TUESDAY, AUGUST, 18

001. WELCOME
10:00 to 11:40 am
virPrague: VR 00
Session Organizers:
> *Ulrike Felt*, University of Vienna, Department of Science and Technology Studies
> *Joan Fujimura*, University Of Wisconsin-Madison

002. Science and Technology Studies on Traditional, Complementary and Alternative Medicine (TCAM). Session one, focus on TCM
10:00 to 11:40 am
virPrague: VR 01

Biomedicine has been very successful in lengthening lives, curing diseases and enhancing the quality of life in numerous ways in contemporary societies. Yet, countless people across the globe choose to complement biomedicine with different non-evidence-based therapies, healing practices and technologies. Some people even use these as alternatives to biomedicine to go "back to nature", to resist medicalization and technologization by refusing vaccines and medications, or to simply express different lifestyles, worldviews and perceptions about good health. For STS scholars and sociologists of science, these practices and expressions do not only boil down to resistance or ignorance of medicine, but offer fruitful sites to analyse public understanding of science and biomedicine, to interpret relations between expert and lay knowledge(s), and to understand hidden and suppressed knowledges of subordinate groups such as women, migrants, Asian, South American and African traditional healers and practitioners in the postcolonial sense. The integration of traditional and complementary medicine into biomedical spheres, as therapies and objects of scientific study, also increasingly blurs boundaries between these domains and has led to new concerns around knowledge colonisation. This panel seeks contributions that explore traditional, complementary and alternative medicines (TCAM) and practices from STS perspectives. In particular we invite papers that target the role of STS theories and methods in studying TCAM. For example, how can we understand aspects of TCAM use, knowledge production, professionalization, standardization, ethics, globalization, and integration of TCAM – if focusing on material practices, hybridity, actor networks, or boundary work?

Participants:

> Chinese Medicine as Boundary Object(s): Explaining TCM's Integration into International Science *Caragh Brosnan, University of Newcastle, Australia; Fran Collyer, University of Sydney; Karen Willis, La Trobe University; Tony Zhang, RMIT University*
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> Traditional Chinese medicine (TCM) is founded on vitalist philosophies that connect health and illness to Qi, an invisible energy flow. Like other forms of complementary and alternative medicine (CAM), TCM is often seen as incommensurable with biomedicine and with scientific methods of validation. In contrast to other CAM modalities, however, TCM stands out as exceptionally successful at assimilating itself into dominant spaces of knowledge production and legitimation. The WHO's recent incorporation of TCM diagnoses into the International Classification of Diseases is a case in point. In Australia, TCM research is a designated area of cooperation in the free-trade agreement with China, and TCM studies are being carried out across university science faculties, often by researchers seemingly with no prior affiliation to CAM. Focusing on the Australian case, this paper examines how and why TCM has been able to transcend scientific scepticism towards CAM, to become an object of study in mainstream science, with national government support. Findings are drawn from key informant interviews with leading Australian TCM researchers (n=8), and point to economic, material and epistemological drivers of TCM's scientific 'success'. While some drivers are located outside of TCM itself, we build on work by Scheid (2014) and others to illustrate the characteristics of TCM that allow it to operate as a boundary object, translating and being exchanged between social worlds in an arena of international scientific cooperation.

> East Asian Experiences in the Modernization of Traditional Medicine on Western Medical Terms *Hon-Ngen Kenneth Fung, UOW Malaysia KDU*
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> Various countries in East Asia have attempted to delve into their traditional knowledge to uncover potential blockbusters in medicine since the 1990s. To accelerate this endeavour, government and private institutions have pursued various innovation pathways to stimulate academic-industrial linkages and promote industrial research to satisfy evidence-based regulatory mechanisms that govern national and international trade requirements. Nonetheless, a pertinent question remains as to whether such strategies – typically deployed for engineering or technology-based sectors – is suitable for the herbal medicine sector that relies on classical literature passed down through generations of trial and error. This study argues that the philosophical divide between Western and Oriental medicine, requires a paradigm shift in how performance and development of this sector should be measured and regulated. This study relies on a series of semi-structured interviews that were conducted with experts, researchers and industry research managers involved in developing such research linkages for the development of commercial products in the herbal medicine sector in various organizations in Malaysia, Singapore, Hong Kong, China, and South Korea. This study presents observations on current gaps in expectations; and documents perspectives on issues related to intellectual property rights; product development; and, product regulation. The study calls for a shift in managing the development of the herbal medicine sector by establishing a separate policy for the evaluation and regulation of traditional medicines. This project documents the challenges in the utilization of modern science and technology in the evaluation of traditional medicine in East Asian countries.

> Worlding Traditional Medicine – A Case from Thailand *Iris Dzudzek, University Münster*
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> In my research project "Worlding Medicine" I follow the genesis, enactment, and circulation of scientific facts in the field of traditional medicine in Thailand. Therefore, I set out for the multiple trajectories and mundane practices of diverse actors. STS scholars focus on how biomedical technologies and standards travel globally. Feminist and postcolonial STS scholars argue, that these often circulate along the route of globalization understood as universalizing western knowledge, neoliberalism, neo-colonialism and humanitarian reason structured in epistemic and physical violence. Drawing on fieldwork in Thailand I argue that in contrast to mainstream medical discourses the making of scientific facts in traditional medicine does not simply translate "traditional" knowledge into biomedical standards. I introduce worlding as a way of ethnographic theorizing in order to open an alternative perspective that contrasts this hegemonic understanding of globalizing health as unidirectional distribution of technological and political health standards. It allows to enter into dialog with actors, about their world-making practices, how they unequally live and share their bodies, infrastructures, technologies, and (scientific) evidences in order to understand the global entanglements of traditional medicine. In my talk I show how actors in the field of traditional medicine in Thailand enact in their scientific world-making practices a medicine that diffracts the taxonomies of the seemingly separate worlds of hard bioscience and traditional belief systems. Mapping these diffractions enables me to tell a story about the making of scientific facts and worlds that crisscross global space and to decentre the geopolitics of biomedical knowledge.

Session Organizer:
> *Jenny-Ann Brodin Danell*, Umeå university, Department of Sociology

Chair:
> *Jenny-Ann Brodin Danell*, Umeå university, Department of Sociology

003. Choreographies: Rhythms and Movements in Research, part 1
10:00 to 11:40 am
virPrague: VR 02

Participants:

Choreography of chronicity: assembling different rhythms of regional elderly care *Nienke van Pijkeren, Erasmus University (Institute of Health Policy & Management); Iris Wallenburg, institute for Health Policy and Management; Roland Bal, Erasmus University Rotterdam*

The regionalization of elderly care requires a renewal of the choreography of patients, architecture, procedures, rules and (informal) care practitioners. Increased care complexity, the growing numbers of chronically ill elderly and shortage of staff, specifically in rural areas, urges a reordering of how and where care is being provided. In this article, we use the concept of choreography used by Cussins (1998) and Law (2010) to point out the arrangements and distribution of events and actors in space and time and how these come together in everyday practice, often in rather conflictious ways. This article furthermore explores how gaining access and replacing care to certain locations, buildings or rooms, requires overcoming potential material barriers and complying with authorizations and ideas on chronic care (Bister, 2018; Oldenhof et al, 2016). We draw on data from an ongoing ethnographic research program (2018 – 2021) on regionalization of long-term care in the Netherlands. Regionalization involves collaboration between organizations and movement of patients following the availability of care – for instance through 'crisis beds' or rehabilitation spots in a particular region. Within this context, different rhythms are at stake: e.g. the transforming needs of patients, the long waiting lists of nursing homes, the short time frames of a crisis admission and the inertia of establishing effective regional inter-organizational cooperation. The metaphor of choreography furthermore uncovers the effort that goes into bringing together these different rhythms and organizational routines.

Exploring choreographies of responsibilities: Biotechnology research, farmed salmon, and public issues *Heidrun Åm, Norwegian University of Science & Technology (NTNU)*

This paper aims to employ the concept of choreography to suggest a different take on social responsibility in public research than conventional approaches to Responsible Research and Innovation. I will start from two biotechnological research projects on new feed for farmed salmon in Norway. According to the RRI-framework of the Norwegian Research Council, scientists are supposed to conduct these projects according to RRI-dimensions. However, salmon farming is a loaded topic. Public concerns around aquaculture abound. Where would RRI-activities in these individual biotechnology projects fit into this picture? Where to locate responsibility in practice? How is agency distributed? Considering its sustained focus on politics in research and laboratories, has STS scholarship on RRI lost politics—in the form of uninvited public contestation, Politics with big P, and power relations—out of sight? There are political-economic dimensions implicated in biotechnology on farmed salmon. By mapping them out, I want to point to the entangled web of movements, dynamics and locations of social responsibility of public funded research that go far beyond research projects. My research follows a pragmatist study of politics. This approach at the intersection of critical policy studies (CPS) and science and technology studies (STS) (Barry 2001, Marres 2007, Asdal 2008, Mitchell 2013, Laurent 2017) studies the joint production of publics, problematizations, and social order.

Let's dance. Choreographing research integrity in interdisciplinary research collaborations. *Bart Penders, Maastricht University*

Collective and collaborative research practices characterized by interdisciplinary team science, face scores of epistemic, social, methodological, political and practical hurdles in shaping shared knowledge making infrastructures. Especially in the context of different moral and epistemic articulations of proper or good science, these hurdles invite creative and often tailored ways to overcome. The pursuit of alignment can invent or draw from a variety of choreographies, requesting diverse and varied relationships to be constructed along the way. In this paper, I draw from the study of three interdisciplinary research collaborations in nutrition science, data science and midwifery, and the ways in which they have managed to work with or around different views and structures on research integrity. The continued encounters across both time and space of different notions or proper science, proper conduct and the 'right' way to act in the context of research, created both friction and choreographies to deal with or avoid friction. I will propose three choreographies to help understand collaborative moral struggles in team science: capoeira, a high-risk choreography that allows mutual actors to enter end leave each other's moral spaces without changing either; a traditional lead and follow, in which the moral space is determined by the leader – although that lead can be hijacked along the way; and a slow dance embrace, in which moral spaces blend, shift and form together. The development of these choreographies profoundly shapes potential and actual roles for researchers as well as shapes the qualities of research produced.

Urban Living Labs as 'jack of all trades devices' - Choreographies of innovation, participation and transition *Kevin Weller, MCTS Technical University Munich; Andrea Schikowitz, TUM*

Urban Living Labs are expected to constitute spaces which allow for the realization of (1) innovative solutions, (2) participation and democratization of technology development and research and (3) a transition towards sustainable cities. These goals are meant to be achieved through experimentation and co-creation in a 'real' but 'manageable' urban area (Gross, 2018; Wagner & Grunwald, 2015; Yvonne, Karin, & Sarah-Kristin, 2015). However, previous studies of participatory sustainability research and urban transformation have shown that in practice, these guiding principles do not necessarily align without tensions (Blok, 2013; Evans & Karvonen, 2011; Felt, Igelsböck, Schikowitz, & Völker, 2016; Klenk & Meehan, 2015; Polk, 2014; Schikowitz, 2019). We explore how urban living labs are constituted as spaces of innovation, participation and transition and how the inherent tensions between these guiding principles are coped with in practice. We argue that tensions are not resolved in a coherent and lasting way, but that they are coordinated dynamically through 'choreographies' - spatiotemporal movements of different actors (Parker & Crona, 2012; Schikowitz, 2017; Thompson, 2005) – such as prototypes, lab coordinators, projects, partners, citizens, methods and concepts. In turn, we analyse how specific choreographies constitute living labs as spaces (Fritz & Binder, 2018; Karvonen & Van Heur, 2014; Löw, 2008) that enable or restrict innovation, participation and transition in specific ways.   The empirical analysis is based on interviews, participant observation and documents from four 'Urban Mobility Labs' in Austria. The research is conducted in the project "PROLAB – Living Labs as prototypical milieus".

Choreographies of collaboration in the Francis Crick Institute *Niki Vermeulen, University of Edinburgh*

The establishment of multi- and interdisciplinary centres has become a central mode of funding innovative research and an international fashion in science policy, which also materialises in buildings especially (re-)designed to foster collaboration inside and outwith the building. But how does the lay-out of these buildings transform ways of working, and the circulation of researchers and knowledge? And how are the boundaries of buildings permeable to the urban environment? Focusing on movements of aggregation, circulation and integration, this paper analyses the Francis Crick Institute as a recent example of this trend towards integrative research centres. The novel £700 Million, 93000 m2 building is merging two long-standing research institutes and three universities in London's central Knowledge Quarter. The Crick strategy 'Discovery without Boundaries' emphasizes openness, removing boundaries between disciplines, organisations and diverse communities. Similarly, its design stimulates chance encounters and collaborative work, e.g. through an atrium, glass partitions, common workspaces, a restaurant and coffee corner, as well as a public exhibition space and community health centre. Consequently, the Crick provides an ideal opportunity to study choreographies of collaboration,

exploring issues of epistemic integration, community building, environmental identity and urban engagement.

Session Organizers:

Filip Vostal, Institute of Philosophy of the Czech Academy of Sciences

Niki Vermeulen, University of Edinburgh

Andrea Schikowitz, TUM

Chair:

Filip Vostal, Institute of Philosophy of the Czech Academy of Sciences

004. Food, Biotechnology & New Meats

10:00 to 11:40 am
virPrague: VR 03

Participants:

Genes, Food and Metabolic Health: Configuring Environment and Food in a Biotech Lab *Stathis Arapostathis, National and Kapodistrian University of Athens*

The paper is a sociological study of a toxicological and biochemistry lab in a peripheral university of Greece. The aim is to understand the way antioxidants have been introduced by the Biochemistry laboratory of the University of Thessaly in order to question dominant techno-solutionism that stresses the importance of pharmaceuticals to secure healthy conditions at a personal and societal level. The research questions the paper addresses are the following: How antioxidants have become key actors to build the lab's visionary understanding of the interaction of genes and nutrition? How biochemistry and biotechnology have promoted alternatives to dominant understandings of nutrition and its role in healthy living? How antioxidants became agents for the promotion of a new model of political economy of knowledge that reproduces knowledge capitalism at regional level. The paper argues that antioxidants have become the immutable mobiles for the lab and its leader to promote the vision of a personalized medicine that is based on well-structured nutrition, new biometrics and the use of local natural resources and products. The paper contributes a sociological analysis of a lab that deconstructs the center-periphery distinction and unravels the enactment of a type of regional capitalism where the surplus value of the local natural resources has been co-produced with new roles for scientists in the neoliberal regime of knowledge making. The paper is based on 18 months of fieldwork that involved interviews with the research team, observations, analysis of reports and published articles.

Replacing Unsustainable Food Cultures? How Meat Alternatives Defend 'Good' (i.e. Meat-based) Food *Malte B Rödl, The University of Manchester*

The industrial production of animal meat is increasingly related to environmental, ethical, and health-related issues. Meat alternatives have emerged as a promising solution to these issues, and are seen as a front-runner in a big transformation of the meat industry. Previously a niche product intended for veg*ans, meat alternatives are increasingly thought to support dietary change and thus able to alleviate the issues of animal agriculture. This mainstreaming of alternative food necessitates products to be as authentic as possible—both from producers and eaters—, including accepting and appropriating the untouchable position meat occupies in many food cultures. Building on a qualitative assessment of meat alternatives including food industry news, producer interviews, advertisements, and user-generated content on social media, this paper identifies and reviews the meaning-making and signification mechanisms with which discourse on meat alternatives appropriates meat. These mechanisms include (a) how conventional vegetarian food is framed as the boring, tasteless, cumbersome, and not fit-for-purpose 'other'; (b) how the non-animal-origin of meat alternatives is made invisible; and (c) how any moral obligations to reduce animal meat consumption are individualised and made conditional on individual taste experiences. Building on these findings, it is argued that while this techno-fix may offer short-term sustainability gains, its embedding into established 'normalities' strengthens existing food cultures and maintains meat's

untouchable status. Eating the flesh of non-human animal thereby remains acceptable.

We Are Eating Our Own Genius! Looking At »Clean Meat« Through Symbolical-Relational Lenses. *Sandra Matthaeus, Chemnitz University of Technology*

My presentation focuses on the biotechnology »Clean Meat«, currently being studied within the research project »Disruptive Technologies. A Sociological Study on the Reconfiguration of Society via Clean Meat, Social Freezing, and Digital Assistants« funded by Thyssen foundation. »Clean Meat« represents lab grown meat based on a biopsy of animal muscle stem cells cultivated using a nutrient fluid within bioreactors. For years now, »Clean Meat« received billions in funding in order to improve the technological process since it promises an ecological sustainable and animal cruelty free satisfaction of the global meat demand. In connection with that promise and against the background of scholarship from STS, the environmental humanities, feminist and postcolonial studies and using a mixed methods approach (discourse analysis, ethnography, interviews), I am focusing on the question to what extent »Clean Meat« transforms our modern self-/world-relationships. My thesis here is that »Clean Meat« rather radicalizes than undermines hegemonic self-/world-relations that led to the current ecological crisis. This becomes clear once we are using especially Annemarie Mol's, Marilyn Strathern's and Donna Harraway's considerations suggesting that in order to answer the question of what we eat we must also turn to the symbolical referring particularly to the relations that go into our food products. In this line, my material suggests, that we are eating with »Clean Meat« our scientific-technological nature-dominating genius which also feasts our belief in innocent knowledge and life practices possibly leaving us not only devouring ourselves eventually but also exactly those we puport to rescue.

Session Organizer:

Marketa Dolejsova, Aalto University

Chair:

Danielle Wilde, University of Southern Denmark

005. Techniques of Resilience. Coping with the Vulnerabilities of Hybrid Bodies-1

10:00 to 11:40 am
virPrague: VR 04

In recent years we have seen the introduction of more and more technologies that operate under the surface of the body. These 'body companion technologies' (Oudshoorn 2020) not only do what they are supposed to do, but simultaneously transform the fragility of bodies by introducing new vulnerabilities. Living with a technologically reconfigured body therefore requires a life-long trajectory of building resilience. Adopting the perspective that vulnerability and resilience is constituted and achieved in a complex interplay with the materiality of bodies, technologies, and the socio-technical environment, this panel invites papers that critically explore and conceptualize how 'everyday cyborgs' (Haddow et al 2015) learn to live with the vulnerabilities of their hybrid bodies. Understanding techniques of resilience is important because it enables us to account for vulnerabilities without turning cyborgs into passive victims of their implants or prostheses. How do people living with implants and prostheses sense and make sense of their hybrid bodies? What techniques do they use to keep their bodies alive? What social and material resources are available to them that can assist them to adapt positively to the new vulnerabilities they face? How do gender, age, ethnicity, and global differences in access to these high-tech devices affect which bodies materialize as everyday cyborgs? The panel aims to contribute to socio-material approaches to vulnerability by foregrounding technologies inside bodies, which are largely absent in most STS studies on vulnerability.

Participants:

Altered narratives, vulnerable testimonies: How does indeterminacy speak in the context of neurotechnological modulations? *Marc Strotmann, MCTS TU München*

The technological innovation and clinical use of neural devices foster new possibilities within the domain of neurosciences, both for research and therapy. The durable implementation of techniques like cochlea implants, deep brain stimulation, and brain-machine-interfaces give hope to patients and experts in the

present. For the near future further developments, especially closed-loop technologies, promises more efficient and variable opportunities, echoing the imaginaries of precise medicine. Nonetheless, the scientific and clinical upcoming of neurotechnologies keeps something phantomatic (Schrader 2010), relating to the indeterminacy haunting the status of individual patients and their bodily experiences. A lot of theoretical attention has been required to the uncertain condition of personal identity, human agency and feelings of subjectivity. How do the enabled intimate contact and relation between the human brain and technological things effect and affect experiences of self, understood as embodied integrity and biographical continuity? Studies within medical anthropology and the STS illuminate the ambiguity underlying the negotiations between patients, their relatives and medical experts about the technological touch for pathways of bodies (Moutaud 2016, Gardner 2017). Following these observations, I aim to undertake a necessary reformulation: How become personal experiences articulated within the context of neurotechnologies, not as a source of external disciplinary power but to a degree of internal vulnerability, hesitation, and loss? Estimating the critical argument that STS might have something to offer but not bring to the fore yet considering technologies that move under the skin (Dalibert 2015, Oudshoorn 2016) I stress the tension of responsibility and vulnerability (Schrader 2015, Kerr et al. 2018) for the case of neurotechnologies and highlight modes of narration and forms of testimony.

Anxious Beauty : Plastic Surgery, Everyday Cyborg, and Feminist STS in South Korea *So Yeon Leem, Sookmyung Women's University*

"I was anxious. During the recovery period, I went though many different unexpected symptoms. Pains visited me without notices. For months, my face was swollen. I stayed at home for two months after surgery. Pains and swellings got better and better, fortunately. However, I still have some numbness around the left part of my mouth. I also have some stiffness right beneath the nose. Those abnormal senses don't usually bother me but sometimes they do. My upper lip got too thin as it rolled inward after surgery. My lower face is still asymmetrical. I thus consciously give more strengths to the right part of my mouth. Becoming a beauty is becoming a cyborg. I am an anxious cyborg." I conducted ethnographic fieldwork at a plastic surgery clinic for about three years. During the fieldwork, I myself underwent two-jaw surgery to have a smaller chin. Since the turn of the 21st century, in South Korea, there has been a new kind of plastic surgery boom to change the overall shape and structure of a face. Two-jaw surgery involves radial jaw bone excision and fixture with titanium plates and screws. This paper is my own way to live with vulnerabilities of the hybrid body as a Korean woman- STS researcher-plastic surgery recipient and an attempt to make plastic surgery a matter of feminist STS. It will reveal gender, ethnicity, and global differences which affect everyday cyborgs' lives.

Becoming Seen: Creating New Vulnerabilities and Resilience through Type 1-Diabetes Wearables *Magdalena Eitenberger, University of Vienna, Department of Political Science*

Medical technologies for Type 1-Diabetes are prominently portrayed as all-encompassing solutions: mitigating dangerous long-term complications while easing patients' everyday life and "disease management". They promise positive changes in patients' highly complex relationship with their chronic illness, combining narratives of wellbeing, convenience, and a more "normalized" life-style. Against the backdrop of such utopian visions for technology-driven "solutions", I leverage a lived experience analysis of the Austrian healthcare system to explore decision-making processes around the (non-)use of T1-Diabetes technologies. Wearable technologies like continuous/flash glucose monitoring systems and insulin pumps have lived and embodied effects, unintended by their makers: They put on display what was previously a quiet, invisible disease, creating new vulnerabilities and forms of resilience. Patients' bodies become hybridized by the devices working to keep them alive. A condition previously contained inside afflicted bodies is pushed onto the surface of the skin. More so, the so-called "self-care

work" necessary to live with T1-Diabetes is moved into the open. With the device comes the datafication of a complex disease, the need to talk about and justify technology use, and to partake in a public discussion about healthcare costs and reimbursements. But I also ask how people make technologies their own by adapting their intended functions to fit their individual needs and "non-uniform" bodies, keeping in focus the bodies unable to embody and become-hybrid with the technologies built for them. I highlight how visible technologies build new communities through recognition, and how this may foster connection and shared experience.

Everyday Cyborgs: Men with implanted/transplanted hair (and its Eigensinn) *Melike Sahinol, Orient-Institut Istanbul; Burak Taşdizen, Orient-Institut Istanbul*

In recent years techno-medical reconfigurations of men's bodies, an example to which are interventions in balding due to aging (Syzmczak& Conrad 2006), has medicalized men's bodies and thus masculinities A reason for this is that cosmetic surgery has become not only more accessible (Edmonds 2009) but also more popular among men with hair transplantations/implantations being one of the most chosen cosmetic surgical procedures by men (American Society of Plastic Surgeons 2019). Extending the focus on 'body companion technology' from the concrete technologies implanted into/on the body/ies, towards including emerging biotechnical entities, such as (synthetic) hair and its implantation/transplantation processes, this research focuses on men's bodies and their materialization as 'everyday cyborgs' through hair implantation/transplantation procedures. Concentrating on men undergoing such procedures in clinics in Turkey and Iran, we argue that these procedures could be regarded as empowerment of vulnerable subjects for they enable self-actualization. As these procedures are embedded in a web of biopolitical currents (i.e. economy, professional settings, etc.), consolidation of gender differences through the reproduction of a particular type of masculinity could be underway. Considering the self-will (Eigensinn) of the bios, and thus hair, our complementary to the body companion technology concept helps to see hair as biotechnical entity, with the agency to reject its new territory, requiring ongoing care on part of the patient's body. Thus, this research conceptualizes the techno-medical (re)locations of hair in men's bodies within a socio-bio-technical framework and scrutinizes how and the ways in which these 'everyday cyborg' bodies deal with emergent vulnerabilities.

BCI, BTBT, and Future TechnoBrainBodies: from a Posthumanist to a Posthumanities Perspective *Sigrid Schmitz, HU Berlin*

The developments from Brain-Computer-Interfaces (BCI) to Brain-to-Brain-Interfaces (BTBI) reach from an enabling of impaired patients to neuroenhancement towards a posthuman future. This neuro-posthumanism holds a set of tensions: Firstly, its agenda targets visions of the abled, successful, white, masculinized TechnoBrainBody, e.g., competition is set up as normative capacity for the uploaded mind to silicon (https://de.slideshare.net/randalkoene). Whereas rationality and consciousness show up as central to these visions, compassion and affect – still feminized – are not accounted for. This tension calls for a deeper analysis by STS scholars about whose lives should be improved and whose lives should be excluded from high-tech driven neuro-posthumanism. Secondly, based on a modern neurobiological determinism (Schmitz 2009), neuroscience recently focuses on the brain connectome to detect the basics of abstraction and to predict all behavioural outcomes, including 'thoughts'. This research is seen as crucial for the development of cyborgian TechnoBrainBodies. The brains complexity, however, enables abstraction beyond neuro-materialism. 'Thoughts' have neuronal correlates, but cannot be traced back only to their neuronal materiality. Abstraction capacity derives from passing a threshold of complexity to a more-than-material emergence, which questions the possibility of high-tech driven 'thought-emulsion'. Within the politically framed perspective of feminist materialisms and by taking up the term of posthumanities (Åsbergs 2013) I work out the frictions between plasticity, determinism and control in the developments of TechnoBrainBodies. I question the brains complexity and its

bio-socio-cultural entanglement, and aim to gain political momentum on how neuro-posthumanities could be realized otherwise than by targeting heteronormative -isms', including affect, sicialities, resistances, dis/abilities, agings, vulnerabilities, and bodily agencies.

Session Organizer:
Nelly Oudshoorn, University of Twente

Chair:
Nelly Oudshoorn, University of Twente

006. New Multiples in STI policy? Understanding the entanglement of concepts, practices and identities

10:00 to 11:40 am
virPrague: VR 05

In the wake of incessant reforms pertaining to the role and function of science, technology and innovation (STI) in society, the 21st century has seen a multiplication of new STI concepts, some of which are challenging the seemingly stable understandings, practices and conceptions of scientific knowledge production and their technological utilization. How do these new concepts, e.g. responsible research and innovation, grand/societal challenges, frontier research, translational research, science diplomacy, mission-oriented research and innovation, emerge? (How) do they relate to each other, and what narratives are they embedded in? What and who are their drivers? How and by whom does their articulation take place, rather top-down or bottom-up? Whom do they include and exclude and when? Do they just legitimize policymakers or (when and why) do they translate into practices and identities of actors from the science system. How are they different from 'old' concepts that bridged or delineated science and non-science? This panel invites contributions that assess the role and interrelation of new STI concepts and is open to single case studies, comparative conceptual works, longitudinal analyses that put new concepts in historical perspective as well as studies that investigate into practice and habitus formations in relation to new concepts.

Participants:

Interdisciplinary Research and Problem Solving: Analysing European Policy Discourses *Isabel Fletcher, Science, Technology and Innovation Studies, The University of Edinburgh; Bianca Vienni Baptista, ETH Zürich*

In Europe, and more widely, interdisciplinary research (IDR) has been identified as an important contribution made by researchers to tackling complex issues such as climate change, anti-microbial resistance and health inequalities. Explicitly modelled on the successful American mobilisation of science and technology to land on the moon (OECD, 1972), such understandings of interdisciplinarity see collaborative research between different disciplines as a means of producing the technoscientific knowledge required for successful policy interventions in these key areas. Using our analysis of recent policy literature on IDR for the Horizon 2020-funded SHAPE-ID project ("Shaping interdisciplinary practices in Europe"), we discuss the different narratives of IDR and its implications contained in publications produced by funding agencies, learned and professional societies, and research organisations. We argue that ideas of "mission-oriented" research have become deeply embedded in the routine activities of these organisations. They are related to a "problem-solving" discourse as opposed to critical or philosophical ones (Klein, forthcoming), more in tune with Arts, Humanities and Social Sciences perspectives. We will demonstrate how, despite their focus on collaboration, mission-oriented instrumental approaches to research prioritise particular kinds of technoscientific expertise at the expense of other kinds of expertise. This privileging occurs in the ways in which funding calls are designed, research questions are framed, evidence is evaluated and research impact is assessed. Finally, we will argue that less hierarchical and more flexible understandings of research and research collaboration are required in order to successfully undertake IDR, and in the process, perhaps, create useful new knowledge.

On the Origins of Research Funding Instruments: the Institutional Emergence of Strategic Research *Susanna Vase, University of Helsinki*

During the last couple of decades, the calls and debates regarding the relevance of science, have become increasingly common in STI policy. Research funding instruments that emphasize transdisciplinary practices, broader accountability, and solutions to global challenges have emerged in national and international funding frameworks. Their features resemble the ideas of the popular STI policy concepts, such as, Grand Challenges, and Responsible Research and Innovation (RRI). The Academy of Finland's newly founded strategic research is a case example of a funding instrument with such emphases. It has introduced new institutional features and requirements, such as, the societal impact assessment, and social interaction plans. This paper examines the institutional emergence of the funding instrument in its local context. Moreover, the research sheds light on the sources of influences, and the ways in which they shaped the construction of the instrument. By drawing on interviews (N=20) with STI policy actors who were closely involved in the different phases of the process, I trace mechanisms that are involved in directing the development. The research finds that the relationship between roles, practices, and concepts is not straightforward. Moreover, their interdependency may orientate the institutional development simultaneously to divergent directions. In addition, it was found that new funding instruments may strengthen the use of certain (old or new) concepts, and encode valuations on the nature of research practices.

Public Engagement In STI Co-operation: Discussions On Potential Implementations In Turkey *yagmur yildiz, Middle East Technical University Science and Technology Policy Studies*

Science, technology, and innovation are key drivers that make sustained economic growth and social development possible. Through STI policies, the conversion of scientific knowledge production into innovation and their technological utilization bring wealth and value creation. In the Triple Helix model of innovation, universities, industry, and government are main actors that collaborate and participate in policymaking to boost knowledge production and innovation. However, there is a blind spot in the Triple Helix approach where civil society is excluded from the innovation systems. Regarding this blind spot, The Quadruple Helix model enables the public to involve actively in science and technology governance as members of civil society to create a dynamic innovation ecosystem. Moreover, the concept of Responsible Research and Innovation (RRI) underscores the citizen involvement aspect of the Quadruple Helix model that overlaps knowledge production, innovation, and democracy. National STI systems enable citizen participation and representation through civil society organizations and NGOs. However, there are countries remain insufficient to engage the public in STI co-operation due to challenges related to socio-economic conditions, industrial specializations, state structures, and tertiary education systems. Turkey is one of the countries in which civil society organizations and NGOs, which are oppressed and suppressed by the government, remain highly incapable actualize public engagement in the national STI system and governance. In this study, I want to discuss and explore potential implementations (e.g. crowdsourcing/crowdfunding) of public engagement in RRI as possible substitutes to civil society organizations and NGOs in the case of the Turkish STI system.

Research for Development - A concept and border issue between science and development politics *Stefan Skupien, WZB Berlin Social Science Center*

The research on cross-national research cooperation, including the categories of Global South/North, tends to leave out the issue of research funding and hence a crucial aspect of STI research. However, research funders are no neutral infrastructure by and for the scientific community, but represent societal, political, or economic stakeholders, whose expectations shape funding policy goals and practices. In consequence, funders need to be integrated as intermediary organization when discussing the ideology and effects of geographic pairing. In our article, we develop and sustain the proposition that an analysis of funders' views is imperative to understand the ways international research collaborations of unequally equipped participants are perceived, maintained, and sometimes reframed over time. Building on interview data and policy documents from six countries, we analyze the semantics employed to make sense of North–South

relationships. We find that narratives from development cooperation complement and sometimes supersede the traditionally liberal meta-narrative of scientific collaborations (Skupien and Rüffin 2020). The paper contributes to the panel's objective to explore the development and forms of concepts and theories in STI by shedding light on the yet underexplored concept of research for development (r4d). By analysing the semantics of r4d funders, we argue that the concept of r4d functions as an umbrella under which the cooperation of different funding organisations and their interest can be negotiated along organizational borders.

Session Organizer:
Barbara Hendriks, Humboldt-Universität zu Berlin and German Centre for Higher Education Research and Science Studies

Chairs:
Cornelia Schendzielorz, Deutsches Insitut für Wissenschafts und Hochschulforschung/Humboldt Universität zu Berlin
Martin Reinhart, Humboldt-Universität zu Berlin

Discussant:
Tim Flink, Humboldt-Universitat zu Berlin

007. Making, Having, Thinking: Sex, Technology and Science (1)
10:00 to 11:40 am
virPrague: VR 06

Sex has distinct yet co-constitutive meanings in science and society. These include: physical characteristics that comprise 'biological sex'; identity categories; erotic practices and relations. This panel will investigate science and technology's roles in the construction of these meanings of "sex" and will act as an incitement for STS to take sex both seriously and playfully and get its hands dirty (or downright filthy). Discussions may include: Making Sex • How have scientific/biomedical technologies made and remade sex in the past? How might we make sex otherwise in the future? • How do we make sex happen? What is the role of science and technology in the facilitation and regulation of sexual practices, pleasures and possibilities? Having Sex • How does a multiplicity and variation of biological sex characteristics produce the notion of two biological sexes that one can "have"? • How do science and technology intervene in the dynamics of sexual play or practice? Conversely, in what ways are erotic practices embedded within science and technology? Thinking Sex • How can the tools of STS help us to think sex beyond limited and often biomedical binary imaginaries? • In the four decades since Rubin's 'Thinking Sex', what has STS scholarship done to "think sex"? Where do we need to go from here? Papers will engage with the rich history of scholarship in this field (including gender and sexuality studies, queer and feminist science studies) as well as the many possible futures of sex, technology and science.

Participants:

Conflating Sex Practices and Sex Characteristics. Or, Do You Have to Have Sex to Have Sex? *David Andrew Griffiths, University of Surrey*

Medical interventions to surgically or hormonally "normalise" the bodies of intersex infants or those with variations of sex characteristics (I/VSC) are structured by norms of imagined future sexual practices. This begs the question: do you have to have sex to have sex? To have a (legal) sex in Britain was only really defined in 1969, in the divorce case of April Ashley (Corbett v Corbett). The judge in the case called many medical experts, in the attempt to reach a biomedical consensus on the definition of sex that could be used in court. There was, indeed, much discussion about the biological constituents of sex, be they genitals, gonads, chromosomes, hormones, or psychology. This was not the only evidence marshalled however; the case also included much speculation about the kinds of sex that Ashley was having. In the end, the judge decided that her vagina was "artificial", that her sex practices were not "natural", and that she was therefore not "a woman for the purposes of marriage". In this paper I will read this history alongside work on compulsory sexuality and contemporary issues in intersex scholarship and activism. I will analyse the ongoing conflation of bodily practices and characteristics in biomedical discourses around the "management" of variations of sex characteristics. This leaves these practices to be defined by restricted and restrictive norms of aesthetics and function, rather than opening them up to scrutiny through a focus on alternative norms of consent and bodily integrity.

Coproduction, Multiplied: The Case of Sex as a Biological Variable *Madeleine Pape, Northwestern University*

In 2015, the National Institutes of Health (NIH) in the United States (US) introduced a new policy mandating consideration of Sex as a Biological Variable (SABV) in preclinical research. In this paper, I ask: what precisely is meant by the designation of sex as a "biological variable?" Moreover, how do policymakers establish sex as such a variable? Given the well documented complexity of "sex" and the degree to which its precise nature is politically and scientifically contested, such a designation is not a given. Extending recent scholarship in feminist science studies, I read the case of the SABV policy through two frameworks—coproduction (Jasanoff 2004), and multiplicity (Mol 2002)—with the aim of exploring how sex is multiply enacted through practices of policymaking and in response to specific political and scientific imperatives. Drawing on textual and interview materials, I reveal how sex is simultaneously enacted as entangled with yet distinct from gender, dimorphic yet overlapping, a system of classification yet a biological force in and of itself, context-specific yet universal, and scientific yet political. I argue that this is possible because of the ontological space created at the intersection of two concurrent issues for the NIH: pervasive gender inequality in biomedicine, and the "crisis" of reproducibility in preclinical research. Ultimately, the SABV policy contributes to reconfiguring political and scientific order, yet "sex" is multiply enacted as a complex, unwieldy, inconsistent, and ultimately ideological series of objects that never fully cohere as a distinct biological variable "once and for all."

"The Right to Identity": enacting sex as a matter of the State in Brazilian judicial cases *Lucas Riboli Besen, Universidade Federal do Rio Grande do Sul (UFRGS/Brasil)*

In the past few years, matters of sex and sexual identities have become a public debate in Brazil. The issue is often brought up by conservatives and religious groups who aim to promote a "safe environment" for their children through projects such as "School without political parties". In 2018, amidst this heated debate, the legal dispute involving the changing of travestis and transgenders' name and sex in public registers reached the Brazilian Supreme Court. Approved by the majority of the judges, it was a sexual rights landmark in recent history. For the past ten years, I have been conducting ethnographic research regarding Brazilian Supreme Court decisions on sexual identities. Despite the many differences within this topic, one question always guided my interest: how the Supreme Court and social movements enact sex as a matter of the State. In the present communication, I focus on the particular case of a pro bono university legal advisory group, G8-Generalizando (G8), who innovated by articulating legal-psychological arguments and knowledge to produce a judicial alternative based on the depathologization of travesti and transgender identities. Inspired by Annemarie Mol, I examine how G8's heteronomous group of professionals produced a novel view on the matter. Also, I argue that throughout the judicial cases the argument shifted from a practical to a critical perspective of the law as the group itself transformed. In this process, the change of registration documents, more than a matter of the State, becomes a site where sex is enacted and transformed.

Session Organizer:
David Andrew Griffiths, University of Surrey
Chair:
David Andrew Griffiths, University of Surrey

008. Making Global Knowledge
10:00 to 11:40 am
virPrague: VR 07
Participants:

How Randomized Controlled Trials construct Global Poverty *Nassima Abdelghafour, Ecole Nationale Supérieure des Mines de Paris*

This paper looks into the concept of global poverty as it is constructed through the action of the randomistas, these development economists who have promoted the use of randomized controlled trials (RCTs) in poverty-alleviation policy-making, for impact evaluation purposes. Dating back to the early 2000, the RCT movement has rapidly spread, with now over a thousand completed or ongoing experiments conducted all over the world. RCTs consist in in vivo experiments comparing a randomly selected "treated" population, receiving a social policy to a "control" population. Expensive and difficult to implement, RCTs are often conducted on small samples, covering a limited geographical area. Yet the question "what works" to reduce poverty, asked by the randomistas, is a global one. RCTs' results are compiled in rankings, in order to identify the ones with the larger impact and the best value for money. The interventions that are found highly efficient and good-value for money are considered for replication and scale-up, to be eventually extended to millions of people. The experimental approach to poverty assumes of a certain homogeneity across poor countries, in which poverty issues can be researched and solved according to a similar protocol. How do the RCT-proponents bridge the gap between a series of local experiments and a global approach to poverty? The paper analyzes the conceptual (e.g. comparative cost-effectiveness analysis, theories of change, assumptions about human behavior) and material (e.g. RCT repositories, data-verses, spin-off NGOs) instruments through which RCTs' results are weaved into an agenda to combat global poverty.

International Energy Cooperation Through The APEC Platform: An Empirical Analysis *Wan-Ching WANG, National Taiwan University; Yen-Chang WANG, Taiwan Economic Research Institute*

APEC has played an active role in terms of international energy cooperation. Through operations of the Energy Working Group (EWG) and implementations of inter-member initiatives, APEC member economies exchange thoughts and knowledge to strengthen domestic and regional energy security, lower the carbon intensity, and facilitate open trade and investment. As APEC region accounts for 60 percent of energy demand and is with vital energy users such as China, Japan, Russia and the United States (APEC, 2019), impacts of the aforementioned cooperation activities are worth of further explorations. Nevertheless, apart from energy statistics and analyses which are distributed from APEC related organisations such as Asia Pacific Research Centre (APERC), research on APEC seems to concentrate on studies of specific energy subjects, including energy intensity (Zhou et al. 2017), energy saving (Hu and Kao 2007), and energy security (Blum and Legey 2012). Applying document analysis, this research revises work plans, publications and member initiatives launched through the EWG and released by APEC affiliated research institutions, to investigate models and effectiveness of cooperation through the APEC platform. The provisional research reveals that the knowledge-exchange activities can be essential references to bilateral trade talks or the establishment of regional market scheme among APEC members. Also, interactions among members are further strengthened through initiative launching and implementation, focusing on energy cooperation, trade practices and capacity building, based on the knowledge acquired by the activities above. This is the uniqueness of APEC energy cooperation which is comprised of international relations, market and economy, and capacity building.

The Epistemic Infrastructure of Global Aid: Working Through the Otherness of the Humanitarian Field *Evan Fisher, CSI, Mines-ParisTech*

How might we describe the "field" of a global, humanitarian NGO? Generally, this field has been qualified in terms of what it is not: through the dialectics of field to headquarters (Siméant & Dauvin, 2002), through an opposition between the sacred field of aid and the profane office space of accountants (Bornstein, 2005), as that far-off destination that jeopardizes the subjectivity of those that leave their homes (Fox, 2014). The field of humanitarian action is an other place, described in terms of how it affects or produces those places that it is not. How might we describe this field in positive terms, without overwriting these experiences of otherness? My proposition is that those activities that open the field - the initial assessment of a population's needs - provide a fulcrum for undertaking this task. My description is based on an ethnographic and historical investigation conducted inside Doctors Without Borders. In discussion with literature on the field sciences (Livingston 2010; Kohler 2002; Gieryn 2006; Kelly 2012), we will show that, as MSF developed a series of epistemic practices that open the field, they constituted an infrastructure for observing and knowing crises around the world in such a way as to turn them into objects of intervention. This epistemic infrastructure (Murphy, 2017), this large-scale investigative technology that affords local practice (Star & Ruhleder 1996), cancels out the distinctions between the local and the global and, thereby, reformulates the problem of the otherness of the field of humanitarian aid: no longer other, the field of humanitarians will be described as a site of mediated and dynamic coordination.

Global Evidence and Local Invisibility *Carolina Rau Steuernagel*

Medical practice and health policy making require a biotechnology – a machine capable of attaching life to text, through processing events and manufacturing evidence as final hybrid outcome. I use two interdependent events - the AIDS epidemic in Brazil and the invisibility of lesbian health – to exemplify the processing. Michel Callon's take on "qualculation" enables understanding this machine as performing a series of quantifying tasks, but that are also dependent on qualification. First, the machine sorts out and detaches entities – dead patients, infected people, sex, blood, virus, medicines – which are displayed in textual forms. Second, those entities are manipulated and relations are created between them, taking the form of charts, tables, reviews. Third, a product is extracted - a judgement, a policy, a final decision on how to act. While evidence is constituted by quantifiable operations, it attaches value to outcomes: Policies are the product of the best evidence. Yet, in order to reach such a purified outcome, something has to be discarded. Lesbian health offers then empirical cases to turn the attention to the byproduct, often out of sight in the manufacturing process. My contribution to this panel will be a reflection on the use of quantifiable evidence to both guide and measure the effect of the Sustainable Development Goals as a global movement for a better future and prosperity. In my examples the translation of global notions of evidence produce local material effects, making bodily features invisible.

Session Organizer:

Nassima Abdelghafour, Ecole Nationale Supérieure des Mines de Paris

Chair:

Felix BOILEVE, CSI MinesParisTech

Discussant:

Andrew Barry, Department of Geography University College London

009. Reproduction in the Post-genomic Age
10:00 to 11:40 am
virPrague: VR 08

This panel will bring together scholars working on the intersection of reproduction and post-genomic science, also called the new biologies. Encompassing fields such as epigenetics, microbiome research and immunology, post-genomic science offers new biological theorisations that complicate the agency of the gene in determining human individuality. Reproduction—and pregnancy in particular—is a privileged site in this research, with transmissions between foetus and gestator offering biological models that challenge dominant ideas of personhood as gene-centred and separate from gestational and non-human environments. The reproductive body is so central to these fields that, as Mansfield and Guthman (2015, 3) write of epigenetics, we can conceptualise them as a 'reproductive science'. The collision of post-genomic research and constructions of reproduction contains both substantial potential and risk. In foregrounding how reproductive and nonhuman environments shape the distribution of life outcomes, the new biologies can validate through scientific discourse a concept of reproduction as a more-than-human milieu. Such a conceptualisation has long animated reproductive justice approaches, and is at the heart of a recent social sciences turn to

'environmental reproductive justice' (Lappé, Hein and Landecker 2019). At the same time, in practice post-genomic studies often construct pregnancy and motherhood as coherent, natural processes that translate easily across cultural and species boundaries, naturalising maternal care and longstanding discourses of responsibility that stratify reproduction across raced, classed and geographic axes (Martin 2010; Warin et al 2012). Seizing these rich tensions, this panel welcomes papers invested in questions of reproductive experience and justice in changing post-genomic times.

Participants:

Maternal-foetal microchimerism and surrogacy: some ethico-legal implications *Margrit Shildrick, Stockholm University*

My contribution explores the implications of microchimerism in socio-cultural and ethico-legal contexts, particularly as it relates to the destabilisation of genetic origins. Microchimerism refers to the existence of parallel but unassimilated sets of genetic material that result in singular (or groups of) cells in the body coding differently from the dominant DNA. Conventional biomedicine and related law has been reluctant to acknowledge the phenomenon even though it has become increasingly evident that microchimerism is probably ubiquitous in the human population. One exception is maternal-fetal microchimerism which has long been recognised, albeit with little consideration of the non-medical implications. Most of the immediate issues concern the ongoing biomedical debate around whether microchimerism is beneficial in terms of enhancing the body's range of immunological responses, harmful in provoking autoimmune diseases, or simply neutral with respect to subsequent health. There has been no resolution of that controversy, but whichever way it develops, I want to extend consideration by insisting that changing biological concerns cannot be separated from socio-cultural and ethico-legal effects. Once the diversity of DNA coding in a singular body has been established, relations of kinship, the identification of legal parenthood, and the operation of surrogacy laws are of direct interest. The overriding problematic asks whether our ethical and legal apparatus is able to address such newly emerging questions.

Microscopes and 'scoping': potentiality, IVF, and reproduction in the postgenomic age *Tessa Moll, Deakin University*

After 30 years, Franklin argues that IVF has become a key "platform, or stem technology" (2013: 31) for biomedicine and biosciences today. After IVF, she argues, biology and technology are increasingly relativized and isomorphic. Thus, IVF remains a foundational technology of reproduction in the post-genomic age that queries relations to pasts and futures, technology and biology, and science and capital. If IVF is a key technology, then potentiality is certainly a key concept. It is no coincidence that in Taussig, Hoeyer, and Helmreich's (2013) reading, the authors offer the embryo as a quintessential example of three articulations of potentiality. I situate the implications of the "naming and framing" (Taussig et al. 2013) of potentiality by drawing from ethnographic fieldwork in South Africa from assisted reproductive technologies and circulations of epigenetic sciences. While potentiality "name and frames," it can simultaneously veil, conceal, and obscure, a characteristic that has been less noted. I describe this as "scoping"; that is how establishing particular moments (the sensitivity of foetal exposure (Mansfield 2016; Lock 2012)), particular bodies (pregnant women (Valdez 2018)), or scopes of what constitutes "safe" (hormone injections as a minor concern, while negating the long term potential harms (Jain 2013)) can both instantiate a moral impetus to intervene, while allow for the neglect to other bodies, forms of life, and futures. While framed as an avenue of hope, I argue that scoping often acts as an opening for both commodification and the reanimating of "old" inequalities.

Revisiting Parenthood: Local Biology, Global Reproduction, and the Problem of Law *Sonja Van Wichelen, University of Sydney*

As biogenetic legitimacies continue to strengthen legal notions of parenthood in Euro-American societies and beyond, scientific discoveries in postgenomics are intervening in these legitimacies. In my contribution I explore these interventions in the realm of global reproduction, including reproductive technologies, surrogacy and adoption. The globalization of family-making prompted the call and implementation of international standards and transnational regulations. Private and public international law are the sites where legal and biological knowledge of parenthood are being reworked. As I will illustrate in the first part of my article, the articulation of parenthood in these legal frameworks are very much attached to either biogenetic or "intentional" definitions of the legal parent. Drawing on the work of Marilyn Strathern and Roberto Esposito I describe how we can understand these legalities as a form of anti-kinship (Strathern 2005) or "depersonalization dispositive" (Esposito 2015: 27). These forms allow bodies, gametes and genes to "thingify" and therefore to be commodifiable. In the second part of my article, I examine how postgenomic findings, that stress the importance of environment in the constitution of biological life, and that approaches life as entangled in local biologies, may challenge these legal forms. By turning to relational materialism I probe the ontic and ontological ways in which kinship can be resuscitated to inform connected lives in the postgenomic age.

The racialising womb: refiguring surrogacy through epigenetics *Jaya Keaney, Deakin University*

In gestational surrogacy arrangements, the womb is commonly figured as a hermetic space, a holding environment that brings the child of commissioning parents to fruition but does not shape fetal identity. This article probes the racial imaginary of such a figuration, what I term the 'non-racialising womb'. Situated in a contemporary context of technically-assisted conception and transnational reproductive markets, the non-racialising womb disembodies gestational labour and reinforces a reductive understanding of race as genetic and set at conception. I problematise this figure through theories of gestation from feminist science studies that centre the lively biology of reproduction to disrupt gendered cultural tropes of the passive womb, and emerging scientific research on environmental epigenetics. These bodies of scholarship share an insistence on the muddied distinction between genetics and gestation, uterine environment and fetal being. I argue that these muddied distinctions allow us to reimagine surrogate gestation as a racialising process, by theorising race not as solely genetic, but as socio-environmental. In this vein, I offer an alternative figuration: the 'racialising womb'. This figuration in turn opens ways of theorising racial embodiment beyond the limiting horizon of the gene.

Session Organizers:

Jaya Keaney, Deakin University

Sonja Van Wichelen, University of Sydney

Chair:

Jaya Keaney, Deakin University

010. Collaborative and conflicting human-microbial cultural practices

10:00 to 11:40 am

virPrague: VR 09

Drawing upon sociopolitical ramifications of human-microbe relationships and food safety standards, this session aims to offer case studies that trace out different scales of "microbiopolitics," particularly as developed by Heather Paxson (2013). Ultimately, the goal of this session is to explore how knowledge practices done by small-scale producers, processors, and scientific experts are enacted through technoscientific interventions.

Participants:

From Deer Meat to Jibie: Industrialization of Hunting and Microbiopolitics in Southern Kyushu, Japan *Shiaki Kondo*

In this paper, I discuss emerging game meat industry in Japan, which is believed to solve the two pressing issues in rural communities: regional economic development and protection of farm lands from wildlife. Recently, depopulation and monocultural forestry practices have caused many human-wildlife conflicts in rural Japan. Total economical damage caused by wildlife within Japan is estimated to be about 20 billion yen (200 million US$) annually. Many local municipalities have adopted various means to mitigate these human-wildlife conflicts including promotion of culled deer and wild boar meats as commercial products, sometimes called jibie (from French gibier). Since 2017, I have conducted an ethnographic fieldwork

in mountain villages in southern Kyushu region where such emerging game meat industry coincides with traditional subsistence and commercial hunting traditions. My questions are: How did the industrialization of hunting and microbiopolitcs associated with it affect local Japanese people's hunting practices and multispecies relations in the region? Is it really possible to achieve regional economic development and protection of farm lands at the same time? This paper will contribute to the ongoing discussions on how biotechnoscientific practices affect multispecies assemblages through microbiopolitics.

Technicalities of Boundary-Making: Entanglements of Microbial Communities and Dairy Technosciences in Northeastern Turkey *Mehmet Fatih Tatari, University of California, Davis (UCD)*

Through ethnographic research in three different universities of Turkey with a focus on microbiologists and food engineers studying "traditional" Kars cheeses, this paper discusses scientific knowledge production, food safety regulations, and technosciences of dairy in Northeastern Turkey. I analyze how the scientific knowledge on the risks associated with using raw milk in rural dairy technologies promoted locally new technoscientific interventions such as counting the somatic cells and checking antibiotics in raw milk, using chrome instead of wooden or copper materials etc. These food safety measures consider dairy products made in pastures as carriers of pathogens and diseases for humans. Akin to what Paxson (2008) called microbiopolitics, this perspective marginalizes dairy production on pastures through microbiological understandings of human health. This paper then investigates the processes through which raw milk "traditional" cheeses unravel the local microflora in laboratories. I focus on the making of scientific realities, by tracing the entanglements of technical forms of knowledge. Milk from pastures is transferred into dairies and laboratories where the distinctive microbial life of a place is expected to emerge in material process of crafting. Scientific work on the microflora of an artisanal cheese reveals different microbial communities, their interactions with human practices, and possible itineraries of nonhuman microbiological life in relation to entities like plants, grass, animals, utters, hands, tools, and situated technoscientific inventions. Working with microbial cultures and crafting cheese offer compositions of sociotechnical processes in the borderlands as boundaries and places are made, crossed, and re-made both in laboratories and dairies.

The paradox of food safety standards: exclusion from compliance. Cases from small-scale dairy producers in Brazil and Bolivia *Georgina Catacora-Vargas, University of Bern / Centre for Development and Environment; Andréia Tecchio, Federal Univesity of Santa Catarina; Aymara Llanque, University of Bern / Centre for Development and Environment; Johanna Jacobi, University of Bern / Centre for Development and Environment*

Food processing safety standards have become highly specialized and adapted to sectors with financial capacity to establish fully aseptic facilities. This approach contradicts the research that reports the benefits of equilibrium among different microbial populations, instead of their full control. The epistemological construction and effects of such standards in Brazil and Bolivia were studied, by an interpretative analysis of the relevant regulation, interviews with ten policy and technical experts, participatory observation among small-scale dairy processors in Seara municipality in Brazil and of individual organic dairy producers in Bolivia, and interviews with 15 of them. The findings indicate that implementation of official standards for dairy processing require significant investment, becoming unfeasible and, at times, unnecessary technical and economic burdens to small-scale producers, for whom food processing is an additional source of income. The effects are their exclusion from local markets, in some cases their "criminalization", decrease in the diversification of their economic activities, loss of their local knowledge, and dependence on medium- to large-scale dairy processors. This case shows how technical food standards act as a normative instrument of power in favor of economically-advantaged sectors, influencing the socio-economic configuration and trajectory of small-scale producers. It also provides elements for analysing the socio-technical imaginaries that frame food standards that qualify "un-technified" and "un-standardized" systems as unsafe and illegal, raising questions on the normative approaches to risk and safety.

Global Pathogens, Local Pathologies: Social Movements and Scientific Knowledge in the Case of Xylella fastidiosa in Italy *Christian Colella*

In 2013 the bacterium Xylella fastidiosa (Xf) was detected on olive trees in Puglia (Italy).The bacterium was also associated with a pathology known as Olive Quick Decline Syndrome (OQDS).Due to the quarantine status of Xf,phytosanitary authorities have implemented drastic eradication and containment strategies (tree fellings,vector pesticides).Due to the importance of the olive tree for the region,the spread of this disease has been characterized by a social debate over the implementation of mandatory phytosanitary policies and the construction of the aetiology of the disease and its solutions.Xf is now considered by phytopathologists as a global treath,however the Italian outbreak showed the need for frames and solutions that would take into account not only the biotic and abiotic complexity of each local case,but also for a reconsideration of the very epistemic core of plant protection practices.Through the studies of Expertise and Experience and Sociology of Ignorance,this paper analyze the controversy regarding the pathologization and medicalization processes of the OQDS in Puglia. In particular,I will see how research groups and environmental social movements elaborated 2 different constructions of nonknowledge and negative knowledge.Through a 2 year multi-situated fieldwork among research communities,stakeholders,and social movements' representatives and members,this paper will argue that the Xf controversy reveals a tension between two frames of the plant pathology:1)a complex of symptoms caused only by Xf (OQDS)versus 2)a complex of multifactorial causes a tension that is also a signal of a deep epistemic and political differentiation within the modes of representations and practices of past, present and future agriculture.

Laboratory practices of vaccine development: the ethics of more-than-human enmeshments *Roberta Pala, University of New South Wales, Sydney*

Vaccines are biosocial events that emerge from situated, more-than-human encounters. Through an account of my fieldwork, I want to consider the laboratory practices behind the research and development of a nanoparticle vaccine against influenza. The development of this vaccine brings together and necessarily relies on the interaction of viral antigens, bacterial bodies, human embryonic cells and plant proteins. This multi-species enmeshment questions ideas of bodies as autonomous and bordered, humans as independent subjects, nonhumans as monolithic 'others', and health as an individual process. Vaccines emerge as more-than-human encounters of bodies that are inter-dependent, permeable and contingent. But, while the concept of enmeshment helps me highlight the relational and entangled nature of vaccines, it does not imply that these are innocent relations. The laboratory is an ecosystem where different bodies are made to matter differently. It is in the practices of exclusions that the ethico-political implications of vaccine research become evident. I consider how the problematic use of animal models in vaccine research establishes hierarchical differences between bodies that can afford risk and bodies that benefit from the risk of others, between the reverence toward some natures (i.e. natural immunity) and the exploitation and elimination of other natures (i.e. laboratory mice). I reflect on the possibility of an ethics of enmeshment that accounts for the more-than-human relations of the laboratory without losing track of questions of justice and suffering. Who dies? Whose labour is exploited? Who makes these agential cuts and who else is implicated their consequences?

Session Organizer:
Mariko Yoshida, The Australian National University
Chair:
Mariko Yoshida, The Australian National University

011. Who are the Publics of Outer Space? Imagining and Framing Publics

10:00 to 11:40 am
virPrague: VR 10
Who are the publics of outer space? How do spaceflight and research agencies, commercial companies, and advocacy organizations address public subjects in different capacities such as citizens, consumers, or audiences? While national institutions led the development of spaceflight in the last century, today new commercial entities are coming to the fore: wealthy billionaires in particular have assumed the role of speaking on behalf of humanity and its future. In this new technopolitical economy of spaceflight, this panel investigates enduring and emerging technoscientific imaginaries of national or global publics (Welsh and Wynne 2013). We address the relationship between institutional framings of space technoscience and the roles that publics play, for example, by validating, objecting to, or confirming the societal and economic value of scientific research and international cooperation (Mackenzie 2013). The panel also considers how research agencies and institutions recognize public diversity and difference in the context of outer space technoscience, and the extent to which people of colour, LGBTQ, women, and other underrepresented publics are addressed by dominant commercial and public actors when framing the meaning and logics of current and future human activity in outer space. The panel therefore contributes to STS scholarship on public engagement as well as the social studies of outer space.

Participants:

Grounding Space Science and Engaging Cosmic Fantasies: Public Outreach in Thailand *Lauren Reid, Freie Universität*

From stargazing camps for kids and live-streaming lunar eclipses, to promoting future holidays on the Moon and walking through a city on Mars via virtual reality — various space-science advocates in Thailand seek to educate and engage the public with both grounded science and fantastical aspirations. While these approaches seem designed to garner enthusiasm and support for potential lives off Earth, they are driven by underlying goals to inspire young generations of Thai people to enter into STEM careers; to disentangle so-called 'superstitious beliefs' from science; and to justify the support of government funders who are sceptical of investing in technologies that turn focus skywards, when investment on land is in dire need. By exploring how Thai space-related institutions actively shape emerging technoscientific imaginaries, this paper digs into the motivations behind a space advocacy that mobilises very Earthly socio-political actions. This research is based on anthropological fieldwork with space-related organisations in Thailand, including the National Astronomical Research Institute of Thailand (NARIT), the Geo-Informatics and Space Technology Development Agency (GISTDA) and Thailand's first space technology start-up, muSpace Corp, founded in 2017. Zooming out, by focusing on the relatively peripheral perspective of Thailand, this paper is intended as a quiet contribution toward destabilising the Euro-American ontologies and socio-politics that dominate global space debates, with the aim to pluralise perspectives on outer space technoscience.

The Pyrotechnics of Promise: The Justification of the International Space Station as a Laboratory *Paola A Castano*

The International Space Station (ISS) was initially envisioned in the 1980s as NASA's Space Station Freedom, and as a straightforward Cold War instrument of "U.S. strength in space." From there, at least, seven major redesigns followed until the program survived by merely one vote in Congress in 1993, right when the rhetoric of leadership made room for one of international cooperation, not only with the partners that had already been invited to participate (Europe, Japan and Canada), but with the former "enemy in space" (Russia). The ISS is the result of a political agreement signed in 1998 and followed by multiple implementing arrangements, logistical alliances and budgetary negotiations. In each one of these intricate steps, the station was justified before different decision-makers, scientists, participants and audiences as a tool or a platform for the fulfillment of their various goals and its potentials were consistently overstated. Drawing on archival work at NASA and in critical dialogue with laboratory studies, this paper traces the history of the ISS as a laboratory focusing on its promises and imagined futures. I show how "science" added a unique weight to the moral claim of necessity for a space station, and how the ISS as a laboratory would not exist in the absence of other promises

across domains like international cooperation, commercial profit, public support, educational inspiration, and technological development. More broadly, the paper argues that the aspirational, functional and legal definition of a site as laboratory is something to be explained rather than assumed.

"There's a Starman Waiting in the Sky": Investigating SpaceX and its Social Media Publics *Richard Tutton, University of York*

Silicon Valley entrepreneurs have emerged as vocal spokespeople for improving human spaceflight capabilities, and have advanced an techno-optimistic view of what should be achieved in the future with respect to the human exploration and exploitation of outer space. Evidence suggests that publics, while excited by outer space technoscience are sceptical about dedicating public funding to it, so how do publics respond to entrepreneurial figures such as Elon Musk and Jeff Bezos who promise to transform human futures for the better through their investment in new spaceflight infrastructures? This talk considers how Elon Musk's company SpaceX has sought to engage publics through staged highly mediatized technological performances. A case in point is the February 2018 Space X demonstration launch of the Falcon 9 Heavy, which sent a red Tesla car with a space-suited figure (aka "Starman") sat in the driver's seat out into the solar system. I analyse Twitter users' responses to this event, how they addressed its significance in relation to Musk's publicly stated vision for the future, and the role of SpaceX in bringing this about. Using this data, I discuss what insights we might gain into how diverse publics are making sense of the new entrepreneur-led agenda in outer space ventures. This paper therefore contributes to existing STS work on public engagement with controversial domains of technoscience.

Session Organizers:
Richard Tutton, University of York
Lauren Reid, Freie Universität
Chair:
Lauren Reid, Freie Universität

012. The In/Visibility of Value and Relevance in the Evaluation Society 1
10:00 to 11:40 am
virPrague: VR 11
In many organizations the evaluation of professionals and their work now relies on specific managerial accounting techniques and technologies of making value and relevance visible. Across companies and institutions people (including academics) express unease and critique over the way they and their work are made visible to the organizations and actors on which they effectively rely for their income, future and careers. This panel seeks to bring together empirical and theoretical investigations into the way work and workers in various organizational, professional and socio-cultural contexts are made visible to, and consequently valued by, others and themselves. All contributions pertain to one or more of the following dimensions of what we call the in/visibility of value and relevance: Organizational (in)visibilities: Which and in what way are values made (in)visible within specific organizations, and with what consequences? How do organizational values relate to policy ambitions or individual merit? Professional (in)visibilities: How is value and relevance made (in)visible in specific professions and specializations, and how might this conflict with or otherwise relate to policy, organizational, or individual values, needs and desires? (In)visibility of diversity: What do age, gender and ethnicity mean for the efforts of actors to be(come) visible and valuable within organizations, and what forms of struggle remain invisible within organizational policy discourses on diversity? Papers in this panel session connect these dimensions, and/or bridge the gaps between more policy-oriented studies, critical perspectives, and local empirical investigations into professional cultures, norms and practices

Participants:

Between Collective Needs and Individual Qualifications: Valorising Doctoral Students' Work in Large Research Collaborations *Helene Sorgner, Alpen-Adria-Universität Klagenfurt | Wien | Graz*

Graduate research and doctoral training have been analysed in STS in terms of the social processes involved in passing on the 'academic habitus' and coming to terms with the inherent

uncertainty of research (Campbell, 2003; Delamont & Atkinson, 2001). Laudel & Gläser (2008) have also discussed the varying significance of the dissertation as a building block for independent research careers across different disciplines. However, there has yet to be a dedicated study engaging with the work of doctoral students as a contribution to collective research processes, and how this work is individualised as an independent achievement that qualifies students for further careers. My case study focuses on doctoral students in experimental high-energy physics, whose dissertation projects are embedded in the research efforts of a collaboration of several thousand members. In my contribution, I trace out the negotiations involved in producing qualified researchers while producing credible research. I show that to be "do-able" (Fujimura, 1987), dissertation projects must align with multiple contexts of work and evaluation, as well as the timelines of the collective research process. Dissertations emerge from negotiations of what work is collectively valued and what work may be retroactively attributed to the student as an individual achievement. Work that is required as a collaborative contribution, but does not count towards academic qualification, risks remaining invisible. Highlighting the efforts involved in making work that sustains collective efforts individually visible and valuable, I show how dissertations may be analysed as products of multiple conflicting orders of worth.

Visibility On Social Media To Create An Economy At Home: Lacework Makers' Instagram Accounts *Nihan Bulsun*

Social media is a part of daily life in all aspects since the last decades, and Instagram is one of the most popular social media applications that has over a billion active users who can use the app in their way for different purposes. In particular, the ease of use and cost-effectiveness of Instagram has made it a preferable marketing area for in-home handicraft makers. Within the scope of this study, the accounts used by the lacework maker women on Instagram for their products are considered. In these accounts, how lacework maker women interpret the existing features of Instagram to turn their social media accounts into a business is analyzed with the framework of Akricht's script theory. Lacework, as a type of soft craft, has been related to female makers, been the occupation of women for a long history. Over time, besides leisure work from tradition, lacework has also become an economy for domestic women. Especially in rural, women who are invisible only seem as unqualified labor overcome lacework production by their talent and handwork. On the other hand, women who do not have a chance to socialize outside, or no support from governmental or non-governmental organizations, no community other than their entourage, it was a big issue to reach a broad audience until social media show up. This research aims to analyze the pattern of how lacework maker women use Instagram to get visibility and express themselves, come together with other makers, reach potential customers, and make sales.

Optics of Evaluation: Conceptualizing the Tools, Methods, Practices, and Infrastructures of Visibility *Hilde Reinertsen, The TIK-centre, University of Oslo*

This paper probes into STS conceptualizations of seeing, visibility, and invisibility. Drawing upon a rich historical study of evaluation of foreign aid in Norway, the paper advances the concept of 'optics of evaluation' as a means to analyse the ways in which evaluation tools, methods, practices and infrastructures effectively make visible and invisible the results of foreign aid programmes (Reinertsen 2016, 2018). The historical analysis showed how the notion of evaluability, introduced and implemented in the Norwegian foreign aid administration during the period 1977-1992, envisioned a whole new way of doing aid work, centered around changing the processes of writing and documentation. The new ideal aid worker was expected to continuously contribute to building and maintaining a complete document archive, into which evaluation teams could later enter in order to assess the value and relevance of the aid workers' past efforts. This paper proceeds in two steps: First, it spells out the dramatic confrontations and subtle transformations this major shift entailed. Secondly, the paper uses these empirics to critically discuss the concept of 'optics of evaluation'. If we consider evaluation a 'technology of seeing' (Pasveer 1992), what does this technology make us see? How does the optic itself

contribute to transform the object under investigation? In probing these questions, the paper extends the longstanding STS interest in scientific observation (Latour & Woolgar 1986, Daston & Galiston 2007) that is now being renewed with the recent turn to politics, public government and accountability (Kafka 2009, Hull 2012, Asdal and Hobæk 2020).

Session Organizers:

Jochem Zuijderwijk, Center for Science and Technology Studies, Leiden University, the Netherlands

Tjitske Holtrop, Center for Science and Technology Studies, Leiden University, the Netherlands

Chair:

Jochem Zuijderwijk, Center for Science and Technology Studies, Leiden University, the Netherlands

013. Socialising the automation of flexible residential energy use
10:00 to 11:40 am
virPrague: VR 12

As renewable energy generation becomes more integrated and embedded in communities, users are increasingly called upon to participate in the active planning, ownership and management of smart energy systems. A key vector of this participation is the automation of home batteries and of significant loads such as air conditioners, heat pumps, water boilers and electric vehicles, which is seen as essential to relieve pressure on the grid during high-demand events such as evening peaks and particularly hot or cold weather. Automation and digitalisation are also facilitating the emergence of new 'energy communities' and peer-to-peer trading of energy generated by prosumers at distributed sites. In this session we ask: How are residential energy users and prosumers imagined by incumbent energy providers, policy makers and regulators as agents of automation? What new valuations of the forms of energy use that inhibit or support load flexibility are being created through markets, regulations, technology and policy? How is automation invoking new collectives, as well as reconfiguring and diminishing current ones? What does automation mean for the increasing focus on empowering citizens and 'energy communities' in Europe and other parts of the world? In posing these questions we seek to move energy planning discourses beyond the terrain of atomistic economic actors operating within markets by insisting on the socio-technical character of energy systems and mapping indiscernible actors in these automated systems.

Participants:

Out of Sync: Visons of flexibility capital among experts and householders *Ingvild Firman Fjellså, NTNU, Dept. Of Interdisciplinary Studies Of Culture*

As energy transitions advance through the introduction of renewable energy production and new types of energy demands, expectations and desire for more flexible electricity consumption has risen on policy agendas, amongst system designers and scholars. Social scientists have also followed this development through studies of both expert visions and users of new flexibility solutions. This article complements this literature by bridging between 'developer and user framings' of electricity consumption and flexibility. It is based on 37 semi-structured interviews with electricity grid developers and householders in Norway. Drawing on the emergent concept of flexibility capital and the energy justice literature, we demonstrate how some householders are more capable of being flexible consumers than others and 'out of sync' with development experts. We discuss how experts envision fairness primarily as access to new forms of flexibility markets, and as acting economically rational on such markets.

Smart charging infrastructures and the socialization of flexible energy use *Ida Marie Henriksen, Norwegian U. Of Science And Technology (NTNU); Marianne Ryghaug, Norwegian University of Science & Technology (NTNU); Tomas Moe Skjølsvold*

Abstract This paper focuses on the role of users in current socio-technical energy system reconfigurations around home automation. Smart charging of electric vehicles (EVs) is one of several automation technologies that is thought to provide more flexibility to the electricity grid. Norway is currently in the middle of an ambitious transition from fossil-based cars to electric cars. The fact that more and more EV owners is in need

of charging has put strains on local electricity grids like in residential condominiums and shared parking garages and has led to these being one of the first to address the need for smart charging. This has been reinforced by new regulations from 2018 stating that housing boards cannot deny EV owners' access to charging in shared garages. On the basis of empirical studies of 6 different condos with shared garages and smart charging in Norway we analyze how this emerging technology is currently being rolled out and socialized. We are specifically interested in how the technology is being socialized into residential buildings and households. Four typical responses and user-types were identified: The practical, the playful, the unintended-middle-actor and the tech-averse pointing clearly towards highly salient controversies around flexibility issues and the acceptability of automation in this area and the ways in which automation invoke new collectives that might both empower and disempower citizens.

Smart home technology and automated agency in changing everyday practices *Line Kryger Aagaard, Aalborg University Copenhagen; Kirsten Gram-Hanssen, Aalborg University Copenhagen*

In the transition towards a low-carbon society, renewable energy generation requires more flexible energy consumption. Smart home technology (SHT) is being implemented as a solution to this, for instance by moving peak-demand through smart automation. So far, energy consumption has been related to human practices, however, with a continuous automation, the question arises of how to conceptualize non-human agency as part of the social aspects of consuming energy. This presentation will discuss the findings of an ethnographic study of smart homes, including interviews with users and technology developers, in order to shed light on how the technology is implemented in and taking part in everyday practices in homes, compared to how they are envisioned by professionals. The study takes a practice theoretical approach in order to understand how humans and technologies are related in a network of social practices. Holding smart capabilities and increased levels of automation, SHT influence domestic activities and reconfigure the socio-technical arrangements of everyday life. Applying concepts from actor-network theory and ideas of symmetrical anthropology by Latour, the paper will discuss how the technology can be understood not merely as a material element in practices, but as a dynamic non-human actor taking part in changing everyday practices and transforming routines of energy consumption. This analysis of the technology invites current theories of practice into a rethinking of the role of the material in social practices. Such a discussion can nuance our understanding of automation processes and emerging human-technology relationships shaping our future energy systems.

A Social License to Automate Electricity Loads? *Declan Liam Kuch, Institute for Culture & Society, Western Sydney University; Sophie Adams, University of New South Wales*

Automated control over heating, cooling, batteries and other electricity loads are becoming increasingly integral to the stability of power systems all over the world as renewable penetration and digitization increases. This automated control requires new modes of engagement by energy users - who, early trials suggest, have not always responded in the ways anticipated by policy-makers and engineers. This paper develops the concept of a 'social license' for automation, charting key matters of concern. The term social license has its origins in the mining industry, and captures the governance of new resource projects from the perspective of their proponents interactions with communities. We critically consider the prospects for a social license for the automation of household energy consumption, which is the topic of a new collaborative research programme facilitated through the International Energy Agency. We discuss the conditions in which users are perceived to have granted or refused a social license in trials of automation technologies to date, exploring the issues of control, autonomy and agency that shape the outcome of these trials, and asking whether such a framing of the challenge risks reproducing the very same obstacles to public acceptance and engagement that it sets out to overcome.

Session Organizer:
Sophie Adams, University of New South Wales
Chair:
Sophie Adams, University of New South Wales
Discussant:
Sophie Nyborg, Technical University of Denmark - DTU

014. Digitalizing Cities and Infrastructure Resilience
10:00 to 11:40 am
virPrague: VR 14

This panel focuses on urban digitalization defined as a techno-institutional transformation of cities in which information technology and digital platforms become the principal infrastructure and the basis for providing essential services to residents. In many cities around the world, urban digitalization is taking place through projects initiated by both city governments and private companies. It is manifested in the organized utilization of various digital technologies such as Artificial Intelligence, Big Data, and Internet of Things that transform a wide range of public sectors, including transportation, finance, security, food, and healthcare. The increasingly adopted concept of "Smart City" exemplifies how city governments across Asia are taking the efforts to digitalize their governing operation. This is coupled with a rapid growth of digital-platform companies such as Uber, Lyft, Alibaba, Grab, Gojek, Ola, DiDi, etc. that provide vital services in ride hailing, food delivery, and electronic payment. While it signifies progress, the growing trend of urban digitalization raises a compelling question: What are the impacts of digitalization on citi resilience and vulnerability? This question is highly relevant in times when cities are growing more vulnerable than ever to disaster and crisis. The panel aims to critically examine the impact of urban digitalization on city resilience. Specifically, it probes how digitalization of public services affects city capacity to respond to crisis and disturbance. This panel invites scholarly works, which shed light on the ways urban digitalization turns into a new structure shaping social life in the city.

Participants:

72 Hours Offline: Reliance of Real-time Information Access as Vulnerability in a Crisis Situation *Magnus Eriksson, Lund University; Elisabet M. Nilsson, Malmö University*

Swedish official disaster response policies have increasingly come to rely on citizen's own self-reliance during crisis situations. Citizens are expected to manage on their own for at least 72 hours before expecting help from authorities. Research conducted so far however, suggests that the citizens are poorly equipped to handle such demands. We have investigated citizens crisis response to a large scale power outage with a scenario-based co-design method. The scenario is based on their actions only in the first hours of the power outage, but participants already ran into difficulties due to reliance on real-time access to information to navigate the urban environment and coordinate their everyday tasks. From not knowing how to access public transport to return home to not being able to coordinate pickup of children in schools, dependency on information access and the "smart city" became a problem. Based on these initial findings, we discuss the increasing reliance on just-in-time information access in everyday life as a vulnerability, especially coupled with disaster management strategies based on expectations of citizen's self-management. We discuss how, ironically, it becomes a vulnerability because information technologies already function as crisis management technologies aim at coping with and adapting to the flexible work and life demands and changing public infrastructures of the everyday "puzzle of life" in the neoliberal city. With the paper we contribute to showing how a novel design-based method can give insights into STS research in the intersection of digitalization of cities and crisis management.

Am I smart enough to live in a smart city? *Eunjeong Ma, Pohang University of Science and Technology*

This paper explores the digital transformation of the city with a particular case study of smart city initiatives in South Korea. Based on the documentary analysis of policy reports and popular media in conjunction with in-depth interviews and casual conversations with participating actors and citizens in smart city projects at the national and local levels, the paper interrogates the meanings of 'smartness' among a diverse range of actors involved. The paper departs from straightforward questions: what

smart city means to a diverse range of social actors and how different understandings are sorted out and translated to implement smart city projects? Can a smart city, as envisioned, serve as spaces of hope for all future citizens? In recent years 'smart city' has been a buzzword to captivate many national governments around the globe, and South Korea is not an exception. The South Korea government set smart city initiatives as a national priority under the catchphrases of enhanced quality of life. They refer to inclusive and comprehensive digital transformation of the city from transportation, mobility, energy, communication, to healthcare. With human-centric approaches to the city as opposed to techno-centric methods, the government aims to build an integrative, data-based, infrastructural platform that can turn the city into a space of experimentation for future. To unravel the complex relations between the smart city, citizens, and technology, the paper first examines the national government's two model smart city projects and then pays critical attention to how 'smartness' is perceived and translated among concerned actors.

The banal dimensions of surveillance: A case study on the implementation of Automated License Plate Recognition (ALPR) systems in Northern Europe *Gabriel Pereira, Aarhus University; Christoph Raetzsch, Aarhus University*
Algorithmic governance entails the increased potential for the surveillance of citizens. One of many technologies of algorithmic governance are Automated License Plate Readers and Recognition systems (ALPR), which algorithmically extract license plates from passing cars. The data produced can be aggregated and analyzed at scale, enabling multiple types of automated decision-making (from handling fines for parking infringements to controlling public space for specific types of uses). As this technology gets currently deployed in the private and public sector across many cities, it generates immense datasets at a highly granular level on the movement of subjects and their locations. ALPR systems, which may seem banal at first sight, are widely implemented for seemingly rational and practical reasons. Yet, this wide deployment of a rather banal technology poses significant challenges to city governance, citizen sovereignty, and political transparency. Because ALPR is less conspicuous and perceived as less intrusive than facial recognition, its status within an array of disciplinary, administrative and economic interests exposes the latent dimensions of datafication and control through algorithmic governance. This paper is based on the authors' participant observation and interviews with smart city practitioners in cities in Northern Europe around the adoption and implementation of ALPR technologies. Specifically, the paper addresses the discrepancies between cities' aspirations and implementations with the vulnerabilities that arise from uncontrolled data flows and the aggregation of city intelligence in often corporate hands.

When Data is Infrastructure: Future of Public Services in Smart London *Gunes Tavmen, King's College London*
In 2017, together with the Sidewalk Labs, Alphabet (aka Google) emerged as the next big player within the corporate world to invest in smart cities. This is because, since data has become infrastructure in the smart cities, world's one of the biggest data corporates, Google, is now more relevant to smart cities than any other IT company. Since Sidewalk Labs is about to take over what used to be public services in Toronto and NYC, many questions around the ownership of data and data infrastructure have arisen in the context of smart cities. London, on the other hand, had positioned itself as a smart city that thrives on opening up data and cultivating its own ecosystem of data-savvy IT sector together with the first Smart London report in 2013. However, through various initiatives (e.g. InLink UK), Google is in the process of becoming a key player in London's smart city planning scene. In this paper, (following Star, Bowker, Parks, Helmond) I will use an infrastructural lens to study "data-driven city" by comparing the emergence of Sidewalk Labs, and Greater London Authority's own data initiatives, to discuss the future of public services. To this end, I will expand on the processes in which data has been transduced (Simondon, 1991) together with infrastructure in smart cities. Consequently, I will argue that, due to lack of institutional contestation of data-driven urbanism, the

organisational capacity of data analytics will increasingly determine the future of public services.

Session Organizer:
Sulfikar Amir, Nanyang Technological University
Chair:
Magnus Eriksson, Lund University

015. Making science in public: 2
10:00 to 11:40 am
virPrague: VR 15
Participants:

How Did Expertise Shape Citizen's Imagination Of Science During The Outbreak Of COVID-19 In China? *Yiwei Pan, School of Health Humanities, Peking University*
The core concern of this article is the process and outcomes of scientific knowledge production and communication relating to a major public health affair. Due to the quarantine policy amid the epidemic, social media has played a critical role in information exchange. Various in backgrounds, including clinical medicine, epidemiology, biology, sociology and history, experts employed by governmental agencies and international organizations, universities and institutions and those who worked individually constituted the mainstream of knowledge sources and were supposed to deliver objective and unbiased opinions. Meanwhile, laypeople became part of this process by acceptance, translation and retransmission. These situations have given rise to unpredictable influence to the public opinion towards medical science and crisis management, like rumors and distrusts. Drawing on analyses on multiple significant cases about scientific expertise on Chinese social media, this article examines who has engaged in the production and communication of knowledge and how the expertise has been formed, delivered, translated and (mis)understood, as well as the actors' considerations and psychological states. It also gives insight into the effect of speeches on the internet during the public health crisis, arguing that the scientific expertise on social media: (1) strengthened the speakers' own academic authorities; (2) raised an imagination of science to public which gives unrealistic expectations to science knowledge; and (3) acted as a multi-purposed tool for social control. KEY WORDS Public engagement with science, science communication, social media

Popular Science Magazines as Hybrid Spaces of Science Communication *Dorothea Born, University of Vienna*
Located between academic journals and the mass media, popular science magazines inhabit an important niche within the diverse „ecosystem of science communication" (Davies & Horst). In this paper I propose a nuanced and detailed conceptualization of popular science magazines as hybrid spaces of science communication. This conceptualization is based on empirical work on the popular science magazines GEO and National Geographic, which consisted of ethnographic work at the editorial offices as well as an extended analysis of articles on climate change published in these two magazines. Drawing on this data, I will show how popular science magazine constitute particular "knowing spaces" (Law) in which scientific truth claims are selected, transformed and recontextualized, and in which public facts are created in the form of popular scientific knowledge. For this process, scientific research and the self-proclaimed credo of 'scientificity' play a very important role. Yet, other criteria, such as media logics, the news value of stories or (imagined) audience preferences also come into play, which lead to specific practices of claim-making, narrating and visualizing stories within these magazines. As GEO and National Geographic are also embedded in larger cultural and political environments, the practices of creating public facts also differ between the two magazines, as I will show exemplarily with the case of climate change. In conceptualising popular science magazine, I will thus highlight both their common characteristics as well as how they are always situated within larger socio-political contexts.

Mapping Capacity for Public Engagement in Anti-Pipeline Coalition Networks *Kirk Jalbert, Arizona State University*
Oil and gas pipelines are at the center of debates about expanding

petrochemical industries in the United States. As numerous controversial projects and high-profile accidents reveal the risks of these vast underground transportation systems, communities are increasingly mobilizing to block the construction of new pipelines that promise continued dependency on extractivist economies and their technologies. STS treatments of pipeline-related advocacy movements largely focus on individual pipelines, regions, cultural identities, and social imaginaries. However, fewer studies have attended to the distribution and connectedness of advocacy coalitions at scale, nor how the character of these networks affect how they share resources and develop capacity to unpack how pipelines are built, operated, and regulated. This paper reflects on the results of a survey of groups opposed to more than 60 pipelines across the U.S. The study is particular interested in how coalitions build expertise to utilize data, maps, and technical information to generate "critical" impact assessments of pipeline projects. Findings suggest that many such tactics are successful in context, yet remain underutilized across coalitions due to a lack of common knowledge infrastructures. Ultimately, this research gives a more full understanding of how the topography of social movements not only structure the nature of public engagements, but also shapes what modes of sociotechnical critique and inquiry are possible in complex environmental debates.

What Does The Public Expect From Science Communication? Explorations Based On A Participatory Methodology *Ana Delicado, Instituto de Ciencias Sociais, ULisboa; Jussara Rowland, ICS Ulisboa; João Estevens, ICS Ulisboa; Giuseppe Pellegrini; Andrea Rubin, Observa; Lubomir Sottnik, University of Travna; Dzhaner Ahmed, FyG Consultores*

Over the past few decades, some institutions and scientists have heralded science communication as the solution to a series of problems: citizens do not know enough of science, hold unscientific beliefs, distrust scientists, are unaware of the benefits of science, are unwilling to pursue careers in science and technology, etc.. Science communication activities have thus multiplied and diversified, ranging from the more passive and unidirectional to the more engaging and participative. Research has addressed the effectiveness of science communication, but frequently from the perspective of the scientific actors: if and how the public has acquired the knowledge, beliefs or 'correct' attitudes scientists/communicators wanted to convey. It is focused on surveying the public on what they learned or how their opinions and attitudes have changed after seeing an exhibition, visiting a laboratory, reading science news or attending an event. A synthesis describing the complexity of the relationships between science and society has yet to be found. The reflection on how the public perceives science communication, what citizens want to know about science, who they trust, and how they want to be informed and engaged has been scarce. This presentation will address this scarcity by showcasing results from public consultations held in five European countries on opinions and beliefs of citizens about science communication, on topics such as climate change, vaccines and GMO. It is based on the EU funded project CONCISE, led by the University of Valencia and with the participation of research teams from Spain, Portugal, Italy, Poland and Slovakia.

Session Organizers:
Sarah Davies, University of Vienna
Noriko Hara, Indiana University
Chair:
Maja Horst, Technical University of Denmark - DTU

016. Veterinary anthropology - session 1
10:00 to 11:40 am
virPrague: VR 16

Over the last 5 years, the sub-discipline of veterinary anthropology has emerged in the wake of ethnographic and historical studies on zoonotic diseases, such as avian influenza, swine fever, rabies and the plague. Veterinary anthropology has been partly informed by Science and technology studies, and this panel aims to promote even closer synergy between these fields by engaging two pivotal questions: How is the body of

veterinary knowledge generated? How does it travel from the centres of scientific knowledge production into bodies of normative practices nested in geographical, socio-cultural and political contexts? These questions invite panellists to explore the relations between humans, animals and techniques in the different settings where humans care for animals and anticipate cross-species disease transmissions. Biosecurity interventions (culling, vaccinating or monitoring animals) requalify borders between territories and between species, building new collectives of humans and non-humans. We encourage investigation of different kinds of agency involved in these borderlands, be they those of pathogens or animals, of animal breeders or animal activists, and most importantly the agencies of vets as necessary and often invisible intermediaries in contemporary interactions between humans and animals. Recognizing attention to zoonoses as a productive entry-point into veterinary anthropology we simultaneously invite panellists to engage what often stays in the shadow of "one health" concept including questions such as: Can animals be considered patients? Do they consent to their treatment? Do they evaluate the interactions that take place around their health? Who is authorized to distinguish a normal animal from a pathological one?

Participants:

Introduction: Towards Veterinary Anthropology *Ludek Broz, Institue of Ethnology of the Czech Academy of Sciences; Frédéric Keck, Laboratoire d'anthropologie socialem - CNRS*

Over the last 5 years, the sub-discipline of veterinary anthropology has emerged in the wake of ethnographic and historical studies on zoonotic diseases, such as avian influenza, swine fever, rabies and the plague. Veterinary anthropology has been partly informed by Science and technology studies, and this paper aims to promote even closer synergy between these fields by engaging two pivotal questions: How is the body of veterinary knowledge generated? How does it travel from the centres of scientific knowledge production into bodies of normative practices nested in geographical, socio-cultural and political contexts? Addressing the possible avenues of veterinary anthropology's future development we argue for a field that would pursue a twofold mission of producing analytical understanding of social ramifications of veterinary expertise while simultaneously facilitating interdisciplinary shift towards efficient use of anthropology's methodological and conceptual tools for the ultimate goal of veterinary medicine: animal and human health.

Biosecurity Undone: One Health from the Margins in India *Laura Cecilia Murray*

I travelled with a team of veterinarians and healers from Anthra—an NGO based in Pune, India—through the Western Ghats. We were on our way to meet Himanshu, a farmer organizing an organic dairy in his village. He had requested their pamphlets on Ayurvedic and folk remedies for ailments experienced by both livestock and their keepers. For, Anthra promotes what they call a "One Health" approach. Typically encouraging the surveillance of human-animal collectivities to prevent zoonoses, Anthra uses it to validate therapeutics that marginal livestock-rearing communities have long used, which emerge from a porous understanding of species. When we arrived, for example, Himanshu showed us his herd. They stayed in a room that opened onto the central living area of his home. He bemoaned the flies and the smell, but at the same time, celebrated their proximity: A few days prior, he recalled, the cattle had warned his family of a deadly snake that had come inside. "We look after the animals," he said, "Who in turn help us. It's a balance of nature, an interrelationship." In this presentation, drawing upon eighteen months of ethnographic fieldwork, I thus track how the proxemics of livestock veterinary care in Maharashtra give rise to forms of entanglement that destabilize biological categorizations of species in favor of alternative organizing conceptions of life. As a process by which dominant discourses of One Health is vernacularized, how might it help us reimagine hierarchies of care and control on increasingly insecure multi-species landscapes?

Research subject or companion? Ethics and euthanasia in rehoming and veterinary clinical trials *Tess Skidmore, Geography and Environment, University of Southampton;*

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Alexandra Palmer, University of Oxford

This paper draws on qualitative research in the UK to explore two parallel cases: (i) when research animals become pets via rehoming; and (ii) when pets become research animals via enrolment in clinical trials. We show that these transformations change human-animal relationships and highlight questions around whether extending life, and the pursuit of positive emotions, is preferable to eliminating suffering via euthanasia (see Hurn and Badman-King, 2019; Morris, 2012). Rehoming of research animals (Wolfensohn, 2010) and the use of pets in veterinary clinical trials can both be viewed as examples of practising care. Both may extend animals' lives, and, in the case of clinical trials, extend opportunities to care better for other animals or even humans given the advantages of studying "real life" animal disease models (Fürdös et al., 2015). In both cases there is a push against regulatory (ASRU, 2015) and cultural norms to prioritise minimising suffering through euthanasia that inhibits rehoming and objections from within the veterinary community to testing experimental treatments on pets (Clutton et al., 2017). Both cases change who makes decisions about euthanasia, with clinical trials, for example, placing such decisions in the hands of vets rather than animal owners, which arguably benefits animals (Ashall et al., 2018). These parallel cases therefore highlight important questions about human-animal relationships with research and companion animals. Working at the interface of STS and animal studies, this paper shows how transformations in an animal's status as either pet or research animal, have important implications for understandings of care-full and ethical practices aimed at ensuring human and animal wellbeing.

Veterinary Values: The More-than-human Biopolitics of Long Distance Cattle Transport Regulation *Else Vogel, Department of Thematic Studies - Technology and Social Change, Linköping University*

Industrial animal farming has ensured the efficient production of affordable meat for rapidly growing populations, but is currently under great pressure to change. In the Netherlands, veterinarians play a key—yet unexamined—role in the regulation and innovation of intensive livestock production. They treat animals to keep them fit for human consumption, advise on farming practices, and perform quality checks in slaughterhouses and during transport. As such, disparate relations and guises of the animal (as product, food, companion, patient, disease vector, bearer of intrinsic worth or polluter) come together and are negotiated in veterinary practice, making vets among the pre-eminent professionals reshaping contemporary human-animal relationships today. This paper focuses on veterinarians in their role as state agents upholding animal welfare and public health regulations regarding long-distance transport of farm animals. Drawing on ethnographic fieldwork during inspections of vets employed by the Netherlands Food and Consumer Product Safety Authority, I foreground the values embedded in knowledge, regulations, standards and technologies, and trace how they support, shape or clash with the qualifications and appreciations of health, illness, safety and comfort that emerge as veterinarians inspect animals, stables and vehicles, evaluate procedures or otherwise try to achieve 'good' farm animal care. Posing urgent questions about 'more-than-human' biopolitics (Asdal et al., 2017), the paper reveals the situated assessments of who requires protection and who/what is expendable or instrumental to the well-being of others. Asdal, K., Druglitrø, T., & Hinchliffe, S. (2017). Humans, animals and biopolitics: The more-than-human condition. Routledge.

Virulent Animals Between Labs and Markets: Scapegoats for the Covid-19 Coronavirus in Wuhan, China *Lyle Fearnley, Singapore University of Technology and Design*

The "epicenter" of the Covid-19 coronavirus outbreak is geographically in China, but ecologically in animals. The Wuhan Institute of Virology identified a genetic resemblance to coronaviruses previously isolated from bats, suggesting a wildlife reservoir. Reports also emerged that a wholesale seafood market where many early cases worked sold a wide variety of wild animals. Soon, international and Chinese publics began to blame the wildlife trade for the outbreak, and many Chinese began to call for a permanent ban on wildlife trading, farming and consumption in the country. In ways reminiscent of the responses to pandemic influenza and SARS, phylogenetic accounts of relations between viruses were transformed into historical narratives of how the virus emerged from animal to human populations due to "uncivilized" consumption of "wild flavor" (yewei). Yet a second "conspiracy" theory of zoonotic origin also began to circulate that placed blame on the Wuhan Institute for Virology's biosecure laboratory itself, suggesting biological weapons development or accidental release due to mistreatment of research animals was responsible. Drawing on social theories of accusation, blame and scapegoats, and broader inquiry into animal rights discourses in China, this paper argues that the two accounts offer opposed visions of ideal social and moral order between humans and other animals, and in particular, regarding how non-human animals can be properly killed, or sacrificed. Finally, I show how this comparison illuminates the moral dimensions of the classic STS theme of the "detachment" and "purification" of scientific laboratories from social and natural environments.

Session Organizer:
Ludek Broz, Institue of Ethnology of the Czech Academy of Sciences

Chair:
Frédéric Keck, Laboratoire d'anthropologie socialem - CNRS

017. Digital technologies shaping the politics of science and the science of politics
10:00 to 11:40 am
virPrague: VR 17

In the wake of the #DigitalTransformation we observe a multiplicity of new practices emerging in science. Digital technologies like #BigDataAnalytics, #MachineLearning or #Crowdworking tools gain importance as scientific instruments, ousting established #EpistemicPractices. On the one hand, this reconfigures the politics of science, setting new epistemic norms for the organization, evaluation and communication of science. On the other hand, the science of politics incorporates new paradigms, assumptions and epistemic affordances into the ways in which scholars perceive and analyze the political and social world, thus producing new political epistemologies. The panel aims to explore the dialogue between these two perspectives and the presentations in it will address one or more of the following questions: 1. How do digital technologies affect the making and doing of science and the ways in which the politics and negotiation of scientific knowledge unfolds? How, for instance, are new distributed arrangements in science, like #OpenScience or #CitizenScience, shaped or enabled by digital instruments? 2. How do digital technologies affect the production and perception of scientific knowledge about the political? How do, for instance, the #ComputationalSocialSciences and #DigitalHumanities challenge and transform the science of politics? How does #ComputationalModeling impact the premises of political advice? 3. How do these two aspects affect each other and how are they intertwined? 4. What do these shifts imply for our own epistemic practices within the STS community? The panel invites contributions that offer theoretical perspectives on digital technologies as epistemic practices as well as empirical studies of relevant cases.

Participants:

Enacting a non-positivist credibility in big ecology *Selen Eren, University of Groningen*

Big data in ecology raises challenges for ecologists not to compromise scientific reliability. Discussions in the literature can be clustered in two groups: one aiming for reliability through socio-technical improvements in data quality, variety and analysis methods (Bayraktarov et al., 2019; Ganzevoort et al. 2017); and the other analysing reliability by understanding socio-technical negotiations (Leonelli 2019; Mayernik 2019). I will first show that the understanding of reliability reflected in the first group is problematic. It either stems from a controversial understanding of data as representing the world and/or prioritizes the role of data analysis for reliable knowledge claims. Moreover, the second group does not provide ecologists with practical strategies to deal with epistemological implications of acknowledging knowledge claims as socio-political products of knowledge infrastructures (Edwards 2010). To conclude, I will call for a new understanding of "reliability" that is more in line

with the theory of knowledge infrastructures and offer a particular understanding of responsibility as a way of enacting "reliability": a responsibility performed by empirically-based strategies aiming to both (1) acknowledge existing but overlooked interactions in knowledge infrastructures (e.g. between the cultures of formalisation (van Zundert et al., 2012) of ecologists' and designers of new data collection tools, or between researchers, crowdworking tools and citizen scientists), and (2) involve other relevant interactions that could not have been established so far (e.g. different epistemic cultures, local knowledge etc.). Also, big ecology did not itself cause such a need for reframing, but mostly made an already existing need even more prominent.

Contextualizing Ontology: Understanding Big Data in Context
Onurhan Ak, Queen's University, Department of Sociology

Big data is one of the most popular phenomena discussed in STS and wider literature today. Multiple accounts of it exist: some scholars celebrate it as a raw representation of reality, while Marxist scholars are critical of its potential for scientific research. This paper builds on the second view and argues that big data should not be understood as a technical object with inherent qualities or a neutral representation of the social, but as a socio-technical object that acquires its qualities from its historical capitalist context of emergence. To illustrate this I first provide an historical account of big data's emergence in relation to the creation of platform business models after the dot-com crash. I provide a brief analysis of the configuration of these platforms to show how they are made viable businesses and how the commodification of user information is present in the design of these platforms. I argue that commodification in these platforms works as an epistemological category. Finally, I provide a thought experiment that illustrates some of the critical claims regarding the nature of big data and its relation to the contemporary capitalist mode of production. I conclude the article by raising some questions about possible perils of using big data in scientific research.

Demanding the Impact of Science? Referring to Science in Climate Activism Online *Frauke Rohden, University of Oslo*

In this paper, I follow climate activists' online engagement to trace changing relationships between society and science. With advancements in communication technologies, social movements have successfully used digital platforms to achieve global reach. At the same time, digital platforms have played a role in increased polarization, and have sparked debates about expertise, legitimacy, and misinformation. However, scientists are increasingly encouraged to use the opportunities of digital platforms for science communication, following the notion that digital communication channels can democratize access to information, while paying limited attention to the actual use of and engagement with scientific contents beyond concerns of misinformation. The two climate activism groups "Fridays for Future" (FFF) and "Extinction Rebellion" (XR), both very active on social media platforms, argue that "The science is clear" (XR) and that policy-makers should "Listen to the scientists" (FFF). In this paper, I explore how these groups interact with scientific information in detail, by tracing the content of their websites and social media activities, their use of hyperlinks, and their references to science and/or scientists. I consider both, the groups' uses of science to make arguments and establish their issues as legitimate concerns, as well as the groups' propagation of scientific contents. By following actors that thrive in modern media landscapes and are vocal about societal and scientific issues, I contribute to bridging the gap between media studies and STS (Ilten & McInerney, 2019), exploring what implications the activities on social media platforms have for recognition of expertise and communication of scientific knowledge.

Session Organizers:
Florian Eyert, Weizenbaum Institute for the Networked Society
Hannes Wuensche, Fraunhofer FOKUS
Chair:
Florian Eyert, Weizenbaum Institute for the Networked Society

018. Economics/Economy, Governance and STS IV
10:00 to 11:40 am

virPrague: VR 18
Participants:

Development of energy citizenship through proximate praxis: The case of OLNPP, Seoul Korea *Sun-Jin Yun, Seoul National University*

With the development of a climate crisis emergency, energy transition has become the talk of the times. Energy transition requires not only policy changes but also changes in mind, attitudes and practices of ordinary citizens who did not pay much attention to energy issues in their daily life. How do ordinary citizens acquire energy citizenship and become energy citizens? Through what are energy citizenship acquired and nurtured? This study explores the One Less Nuclear Power Plant (OLNPP) of Seoul Metropolitan Government (SMG) in South Korea as a case. The OLNPP is a relatively successful energy transition policy initiated by SMG. The goal of the first phase (April 2012 to December 2014) was to reduce 2 MTOE (roughly what is produced by one nuclear power plant) of conventional energy and that of the second phase (August 2012 to December 2020) is 4 MTOE, through energy conservation, efficiency improvement and renewable energy production. Projects of OLNPP include energy self-sufficient villages, building retrofits, LED lights, a car sharing, and Eco-Mileage, Mini-PVs and so on. The core element in the development and implementation of the OLNPP was citizens' participation. Through participation in various OLNPP projects, citizens came to be familiar with new energy technologies and facilities, to be stimulated to think and learn about energy issues at their residence in their daily life, in spite of their small-scale. Proximity and visibility provided by OLNPP projects have contributed to acquirement and development of energy citizenship. Energy became not a remote and irrelevant issue any more

Where do land markets come from? *Alexander Dobeson, Uppsala University*

How can one put a price on something that has not been produced in the market? According to a common view, land markets deviate strongly from the neoclassical model of perfect competition due to their highly localised, opaque and fictitious nature, leading some to question their empirical existence altogether. Against this backdrop, this paper puts forward a novel sociological account of land markets as techno-political projects that sheds light on the attempts of incumbent actors including private firms, public authorities and the state to manufacture the supply and control the valuation of land as marketable good and asset. Drawing on archival and ethnographic research from the 'land market space' in England and Germany, the empirical findings show how different institutional legacies of landed property have resulted in the institutionalisation of different conceptions of valuation that shape the fashioning and functioning of land markets as techno-political projects and practice. Hence, while private firms fashion and control different segments of the English land market around professionalised valuation standards within an investment-driven management framework based on self-regulation, the valuation of land in Germany is tightly regulated by federal laws and monitored by regional surveyor commissions issuing local 'guidance values' aimed at producing market transparency and curbing speculation. The paper finishes by demonstrating how different moral ideals of market value shape the fashioning of concrete land markets and concludes with some remarks on the integration of sociological market studies into comparative political economy.

Revolving Door: Pure Science or Biomedical Rentiership *Ayesha Umar, York University*

Biomedical markets present a unique case of examining rentiership and political contestation now becoming increasingly apparent in contemporary Pakistan where recent epidemics (i.e. AIDS, Rabis) have devastated lives of millions. This paper's significance lies in its contribution to understand how technoscientific capitalism creates value and for whom, How financing of under-developed market creates a network which connects various actors such as doctors, sales representatives, civil society organizations, trade unions etc. and how various publics contribute in the new discussions of nationalizing biomedical sector in Pakistan with primary focus on Sindh

province. Alternatively, how rent-seeking can be framed to promote the technological disruption and risk-taking financing especially within Naya Pakistan rhetoric. Thus, I aim to understand how technoscientific capitalism rewards few not many by stabilizing and monopolizing knowledge and in doing so might produce such policy frameworks which then can promote redistribution and accountability.

Cripping Welfare Maintenance Regimes in New Deal America
Leah Samples, University of Pennsylvania

In this paper, I examine how the on-the-ground implementation of mid-twentieth century federal and state welfare programs designed to provide income security relied on the maintenance practices and labor of the aid recipients themselves. Using the case study of Title X: Grants to States for Aid to the Blind of the Social Security Act, I look at the complex and frequent maintenance routines blind Americans were expected to perform such as regularly paying a visit to a state-approved ophthalmologist to confirm their blindness, continuously tracking and recording any gifts received from friends and family members, and even maintaining a weekly, state-approved budget for their entire household expenses. Failing to perform even one of these routines could cost them their welfare benefits. While these state-approved maintenance regimes were designed to standardize the process of efficiently and effectively administering and managing federal funds, we see that in practice blind Americans used the knowledge they gained from these practices for political action to disrupt not maintain the welfare system. By cripping maintenance practices designed to standardize and force likeness, sightless Americans instead used these very maintenance practices like the eye exam or the household budget to bring attention to the dynamic nature of vision, the messiness of kin relations, and the inadequacy of their current aid amounts. Through this analysis, we ultimately see as Anna Reser articulates in "My Working Will be the Work: Maintenance art and Technologies of Change," how the "technologies and labors of maintenance have the power to disrupt as much as they have the power to sustain." Bibliography Reser, Anna. "'My Working Will Be the Work:" Maintenance Art and Technologies of Change." Lady Science. Lady Science, July 1, 2019. https://www.ladyscience.com/maintenance-art-technologies-of-change/no39.

Session Organizer:
Alexander Dobeson, Uppsala University

Chair:
Alexander Dobeson, Uppsala University

019. What science, technology and innovation, for which transformations?
10:00 to 11:40 am
virPrague: VR 19

We live in times of growing anxiety – something has to change! We need radical transformations! In many circles, problems and changes are handled in one distinct way: the call for innovation. We can innovate our way out of climate change, inequality, or many other societal challenges that affect us today. Very often, innovation is conflated with technology and market developments as the means to deliver products and services, which can become a means to control and economize new dimension of life. At the same time, we are now aware that innovation is not only a solution, but also part of the problem. This has resulted in a call to reform the institutions of science and innovation, for example, under the name of Responsible Research and Innovation, Social Innovation, or Transformative Innovation. Do we fall into the same trap and search only for innovations when we embrace these labels? If innovation is also one of the sources of the problem, can we solve it with another type of innovation? In this panel we want to bring in an interdisciplinary dialogue about what it means to transform science and innovation, and – if and how – can science and innovation contribute to larger-scale transformations. What historical and recent dynamics lead to this phenomenon? Are there new forms of doing science or achieving social progress that transcend this nexus? Are there new forms of knowledge e.g., from a perspective of the global south, queer or other formats that break the mold?

Participants:

Governing technology innovation processes for ethically "desirable" societal transformation *Alexander Orlowski, International centre for ethics in the sciences; Cora Biess, International centre for ethics in the sciences; Maria Pawelec, Universität Tübingen*

The Digital Revolution is profoundly transforming society. Technologies such as Machine Learning raise various ethical challenges, including risks to justice, privacy and human autonomy. Some technological innovations also threaten democracy. Technologies´ development processes and respective contexts are often intransparent. In order to understand innovations' underlying political conditions, their normativity and impact, it is crucial to combine ethics of technology, sociology and political science. This may enable actors to transform the process of technological innovation and, ultimately, alter its societal impact. Our paper draws on 'governance' as both a useful analytical tool to grasp the complexity of influences in socio-technical systems, and a guiding normative concept. We propose an extended concept beyond 'active' governance by (non-)state actors, which also includes passive mechanisms such as the formative power of technology itself, of framework conditions and infrastructure (see Governance by Infrastructure/Algorithms, Musiani 2013; DeNardis/Musiani 2016). Our interdisciplinary contribution ultimately poses the normative question: How should governance processes be designed to encourage the development of ethically and societally 'desirable' technologies? We will present qualitative case studies of the configuration and influence of existing governance mechanisms of technological innovations such as autonomous driving, social bots or algorithms creating deep fakes. Drawing on literature analyses, expert interviews and participatory observation, we seek to identify strengths and weaknesses of existing governance mechanisms. Based on an ethical analysis, we then develop 'points to consider' for the design of ethically acceptable innovation governance. These may be relevant e.g. for engineers and IT-developers, research funding bodies and political decision-makers.

Benchmarking for Money: How German Municipalities Discovered Rankings to Press for Federal Funds *Alina Marktanner*

This paper retraces how German municipalities started to use intercommunal benchmarking in order to press for more allowances from the federal level in the 1990s. When municipalities found themselves in a debt spiral towards the end of the 20th century, they resorted to quasi-markets as governing tools. The old question of how public services could be evaluated in the absence of market competition was reversed: How could municipalities empower themselves towards the federal level by quantifying their "output" and their corresponding need for tax shares? I use the notion of "advocacy coalition" (Sabatier) to map the interests of municipal treasurers, administrative associations, public administration scholars, the market-oriented Bertelsmann foundation and management consultants in measuring and ranking municipal performance. Whereas treasurers and administrative associations tried to demonstrate the need for federal spending by highlighting municipalities' poor performance, the Bertelsmann foundation sought to advance its agenda of introducing market mechanisms into the public sector. Management consultants, in turn, considered the facilitation of rankings as a means to secure the public sector as a client base. Constructing the metrics underpinning the benchmarks enabled communication among the heterogeneous groups and structured their interaction. The paper provides a historical anthropology of municipal finance by scrutinizing administrative records as well as reports and campaigns by the adjacent actors. It feeds into the continuing interest of STS scholars in the performative nature of economic tools and practices by presenting a more differentiated picture than do diagnoses of "neoliberalization" of the public sector.

Where the Wind Blows - Tracing Global Environmental Governance in the Rise of Modern Wind Energy *Thomas Harboell Schroeder, Division of History of Science, Technology and Environment, KTH Royal Institute of Technology*

Wind energy is depicted as an environmentally friendly technology and therefore has been supported by local initiatives

and national politics. In the light of global climate change, the view of wind energy as 'green' increasingly addresses planetary-scale changes in energy production. However, there are limits to the vision of wind energy as green, from its material consumption of resources and landscapes to the ecological threats to birds, bats or sea life. This paper will analyse the historical development of modern wind energy in a transnational perspective with a focus on Denmark as a country that pioneered wind energy and as an example of how planetary environmental issues became manifest in local initiatives with global significance. What began as grassroot projects in Denmark sparked the emergence of some of today's main wind turbine manufactures, the spread of the modern three-bladed wind turbine, and the first major construction of wind energy in some of the world's large countries. This paper will pay special attention to the entanglement between wind power and global environmental governance – both in the sense of international environmental agreements and treaties and in the sense of environmental efforts entertained by for example business corporations, NGOs and environmental movements. In this way, the paper will show that global environmental governance in addition to traditional politics happens in complex and indirect ways through visions of green futures materially-semiotically transferred through time and space – through ever changing 'sociotechnical imaginaries'.

Session Organizers:
Carla Alvial Palavicino
Juan Felipe Espinosa, Universidad Nacional Andrés Bello
Arne Maibaum, TU Berlin
Zoe Robaey, WUR
Chair:
Arne Maibaum, TU Berlin

020. Experimental Practices and Practical Experiments in an Uncertain World I
10:00 to 11:40 am
virPrague: VR 20
Participants:

"Drawing Uncertain Lines": Concerns and Practices of "Unbestimmtheit" in Tractography and Ethnography *Maxime Le Calvé, Humboldt Universität zu Berlin*

This paper proposes to consider the concept of uncertainty (Unbestimmtheit) explored by the art historian Gottfried Boehm (2008), as a key to understand important dynamics in the production and the reception of the scientific image. Based on my ongoing fieldwork in a department of neurosurgery, I will confront in my argument two cases of image practices: tractography and ethnography. Tractography consists (in this case) in the production of images of the brain depicting tracks involved in speech for patients about to undergo surgery—a process in which designers and scientists make aesthetic decisions by varying statistical parameters. Ethnography consists (in this case) in the production "on the fly" of digital drawings that depict social situations and infrastructure of this socio-world—telling stories of how medical images of the brain are "done" (Burri 2008) and how they fit into the clinical practice. The theme of uncertainty—of ambiguity and vagueness—will be reflected in different ways. As an essential parameter of the intra-actions in which these acts of imagery are conducted, uncertainty (as "Unbestimmtheit") will be described as an aesthetic efficacy of the image, which is found in both levels of production and reception. The fabrication of efficient images will be presented as a performance, both as the emergence of empirical knowledge, and as the staging of a process of depiction that needs to be made intelligible to the user. Integrating "Unbestimmtheit" as a positive force in this peculiar socio-world is quite a challenge and I will argue that STS scholars can play a major role in this type of aesthetic interventions.

Focal shifts and generalizing from longitudinal ethnography of sociotechnical change *Sampsa Hyysalo, Aalto University; Robin Williams, The University of Edinburgh; Neil Pollock, The University of Edinburgh*

There has been increasing interest in extending current

ethnographic analyses of sociotechnical change beyond laboratory or workplace ethnography through longitudinal and multi-site research. The 'biographies of artifacts and practices' (BOAP) framework is one such development with by now over two decades of history and tens of studies in different sectors. BOAP investigations move beyond prevalent short term, single site ethnographies in S&TS by combining a series of mutually complementary studies of different moments and settings of the 'biography' of technology and practices in the ecologies of actors involved. The first generation of BOAP investigations were achieved by bringing together insights from a string of studies (variously conceived and funded), over an extended period. Recent BOAP research has been pursued purposively, focusing on different issues, processes and interstices amongst evolving ecologies of actors. A key promise and a challenge remains in linking and triangulating observations and insights from sub-studies with differing, albeit overlapping theoretical and empirical foci to reach more encompassing grounded theorization. We draw on investigations geared towards achieving transformational change in contrasting settings: the transition to sustainable domestic energy, 'digitally mature' hospital information infrastructures and use of AI in business intelligence. We reflect particularly on pursuing authenticity to actor world views while retaining analytical distance and challenging existing policy and theoretical framings; navigating and reflecting upon the uneasy terrain between empirical inductive and theoretically informed deductive inference and between retaining openness to emergent developments and the periodic need to come to defensible (theoretical, policy) accounts.

How to Use Socio-technical Imaginaries Framework and Narrative Research to Co-create Virtual and Tangible Commons *Lisa Klautzer, TEZO Analytics LLC; Rumy Narayan, Department of management, University of Vaasa, Finland; Seo Yeon Hong, Tezo Analytics LLC*

"A map of the world that does not include Utopia is not worth even glancing at, for it leaves out the one country at which Humanity is always landing. And when Humanity lands there, it looks out, and, seeing a better country, sets sail. Progress is the realisation of Utopias." Oscar Wilde Following sociologists view of the city as "a laboratory for the investigation of collective behavior"(1) what better place to explore how citizens can be both end-users and co-creators, expert-partners to scientists and beneficiaries of innovation within their neighborhoods? The project conceptualized in this paper aims to distill how socio-technical imaginaries (2), which have been used overwhelmingly within energy technology, can help understand the social responses to innovation within urban developments and how involving citizens in narrative creation can allow them to ideate, negotiate, contribute, benefit, re-define, and co-create a physical and virtual new "commons" that supports sustainable urbanization by enabling the adoption of innovation to shape the physical environment (e.g. technologies such as building information modelling (BIM), methodologies such as pre-fabrication or additive manufacturing, and materials such as bricks made of photosynthetic microbes, or photovoltaic glass), and the creation of virtual platforms (neighborhood blockchains and token systems, material banks and material passports, etc.). (1) Robert E. Park and Ernest W. Burgess: The City Suggestions for Investigation of Human Behavior in the Urban Environment. The University of Chicago Press. Chicago, USA, p. 22. (2) E.g. Sheila Jasanoff & Sang-Hyun Kim (2013) Sociotechnical Imaginaries and National Energy Policies, Science as Culture, 22:2, 189-196.

Platforming the Social *Scott Wark, University of Warwick*

Media platforms exploit networks to produce relations. Scholars often talk about two main kinds: economic relations, whereby platforms produce value for owners; and participatory relations. But platforms also produce a specific social relation: a mediated form of communality, or common-being online. This paper will use the platform as a conceptual frame for analysing the different forms that this communality takes. It will do so by reflecting on a collaborative project, 'Algorithmic Identities', conducted between the UK and Chile. This project sought to understand

participants' feelings about recommendation algorithms. It studied these by making an app, 'Big Sister', that uses social media data to generate a profile and, through this, music recommendations. We conceived of this app as a 'prototype' that creates knowledge through making. Whilst it provided insights into algorithmic recommendations, it also provided insights into platforms. This paper argues that making and using this app prototyped 'platformised' social relations. To use it as a research tool, we had to manage data between the UK and Chile. Operating under the GDPR, a European-wide suite of data regulations, participants in the UK had a markedly different status as 'data subjects'. Conversely, Chile was negatively labelled as a 'third country' for data sharing regulation. Platforms materialise differently in these places. Whilst they mediate the seemingly-free circulation of data to produce value, they generate different users, different value regimes, and different forms of extraction across the globe. Or: they prototype different forms of communality. Treated heuristically, the platform brings these into relief.

Using iGEM as a venue to explore values and practices in science *Jake Finan, Athena Institute, VU Amsterdam; Pim Klaassen, Vrije Universiteit Amsterdam; Megan Palmer, Center for International Security and Cooperation, Stanford University*

Synthetic Biology presents itself as mode to disrupt the current biological science paradigm, offering rapid, robust alterations to biological systems [1]. The proposition of essentializing biology into a series of components, usable as basis for greater change, presents a dilemma concerning society's place in researchers' vision [2]. It has been thought that the prevailing ethical and safety practices might be insufficient guides to deal with the scope and scale of synthetic biology [3]. iGEM is a world-wide synbio student competition that was developed as venue to explore more holistic approaches to the social significance of science for society [4]. Currently it is evolving quickly, as new guidelines become available and the SDGs will be integrated into the competition, thus unambiguously tying it to broader science and society discussions [5]. Competitions themselves motivate engagement with scientific practices and foster ownership of scientific processes [6,7]. This provides an opportunity to re-design the competition to teach specific practices and draw particular focus to the ethical use and societal meaning of synthetic biology [5.6]. Ultimately, what values are instilled how efficaciously will – at least partially – be driven by the competition's design choices. Against this background, a discussion will be staged revolving around how (i) the SDGs could be better utilized in contextualizing synbio, (ii) deliberative and inclusive practices of value orientation can be integrated in synbio, (iii) future scientists and innovators can be better prepared for challenges biological science presents and (iv) iGEM should conceive its responsibilities as synthetic biology platform. Wang, Fangzhong, and Weiwen Zhang. "Synthetic Biology: Recent Progress, Biosafety and Biosecurity Concerns, and Possible Solutions." Journal of Biosafety and Biosecurity, vol. 1, no. 1, 2019, pp. 22–30., doi:10.1016/j.jobb.2018.12.003. Rabinow, Paul, and Gaymon Bennett. "Synthetic Biology: Ethical Ramifications 2009." Systems and Synthetic Biology, vol. 3, no. 1-4, 2009, pp. 99–108., doi:10.1007/s11693-009-9042-7. M. J. Palmer, Science 10.1126/science.abb1466 (2020). Goodman, Catherine. "Engineering Ingenuity at iGEM." Nature Chemical Biology, vol. 4, no. 1, 2008, pp. 13–13., doi:10.1038/nchembio0108-13. "Home .:. Sustainable Development Knowledge Platform." United Nations, United Nations, sustainabledevelopment.un.org/. Podolefsky, Noah S. "Intentional Design for Empowerment." 2013 Physics Education Research Conference Proceedings, 2014, doi:10.1119/perc.2013.pr.057. Djaouti, Damien & Alvarez, Julian & Jessel, Jean-Pierre. (2011). Classifying Serious Games: the G/P/S model. Handbook of Research on Improving Learning and Motivation through Educational Games: Multidisciplinary Approaches. 10.4018/978-1-60960-495-0.ch006.

Session Organizer:
Maxime Le Calvé, Humboldt Universität zu Berlin
Chair:

Maxime Le Calvé, Humboldt Universität zu Berlin

021. Filling the Gaps Between Observations With Data: Nature, Models and Human Agency
10:00 to 11:40 am
virPrague: VR 21

STS case studies have shown how observations and measurements of phenomena in nature are transformed into scientific data in different practices. In light of the rapid digitalisation and a growing interest in 'big data' it is important to continue investigating the ways in which environmental science produce scientific data for use in research and policy. This panel invites papers that discuss how environmental data generation and processing is mediated by models. There is a wide range of data collection practices in environmental science, ranging from remote sensing, to scientific field work, to citizen science observations. Data generation can also involve new mobile applications, or DIY counter monitoring, or computer model simulations. Papers analysing the many ways in which environmental data is collected by humans and non-humans are welcome. Regardless of the starting point, data must be processed to become useable in scientific analysis. As the increasing digitalisation produces a deluge of data to order in scientific classification schemes, the human ability to discern and judge is delegated to models. Modelling of environmental data also enacts human agency when filling the gaps between empirical measurements or observations. Data processing algorithms perform imagined epistemic subjects. The consequences of the merging of numbers representing nature, machine calculations and scientific skills in the generation of environmental data are important issues for STS investigation and we invite presentations of ongoing research into the relations between nature, models and human agency.

Participants:

Algorithmic Absences: Constructing Something from Nothing
Francis Lee, Chalmers University of Technology

This paper analyzes the making of absence. Absence is often treated as an unproblematic category that bounds and delimits the matter at hand. Absence is often taken for granted. Absence is the thing that we are not after. That which we take no interest in. That which is discarded. At the edge of the data that matters. But absence is just as precariously constructed as presence. This paper analyzes how a set of actors construct absence in their work to predict disease. Based on fieldwork at the European Centre for Disease Control and Prevention, the paper analyzes how the seemingly straightforward absence of disease breaks down into a multitude: absence of data, absence of cases, absence of modelled risk, as well as simulated "pseudo absence." In practice, the simple category of "no disease" turns out to contain many layers. This case points to the analytical importance of not just paying attention to those things that are made present in the world, the matters of concern, or the facts of the matter—but also to the making of absences, nothings, and blank spaces. In attending to the making of absence, the paper seeks to highlight absence as a crucial category to pay attention to in critical analyses of algorithms and Big Data. How to analyze that which bounds presence?

Modelling Environmental Data Products *Catharina Landström, Chalmers University of Technology*

Once upon a time in the environmental sciences the term 'data' was used with reference to objects or measurement values. Such data was used as input to scientific analysis and when conclusions had been reached data was stored somewhere and often forgotten. Today data has become a key output of science, offered to actors in society. This re-casting of data as scientific output raises many questions. One the one hand, there are consequences for scientific research. Which new ways of working are needed to turn scarce and patchy measurement data into large, continuous data sets that can become products for sale? How does producing data for sale relate to ideals of science as a public good? On the other hand, are questions about decision makers privileging scientific 'data products' that lack transparency, above other types of information in environmental governance. This paper considers the production of environmental data for users in society in the empirical context of a research project on drought impacts in the UK. This multidisciplinary project involved environmental computer modellers from various scientific disciplines, addressing issues

on different geographical scales. Data was produced for use within the project, as a shared resource linking different modelling activities together. Data was also a project output made available to other scientific users and actors in society. As this was a computer modelling project much of the data, both input and output, was created by model simulations and this process of making data is the focus of the analysis.

Nonhuman operators and vernacular photography: Google Clips camera and its failed search for a spontaneous and authentic record of everyday life *Michal Šimůnek, Film and TV School of Academy of Performing Arts in Prague - FAMU*

Nonhuman (Zylinska 2017), operational (Farocki 2004, Paglen 2014, Hoel 2018) cameras operated by machines, sensors and algorithms have infiltrated family photography only recently. These technologies are praised mainly as a significant source of spontaneity and authenticity. As it is argued in marketing and users' discourses, passing the camera from the hands of human operators to machines frees family members from traditional photographic labour. Without being interrupted by the act of picture taking, one can enjoy everyday family life more spontaneously and authentically. Cameras operated by nonhumans promise not only to make an authentic record of our life but also to make the life itself more authentic. This shift from photography as an authentic record of life towards photography as an enabler of authentic life itself calls for a consideration of how new forms of interaction between human and nonhuman operators transform family photography practices and family life itself. The present paper proposes such kind of consideration by taking as an example short life of the Google Clips camera, which was announced in October 2017, released for sale on January 2018, and discontinued in October 2019. Inspired by Bruno Latour's (1991) investigation of the success of Kodak camera, the paper aims to tell the story of Google Clips camera and to identify all the key actors, be they human or non-human, playing a role in the failure of innovative AI Google camera. In other words, the paper discusses the way humans and non-humans are woven into the story of Google Clips camera and fabric of contemporary photography practices.

QATIPANA: Becoming and Individuation on the encounter between technical apparatuses and natural systems *Renzo Christian Filinich, Universidad de Valparaiso*

The present research turns around the concepts and processes of Becoming and Individuation where it evidences a functional model based on the articulation of an information processing system based on the approaches of the philosopher Gilbert Simondon; which aims to model a sensorimotor cycle performed by the cognitive system of an Artificial Intelligence agent. To establish this model of biological inspiration, we use the concepts of information and modulation in Gilbert Simondon and information in Norbert Wiener's cybernetics. These resources require us to ask ourselves the following question: How does the technologization and computerization of cultural techniques change the very nature of knowledge of the affection of being with others (people, things, animals)?. To answer this question we will offer an interdisciplinary study (arts, sciences, information technologies) on the effect of this symbiosis and in what ways it can be seen in the use full of knowledge about the foundations of living and non-living matter. The architecture that we have called Qatipana (Quechua word that denotes the flow of information processing systems), although it cannot be considered as a systems theory, has the utility of being able to explain some empirical observations that we also present here. In conclusion, the implications and limitations of this model and the research that is being carried out to present its utility and probability as a model of the algorithmic cognitive system are part of the questions of communication and affect in the decisions provided by the automatic system.

Session Organizers:
Catharina Landström, Chalmers University of Technology
Dick Kasperowski, University of Gothenburg
Chair:
Dick Kasperowski, University of Gothenburg

022. Reexamining Narratives within Responsible Research and Innovation (RRI)

10:00 to 11:40 am
virPrague: VR 22

While Responsible Research and Innovation (RRI) is ostensibly an orientation point for efforts to make research and innovation more societally responsive, there exist contentious narratives framing RRI which both open and close forms of work. These narratives include envisioning RRI as…   an intervention to command and control researchers and innovators to become more responsive to their negative societal impacts; a tool to coerce citizens into becoming more acquiescent in their support for research and innovation;   an intervention to facilitate the development of novel forms of collaboration between representatives from diverse sectoral, disciplinary, and societal perspectives to align research and innovation with broader societal needs;   a policy concept which is self-serving and aims develop its own network of practitioners and supporters to sustain itself. This panel will include a diversity of presentations exploring these themes across different institutional, geographical, and sectoral contexts.

Participants:

How Do We Shift Values In Practice? : The Case Of Norm-critical Innovation *Linda Paxling, Lund University*

The Swedish Innovation Agency VINNOVA hosts the program Gender and Diversity for innovation that funds projects working with norm-critical innovative practices. The objectives of the program are closely related to the seven protected grounds of discrimination and the Sustainable Development Goals 5 and 10. The projects (ranging from 8 months to 3 years) are embedded in many societal sectors (such as transport, health care, and urban planning). Their core focus has been to understand, challenge and change norms that discriminate and exclude actors, with long-term goals of creating institutional change. The qualitative study consists of 25 interviews with project managers and a content analysis of 90 final reports from 2014 to 2019. Although the terminologies between norm-critical innovation and responsible research and innovation (RRI) differ there are several commonalities in their narratives. Similar to RRI the norm-critical innovation process enacts as a situated intervention wherein researchers, practitioners and innovators learn to become more response-able (Barad, 2007). Whereas RRI has primarily grown within and for the policy and research community (Rip, 2014) norm-critical innovations most often take place outside of academia. My analysis shows that responsible innovation programs such as norm-critical innovations have important effects within the civil society and show potential for innovative sociotechnical assemblages (Kuhlmann & Rip, 2019). Norm-critical innovations provide an important contribution for how RRI can be developed further and broadened as a process and as a tool (Holbrook, 2019) that addresses the normative underpinnings of research and innovation and engages closely with citizens and civil society.

How narratives of RRI is translated and contribute to nurture RRI ——Comparative Study Based on the Case of "Smart Pharmacy" in Shenzhen, China *Yang Fei, Tsinghua University; Ping Li, Tsinghua University; Pusheng Wang, Tsinghua University*

The purpose of this article is to study how narratives of responsible innovation are translated into specific organizational contexts, and then nurture and form a specific RRI practice path. In order to better explain the above issues, the paper selects two cases of "smart pharmacy" in Shenzhen, China for comparative research. The Chinese government (State Council, 2017) proposed the concept of building a smart hospital for the first time in 2017, mentioning the use of artificial intelligence, and building new smart pharmacy treatment models based on the Internet, the Internet of Things, and big data. Different evaluation narratives have been formed around smart pharmacies. Some experts believe that smart pharmacies use machines to replace people and achieve a seamless connection between the prescription system and the pharmacy dispensing system. The visit length shortened accordingly. In particular, it can reduce the error rate of medication delivery, and help to do regular reminders, follow-up of medications, and drug reorganization for patients with chronic diseases. Most importantly, medication

safety of elderly patients with multiple chronic diseases can be guaranteed. Hospitals can also reduce operating costs by operating smart pharmacies. Others believe that there are also risks in smart pharmacies, such as the compatibility between automated equipment and hospital HIS systems. Procedural bugs in the dispensing process will seriously disrupt the following process. At the same time, pharmacists and patients will need more training to master the operating system and intelligent equipment. Our research found that facing the guidance of constructing "smart hospital" in the national policy, two pilot hospitals in Shenzhen have formed two different pharmacy cultivation paths based on different narratives. The model of Peking University Hospital is based on efficiency and profitability, while the model of Hong Kong University Hospital is focused on patient safety and patient-centered care. The two hospitals differ in terms of equipment selection, organizational structure, management methods, and staff structure in smart pharmacies. How did this difference arise? Based on this question, we will conduct in-depth interviews with relevant actors at the two hospitals, focusing on research and analysis: (1) By exploring the understanding and translation of smart pharmacies' organizational culture of specific hospitals, we are interested in which value was selected and why? (2) How do the narratives of Peking University Hospital and Hong Kong University Hospital on smart pharmacy build innovative smart pharmacy practices, reflected in network build and learning? Keywords: Narratives, Translation, RRI, Smart Pharmacy

Marching to the Beat of a Different Drum: Neglected Narratives of Responsible Research and Innovation (RRI) and its Possible Futures *Dani Shanley, Faculty of Arts and Social Sciences, Maastricht University, Maastricht, the Netherlands*
Largely considered a new conceptual approach for understanding the system of research and innovation, Responsible Research and Innovation (RRI) undoubtedly has multiple roots, but few would deny that the development of Science and Technology Studies (STS) has played a central role. Standard histories of STS typically describe the evolution of the discipline from its early emphasis on unpacking the processes involved in the creation and legitimization of scientific ideas, towards a more critical, cultural approach to knowledge production, which is attentive to feminist and postcolonial critiques (Cutcliffe, 2000). However, a second history of STS, which shares more in common with the objectives of RRI, speaks more to its origins as a "movement", where the focus from the outset was more explicitly upon the politics of technology, on illuminating the social and political implications of society's technological choices (Jasanoff, 2010; Rip, 1979). Through the analysis of archival material, interviews, articles, and conference reports, I explore the "delightfully unruly territory" that was STS in the 1960s and 1970s (Jasanoff, 2010). I look at how through various dialogues and interactions, via multiple channels of communication, competing narratives of society's technological choices emerged. I focus particularly on how different agendas, methodologies, and positions on these issues were negotiated within new types of collaborations across industry, the academy, and civil society. I ask what a critical history of RRI, which explores forgotten aspects of its history, might reveal in terms of how RRI might have been otherwise. I suggest that opening up established narratives could encourage engagement with neglected narratives, arguing that the history of RRI has a greater role to play in imagining its possible futures. Cutcliffe, S. H. (2000). Ideas, machines, and values: an introduction to science, technology, and society studies. Rowman & Littlefield. Jasanoff, S. (2010). A Field of Its Own: The Emergence of Science and Technology Studies. In R. Frodeman, J. Thompson Klein, C. Mitcham & J. Britt Holbrook (Eds.), The Oxford Handbook of Interdisciplinarity, (pp. 191-205). Oxford University Press. Rip, A. (1979). The Social Context of 'Science, Technology and Society' Courses. Studies in Higher Education, 4(1), 15-26.

Sculpting Responsibility? Historicising Nanoscience and Technology Development in Attendant Research and Innovation Ethics Practices *Nicholas Surber, Chalmers University of Technology; Karl Palmås, Chalmers University of Technology; Rickard Arvidsson, Chalmers University of*

Technology
This paper surveys the literature on responsible research and innovation (RRI), exploring how it emerges from the normative predecessors of ethical, legal and societal aspects (ELSA), anticipatory governance and upstream engagement, specifically in the context of nanoscience and technology. The literature study – which will focus on both academic papers and policy documents – seeks to identify and critique narratives regarding the manifold rationales for responsibility in the field of nanotechnology. This will extend to broader narratives about environment and society in relation to such technoscientific development. This focus is motivated by the fact that the field, since its very emergence, has juxtaposed technoscientific exploration with concerted and highly motivated efforts to introduce RRI practices, influenced by scholars within science and technology studies as well as social science. Further, nano-technosciences can now provoke discussions relevant to analogous, albeit less mature, "key emerging technologies" through emerging historicity. In exploring the above-mentioned narratives, the paper will interrogate how narratives around RRI can be situated historically in relation to particular problematics that emerged in the context of nanotechnology. Second, the paper will explore the extent to which narratives are informed by concepts and debates within recent social research, such as neoliberal governance (-00s) and risk society/reflexive modernisation (-90s). Third, the paper seeks to analyse these narratives by revisiting classic/seminal social scientific concepts, for instance, "ideology" (Mannheim) and "legitimation crisis" (Habermas).

Session Organizers:
Wouter Van de Klippe
Ingeborg Meijer, Leiden University
Roger Strand, University of Bergen
Erich Griessler, Institute for Advanced Studies
Anne Loeber, University of Amsterdam
Ralf Lindner, Fraunhofer ISI
Chair:
Wouter Van de Klippe

023. STS, Technoscience and How Discontinuation Matters II
10:00 to 11:40 am
virPrague: VR 24
Abandonment of technologies and socio-technical systems occur not infrequently. However, the social construction of technology, everyday use, innovation management, technical maintenance and governance of technologies and socio-technical systems have preferentially been associated with advancement and innovation. Discontinuation is, at most, discussed as regime change, innovation setback or failure—as if advancement and innovation was the only direction in which socio-technical development and its governance would go. STS is no exception to this observation, although there are in STS important studies addressing the issue of ending directly, like Aramis in France (Latour 1992), or studies that can, in retrospect, be seen as descriptions of technologies that were, after all, abandoned, like the "male pill" (Oudshoorn 2003). Script analysis may offer another lead, e.g., when Akrich and Latour (1992) are referring to 'de-inscription', Geels and Schot (2007) to 'de-alignment', Kuhn (1962) to 'paradigm shift', or Utterback (2003) to 'product and manufacturing discontinuities'. The empirical cases are legion, though. However, it is crucial to see how socio-technical systems, technological regimes, or technologies are (or have been) disappearing or are being brought to an end.

Participants:

Phasing out and in – policies of discontinuation in the German energy and lighting sector *Martin David, Helmholtz Centre for Environmental Research - UFZ; Nona Schulte-Römer, Helmholtz Centre for Environmental Research - UFZ*
Past scholarship has brightened our understanding of policy instruments aiming for discontinuation (Kvimaa and Kern 2016) despite deep incumbency (Johnstone et al. 2017). This paper explores the 'making of ends'. It focuses on policies that intentionally create discontinuity in socio-technical systems by out-phasing well-established technologies. More precisely, we compare policies for phasing-out coal and lignite energy

production in the context of the German energy transition and the out-phasing of light bulbs and mercury vapor lamps as part of the German national climate initiative. In both case studies, complementary innovation policies helped fill the emerging gaps by 'phasing in' other technologies—renewable energies and LED lighting. In our analysis, we explore these national policies of discontinuation in relation to policies of energy production and consumption on the European and local level. Conceptually, we re-read Michel Callon's (1984) proposition of Some elements of a sociology of translation (1984) and use it as a framework for understanding 'policies of discontinuation'. By focusing on the interplay of 'phasing out and in', we propose 'disolution' as the flipside of enrolement and a fifth aspect in the Sociology of Translation. In other words, the out-phasing of well-established technologies—the dissolution of socio-technical configurations that work (Rip & Kemp, 1998)—facilitates the enrolement of renewable energies, LED luminaires and their users in energy production and lighting. We argue that dissolution is a necessary, but not a sufficient condition for new enrolements.

Ending the coal energy production in Germany: doing discontinuation governance *Peter Stegmaier, University of Twente*

There is a broader trend to divest from fossils. This paper examines the coal exit in Germany. The discontinuation of coal energy production in Germany is linked to increasing de-legitimation. There is a sense that the status quo of coal energy production bears risks and that it becomes both unnecessary and unacceptable. We can find that legitimation of is mainly based on coal being seen as the fastest growing energy source globally which holds large reserves and which in Germany estimated enough for several generations. It is perceived as a secure, unrestricted, competitive source for long-term energy supply as well as economically important. High investments in plants have been made. De-legitimation is based on considering coal combustion as one of the most harmful practices to environment, health, and climate. Besides, government plans to generate 80% of all electricity from renewables. Discontinuation finds ever greater spread: with coal, there is again another discontinuation trajectory in energy policy under way after nuclear. There is an on-going open political conflict over the coal phase-out, not just in committees and orderly governance settings, but also on the streets, around the coal-pits, and in the forests. The conflicts didn't end with the report of the coal exit commission. Court decisions are partially halting and even delegitimising coal policy and business. This continues existing work on phasing out incandescent light bulbs, nuclear energy production, DDT and internal combustion engines for cars in a multinational ORA project.

De-inscribing And Re-inscribing Legacy Technologies In The UK Public Sector *Jessamy Perriam, IT University of Copenhagen*

As many governments around the world embark on 'digital transformation' projects to deliver public services to citizens, the narrative is shaped by terms such as innovation and agility. Yet many of these public services are already digital in one sense of the word. There are technologies in place supporting the processes and transactions of bureaucratic life, some are 40 or more years old. The challenge emerges when digital transformation aspirations meet legacy technologies. The paper uses Latour's example of Aramis as a starting point to question what happens when a once loved technology is deemed to be 'legacy'. It also describes how some technologies stubbornly refuse to be de-inscribed, holding on to their purpose for dear life. I also explore how legacy technologies act as a source of organisational remembering and forgetting (Bowker and Star 1999). This paper uses a case study of the UK public sector and their integration of legacy technologies in public services over the past decade. This is based on oral history interviews with former civil servants and government contractors responsible for the strategic or technical de-inscription or re-inscription of legacy technologies particularly in the transition of public services to the GOV.UK website. The case study will refer specifically to the legacy technology supporting vehicle registration and how it has been rendered near invisible to the end user.. Additionally, the

paper will explore how policy, procurement and civil service culture contribute to the de-inscription or re-inscription of legacy technologies in an era focused on digital transformation.

The ugly duckling. A never perfect innovation *Stefania Sardo, Munich Center for Technology in Society, Technical University of Munich*

While conceptualized by Rudolf Diesel in the 19th century as a quasi-efficient and rational technology, the diesel engine has proved to be far from perfect and it has never reached an unquestioned societal acceptance. It was dirty, loud, and slow, and it was transformed into a cleaner, quieter and more powerful solution. When regulations have imposed increasingly tighter environmental requirements, it was partially remodeled to meet those expectations. At present, further fixes are being developed to regain users and policymakers trust after the dieselgate scandal eruption, even though countries such as India, Britain, and Norway have declared their willingness in abandoning diesels vehicles. As a matter of fact, it is difficult to predict whether diesel engines will disappear in the near future, or if they will be - once again - fixed. Indeed, one could argue that this technology has always been on the edge between being stabilized and discarded. This study reflects on different discontinuation processes and on the conditions for discontinuation to happen. It is based on extensive field research on policy discourses and discontinuation strategies related to the diesel technology applied to the automotive sector across three different countries, i.e. Norway, Germany, and Italy.

The biofuel promise: examining policy expectations around liquid biofuels over twenty years *Zora Kovacic, University of Bergen, Norway; Maddalena Ripa, Institute of Environmental Science and Technology, Autonomous University of Barcelona*

Biofuels have been promoted in European policy since the early 2000s. In the beginning, they were touted as a promising solution to multiple challenges: reducing emissions, ensuring energy security in Europe and helping farmers find new markets for their products. The story of biofuels of the last two decades, however, has been surrounded by multiple controversies. The widespread and constant support to biofuel policies is surprising from a scientific point of view, since the promises of biofuels have been contested both in terms of lessons learned and in scientific terms (contrasting scientific evidence). Despite the controversy, the institutional support for biofuels has remained remarkably strong in the international political agendas. Building on the sociology of expectations, we focus on the 'emerging' biofuels narratives and how they changed over time. The aim of this work is to shed light on the mechanisms that give continuity to certain promises or trigger change in order to explore the role of this innovation in policy. This case study shows at once: (1) a discontinuity in terms of narratives and policies that support biofuels (from minimum use targets to maximum use targets), and (2) a continued support for biofuels as an innovation that avoids the political stall of recognising dependence on fossil fuels for liquid fuels. We argue that the support of biofuels is better understood with regard to the institutional needs this innovation promises to fulfil, rather than with regard to what has been delivered. For this reason, we emphasize the role of expectations.

Session Organizers:
Peter Stegmaier, University of Twente
phil johnstone, Science Policy Research Unit, University of Sussex
Pierre-Benoit Joly, Lisis

Chair:
phil johnstone, Science Policy Research Unit, University of Sussex

024. Can it Scale?: The scalability zeitgeist, entrepreneurial thinking, and the role of STS
12:00 to 1:40 pm
virPrague: VR 01

Scalability is central to contemporary innovation discourses and, therefore, political and economic life. 'Can it scale?' Has become a cliche in venture capital firms and NGOs alike. Perhaps most prominent in discussions of

platform technologies, big data, and new digital monopolies, scalability has also permeated public policy in the form of "grand societal challenges," calls for "entrepreneurial statehood", and scalable "living labs." This panel questions scalability as a paradigm and ordering device in innovation and public policy. Our ambition is not to theorise scale, as geographers have long sought to do. Rather we aim to examine how actors mobilise and stabilise ideas of scale through their 'scalable' innovation instruments and practices, and the changing political economy associated with it. This opens the possibility of interrogating how actors mobilize, rationalize, and operationalize (the idea of) 'scaling up' and 'scaling across' space, and what it means to produce credible templates. Rather than repeating rehearsed objections to the very possibility of scalability, on the grounds that the local is irreducibly complex, this panel aims to work toward a new STS vocabulary for understanding and critiquing the entrepreneurial zeitgeist of scalability. We seek to open new avenues for enquiry, by attending to the practices through which spaces are hierarchically organised, like Russian-dolls, into scalar models of one another or 'flattened' into a single scalar register. The panel welcomes theoretical engagements with scalability, as well as efforts to broaden the STS toolkit for practically engaging with problems of participation, power, and justice at different scales.

Participants:

Blitzscaling or Responsible Transformation? Coming to terms with the scalability zeitgeist *Sebastian Michael Pfotenhauer, Technical University Munich; Brice Laurent, ARMINES; Kyriaki Papageorgiou, ESADE Business & Law School; Jack Stilgoe, University College London*

An obsession with "scaling up" has captured current innovation discourses and, with it, economic and political life. Perhaps most visible in the rise of platform technologies, big data, and concerns about a new era of monopolies, scalability thinking has also permeated public policy in the form of "grand societal challenges," calls for "entrepreneurial statehood", or scalable transitions through "living labs." In this paper, we explore this scalability paradigm as an ordering logic and key ingredient of current initiatives in innovation and public policy. Building on STS literature that has primarily focused on non-scalability and the ensuing frictions, we are interested in the power of the scalability discourse and the corollary reconfigurations of political and economic power. In particular, we identify constitutive elements -- three tech solutionism, experimentalism, and financialization -- of how scalability thinking is being mobilized, rationalized, and operationalized across a range of settings. Our analysis offers a new vocabulary for understanding and critiquing the entrepreneurial zeitgeist that values scalability above all else, and inroads for proposing alternative trajectories of social transformation. It also that STS and its toolkits needs to come to terms with scalability as a powerful rhetoric and site of contemporary politics: If critical analysis is to accompany changes in dominant understandings of innovation and social change, our intellectual frameworks and modes of intervention need to go beyond the insight that universalism is impossible.

Activating STS through STS Sensibilities: The Scholarship in STS Making & Doing *Gary Downey, Virginia Tech; Teun Zuiderent-Jerak, Athena Institute, VU Amsterdam*

STS sensibilities are observable instances of STS knowledge expression that enact knowledge contents but without necessary reference to their formal linguistic formulations. Projects in STS making & doing (Downey and Zuiderent-Jerak 2017, Wylie, Shapiro, and Liboiron 2017) express STS sensibilities through techniques, devices, infrastructures, and bodies and then attach them in empirical settings. Attaching STS sensibilities produces travel for STS knowledge and provokes reflexive learning that iterates and re-frames STS sensibilities. Existing uses of "STS sensibility" focus on relations between knowledge expression and knowledge production, i.e., research (Law and Singleton 2013, Suchman et al. 2017). This introduction to a forthcoming collection (Downey and Zuiderent-Jerak 2020) shows how ten projects in STS making & doing expand the aperture of STS scholarship to include expressing and following observable sensibilities beyond the boundaries of the field (Lin and Chen 2020), (Nafus 2020), (Guggenheim, Kröll, and Kräftner 2020), (Thomas, Juarez, and Becerra 2020), (Jensen et al. 2020), (Liboiron et al. 2020), (Mesman and Carroll 2020), (Shapiro

2020), (Zuiderent-Jerak 2020), (Downey 2020). Expressing and attaching STS sensibilities activates STS, replacing hopes for "impacts" and "up-scaling" with traceable, analyzable trajectories of knowledge expression and travel. The STS making & doing projects in this collection therefore frame practices that take STS scholarship "outside the [conference] hotel" while staying true to STS concerns about linearity. Framing STS making & doing as the production, expression, and travel of STS sensibilities helps us explore alternatives to entrepreneurial notions of scalability through experiments that put our own scholarship in perpetual translation.

Scaling-up robot demand: Towards a comparative "ontographic" study *Carlos Cuevas-Garcia, Technical University of Munich; Federica Pepponi, MCTS - Munich Center for Technology in Society (TUM); Cian O'Donovan, University College London*

Scalability has been a key driver in research funding initiatives in the field of robotics. A widely spread assumption in this field suggests that for robotics to thrive it must create and keep adapting to an ever growing market. Attempts to create this market can be noted in the diversification of areas of application for complex robot technologies, for example industrial robots, healthcare, homecare and elderly care robots, delivery robots, emergency and rescue robots, inspection and maintenance robots, and so on. The better fit between these robots and grand societal challenges such as aging, food security or sustainability, the better. Yet, in almost no case can we see state of the art robots implemented in practice. In this presentation we examine strategies through which different actors in the field of robotics intend to scale-up the research, development and implementation of robots in the areas of infrastructure inspection and maintenance, and healthcare. Drawing on Michael Lynch's concept, we suggest a comparative "ontographic" methodology for the study of scaling-up practices. We do not start with an assumption of what is or isn't an effective strategy to scale-up robots' use, but examine the practices and narratives through which this scalability is expected to happen. We draw on interviews and on observations of conferences, workshops and final evaluations of European Commission funded projects.

SthlmTech is a Unicorn Factory: How a fact about billion-dollar startups transformed Stockholm's entrepreneurial landscape *Angela Kristin VandenBroek, Binghamton University*

"Stockholm produces more unicorns per capita than any place in the world besides Silicon Valley." This "fact" has permeated the discourse, logic, and aspirations of Stockholm's startup ecosystem (SthlmTech). It appears in guides, in state diplomacy projects and economic initiatives, on event stages, in business media, in pitches, and as a frequent topic of conversation. I will explore how despite its perception as "just a fact," it has become a force that carries along with it political, ideological, and aspirational attachments to scaling and growth. By becoming the linchpin in SthlmTech's community building, the fact and its attachments have seeped from a role in marketing and diplomacy outward into policy and infrastructural decision making and the hopes and aspirations of entrepreneurs. While others ask, "How did SthlmTech become a unicorn factory and is it replicable?" I ask, "How is this fact altering Stockholm's innovation and entrepreneurship practices and how could it have been or be otherwise?" This paper will draw on twelve months of ethnographic fieldwork in SthlmTech, including interviews with entrepreneurs, investors, evangelists, state employees, and other support personnel and participant-observation through event attendance, networking, and co-working in startup offices. Drawing on theoretical approaches to facts from both STS and anthropology, I have developed two concepts—slipperiness and sliding—to describe the constructions, circulations, and appropriations of the unicorn factory fact and how this has shaped SthlmTech around issues of scaling and growth even when it stands in contradiction to the missions and plans of many of those who wield it.

The economy of permanent experimentation. The market value of multiplying experimental sites. *Mathieu Baudrin, CSI-Ecole Des Mines De Paris; Brice Laurent, ARMINES*

The current evolutions of the urban environment are characterized by an increasing use of real-life experiments, be they related to mobility, energy, or data. Recent works in STS have discussed how experiments redefine the practices and objectives of innovation. These works have analyzed the political implications of experiments as they are mobilized as instruments for governing the city. In this paper, we argue that the economic value of experiments is the other side of their potential use as governance instruments, and, as such, deserves analytical scrutiny. Using empirical materials related to tests of self-driving cars involving both multinational industrial companies and smaller firms specializing in autonomous technologies, we analyze how private actors define the present and future economic values of the experiments they are involved in. We identify an emerging market, in which the entities being bought and sold are experiments and their technical and social components. In this market, buyers are cities and national public bodies with ambivalent objectives. Sellers are industrial companies developing technologies (such as sensors) not necessarily related to transportation, and firms specializing in autonomous shuttles fit for experimentation but not expected to function in ways that would answer actual public transportation needs. This market is configured in such a way that each party benefits from the continuous addition of small-scale experiments that have little chance to ever scale up. Thus, we identify an 'economy of permanent experimentation', and we use our material materials to discuss its implications for the (re)definition of the common good.

Session Organizers:
Makoto Takahashi, Technical University Munich
Cian O'Donovan, University College London
Gianluigi Viscusi, Imperial College Business School
Brice Laurent, ARMINES
Sebastian Michael Pfotenhauer, Technical University Munich

Chair:
Makoto Takahashi, Technical University Munich

Discussants:
Gianluigi Viscusi, Imperial College Business School
Cian O'Donovan, University College London

025. Choreographies: Rhythms and Movements in Research, part 2
12:00 to 1:40 pm
virPrague: VR 02
Participants:

Chronic com-position in ethnographic research *Alexandra Endaltseva, L'École des hautes études en sciences sociales / Linköping University*

This paper is grounded in the ethnographic study with(in) chronic patients organization in Russia – Russian Multiple Sclerosis Society [RuMSS]. I advocate for an embodied approach to chronic patients' movement in STS accounts. Movement of knowledge, spaceshifts, concerns, emotions, chemical reactions, capital, and power. I question how to move along in ethnographic research? How to maintain different movements in a mutually nourishing way? What are the prompts for moving with different rhythms, directions, memories, and relations? I discuss a concept of com-position - based on my movements with(in) RuMSS from 2016. I start with tracing the process of embodying patients' movement which puts an ethnographer in com-position (position together) with affects, sensations, demands, remorses, pains, stillnesses, exercises, which are already at place. Doing rehabilitative yoga, making art together, aiding with going to the toilet in non-accessible places, translating. Com-position always means change and mutation. It is never on time - always too late. And its traces stay at place. I continue by discussing instances in com-position: waiting for openings, staying available, resisting to analyze prior to deep listening. Pausing is a mode of patient activism from which ethnographers can learn: of researching chronically ill body, tuning in with illness rhythms, looking for openings to stage a media appearance. Com-posing creates places for patients - not in terms of place-making, but as fitting in, saving life resources, fixing, maintaining what is at place to com-

pose with.

Writing good economics: how texts 'on the move' perform the worlds and discipline of experimental economics *Kristin Asdal, TIK, Centre for Technology, Innovation and Culture; Béatrice Cointe, CNRS*

In the last few decades, experimental techniques have become established as standard practice in economics. But how do economic experiments produce economic facts? While there is a wealth of research on the history, philosophy and epistemology of economics, few studies approach economics as a practical and material endeavour in the way STS and ethnographies of science have approached natural sciences. We pursue a material-semiotic investigation of the fact-making of experimental economics by tracing a, at the face of it, modest and mundane thing: the written instructions that guide experimental subjects in the lab. We follow this text 'on the move' from its very writing, through the lab, the review process and out into the journal article. To do so, we analyse "text-author ensembles", that is journal articles together with practice-oriented interviews with their authors. We argue that experimental instructions are in fact a pivotal device in experimental economics. By following them across the lab and the discipline, we retrace a choreography of fact-making in economics. Not only do the instructions enact the laboratory setting and guide the movements of participants in the experiments. By simultaneously enforcing norms and telling stories, they link the experimental setting with the discipline of experimental economics – hence, they crucially take part in making the discipline. Thus, we argue for the significance of studying texts not only as rhetorical devices, but as material and semiotic devices that in their combination of the material and the textual build the discipline of experimental economics.

Critical horology, or developing clocks 'for the people' *Michelle Bastian, University of Edinburgh*

In 2018 Facebook introduced a new unit of time, the 'flick' equal to 1/705,600,000th of a second. It was developed in order to better measure time between media frames. The use of standard clock time requires calculating with fractions of seconds, the flick howeverallows smoother calculations of time in full integers. In 2008 Google also created its own way of measuring time, developing the 'leap smear' to add leap seconds into clock time gradually instead of the disruption of adding a full second at once. This corporate interest in measuring and defining time speaks to wider practices within the sciences which frequently develop timescales relevant to the needs of the work being undertaken. Geologists, physicists, biologists etc all create times of their own, with a clear understanding that time can be told according to a variety of reference phenomena. Acanthochronology, which uses the growth of thorns and spines, such as cactus spines, to tell time provides a particularly unusual example. While work in critical cartography has championed the participation of non-experts in the creation of a wide variety of maps, there has been little exploration of how the flexibility of time standards assumed by industrial and scientific actors might be democratised and opened up 'to the people'. In this paper, I argue for a 'critical horology' speaking particularly to the STS interest in challenging the privileged position of business and science as authorities over scientific knowledge, in this case metrology and setting of standards of time.

Internationalisation Dynamics At Play: Constructing And Diffusing Zebrafish As A Model Organism In Latin American Life Sciences *Rodrigo Liscovsky Barrera, Science, Technology and Innovation Studies, The University of Edinburgh*

Zebrafish (Danio rerio), a small tropical freshwater fish from the Ganges region of India and popular in pet shops, has become one of the most attractive model organisms in contemporary life science research. Although the use of zebrafish in scientific research has been growing steadily on the world-stage, in Latin America this growth has been unprecedented. In this paper, I first discuss how various internationalisation dynamics including international travels of scientists, fishes and the networks that were forged as a result, played a key role in the standardization process of zebrafish as a genetic model organism at the world

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stage and in determining the structure of the emerging international zebrafish community. In the second part, I focus on the mobility trajectories of Latin American zebrafish researchers and their engagement in informal exchange networks of fishes, knowledge and prestige. Despite the global infrastructures envisaged to support and diffuse zebrafish research worldwide, barriers to the import of livestock opened informal channels of exchange between geographically distant actors, which challenge the collaborative ethos often associated with model organism communities in STS literature. This community therefore acts not a harmonious ecosystem but rather as an arena where scientific practices can react against or reproduce power structures derived from the social organisation of scientific labour worldwide. Altogether, this research makes use of mixed methods (interviews, historical documents and bibliometric analysis) to analyse the movements that contributed to the construction of zebrafish as a model organism worldwide and its subsequent diffusion in Latin America.

Time Language in Sciences *Helge Jordheim, University of Oslo; Filip Vostal, Institute of Philosophy of the Czech Academy of Sciences*

It is not only technological and measurement devices like clock-times, but also words and expressions human beings use to structure and capture time. No science can do without a language of time, designed to tackle orders, sequences, intervals and other temporal modalities, ranging from femtosecond rhythms in laser physics to million-year eras in earth sciences. The semiotics of time come with some specific tensions and paradoxes that we want to explore in this paper. First, languages of time are very much embedded in the ordinary language of the everyday, in which there are all kinds of "fast" and "slow", "long" and "short", in stark contrast with the specialized terminologies of the sciences, often highly mathematicised. The semiotics of "beamtimes" rest firmly on the semiotics of "lifetimes", to use the title of Sharon Traweek's path-breaking book from 1988. Second, it follows that the temporal semiotics of the sciences is haunted by the inherent imprecision of words like "extremely fast", "ultrafast", "very slow", "slow-moving", "(i)regularly", and "(no that) often", while constantly struggling for extreme degrees of precision, both epistemologically, technologically, and linguistically. These forms of precision are produced by measurements, but are explained and implemented through language, and thus cannot escape the lingering imprecisions of the everyday use of time language. Third, the need of the sciences to distinguish between different dimensions cannot at all be met by the languages of time, which constantly draw upon spatial figures or images, like the clock-face, the different "movements" of time, timelines or different forms of graphical depiction of time etc. "Anyone who talks about time, must rely on metaphors", the German historian Reinhart Koselleck has claimed (2000: 9, also Lakoff & Johnson 2003), adding that most of these are spatial, too. Finally, semiotics is both "indicator and factor", to use another expression from Koselleck, of acceleration. On the one hand, scientific languages are developed to observe and describe forms of acceleration, for example in particle accelerators like CERN, linear and synchrotron accelerators worldwide, but on the other hand language is also part of acceleration processes by intentionally and explicitly speeding up information flow and cognition processes by means of abbreviations, use of standard formulas, even symbols, and other forms of language that promotes speed. In the paper, we will explore how these and other tensions come to the fore in scientific articles published in the leading journals of Nature and Science (year 2019), in order to suggest some provisional conclusions about temporal semiotics in the sciences.

Session Organizers:
Filip Vostal, Institute of Philosophy of the Czech Academy of Sciences
Andrea Schikowitz, TUM
Niki Vermeulen, University of Edinburgh
Chair:
Niki Vermeulen, University of Edinburgh

026. Standby. On sociomaterial modes of organizing.

12:00 to 1:40 pm
virPrague: VR 03

Standby, in its technical sense, refers to devices that are neither on nor off. It designates an operating state in which despite apparent shutdown energy continues to flow to guarantee sudden reactivation. This closed panel explores how standby acts as a sociomaterial mode of organizing: Mobile digital devices catapult everyday lives into a constant state of readiness, infrastructures are set "on hold" to anticipate energy transitions, and moments of apparent "unproductivity" are integrated into capitalist cycles of reuse, maintenance and care. Standby creates latent and more-than-human assemblages that are under constant tension. From the seemingly motionless state of self-tracking devices to a power plant's production stoppage, standby is accompanied by a nervous humming, ticking and pulsating of bodies and things.   We have collected conceptual, analytical and methodological explorations of standby that scrutinize the frictions and forces of such a mode of 'active inactivity': What happens in the moments between of 'being on' and 'being off'? How does the in-between of stillness and movement become operable? How does standby allow for the regulation and synchronization of a vast set of people, things, natural elements, and technologies? How is it coordinated into a collective composition that involves divisions of labor, degrees of control and joint objectives? Considering standby as a mode of organizing has sociopolitical implications: It's inherent tension as not-so-static standstill carries a transformative potential, yet at the same time standby's ticking rhythm might lull us in and limit capacities to act against the harmful conditions of our contemporary lifeworlds.

Participants:

Stay tuned: Televised endurance as a standby-condition *Alexa Faerber, Universität Wien*

The notion of "Standby" as a mode of "active inactivity" invites to explore the ambivalence of manifold situations in contemporary and past societies. This contribution explores economic practices as standby and focuses on the morally-loaded and ambivalent practices of thrift (emerging from necessity, choice, or both) and their cultural representations. On the basis of research in low budget urbanity (Färber 2014, Färber/Otto 2016) I will first test urban situations of thrift and what has been coined as austerity "mood" (Coleman 2016: 90) in the light of the technical metaphors of "standby". Based on the cooperation with Aneta Podkalicka I propose second to analyse the cultural representation of thrift and dwelling in TV programs with the vocabulary developed. How do practices and situations as being "stuck" (Perkins 2019), "trying hard enough" (Meyer 2019) or "high energy striving" (Kanai/Dobson 2019) resonate with "being on hold"? Especially the notion of "televised endurance" (Färber/Podkalicka 2019), that refers to the work of Lauren Berlant and Elizabeth Povinelli grasps the condition of "inactive activity" and will be re-examined in the light of "standby". Comparing both registers of terms, the vocabulary for the everyday conditions problematized by "standby" this contribution tries to refine and expand it in order to be able to ask the following questions: What insights for social change can we achieve by referring to the manifold situations of "active inactivity"? What potential does the notion of "stand-by" have for articulating agency in harmful conditions of lifeworlds?

Quicksand: Understanding the city from its tenuous grounds *Laura Kemmer, Center for Metropolitan Studies, TU Berlin; Frank Ingo Mueller, Institute of Geography, Technische Universität Dresden*

Mud, sand, asphalt; wastelands, construction sites, landed property – cities are built on all but solid grounds. Historically, urbanization has been based on draining swamps and flattening hills: The city of Rio de Janeiro presents one such case where turning morros (hills) and swamps into asfalto (asphalt) underlies patterns of socio-economic segregation until today. While this process has been looked at as politically exclusive and socially disruptive, its material conditions have received less attention. Drawing from extensive ethnographic fieldwork on contemporary urbanization projects in two at least geographically distant districts of Rio de Janeiro between 2014 and 2020, we demonstrate how the conceptual division of the city between morro/margin and asphalt/center is more than metaphorical. In the city's periphery, illicit actors pile up sand to expand their territorial dominance as they offer housing for residents who wait

to be resettled from swampy "risk" areas. In the city center, the recent round of investment has literally unearthed the cities' material layers of colonialism, as piles of bones inside a slaves' mass grave afford new directions for construction works. Contributing to debates on the materiality of urban grounds (Ingold,2004; Meulemans, 2019) from the analytical lens of standby, we demonstrate how urban soils are not the stable surface on which human urbanization projects materialize, but volumetric territories of political contestation.

Being on standby - On maintenance work in chronic disease management *Lisa Wiedemann, Helmut Schmidt University Hamburg*

Within the context of type 1 diabetes, this article examines what it means to live with this disease in tandem with digital technologies. For decades patients have been tediously replicating the function of an organ on a daily basis, but due to digital developments the materiality of care has changed and the daily treatment has become woven into a wide web of digital components. Based on empirical fieldwork, this article seeks to outline how these transformations have affected what daily care means. I argue that patients increasingly need to act as maintenance workers and are in a constant mode of standby in order to reorganize or re-stabilize their treatment practices. In this, I link the mundane effects of smart technologies to these practices of chronic illness management (Corbin and Strauss, 1985) which include the 'care of things' (Denis and Pontille, 2015). The argument draws on a sociomaterial perspective and a growing body of work in the field of science and technology, shifting attention from stability to maintenance and repair. Thus, it becomes possible to read care practices on the level of their instability and fragility.

Putting Data On Hold. Exploring the Sociomateriality of Standby *Vanessa Weber, HafenCity University*

Inspired by contemporary visions of the 'data revolution', this paper questions the idea that data are in constant use. The paper explores the production of data by complex assemblages of sociomaterial data infrastructures (Vertesi 2019, Seaver 2019) performed by both human and nonhuman actors. By analyzing various processes of environmental data production in cities (based on extensive ethnographic fieldwork), the paper argues that data are neither always active nor never useless. Rather, in recent years, massive amounts of data are systematically 'put on hold'. They are on standby for future use or until the storing facilities, and therefore their existence, is outdated. Concerning data on air quality, the paper reveals, at first, how the ongoing efforts of producing environmental data are enabled through the increasing implementation of sensor technologies in the urban realm (Calvillo 2018, Gabrys 2016), whereby the assemblages of human and nonhuman actors and their sociomaterial interplay are unfolded. Second, it examines the sociomaterial sensing of air quality within different temporal-spatial techniques of filtration. Within this context, standby turns out to be the ordinary mode of data and their sociomaterial assemblages. A mode of 'data on hold', which leads to political questions, such as the sorting out between activated and inactivated data as well as the decisions leading to these separations.

On Standby for the Apocalypse: Botanic Gardens as Infrastructures of Care in the Anthropocene *Franziska Dahlmeier, Hamburg University*

Botanic Gardens, especially ones like the Royal Botanic Garden Kew Gardens" in London, UK, can be thought of as „standby infrastructures" for tender plants either critically endangered or already extinct in the 'wild'. Thus, a botanic garden can be understood as a site in which plants are artificially being put into a mode of „standby", a mode that is, in this context, located somewhere between alive and dead: without infrastructural maintenance via glass houses, heat banks, humidifiers, shading systems and continuous care practices by expert gardeners, the plants would die. The thesis of this paper thus is the following: the socio-material site of the botanic garden serves as an infrastructure of care for the plants' non-technologically and non-humanly enhanced original habitats which are more and more destroyed by climate change and habtitat loss. The plants meanwhile are put on standby in botanic gardens only to be fully 'activated', i.e. seeded and planted, again after critical incidents or once the conditions are being made available for the plants to be naturalised in their original habitats. The botanic garden, therefore, serves - as the term „conservation practice" reveals - as a kind of standby storage unit for the plants being placed there via a vast (human as well as more than human) infrastructure of care.

Sensing Standby. An audiovisual journey into infrastructural temporalities *Annika Kuehn, University of Hamburg*

This short film is about a cruise ship terminal on standby. It engages with the life of transport infrastructures beyond passenger business. Visually, infrastructure takes the lead as we pass through the terminal from entry hall to gangway. We see an empty terminal, a social void, but feel the movement, which becomes the basis of this stillness. The constant humming of slowdowned materiality reminds us of the asynchrony and connectivity of operations (Denis/Pontille 2015). The sounds of pollution and the babbling of human voices give us a hint to the operations during terminal service, but also how oceans might treat life, which is less privileged and sheltered.   The film reduces the human-centered spotlight to engage with the actualization of technologies and their effects for heterogeneous collectivities (Harvey 2012). Drawing from infrastructure theories it opens up to more-than-human interactions and shows that there is hardly anything more firmly inscribed within urban sociality than train stations, port terminals or airports. They occupy and shape huge parts of urban landscapes unremittingly proceeding circulations of various more-than-human entities.

Session Organizers:
Annika Kuehn, University of Hamburg
Laura Kemmer, Center for Metropolitan Studies, TU Berlin
Vanessa Weber, HafenCity University
Birke Otto, European-University Viadrina

Chair:
Birke Otto, European-University Viadrina

Discussant:
Joe Deville, University of Lancaster

027. Techniques of Resilience. Coping with the Vulnerabilities of Hybrid Bodies-2
12:00 to 1:40 pm
virPrague: VR 04

In recent years we have seen the introduction of more and more technologies that operate under the surface of the body. These 'body companion technologies' (Oudshoorn 2020) not only do what they are supposed to do, but simultaneously transform the fragility of bodies by introducing new vulnerabilities. Living with a technologically reconfigured body therefore requires a life-long trajectory of building resilience. Adopting the perspective that vulnerability and resilience is constituted and achieved in a complex interplay with the materiality of bodies, technologies, and the socio-technical environment, this panel invites papers that critically explore and conceptualize how 'everyday cyborgs' (Haddow et al 2015) learn to live with the vulnerabilities of their hybrid bodies. Understanding techniques of resilience is important because it enables us to account for vulnerabilities without turning cyborgs into passive victims of their implants or prostheses. How do people living with implants and prostheses sense and make sense of their hybrid bodies? What techniques do they use to keep their bodies alive? What social and material resources are available to them that can assist them to adapt positively to the new vulnerabilities they face? How do gender, age, ethnicity, and global differences in access to these high-tech devices affect which bodies materialize as everyday cyborgs? The panel aims to contribute to socio-material approaches to vulnerability by foregrounding technologies inside bodies, which are largely absent in most STS studies on vulnerability.

Participants:

Living With a Transplanted Face. The Conflicting Meanings of Hybridization. *Marie Le Clainche Piel, EHESS - Centre d'Etude des Mouvements Sociaux*

Facial transplants involving organ donation are presented as alternatives to prosthesis and autograft. More radical in repairing the aesthetics and facial functions of disfigured patients, they also involve a singular form of hybridization. How do experimental patients negotiate their new condition? How does

the social life of the organ (Appadurai 1986, Nguyen 2015) – which has belonged to someone else and requires a lot of care to avoid rejection – manifest itself? Based on the follow-up of five face transplant patients in France and the ethnographic investment of surgical services, I show that the way patients experience their hybrid body is built into the interactions with other patients, medical staff and relatives (Oudshoorn 2018). What the flesh represents – from therapeutic tool to medium of the donor's identity – is not fixed in the technology (Mol 2002). I analyze the two main relationships to hybridization that appear in the post-operative period. On the one hand, certain patients describe the reception of a transplant as a profound identity change. The transplanted face carries within it a story and taking care of the graft also means taking care of the donor and being grateful. On the other hand, there are moments and patients for whom the nature of the restorative material is not thematized as central – what matters most is the possibility of staying alive, without the disfigurement. Thus, what "adapting positively" to the graft means has several potentially conflicting answers. This paper contributes to the study of hybridization technologies and medical innovations through patients' trajectories

"Push yourself, assert yourself !" : when amputees take risks to cope with and give meaning to their prosthetic body *Valentine Gourinat, University Claude Bernard Lyon 1; Lucie Dalibert, University Claude Bernard Lyon 1*

Lower-limb amputees are encouraged by healthcare professionals to take care of their body, especially their remaining leg and knee(s). While swimming is the most advised sport, only a few amputees dare to go to the swimming pool and exhibit their amputated body in public. Rather, running with a lower limb prosthesis is a popular practice in amputees' population, even though it can not only damage the prosthesis, but also lead to several injuries (e.g. falling or muscular pulling), strain joints and accelerate their ageing process. Therefore, how to explain the popularity of such a risky practice ? By analysing the meanings that amputated people give to such a demanding practice, the aim of this presentation is to show how the latter is not experienced as merely creating new vulnerabilities, but is rather perceived as a powerful technique of resilience. We will rely on ethnographic fieldwork, in particular interviews conducted with French amputated runners, to demonstrate that, by pushing their body and/with prosthesis to their/its limits, amputees eventually develop knowledge and know-hows that enable them to appropriate their prosthesis, make (full) use of its capacities and improve their self-image. All the while it confronts amputees with the vulnerability of their (technologically) reconfigured body, running becomes a singular technique of resilience, one that also becomes even more meaningful when realised among abled-bodied people. As such, this presentation aims to foreground and give voice to ordinary cyborgs by attending to the daily experiences and practices of lower-limb amputees with their prosthesis.

The Mutual Shaping Of ART And The Maternal Body *Natalia Fernández Jimeno, University of Oviedo*

Despite not being technical artifacts, Assisted Reproduction Technologies (ART) are technologies that act on the materiality of women's bodies and accompany them for at least a part of the life path. ART intervenes directly in female bodies by subjecting them to procedures that are not free of risks and pain, both physical and psychological. With the promise of satisfying the desire for motherhood, ART transform women's bodies through hormonal treatments and surgical procedures. Patients exhibit their vulnerability through the recognition of themselves as infertile. At the same time they are exposed to physical and mental risks in order to satisfy the desire to have biologically related children. However, patients are not merely passive agents since they participate in an ontological choreography (Thompson, 2005) that allows them to go through the process. That is when the body negotiation processes are opened and the patients becoming-with-technologies (Barla, 2019) transforming them for their interests. This paper aims to show body hybridizations with the technology and negotiation processes of vulnerability and resilience of ART patients through a case study in Spain. Barla, Josef (2019) The Techno-Apparatus of Bodily

Production: A New Materialist Theory of Technology and the Body, Transcript Verlag. Thompson, Charis (2005). Making parents: the ontological choreography of reproductive technologies. Cambridge: MIT Press.

Towards a Sociology of Resilient Cyborgs. Medical Implants as Body Companion Technologies *Nelly Oudshoorn, University of Twente*

Medical implants are often portrayed as almost magical technologies. Once implanted in bodies, they will work automatically by themselves and do not require the agency of their 'users.' This representation is problematic because a discourse that assumes a passive role for people living with implants silences the fact that keeping cyborg bodies alive involves a life-long trajectory of building resilience to the new vulnerabilities introduced by these devices. Reflecting on my ethnographic study of how people learn to live with pacemakers and defibrillators, I suggest that a sociological understanding of becoming resilient cyborgs should include the following five heuristics: 1.Conceptualizing the active engagement of everyday cyborgs in building resilience as work; 2. Accounting for their expertise by including sensory experiences and resilience techniques; 3.Following the whole life cycle of hybrid bodies, including dying and death; 4.A sensitivity to difference; 5.Conceptualizing internal devices as body companion technologies. The metaphor of companion technologies invites us to approach technologies implanted in bodies as devices that act as life-long companions which are inextricably intertwined with all aspects of life, including the process of dying. Conceptualizing medical implants as body-companion technologies draws attention to the multiplicity of human-technology relations that emerge in creating resilient cyborgs. These may involve reciprocal relationships of guarding and disciplining as well as one-directional interactions of domesticating. The paper thus contributes to rethinking theories on human-technology relations by accounting for technologies implanted in bodies which are often missing in STS approaches.

Session Organizer:
Nelly Oudshoorn, University of Twente
Chair:
Nelly Oudshoorn, University of Twente

028. Making Things Flow: Value- and World-Making Practices in Biomedicine
12:00 to 1:40 pm
virPrague: VR 05

Flows of materials, bodies and knowledge are essential to contemporary biomedicine. Such flows are often unnoticed or taken for granted, except "when things don't work" and flows are hindered. In this panel, we explore not only what and how things move in biomedicine, but what it takes to make things move across contexts and actors. Of specific interest is the intertwining relationship between flows and the production of value. The making of (bio)value entails practices to render, rehabilitate and/or transform entities that would often otherwise be considered waste into productive resources (Waldby 2002). In other words, flows tend to signify value. Value-making flows also often entail pauses and temporary immobility. This is the case when, as part of a relocation process, entities are put into storage. We wish to crack open such practices enabling the repurposing of entities to new potential, and explore the relationship between flowing and storing. Also of interest are questions of legitimate and illegitimate flows. While some entities, like genomics data, are regularly being exchanged and moved, others are left out. Interrogating what is let in and out of productive systems in biomedicine, we unpack the assumptions and underlying rationales for including some rather than others from value-making flows. By examining local and global flows, this panel speaks directly to this year's conference theme questioning how sociotechnical infrastructures are embedded in specific times and spaces. Ultimately, we wish to explore how flows are materially enacted and involved in different forms of value-making and world-making.

Participants:

Animals and Animal Models: Flows and Fissures in the Biologies of Mice *Carrie Friese, London School of Economics*

This paper explores what Daniel Nicholson has described as the

'flowing stream' of the organism by tracing the flows of laboratory animals – specifically mice – used in biomedical science. Based on ethnographic research conducted in a biological services unit (BSU) and some of the laboratories it serviced, I ask why cancer developed in aged, feminized mice mattered so much to animal technicians working in the BSU and ceased to matter to immunologists working the laboratory. I contend that animal welfare ideas about communal living intersected with sex differences in mouse behaviour in a manner that marked aged, female mice with cancer in the BSU. This biological and social process of becoming was erased from the mouse body upon culling, however, and cancer was deemed irrelevant for the immunological science that these animals were bred for. Where Nicholson reconceptualises the organism as flowing stream to replace the idea of organisms as complex machines, I show how processual biology was, in this ethnographic site, 'choreographed' (Thompson 2005, 2013) with mechanistic metaphors. My goal is to describe when and how ideas and information flow and when they don't. This descriptive work emphasizes the politics and economies of ideas about animals as models, which are infrastructural to bioscience and biomedicine (Nelson 2018) in a manner that enables and disenables certain ideas from travelling.

From Data Flow, to Access and Beyond *Aaro Tupasela, University of Helsinki*

During the past few decades, data has become a major political preoccupation. Within the Nordic countries state-collected and maintained data resources have come to signify new sources of value-making (in its many forms). Building on the "mobility turn", this presentation will contextualize data flows in relation to two recent conceptualization of data use: data access and synthetic data. These modalities reflect social, economic, ethical and legal concerns that have been raised in relation to the flow of data. In data access, data itself does not flow from one physical location to another; rather, users access data, whereby they are able to generate output (value) without gaining access to the original data set itself. In this sense, the data does not move, but value can be extracted. Even more recently, concerns over anonymity and privacy have led researchers to develop methods for generating synthetic data to provide an accurate representation of population data, for example. The artificial intelligence community, in particular uses synthetic data as a way of using accurate data sets on phenomena without compromising individual's privacy. These different modalities of data access and use represent alternative configurations of social relations between actors, as well as ethical, legal and social concerns surrounding the use of data. They also represent changes in the way data infrastructures are responding to emergent concerns surrounding the use of personal data in research.

Value, mobility and stability in the tissue engineered skin market: Examining Big Tissue mobilities *Neil Stephens, Brunel University London*

Tissue engineered skin for burns and other wound healing conditions is now an established clinical practice. In this paper I explore two case studies of specific skin tissue engineering products. I explore the mobilities and mooring-points that shape and facilitate their use and enact their value. The mobilities and mooring-points exist in multiple dimensions, including (i) physical movement of tissue: the taking of donor cells, the expansion of skin elsewhere, and the clinical application of skin to the patient, (ii) the development and exchange of expertise and knowledge in inventing the techniques, (iii) flows through regulatory environments, and (iv) corporate level mobilities through company acquisitions and restructuring. Beyond this, I make the case that skin tissue engineering can be located on the spectrum of what I term 'Big Tissue': work to expand and mass-produce tissue volumes. As such, the notion of flows also provides leverage for understanding the role of volume, expansion, and scale in enacting the value and political economy of skin tissue engineering in particular and Big Tissue in general.

In search of "extra data": transforming human tissues into a common resource for personalized medicine *Clemence Pinel, Center for Medical Science and Technology Studies, University of Copenhagen*

This paper explores the circulation and repurposing of human tissues from clinical to research uses. Contemporary personalized medicine is marked by the drive to find new and unique data to turn into valuable knowledge. In Denmark, a country that prides itself in its data culture and elaborate national registries, this drive is manifest in efforts to mobilize pathology samples collected for diagnostic purposes together with clinical and registered data for innovative research. Drawing upon ethnographic fieldwork in a Danish laboratory conducting genetic epidemiology based on pathology samples, we unpack what it takes to make such tissues flow towards new uses. Pathology samples are first characterized as "extra data," which could be made 'productive' and of value for the 'public good,' if only their research potential was recognized and unleashed. Exploring what happens to the tissues as they move to the new productive contexts of research, we show that researchers enact a set of practices to transform tissues stored in hospital basements into a series of numbers. As tissues become 'dry data' for data intensive research, they are detached from the patients from whom they originate. This suggests that to realize personalized medicine, samples, which were first used for diagnostic, or what we term 'personal medicine', have to be turned into a common resource, where they become a number amongst many. In such contexts, the person disappears in the collective. The repurposing of tissues from clinical to research uses therefore sheds light on productive flows connecting 'personal medicine' to 'personalized medicine.'

Session Organizers:
Clemence Pinel, Center for Medical Science and Technology Studies, University of Copenhagen
Mette Svendsen, University of Copenhagen

Chair:
Mette Svendsen, University of Copenhagen

029. Making, Having, Thinking: Sex, Technology and Science (2)
12:00 to 1:40 pm
virPrague: VR 06

Sex has distinct yet co-constitutive meanings in science and society. These include: physical characteristics that comprise 'biological sex'; identity categories; erotic practices and relations. This panel will investigate science and technology's roles in the construction of these meanings of "sex" and will act as an incitement for STS to take sex both seriously and playfully and get its hands dirty (or downright filthy). Discussions may include: Making Sex • How have scientific/biomedical technologies made and remade sex in the past? How might we make sex otherwise in the future? • How do we make sex happen? What is the role of science and technology in the facilitation and regulation of sexual practices, pleasures and possibilities? Having Sex • How does a multiplicity and variation of biological sex characteristics produce the notion of two biological sexes that one can "have"? • How do science and technology intervene in the dynamics of sexual play or practice? Conversely, in what ways are erotic practices embedded within science and technology? Thinking Sex • How can the tools of STS help us to think sex beyond limited and often biomedical binary imaginaries? • In the four decades since Rubin's 'Thinking Sex', what has STS scholarship done to "think sex"? Where do we need to go from here? Papers will engage with the rich history of scholarship in this field (including gender and sexuality studies, queer and feminist science studies) as well as the many possible futures of sex, technology and science.

Participants:

Data-driven intimacy: New biodigital technologies in the (re)making of sex *Jacinthe Flore, RMIT; Kiran Pienaar, Deakin University*

Wireless sex toys are increasingly popular technologies that allow sexual partners to connect remotely across long distances. Promoted as enhancing intimacy and pleasure as part of a healthy sex life, these devices buttress a 'sex for health' discourse which relies on the collection of intimate data purportedly used to improve the next generation of teledildonics. This presentation draws on two case studies of sex toys developed by leading sex-tech/teledildonic companies, Lovense® and Kiiroo® to examine how the relationship between data and sexual subjectivity is being transformed through the design and functionality of these emerging technologies. Applying concepts from science and

technology studies, and extending the work of Faustino (2018) on teledildonics and the 'coital imperative', we explore how sexual practices, intimacy and pleasure materialise and become 'datafied' through these sensory technologies. Inspired by the concept of the 'sexuality-assemblage', we pose teledildonic-enhanced sex as a 'sexuotechnical-assemblage', a term that highlights the uniquely technological dimensions of sex in the age of teledildonics. Approaching these devices as sexuotechnical-assemblages highlights the generative role of data as lubricants of long-distance intimacy, and as central actors in the (re)making of sexual subjects, practices and by extension, 'healthy' sexuality. We conclude by considering the implications of our analysis for the enactment of sexual desires, gendered bodies and norms of sexual health in relation to the promises and limits of teledildonic sex.

Designing our partners: emotional companionship and sexual fulfillment in human-doll/robot relationships *Deborah Blizzard, Rochester Institute Of Technology*

The field of Lovotics, the study of emotional bonds with robots, is growing; at the same time, we are witnessing a growing contingent of humans finding emotional companionship and sexual fulfillment with life-sized and life-like dolls. Although some people criticize these newer approaches to emotional companionship and sexual partnership – humans with robots or dolls – an examination of these behaviors reveal some intriguing questions about how our currently deemed "acceptable" human-human emotional and sexual behaviors may challenge, entrench or constrain these newer activities. How do these new relationships fit within our constructions of relationship categories including what constitutes an acceptable partner and behaviors, and how ought we to understand and even legislate them? In short, are the patterns and practices of human-human relationships, including what is legal and what is not legal, the appropriate way to frame human-doll and human-robot relationships? If it is not, what are the parameters of social and cultural acceptability for these new relationships? If the field of Lovotics is correct in suggesting that we may see more human-other couplings such as the human-robot and human-doll, these and other questions will become ever more pressing. Utilizing a comparative study of how the rhetoric and behaviors differ when discussing human-human, human-doll, and human-robot relationships, this article examines how human emotional and sexual acceptability might be reimagined in the light of the burgeoning activities of human-doll and human-robot relationships.

Dysphoria's Dysphoria: Shifting Onto-Epistemologies of Gender Dysphoria *Joshua Falek, York University*

Throughout the past two decades, the field of transgender studies has argued that to access transition-related care, transgender people must craft a convincing and trans-normative narrative of gendered embodiment (Prosser 1998). However, in 2018, media outlets reported on an fMRI study that suggested there are specific transgender "brain patterns," and which additionally argued that neuroscience could better equip medical professionals to identify transgender patients earlier and more accurately that such self-reports. Utilizing Karen Barad's analytic of ethico-onto-epistemology, I argue that this study is not only indicative of a potential shift in the epistemology of transgender embodiment—from narrative to fMRI report—but as well, a shift in the actual ontologies and ethics of transgender embodiment. To characterize this malleable quality and its resulting ethics, I employ Félix Guattari's theorization of signifying semiologies and a-signifying semiotics as a method to explore the ramifications and implications of the study. Through Guattari's theoretic, I expose how the divergent ontologies of sex and gender change the relations between capital, cognition, and embodiment, evidencing a shift from Foucauldian biopolitics to Deleuzian control, yet sustaining gender as biomedical assignment. Specifically, I argue that this study conceptualizes transgender embodiment as scientifically verifiable, biologically constituted, and as binary. Therefore, thinking with scholars like Maurizio Lazzarato, Kathryn Hales, Jasbir Puar, and Bernard Stiegler, I provide an exploratory account of the potentials of gender dysphoria as protean, revealing the contingencies and challenges to contemporary formulations of sex, gender, and

dysphoria.

Sex, Gender and Sexual Orientation: Challenging Categorizations in Genomic Research and Knowledge Production *Melanie Goisauf, BBMRI-ERIC; Kaya Akyüz, University of Vienna; Gillian Martin, University of Malta*

With the advance of genetic research, specific individual conditions received increased attention in the scientific knowledge generation. In this development, the mode of knowledge production itself has gained significant relevance, as the data-intensive search for biology/sociality associations has repercussions on doing social research and on theory. In this paper, we aim to critically reflect on the discourse around genomic research, in scrutinizing how certain conditions or preferences are "found" in genes which could affect behaviour, but also how the social perspective is factored in. We are doing so by debating a recent case: a large-scale genome-wide association study (GWAS) on sexual orientation that suggested partial genetic basis for same-sex sexual behaviour (Ganna et al., 2019). In particular, we analyse how underlying classification and categorisations of sex and gender are reproduced. While categorisations are inherently social in their production, their use in knowledge production has wide ranging implications. In exploring how these social categories are incorporated in a wider scientific debate on genetic conditions and knowledge production, we caution against the marginalization of social science in the wake of developments in data-driven research that neglect social theory, established methodology and the contextual relevance of the social environment. We argue that an in-depth discussion and reflection on the social configurations that are inscribed in and reproduced by genetic data-intensive research is urgently needed.

Session Organizer:

David Andrew Griffiths, University of Surrey

Chair:

David Andrew Griffiths, University of Surrey

030. Making Global Government

12:00 to 1:40 pm

virPrague: VR 07

Participants:

Constructing and Maintaining the World Bank as a Global Institution *Felix BOILEVE, CSI MinesParisTech*

This work shows how the World Bank constructs and maintains itself as a global institution. The development institution born in Bretton Woods in 1944 is not global because it would be able, from its headquarters in Washington DC and through its local offices in more than a hundred countries, to cover territories with standardized instruments so as to manage them centrally, like the States of James Scott (1999). The World Bank is also not global because it would be able to delimit confined spaces in developing countries from which it would extract and repatriate value, thus ignoring the vast remaining spaces deemed valueless, like the oil companies of James Ferguson (2005). Based on the actor-network theory, this work shows that the Bank is global by its ability to interfere in already existing but localized socio-technical networks, and to connect them so as to occupy a key position in the longer network under construction: it is global because it connects geographic and reticular spaces, and powerful because it acquires an ability to articulate these spaces. To show this, a twelve-week ethnography of the work of a Bank project manager in West Africa was conducted. Ferguson, James. 2005. « Seeing like an oil company: space, security, and global capital in neoliberal Africa ». American anthropologist 107 (3): 377-82. Scott, James C. 1999. Seeing like a State: How Certain Schemes to Improve the Human Condition Have Failed. New Haven: Yale University Press.

Evidence-Based Development, Scaling Up, And Enmeshed Plans *Fiona Gedeon Achi*

This presentation explores what "globals" are at stake in the project of worldwide poverty alleviation by studying how an NGO practicing "evidence-based development" implements "at scale" a deworming initiative in partnership with the government of Kenya. Today, anti-poverty projects emerge around

collaborations that cannot be easily categorized as national or global, public or private, academic or operational, field-based or digital, nor bound to one specific geographical region (Redfield 2012). It is precisely to this hybrid nature of development programs and the ambiguity of the goals at stake in distinct interventions (biopolitical aims? national plans? reaching millions?) that this presentation attends. Drawing on ethnographic material, it shows how this deworming initiative seems to straddle what are taken as two distinct axes for the management of people and things: on the one hand, the nation-state form which supposedly should care exhaustively but only for a restricted citizen population; and on the other hand, global actors that address a global population but with circumscribed interventions, which often harbor the language of investment and calculation (Biesel 2014). How might evidence-based development be drawing ways of managing worldwide poverty that come "after the social" and the logics of provision based on social citizenship, and yet that are perhaps not so radically "decoupled from the nation-state" (Ferguson 2010: 168)? Overall, I aim to draw a specific portrayal of the global, one that neither dispenses nor hovers above the nation-state, but that mobilizes the apparatus of the state in important ways and often even depends on it.

Global Health is dead, long live global health! *Robert Borst, Erasmus School of Health Policy and Management; Johanna Kostenzer, Erasmus University; Roland Bal, Erasmus University Rotterdam*

Has Global Health, after all these years, exhaled its last breath? The past twenty years have seen a burst of agendas, initiatives, and organisations dedicated to improving health globally. This emerging field has been problematised to the extent that funders, journals, and universities alike now bear its name as capitalised proper noun: 'Global Health'. Yet, the same actors now wonder what this noun actually represents or means. Our inquiry set out to problematise Global Health and rethink how it interacts with local practices. We used fieldnotes and diaries covering five years of our research that took place within this Global Health constellation. Following Callon & Latour (1981) and Callon, Lascoumes & Barthe (2009), we show how different local practices translate into Global Health and how Global Health subsequently affects the local practices it purportedly represents. We argue that Global Health has become cosmopolitanised to the extent that it finds itself loosely coupled with the local practices it set out to support. As a consequence, the translation of Global Health back to local practices becomes problematic – which is a diagnosis that actors in that field itself propose.   We suggest an alternative translation, one that signifies change but resembles the past: the dethronement of Global Health as such. Our alternative translation, the proclamation in the title of this abstract, calls for a global health that does not move beyond the local practices and does away with a North/South divide entrenched in its capitalised predecessor.

Making the global look like it is big. Practices of the global, internationality and size-building in Universities. *Alexander Mitterle, Martin-Luther-University Halle-Wittenberg, Germany*

When in 1155 Frederic II. sealed a privilege for scholars travelling to and from Italian universities imperial "orb" instituted the university as a truly global institution. Shortly after the popes followed attributing the cooperation across nationes in the universitas with universal privilege. Thus from early onwards the size and meaning of the university was built on globality and inter-nationality. Universities today still see themselves as global organizations but have lost both the distinct jurisdiction and the global authority that assigned such privileges. They are today less run by medieval nationes but as organizations with a global outreach. Universities still draw scholars and students of different nations and they still aim for global recognition, but the means to achieve global size and visibility have changed. The paper traces the history of the global and the international since the middle ages. It shows that the globe was very much the signal of size in the middle age, but also dependent on an active engagement of the university to build this size. With the rise of the nation-state the international became a valuable contestant to the global.

Without a global power to attribute a defined size the distinct particularity of internationality has become a common form of foreignness. Yet next to profane practices of depicting globality and internationality we can continuously identify a symbolic dimension that crosses questions of material size, knowledge and power. At its center lies a "cordial agreement" (Sloterdijk) between science and power that instituted a mutually beneficial size-building.

Session Organizer:
Felix BOILEVE, CSI MinesParisTech

Chairs:
Nassima Abdelghafour, Ecole Nationale Supérieure des Mines de Paris
Evan Fisher, CSI, Mines-ParisTech

Discussant:
Vololona Rabeharisoa, Ecole Nationale Supérieure des Mines de Paris

031. The political economy of food biotechnologies
12:00 to 1:40 pm
virPrague: VR 09

Drawing upon genomic and reproductive biotechnologies that aid in the contemporary intensive crop, livestock, and oyster farming to tackle ecological uncertainties under the conditions of late-capitalist societies, this session aims to trace out how these distributed nature of agencies emerge within more-than-human assemblages.

Participants:

The never-ending controversy over GM wheat: a view from the South American arena *Ana Maria Vara, National University of San Martín*

Since the beginning of the global controversy over genetically modified (GM) food, GM wheat represents one of the most resisted crops, particularly because it is a cereal devoted to human consumption, unlike most other GM crops already in use—like soybean, corn and cotton. So far, no GM wheat has gained commercial approval in the world, although there have been lots of field trials and some incidences of rogue plants. Although resistance remains strong, there have been repeated attempts at developing different kinds of GM wheat. Argentina, a traditional agro-exporting country that is one of the largest producers and exporters of GM crops (mostly because of its early and enthusiastic adoption of GM soybean), is currently discussing the adoption of a drought-tolerant GM wheat. Developed by the local company INDEAR through a public-private agreement, HB4 wheat has gained pre-approval. Final approval seems to depend mostly on acceptance by main importers of wheat. The discussion over HB4 wheat in Argentina is particularly revealing because this country continues to be a privileged arena where global forces around GM food collide. Global and local, big and small, national and transnational actors play a drama in which arguments over autonomy and colonialism, food security and climate change, transnational companies and public policies, as well as over kinds of knowledge, uncertainty, and cultural values are deployed in intricate ways.

Troubling Ecologies and Biocultural Opportunities of the Pacific Oysters *Mariko Yoshida, The Australian National University*

In this paper, I bring together the implications of biotechnological practices performed in the contemporary Pacific oyster's ecoregion stretching from Tasmania, Australia, to Japan. Attentive to relationalities of ambiguous agents, a so-called quasi-species or quasi-living, I ask how the ecosystem services that oysters provide, and community's reliance on these services for the sake of stable seafood production, co-evolve. Specifically, I illustrate Japanese oyster producers' encounters with Australian oyster producers' response to the outbreak of Pacific Oyster Mortality Syndrome (POMS), a disease which affects Pacific oysters and is caused by a virus called OsHV-1 micro variant. Australia's policy approach to oyster restoration unveils the way in which ecological vulnerability and instability are produced, intensified, and managed. I examine how Bivalve Culture Limited, the first Australian commercial oyster hatchery for

Pacific oysters, tightened biosecurity control when POMS wiped out southern Tasmania's Pacific oysters. The outbreak of POMS has made Japanese marine biologists and policy-makers aware that this virus spread can be caused by the movement of non-native seed oysters, which bring invasive alien species that traveled through transport. Japanese oyster producers have started to recently engage in harvesting native seed oysters locally in order to eliminate dependence on seed oysters produced in Miyagi, where the increase in seawater temperature also has become a new risk for the oyster population. I argue that these practices are locally-situated through interdependent enmeshments of networks in action, dynamics, and stabilization - in which multiple heterogeneous actors are intertwined.

Connectivity Cafe: Prototyping the Dining Event *Shomit Barua*

The Connectivity Café is an experimental dining experience in which a meal is reimagined as a vehicle for expressive interaction. Dining as a "social event" is viewed as a plastic context that may then be shaped and manipulated to promote surprising and meaningful connections between guests. This work-in-progress uses various sensing technologies to extend the dining experience beyond the expected, to engage human perception, stimulate conversation, and allow for "enchanted" interactions using everyday utensils. Objects and environment are designed to amplify commonplace gestures and behaviors into expressive instruments of improvised playfulness and spontaneous collaboration. The primary focus of this experimental meal-as-event is to encourage creative intimacy in a poetic atmosphere. The Connectivity Café involves a suite of subtle interactions via "mated" objects, such as augmented serving-plates, glasses, silverware, and placemats, even the table itself. Commonplace objects become diegetic as they detect contact or proximity to another guest's position, and change state (glow, heat up, ring, etc.). This project frames dining as a temporal event to explore communal rhythms, ceremony and ritual as malleable sequences. The desired outcome is to promote conviviality and to transform the isolation and exclusivity that is often the byproduct of new media. We also seek to answer questions such as what artistic expressions may be possible in a ritual context, and how to stimulate a synesthetic experience that catalyzes a sensory and cognitive appreciation for culture, food history, social behavior, and interpersonal relationships. Affective Design, Computational Augmentation, Social Interaction, Rhythmanalysis, Responsive Environments, Ceremony, Ritual, Sensing, Synesthesia.

Determinants of Genetically Modified Food Crops Adoption in India: A Structural Analysis Approach *Krishna Tripathi, Centre for Studies in Science policy, Jawaharlal Nehru University, New Delhi; Vairaj Arjune, Centre for Studies in Science Policy, Jawaharlal Nehru University; Ashutosh Tiwari, Centre for Studies in Science Policy, Jawaharlal Nehru University*

The discussion on GM food crops in India is marked by two substantial lines of arguments, one rooting for the adoption of GM food crops citing the need for food security for the burgeoning population, impact of climate change on agriculture, nutritional requirement, pesticides and fertilizer inputs. The counter view believes the greater challenges to the environmental, agricultural and human health outweigh its benefits in the future. The factors playing active role in dealing with above created picture are either not clear or not systematised hampering any attempt to address this issue effectively and create a regulatory deadlock. The study has attempted to identify the determinants for the genetically modified food crops' discourse in India. We have also attempted to find out how these determinants are influencing the issue of adoption of genetically modified food crops in India. Methodologically, the MICMAC (Matrix of Crossed Impact Multiplications Applied to a Classification) method is being used as a technology foresight exercise. The findings suggest interplay among variables as government policy, anti-GM protests, impact of legal framework, regulatory framework, institutional framework among others. It also defined the degree and kind of influence/dependence of the factors, providing a lucid picture of the major determinants for the adoption of food GM crop in India. On the basis of the

results, an exhaustive scenario building exercise was conducted to construct various futures on the basis of the current system. The study may equip the policy makers to reach at more meaningful and rational approach towards GM food crops by streamlining the decision making process. The data can be applied for consensus building on various stances and also can help in the prioritisation of the actors and course of action for a better and inclusive result.

Session Organizer:

Mariko Yoshida, The Australian National University

Chair:

Mariko Yoshida, The Australian National University

032. Who are the Publics of Outer Space? Public Interventions and Contestations

12:00 to 1:40 pm
virPrague: VR 10

Who are the publics of outer space? How do spaceflight and research agencies, commercial companies, and advocacy organizations address public subjects in different capacities such as citizens, consumers, or audiences? While national institutions led the development of spaceflight in the last century, today new commercial entities are coming to the fore: wealthy billionaires in particular have assumed the role of speaking on behalf of humanity and its future. In this new technopolitical economy of spaceflight, this panel investigates enduring and emerging technoscientific imaginaries of national or global publics (Welsh and Wynne 2013). We address the relationship between institutional framings of space technoscience and the roles that publics play, for example, by validating, objecting to, or confirming the societal and economic value of scientific research and international cooperation (Mackenzie 2013). The panel also considers how research agencies and institutions recognize public diversity and difference in the context of outer space technoscience, and the extent to which people of colour, LGBTQ, women, and other underrepresented publics are addressed by dominant commercial and public actors when framing the meaning and logics of current and future human activity in outer space. The panel therefore contributes to STS scholarship on public engagement as well as the social studies of outer space.

Participants:

Reassembling the Cosmos: Space Exploration From a Perspective of Space Metal Scavengers *Makar Tereshin, University of Tartu, Institute of Cultural Research*

In the European North of Russia, a hard-to-reach area along the river Mezen in the 1960s became a vantage point for the Soviet Space program to launch satellites to Polar orbits. Several areas of sparsely populated region were allocated as ranges for boosters, which detached from rocket-carriers launched from Plesetsk Spaceport. However, this landscape was well-known to local hunters and it was a crucial part of their environment. The Spaceport's infrastructure was organized without taking it into consideration. Moreover, the areas weren't cleaned up from the rocket debris and hundreds of them accumulated there since the Spaceport started operating. Though, during Perestroika and the consequent collapse of the Soviet Union, the space debris contributed to emergence of space metal scavenging as a way to make a living in the times of crisis, when people had to adjust their life making projects to severe changes. As a part of my contribution to the panel I would like to address an issue of how Space exploration infrastructure could be seen from a perspective of local communities engaged in scavenging of the resources it has brought. Drawing on my experience from a fieldwork in the area, based on participant observation and semi-structured interviews with the scavengers, I will present how the ranges with their space debris, despite of disrupting and polluting the landscape, were re-developed and put into use by the villagers who drew on local knowledges in their practices of space metal scavenging.

Making the Cosmos Accessible: Space Amateurs and Local Publics in Russia *Denis Sivkov, Russian academy of national economy and public administration*

The NewSpace movement, post-soviet nostalgia, and political engagement drive Russian space-obsessed enthusiasts to gain access to the Cosmos. They engage in a wide range of activities: organizing and taking part in popular science events, sharing

large quantities of information and photographs, waging "holy wars" on social media and message boards, and even applying to the "Roscosmos" "open" competition in the cosmonaut corps. Some of these cosmic enthusiasts attempt to crowdfund amateur projects in order to make space research and exploration more accessible for the local public. Russian space amateurs design and launch satellites, launch "mousenauts" into the stratosphere and land them back alive, discover interstellar comets and track state and commercial satellites. These bottom-up initiatives exist outside of national and global public spheres of influence. These amateur projects mobilize utopian and political theories to argue that space exploration is an endeavor available to everyone, not just as a site for state and commercial investment. Amateur cosmonautics has demonstrated a variety of innovative experiments within the cosmic sphere: simple and inexpensive technological design, new and alternative approaches to invention, redistribution of time and work resources, and researching and testing materials and components that might withstand the extreme environments of outer space. Russian space amateurs reveal that cosmonautics and outer space is not just an isolated site for state vanguards or bureaucratic red tape, but that "backyard" amateur space research/exploration is a collaborative exercise consisting of a variety of actors and technologies.

Toy Stories During the Apollo Program Moon Race *John McCamy Wilkes, WPI/retired professor*

The most popular toy for boys in 1966 was action figure Major Matt Mason, Mattel's man on the moon. Sgt . Storm and civilian scientists Doug Davis and Jeff Long were soon to follow. This astronaut team had some very fancy hardware for getting around on the moon (sleds, crawlers and trailers) and a 3 story space base as well as rather specific exploratory and construction missions. They also had to deal with alien artifacts and giant sandworms. In real life, the USSR was doing its first unmanned soft landing on the moon and NASA was struggling in the Gemini program to get the very first space docking and some tethered EVA's done. Mason et al. were already there and had rocket backpacks, though their spacesuits were based on Gemini prototypes. Matt and his buddies were so cool that Mattel's GI Joe did not sell well until the moon landings ended in 1972. The 6-8-year-old kids who played with these toys are 62-64 today, nearing retirement. Significantly, 64-year-old Tom Hanks is working on a movie in which he plays Maj. Matt Mason. I consider this part of an ongoing effort to pass the dream of living and working on the moon to a new generation The children dreaming about the grand adventure of their times, and the engineers working on toys while talking to scientists at JPL, were inventing a possible future. Through Matt we can follow the imaginations of the trail blazers.

Challenging the government space science in USSR: the Complex Amateur Expedition for Studying the Tunguska Meteorite in Siberia *Ivan H. Tchalakov, Dep. of Applied and Institutional Sociology, University of Plovdiv, Bulgaria; Irina Popravko, Laboratory for Social and Antgropological Research*

The paper discusses the early history (1959-1964) of the Complex Amateur Expedition (CAE) for studying the Tunguska meteorite, associated with testing of the hypothesis about the artificial origin of the meteorite (as an exploded extraterrestrial nuclear-propelled spacecraft). CAE is considered as a unique phenomenon that reveals the complexity and versatility of Soviet science and society, beyond the commonly accepted framework of ideologically loaded (binary) notions about science and society in the former USSR. Drawing on D. Raff's "forward-looking approach", we examine the historical evidences in the immediate context of their origin in an attempt to reconstruct the key features of Soviet 'civic society' in late 1950s and early 1960s, and the remarkable place of outer space and nuclear research in it. Applying the framework of actor-network theory (ANT) and other approaches in contemporary Science and Technology Studies (STS), we propose an explanation for the extraordinary fact that the first team to arrive at the meteorite impact area was that of young enthusiasts from the city of Tomsk, eager to test new research methods and technologies, and

not the professional researchers from the Committee for Studying Meteorites of USSR's Academy of Sciences in Moscow. We argue that the analysis of CAE's experience helps us uncover important details about the emergence of breakthrough research practices and science-public interaction in the study of Outer Space here on Earth and a complex and lasting (long-term) endeavor.

Session Organizers:
Richard Tutton, University of York
Lauren Reid, Freie Universität
Chair:
Richard Tutton, University of York

033. The In/Visibility of Value and Relevance in the Evaluation Society 2

12:00 to 1:40 pm
virPrague: VR 11

In many organizations the evaluation of professionals and their work now relies on specific managerial accounting techniques and technologies of making value and relevance visible. Across companies and institutions people (including academics) express unease and critique over the way they and their work are made visible to the organizations and actors on which they effectively rely for their income, future and careers. This panel seeks to bring together empirical and theoretical investigations into the way work and workers in various organizational, professional and socio-cultural contexts are made visible to, and consequently valued by, others and themselves. All contributions pertain to one or more of the following dimensions of what we call the in/visibility of value and relevance: Organizational (in)visibilities: Which and in what way are values made (in)visible within specific organizations, and with what consequences? How do organizational values relate to policy ambitions or individual merit? Professional (in)visibilities: How is value and relevance made (in)visible in specific professions and specializations, and how might this conflict with or otherwise relate to policy, organizational, or individual values, needs and desires? (In)visibility of diversity: What do age, gender and ethnicity mean for the efforts of actors to be(come) visible and valuable within organizations, and what forms of struggle remain invisible within organizational policy discourses on diversity? Papers in this panel session connect these dimensions, and/or bridge the gaps between more policy-oriented studies, critical perspectives, and local empirical investigations into professional cultures, norms and practices

Participants:

The evaluation of academics in the age of global competitions and its unintended consequences for university research *Hee-Je Bak, Kyung Hee University; Do Han Kim, Kyung Hee University*

Under the pressure from the increased social demand for accountability and the growing competition for higher positions in global university rankings, a number of Asian and European universities have recently begun to introduce stronger command systems for promotion and incentive systems based upon quantitative research performance measures. Analyzing a panel dataset comprising each faculty member's publication record for fourteen years and the results of in-dept interviews on the faculty members in a Korean university, this paper discusses how certain evaluation and reward systems of a university have changed not only research performance but also academic cultures and practices. By emphasizing journal publications in SCI(SSCI)-indexed journals which count in the global university ranking tables, the newly implemented evaluation systems significantly increased the number of publications in those journals at the cost of other types of contributions such as teaching, public services, and publications in domestic journals. The costs are beyond what the quantitative indicators show. Epecially newly employed faculties tended not to put a high value on the publication in Korean in domestic journals and public services. In these contexts, the university's implicit call for a division of labor between those who publish in international journals and those who publish in domestic journals may produce a new system of stratification among faculties and put the organization away from social needs. By linking local empirical investigation to the issues of academic cultures and practices, this paper will contribute to the STS discussion over the independence and social values of academic science in rapidly changing

environments.

Clusters of Dissent: Bibliometrics of Closed Research Networks
Jonathan Grunert, SUNY Geneseo

Consensus studies around anthropogenic global warming (AGW) identify a robust rate of agreement among scientists that exceeds 90% (Cook, Oreskes, et al, 2015). This paper concerns articles that reject AGW; that is, it examines published research that does not align with the high rate of consensus that exists in scientific communities. Specifically, I investigate the eighty-two articles that Cook (2013) and Powell (2015) identify as rejecting AGW, regardless of the degree of explicitness. This research utilizes bibliometric data, examining the citation networks from these eighty-two articles, as well as common keywords, the impact factors and disciplines of the publishing journals, and any available altmetric data in an effort to respond to two questions about dissenters: What do we do with them? and What role(s) do they play in research? In this paper, I will argue that these dissenting articles can tell us about the process of researching existing literature for those who defy near-unanimity in scientific expertise. More specifically, I will address the citation clusters that the dissenters rely upon for research support, especially as they reveal closed networks where their research may be difficult to discover.

Understanding Academic Ability through Numbers: Hensachi as a Double Ranking of People and Institutions *Markus Hoffmann, TU Berlin*

Most global university rankings use single numbers to rank universities or departments (Hazelkorn 2015). To arrive at these numerical ranks, different indicators are weighted, calculated and put into relation to each other. While those global rankings operate on a very general level, it has been shown that more targeted rankings have definite effects on both the (future) student body and university faculty/administration (Espeland/Sauder 2007). This paper will discuss a domestic ranking of university programmes in Japan known as hensachi, which represents the difficulty of entrance examinations for the respective programmes. Unlike global rankings (which pride themselves on their sophisticated ranking methodologies) this difficulty-ranking is based on average entrance examination scores of the previous year and depends on an earlier personal ranking of pupils, thus connecting relational rankings of people and institutions in an intimate way (Goodman/Oka 2018). Based on the analysis of interviews with Japanese university students, and guided by a material-semiotic approach (Latour 2005), I will show: 1. How practices deeply engrained in (in)formal school settings and the labour market create the conditions for understanding scholastic ability in numerical terms. 2. That those practices are the reasons for the normalization of a numerical ranking of pupils and universities, despite official opposition to it. 3. That the supposedly representative nature of numerical representations of academic ability is performative; in what is commonly accepted as ability, what counts in education and how young people think of themselves and others – thus proposing certain possible futures and foreclosing others.

Session Organizers:

Jochem Zuijderwijk, Center for Science and Technology Studies, Leiden University, the Netherlands

Tjitske Holtrop, Center for Science and Technology Studies, Leiden University, the Netherlands

Chair:

Jochem Zuijderwijk, Center for Science and Technology Studies, Leiden University, the Netherlands

034. Grassroots Innovation: Hacking, Making, Hobby, Entrepreneurship 1
12:00 to 1:40 pm
virPrague: VR 12

A hallmark of our emerging world is that the general public obtains not only access to modern technologies but also the knowledge, means, and incentives to generate new products and applications from them. While self-made inventors populated history, do-it-yourself and technological explorations outside big companies, government, and academia nonetheless become a social movement with conspicuous collectives, information channels, and media coverage. Today, hackers work on open-source, free-access software and firmware for fun and profit. Makerspaces spread everywhere for the cause of sharing manufacturing, participatory design, recycling and reuse, nurturing start-ups, or community building. Made-in-garage is a common myth in high-tech. "Mass innovation" or "STEM for everyone" is promoted by the states around the globe. In this panel, we welcome various approaches and perspectives to make sense of this phenomenon of grassroots innovation. We ask: What are its connections to the longstanding traditions of technical hobbies? Which organizational and managerial platforms do grassroots innovators introduce that influence the development of new technologies? What is the nature of the tension between non-profit and commercial, between amateur and professional, in these activities? How do the hackers' and makers' political actions intertwine with their technical innovation? While hacking and making are seemingly global, what are their major differences in different countries and regions, especially between the affluent North and poor South? How does grassroots innovation reconfigure the current technological landscape? What are the roles of the state and capital in shaping grassroots innovation, and how is such shaping grappled from below?

Participants:

How to push back hegemonic search? Analyzing alternative imaginaries in search engine design and their potential to contribute to more open digital futures *Astrid Mager, Austrian Academy of Sciences*

Many digital technologies are driven by big US-American technology companies and their innovation rhetoric nowadays. CEOs like Mark Zuckerberg (Facebook), Elon Musk (Tesla) or Sundar Pichai (Google) have become important figures in shaping artificial intelligence, self-driving cars and other "smart" applications. Their imaginaries of future society have become deeply embedded in technology, social practices and people's minds. They spread through mass media, public debates and policy lobbying, but also through digital devices, applications and business models. As they settle in technology, infrastructure and daily routines they unfold their capacity to redefine the very nature of privacy, democracy and the self. They undermine the "capacity for democratic self-government" (Cohen 2013: 1913). But how can these hegemonic imaginaries be pushed back? How can alternative digital futures emerge and take shape? And how can they grow and gain ground in technology, social practices and wider society? These are the questions to be answered in this talk by focusing on alternative search engines and the future visions driving them. Drawing on three empirical case studies (Open Web Index initiative, open source search engine YaCy/SUSI.AI, and privacy-friendly search engine StartPage) I will analyze "vanguard visions" (Hilgartner 2015) articulated by the three developer teams, how they get embedded in software practices and technology, and their potential to grow into broader "sociotechnical imaginaries" (Jasanoff and Kim 2009, Jasanoff 2015). Which strategies and pathways the three projects follow to spread and stabilize their "vanguard visions" through their developments and public performances will be analyzed. In this analysis, a particular focus will be put on the way "openness" is envisioned and embedded in sociotechnical arrangements and what differences occur. Whether these alternative visions and technologies have the potential to spread beyond their own communities and grow into broader, collectively held "sociotechnical imaginaries" with the capacity to contribute to more open, self-determined digital futures and what requirements would be needed to support this process will be finally discussed. References: Cohen JE (2013) What privacy is for? Harvard Law Review 126: 1904-1933. Hilgartner, S. (2015) Capturing the imaginary: Vanguards, visions and the synthetic biology revolution. In Hilgartner S., C.A. Miller, R. Hagendijk (eds): Science and Democracy: Making Knowledge and making power in the biosciences and beyond. New York: Routledge: 33-55. Jasanoff, S. (2015) Future Imperfect: Science, Technology and the Imaginations of Modernity. In S. Jasanoff and S.H. Kim (eds) Dreamscapes of Modernity: Sociotechnical Imaginaries and the Fabrication of Power. Chicago and London: University of California Press: 1–33. Jasanoff S and Kim S.H (2009) Containing the Atom: Sociotechnical Imaginaries and Nuclear Power in the United States and South Korea. Minerva 47: 119–146.

Uplifting Technological Appropriation: Reflecting on the integration of sociotechnical ideas. *Martin Andrés Perez Comisso, SFIS - Arizona State University*

In this study, I focus on the intellectual, methodological and ontological explorations between 2016 and today in the space of a generative and integrative framework in technology appropriation. Towards cases of media technology, this paper integrates the notion of technological appropriation as a sociotechnical-centered process, using the rational model of technological appropriation. (Quezada & Perez Comisso, 2016). This concept hasn't been central to conversations of science and technology studies but has been explored for some scholars in the field in recent years (e.g Eglash, 2004; Odumosu, 2009). Technology appropriation is understood "not just about a user's ability to effectively use technology but also how that technology is embraced and absorbed into the individual's lifestyle to meet specific needs." (Adjin-Tettey & Mbatha, 2019), and to that extent, allows us to situate technological experiences in simultaneous and diverse expressions. Becoming part of a socio-technical system is an open question that can be theorized through technological appropriation. I use the case of an offline digital library to operationalize the rational model of technology appropriation. Based on designers' and users' visions of technology, technological appropriation may allow the inclusion of marginalized voices on the configuration of social imaginaries of technology. In this presentation I make emphasis on which epistemic opportunities and limitations the STS communities have in front of the emergence, resistance and debate of new theoretical approaches for sociotechnical systems, the relevance of new theories for non-expert communities, the role of general claims and representations in the validation and rebuttal of this case, and reflect about the relations with different evidences from the field. Selected References: Adjin-Tettey, T. D., & Mbatha, B. (2019). Digital Natives' Appropriation of New Media Technologies: A Survey of Literature. Covenant Journal of Communication, 6(2). Eglash, R. (Ed.). (2004). Appropriating technology: Vernacular science and social power. U of Minnesota Press. Odumosu, T. B. (2009). Interrogating mobiles: A story of Nigerian appropriation of the mobile phone (Doctoral dissertation, Rensselaer Polytechnic Institute). Quezada, C., & Comisso, M. P. (2016). De telegrafía sin hilos a radiodifusión: Apropiación tecnológica de la radio en Chile, 1901-1931. Hib: Revista de Historia Iberoamericana, 9(1), 103-125.

Innovating at the forefront of the hardware/software collision *MC Forelle, Cornell University*

Contemporary automobiles are no longer purely mechanical artifacts. For decades now, cars have been hybrid devices; mechanical and electronic, analog and digital. Consequently, the modern car exists at the intersection of many different regulatory paradigms, including those administering transportation infrastructures, consumer product safety, intellectual property, and cybersecurity. The digital revolution has changed more than just the systems within a car. It has also massively impacted the business of selling parts. The internet provides automotive parts manufacturers with a variety of platforms for marketing and selling their products, as well as new ways of hosting the troubleshooting communities that often pop up around technical products. For smaller and newer manufacturers, these are important opportunities for establishing a strong and loyal user base. For agencies like the Environmental Protection Agency enforcing federal law, and antagonistic original equipment manufacturers monitoring for possible intellectual property infringements, these provide new means of surveillance. This regulatory gauntlet is a significant burden for emerging aftermarket parts manufacturers. In this presentation, I explore grassroots innovation at the forefront of the software/hardware collision. Using qualitative methods, I reveal how automotive aftermarket parts companies, and their representative organizations, navigate the challenges of innovating in a shifting regulatory landscape. These groups rely on word-of-mouth to share information on how to market new products without running afoul of federal agencies, pour institutional resources into professional education courses, and shape the discourse within their industry to organize an otherwise loosely connected community into a force for collective action.

Session Organizer:
Chen-Pang Yeang, University of Toronto
Chair:
Chen-Pang Yeang, University of Toronto

035. Race and Biomedicine Beyond the Lab Panel 1: Health and Disease
12:00 to 1:40 pm
virPrague: VR 13
The panel builds on and expands the work of the emerging international network gathering around the theme of Race and Biomedicine Beyond the Lab (RaBBL), exploring how individuals and groups in wide-ranging contexts reimagine and seek to reconfigure racial futures. This panel (part one of a two-part panel) centers the racialized body in the construction of disease in a global context (Australia, Tanzania, India, United Kingdom, United States). From the creation of microbiome science to the "pathogenic racialilzation" highlighted in the fast moving and current pandemic caused by the Coronavirus—race, nation, and ethnicity are deployed in this panel to make sense of biomedical infrastructures and systems of care.

Participants:

Doing Difference in Indigenous Diabetes Care *Maja de Langen, University of Amsterdam*

Race and biomedcine are mobilised in the very structuring of the Australian healthcare system, through the physical separation of Indigenous and non-indigenous health services. This can be understood as a form of justice, a reckoning with structural violence of healthcare institutions, and an assertion of the rights of Aboriginal Australians to safe and accessible healthcare. Yet it is also an assertion of the alterity of Indigenous illness, recognised and approached predominately through mainstream biomedical practices that strive for sameness in health outcomes by differentiating care. This paper attends to the enactment of 'Indigenous' diabetes in such differentiated care practices. Through ethnographic research in Aboriginal Community Controlled Health Organisations (ACCHOs), as well as informal spaces of everyday care, I explore how Indigenieity is enacted in diabetes care practices. How are populations and individuals enacted through the prism of illness, and how is illness enfolded in notions of Indigeneity? In practice, the mantra of "cultural difference" often replaces discussion of race. "Cultural awareness trainings" teach practices appropriate to Aboriginal healthcare and "cultural revival" programs are developed to improve biomedical markers of health. Meanwhile, in sometimes hushed tones, healthcare professionals point to biological differences to account for the unequal toll of diabetes on Aboriginal bodies. They recount numerous theories, asserting difference, yet uncertain of how to explain it: "there just has to be something different, genetically maybe, it's obvious isn't it?". In support groups with Aboriginal patients, difference is also often grappled with: "white fellas don't get diabetes like us". This paper explores such doings and discourses of difference, and how they are mobilised within and beyond healthcare.

Genetic Afflictions And The Other Within The Caste System: Situating Sickle Cell Disease In India *Sanghamitra Das, Arizona State Univerity*

In this paper, I use the concept of the other as a synthesis of genetic affliction and caste subalternity in India. I discuss how beliefs about otherness derived from the ancient caste system in India are corroborated by the genetic basis of sickle cell anemia creating a biomedical landscape wherein affected individuals struggle to articulate their demands for medical treatment. In India, sickle cell anemia has historically been localized in the indigenous tribes of central India. With time, the disease has found an increasing incidence in other caste groups in the region. Based on a set of five interviews in the state of Chhattisgarh in central India, I seek to draw an initial account of non-tribal experiences of sickle cell disease as a genetic affliction in India. I discuss how the sickle cell disease is framed as a "tribal" disease in India and how the inadequacy of biomedical infrastructures needed for treating sickle cell patients in the region is linked to this genetic othering. While the Indian scientific community is rapidly embarking on genetic research to find possible genetic cures and genetic preventions for the condition, existing patients

in such resource-constrained conditions continue to cope with limited treatment availability. These conditions have led to an articulation among the communities of patients and physicians for a need to decouple the disease from the traditional caste hierarchy. I argue that this de-coupling is a way of reformulating identities rooted in genetic conditions in order to seek legitimacy as biomedical subjects in the eyes of the Indian state.

Heritable Space-Time, Genetic Sensibilities: Sickle Cell Disease as Scaffolding for Racialization in Post-colonial Tanzania *Rebekah M. Ciribassi, Cornell University*

Sickle cell anemia offers a uniquely potent example of the entanglement of 20th century American race-thinking and biogenetic science (Tapper 1999; Wailoo 2000). Scholars have demonstrated how the political histories of race in the United States have shaped the conditions of biomedical possibility for the enactment of sickle cell disease in the 21st century (Rouse 2009). Less has been said, however, about how biogenetic knowledge-making participates in post-colonial contexts of race and racialization beyond hospitals and laboratories. This question is particularly relevant in Tanzania, where anti-racialism is central to the post-Independence, nationalist ethos. Drawing on over two years of ethnographic research in homes across Tanzania, I consider the life of sickle cell diagnosis beyond the particular confines of clinical practice, and question how the rising prioritization of this genetic disease intervenes in particular Tanzanian extra-clinical and mundane relations of bodily difference. I argue that the biomedical technologies of sickle cell disease mobilize certain logics of spatio-temporality and sensoriality of the body, which in turn lend themselves to practices of racialization. These material engagements with the body are carried into the socio-political contexts beyond laboratory or hospital walls, intervening in both anti-colonial and nation-building discourses. Therefore, it is not necessarily the categories of Western race that are reproduced through sickle cell disease care, but rather techniques for racialized bodily knowing that become imbricated with locally-relevant relations of bodily difference. This paper will contribute insights on the new turn toward genetic medicine in Africa, and its relation to post-colonial techniques of racialization.

Pathogenic Racialization: Mobilizations Of Race And The Production Of Ignorance During The Coronavirus Outbreak *Maggie Mang*

Concerns and, sometimes, outright paranoia and panic, over coronavirus, otherwise known as COVID-19, have occupied the attention of media, governments, and people in recent months. Racialized fears over dangerous "carriers" have revealed themselves in orientalist media headlines, financial setbacks for Chinese-associated businesses, and even violence. As Priscilla Wald (2008) has argued, narratives of contagion significantly influence trajectories of and responses to outbreaks, and can often either relieve or shore up ideas of a racialized other. In these ways, the proximity of race and contagion intersects with longer historical patterns of demographics and locales.   In this paper, I focus on two dimensions relating to the recent coronavirus outbreak. First, I analyze the ways in which race and its proximity to infection become mobilized by broader stakeholders within public spaces such as digital platforms and everyday locales. I highlight the ways in which certain deployments of race attempt to move towards a type of "pathogenic racialization," which have implications for how science is then done. Secondly, drawing on Shannon Sullivan and Nancy Tuana's (2007) work on how epistemologies of ignorance function in relation to race, I further analyze how certain productions of ignorance as related to risk end up couching (everyday) prevention strategies in ways that assume contours of race, ability, and class. Pulling together insights from science, critical race, and disability studies, I ask the question: how does demographic thinking during outbreaks implicate the mobilization of "race" as a category outside the laboratory? Works cited: Sullivan, Shannon, and Nancy Tuana, eds. Race and epistemologies of ignorance. Suny Press, 2007. Wald, Priscilla. Contagious: cultures, carriers, and the outbreak narrative. Duke University Press, 2008.

The Microbiomisation of Race: (Individual) Capital, Food

Cultures and Microbial Embodiment *Andrea Núñez Casal, University of Oxford, UK*

Drawing on ethnographic fieldwork with microbiome scientists in the US and the UK and an analysis of scientific publications and the microbiome online community, this paper shows how the individual dimension of human microbiome science is sustained by microbial DNA data from human populations, and gains meaning through informal online networks of microbial-related evidence (i.e. blogs, fermentation, probiotic and other microbial consumer markets). By correlating certain microbial species and diversity and hunter-gatherers, ideas of race, nation, and ethnicity become 'microbiomised' (Núñez Casal, 2019). Unlike other biological-social interplays—such as the personification of cells, by which biomedicine writes and speaks about cells as if they were interchangeable with persons (Martin, 2006)—in the process of microbiomisation, the 'social' (i.e. lifestyle, cultural habits, ritual, traditions, local milieus) is the main element that animates scientific research on microbes. Bioprospecting microbial 'populations' is a key element of the processes of microbiomisation, Yet, human microbiome science, as part of postgenomics, does not only operate at the level of populations (Fox-Keller, 2010; Hinterberger, 2012),nor does it only operate on the individual via personalised medicine projects (El-Haj, 2007; Wade et al., 2014). By contrast, this paper demonstrates that biomedical interventions aimed at defining a 'healthy' microbiome and optimising health through the human microbiome are articulated upon (1) the microbial genetic makeup of non-Western(ised) communities, societies, and locales; and (2) individual economic, social, and cultural capital in neoliberal societies via new articulations of food cultures, embodiments, and subjectivities around interspecies health and disease.

Session Organizers:
  Vivette Garcia Deister, UNAM
  Nadine Ehlers, University of Sydney
  Amade M'charek, University of Amsterdam - AISSR
  Anne Pollock, King's College London
Chair:
  Melissa Creary, University of Michigan, School of Public Health

036. **Unpacking the Foundations of the Current Biometric Moment: Infrastructuring Biometrics Past and Present**
12:00 to 1:40 pm
virPrague: VR 14
Participants:

Seeing Through the Face: Understanding Theories and Practices in Facial Recognition Systems Design *Benedetta Catanzariti, Science, Technology and Innovation Studies, The University of Edinburgh*

Over the last decade, the applications of facial recognition have become common in a wide range of sensitive domains, such as predictive policing, immigration control, access to insurance, employment, social benefits, and credit. Moreover, machine learning techniques have enabled a shift from the indexical nature of recognition technologies (the necessity to connect a face to a unique identity) to a mode of classification and knowledge production (arguably, the ability to predict someone's behaviour or personality type). In particular, the automation of emotion classification claims to provide an 'objective' and 'scientific' framework for the conceptualization of affective behaviour. However, that a systematic analysis of facial features could uncover something about the core truth of the individual dates back to the 19th century invention of photographic technologies and the development of the theory of physiognomy. Indeed, the categorization of the face through numerical measurements is part of a project of social classification that has its roots in positivist criminology. In this paper, I will explore the epistemological lineage that connects modern deployments of facial recognition with physiognomic theories. I will discuss Alphonse Bertillon's (1853-1914) and Francis Galton's (1822-1914) archival effort to establish a 'science' of identity through detailed anthropometric measurements, and its relationship with

the theories and methodologies underpinning the design of modern facial and affect recognition technologies. Finally, I will inform my argument with data collected in the patent analysis of some affect recognition commercial applications, and semi-structured interviews conducted with professional developers.

Identity and Identification in the Age of Selfies and Automated Face Recognition – The Case of Clearview AI and Fawkes
Heewon Kim, Korea Advanced Institute of Science and Technology (KAIST)

What are the meanings of identity and identification when using the technologies that automate the process of recognizing faces from images shared online? How does identification work when the technology is mobilizing the resources of personal photos in the Age of Selfies? Based on published interviews, newspaper articles, and academic papers, this paper analyzes the sociocultural underpinnings regarding two technologies: Clearview AI for face recognition and Fawkes for face inoculation, in the world where myriad of photos are being shared on social network services. When a user uploads an image of any person to the Clearview AI system, it recognizes and identifies the face by gathering public photos and providing the webpage link for each photo of that person. The public photos are scraped from social media and network platforms such as Instagram, Facebook, and Youtube, where people share parts of their lives to construct their exhibited identities. In resistance to this algorithmic gaze, cloaking systems such as Fawkes are being developed. Fawkes inoculates photos by making pixel-level changes that are imperceptible to human eyes. The system protects individuals' faces in the image from face recognition systems, making them safe to upload on social media. Examining the workings and on-going conflicts on the usage of Clearview AI and Fawkes, I show that the relationship between identity and identification is reshaped by social network platforms and the technologies that either use or disable the algorithmic gaze toward digitalized faces.

Speaking likeness: technologies of vision in everyday practices of border control in Europe *Ildiko Plajas, University of Amsterdam*

In the era of big data and sophisticated surveillance technologies, European borders are increasingly regarded as high tech and automated. Drawing on fieldwork conducted in September 2017 at the Romanian–Hungarian border, an inter-EU Schengen border, I explore how analogue techniques of the body, paper and pen, hands and vernacular attention facilitate everyday border police work. These techniques bring along century old histories of sorting and categorizing groups of people. The visual comparison of faces with passport photos for instance is still referred to by border police agents as the method of 'spoken portrait' with direct reference to the early days of bertillonage. In this paper I also propose to think beyond the realm of the visual and attend to other sense such as tactility, sound, smell and different devices as trained techniques of the body that become instrumental in sorting people and safeguarding or halting their movement. Vision thus is neither the only nor the dominant technique of the body used in border police work. I suggest that opening up the study of sophisticated surveillance technologies to include analogue and bodily techniques, is a way to address how historical ways of sorting people are folded into (M'charek 2014) current bordering technologies.

Session Organizers:
Michelle Spektor, Massachusetts Institute of Technology
Ranjit Pal Singh, Cornell University
Chair:
Ranjit Pal Singh, Cornell University

037. Making science in public: 3
12:00 to 1:40 pm
virPrague: VR 15
Participants:

Innovation Communication – bridging Science Communication and RRI *Maja Horst, Technical University of Denmark - DTU; Alan Irwin, Copenhagen Business School*

There is now a large literature addressing matters of responsible research and innovation (RRI), including an extended discussion of how best to formulate and enact this multi-dimensional concept. Very importantly, however, this literature tends to under-emphasize the issue of communication. While some address the need for transparency and open dialogue (Stilgoe et al, 2013; Pidgeon et al, 2013), we argue that there is a need for a much broader idea of 'innovation communication' (Plesner & Horst 2012; Davies & Horst 2016) in RRI. 'Innovation Communication' should be defined as an integral part of the innovation process, which aims at generating support for the development of an innovation such that it can become a stable part of the emergent socio-material reality. This includes explicitly developed communication strategies (as in the SPICE case, see Stilgoe et al 2013) but also more implicit organizational messages and even the innovation process itself. Seen in this way, science communication is a significant and central element of the entire innovation process and therefore also of RRI. As we will argue, this has important consequences for the theory and practice of responsible research and innovation.

"It is also a little bit liberating": Scientists as activists *Sarah Maria Schönbauer, Munich Center for Technology in Society, Technical University of Munich*

The environmental movement has grown steadily over the last two years. As part of an increasing proclaimed environmental urgency, that largely focusses on climate change, pollution or the decline of species, scientific expertise has (re)gained an important public role. This public role is tangible for example in the widely shared phrase "believe the scientists". At the same time, many environmental scientists started to engage in protests, such as when joining the UK-founded "Extinction Rebellion", through participating in "Fridays For Future" protests or when building the "Scientists For Future", an initiative founded in Germany. Scientists not only engage in protests as individuals, they also publish collective comments in scientific journals or publish pictures of solidary actions on the homepages of scientific departments. I argue that this connection between science and activism is indicative for a science-society relation which is potentially under revision. Thus, I will analyze how the role of scientists is negotiated when environmental scientists talk about their involvement in activism. Based on interviews with environmental scientists engaged in protests, I ask: how do they self-identify as scientists when involved in activism? How do they emotionally relate to their professional work through activism? And how does this involvement have an impact on research? By discussing the public appearance of scientists and their experiences as scientist-activists, I will provide insights into the affective regimes of living and working in academia and critically reflect the role of scientists in public.

The Science Gallery Effect: Art-Science Exhibitions and the Culture of Science *Autumn Brown, Science Gallery Dublin*

Exhibition spaces featuring the work of both artists and scientists allow audiences to examine representations and performances of the future of scientific research and technological innovation. They also present an opportunity for participants to shape and react to the value systems that are often invisible in the realm of academic and industry research. These exhibition spaces are not merely curated halls of examples where science has made an instrument of art or vice versa. They are places which foster relationships and facilitate dialogue between communities that are often separated. This project is interested in examining the role of art-science exhibition spaces in reflecting patterns of the scientific and technological imagination as well as impacts on the current and future culture of scientific research. In places like Science Gallery Dublin where visions of the future can be shared, constructed, and contested, what kind of impacts do we see on the identity and attitudes of our "expert" collaborators and our visitors? Where do their values meet and diverge? What stories do they take back with them to their professional and personal communities? This proposed research will employ the use of an inductive qualitative methods approach. In order to provide the project with contextual and nuanced data, and to capture the breadth and depth of impact, a multi-methodological approach will be employed. Methods of data collection include SySTEM2020 map data analysis, visitor zine creation (artefact creation as both data and method) triangulated with quantitative

surveys. Data will be collected during the national tour of the PLASTIC exhibition to areas of low STEM engagement across Ireland, and the static exhibitions of INVISIBLE and BIAS in Science Gallery Dublin.

The Trickle-down of Political and Economic Control: Notes on the Organizational Suppression of Environmental Researchers *Sampsa Saikkonen, University of Helsinki, Department of Social Research; Esa Tapani Väliverronen, University of Helsinki*

In many countries attempts to suppress scientists as public experts have become more prevalent. In democratic countries, particularly environmental scientists have been subjected to control. Previous literature of suppression of dissent and censorship has made these efforts visible. However, the structured nature and mechanisms of suppression of researchers at the organizational level have remained less studied. This paper aims to address this gap in research. It is based on a qualitative analysis of ten in-depth interviews with environmental researchers being employed or engaged in government science. The analysis is influenced by a power-theoretical perspective on the suppression of science. By analyzing the interviewees' accounts, it scrutinizes the different ways in which political and economic control by external actors can trickle-down in research organizations affecting individual researchers. The focus is especially on the interlinking of political and economic influence of external actors with different forms and practices of control at the organizational level. Three forms of such trickle-down are identified and discussed: internalization of political and economic control, external influencing and bureaucratic control, and economic/interest group influence in research organizations. We argue that these forms of control function as a filtering layer of suppression between political and economic control and individual scientists out of the public eye. Thus, there is a system power in action, which should be understood in discussing the current problems of public expertise.

Session Organizer:

Sarah Davies, University of Vienna

Chair:

Noriko Hara, Indiana University

038. Veterinary anthropology - session 2

12:00 to 1:40 pm
virPrague: VR 16

Over the last 5 years, the sub-discipline of veterinary anthropology has emerged in the wake of ethnographic and historical studies on zoonotic diseases, such as avian influenza, swine fever, rabies and the plague. Veterinary anthropology has been partly informed by Science and technology studies, and this panel aims to promote even closer synergy between these fields by engaging two pivotal questions: How is the body of veterinary knowledge generated? How does it travel from the centres of scientific knowledge production into bodies of normative practices nested in geographical, socio-cultural and political contexts? These questions invite panellists to explore the relations between humans, animals and techniques in the different settings where humans care for animals and anticipate cross-species disease transmissions. Biosecurity interventions (culling, vaccinating or monitoring animals) requalify borders between territories and between species, building new collectives of humans and non-humans. We encourage investigation of different kinds of agency involved in these borderlands, be they those of pathogens or animals, of animal breeders or animal activists, and most importantly the agencies of vets as necessary and often invisible intermediaries in contemporary interactions between humans and animals. Recognizing attention to zoonoses as a productive entry-point into veterinary anthropology we simultaneously invite panellists to engage what often stays in the shadow of "one health" concept including questions such as: Can animals be considered patients? Do they consent to their treatment? Do they evaluate the interactions that take place around their health? Who is authorized to distinguish a normal animal from a pathological one?

Participants:

Disciplining and domestication: dogs, science and the Anthropocene *J. Bernardo P. Couto Soares, University of Amsterdam - AISSR*

In my research project, I approach the intersections between human-animal health and Medical anthropology, by conducting fieldwork in an animal shelter. This institution emerged with the development of the modern city, in the early nineteenth century, as the bodies of animals became the focus of public health policies, animal welfare practices, and veterinary medical procedures. And inside of it, the veterinary doctor takes a pivotal position in vetting animal health, but also indirectly shaping animal's bodies, through the neutering, vaccination, and placement of an electronic identification chip in their neck. In the animal shelter, I explore how are human/animal relations co-created within the daily intra-actions, within their practices of, for example, dog training, feeding rituals, space division, and medical procedures. The interactions between human animals and nonhuman animals within these institutions constitute a material and discursive transformation of the animal's body, language, and behavior. This academic work contributes to the STS field by its innovative application of posthuman applied linguists in the conceptualization of human and animal relations, by stipulating that the animals perform, instead of behaves, in their acts and "speaks" through body postures, facial expressions and barking, which is translated by the human. This is a hybrid co-existence in which the purpose is to bring the stray, captured, animal to be a more docile, domesticated individual in order to become seen as "potentiality adoptable".

Hinders To Smallholder Livestock Production In Northern Uganda: Moving Beyond The Threat Of Animal Disease *Anna Arvidsson, The Swedish University of Agricultural Sciences; Klara Fischer, Swedish University of Agricultural Sciences*

Livestock disease creates uncertainty in animal husbandry, risk for losses and potential human health threats. We report findings from four months of ethnographic field work in Northern Uganda 2019, aiming to provide a comprehensive picture of key challenges in livestock production as perceived by smallholders and local veterinarians respectively. In contexts of high poverty and marginalization, such as the one studied here, animal diseases are both more prominent, and more difficult to diagnose and control. Thus, finding ways to prevent and cure livestock diseases in the contexts of the poor is an important development challenge. We draw on the concept of embodied objectivity to emphasize how all knowledges are relational and intertwined in their context and material circumstances. Results indicate that diseases cause significant negative material impact, and embodied stress for smallholders but at the same time that diseases are not conceptually separated out from other problems in livestock production. Jealousy and theft were grouped together with disease, and ranked equally or higher than specific symptoms of disease. Despite officially having responsibility for supporting the smallholders studied, local veterinarians are largely inaccessible to smallholders. These form an epistemic community with veterinary researchers and bureaucrats framing specific animal diseases distinct and decontextualized problems with specific solutions. As a result they also frame smallholders embodied objectivities as false. If veterinary knowledge rarely reaches smallholders who live in the shadows of scientific knowledge production, the question we may ask ourselves then is; for whom is the veterinary knowledge produced?

Towards A New Ethics Of Farm Veterinary Care: Exploring The Intersection Between Veterinary Science, Technologies And Farmed Animal Welfare *Camille Bellet, University of Liverpool; Lindsay Hamilton, University of York; Jonathan Rushton, University of Liverpool*

In this paper, we explore how the socio-cultural and political context of veterinary science influences knowledge production and the management of animal chronic diseases in farming. We engage with the concept of 'freedom' to ask whether veterinary science supports European animal welfare policy, particularly in relation to animals' rights of 'disease freedom' in farming. We argue that, within current economic regimes shaping animal health research and the food industry, the health of - and, by consequence, the veterinary care for - farmed animals becomes a means of productivity growth and economic profitability, rather than a vehicle for farmed animal welfare. Our study draws on a documentary analysis and in-depth qualitative interviews with

farmers, veterinarians, scientists, policy-makers, and industry actors of cattle, pig, and poultry farming in Europe. The study is underpinned by science and technology studies perspectives on veterinary medicine, one health, and animal ethics and experimentation. We expand and contribute to this literature in two ways. First, by focussing on the field of animal chronic diseases that are non-transmissible to humans. We argue that these diseases are overlooked compared to zoonoses but are equally worthy of attention. Second, by refining the conceptualisation of 'one health' to include the wellbeing of humans and nonhumans alike, whether they be farmed animals, professionals and consumers in the particular context of food and agriculture.

Biocultural species: Islam, meat science, and animal stress in Malaysia *En-Chieh Chao, National Sun Yat-sen University*
Studies of laboratory practices from the past have engaged in both ethnographic and historical analysis, yet efforts to situate them in a dialogue with "the ontological turn" of anthropology remain scarce. This paper narrates a short history of how Malaysian scientists approach the issue of animal welfare in light of the triple demands of the halal meat trade, international journals' review, and animals' responses in uncharted realms. Featuring the Halal Product Research Institute at University of Putra Malaysia, its scientists, and the animals they study, I explore how and why Malaysian scientists have shifted the focus of experiments from insensibility (to feel pain) to an objectification of pain and stress, while advancing unique knowledge about farm animals through Islamic and scientific lenses. In such a complex process of scientific inquiries and human-animal interactions, I argue that farm animals are biocultural species in at least two senses. First, they have come to be understood by their responses to scientific experiments that have explicit or implicit cultural agenda. Second, their bodies are not only the living materialization of long-term breeding and standardization across continents, but also the assemblages of heterogeneous networks. As animals' responses to experiments influence the scientific advisers of religious scholars who issue fatwas to determine the existence of the meat trade with Australia and New Zealand and the slaughtering methods they use, the mutable boundaries of laboratories also bring humans, farms, slaughter houses and dinner tables all into an enormous biocultural habitat.

Session Organizer:
Frédéric Keck, Laboratoire d'anthropologie socialem - CNRS
Chair:
Ludek Broz, Institue of Ethnology of the Czech Academy of Sciences

039. Governing Reproductive Bio-economies: Policy Frameworks, Ethics and Economics 1
12:00 to 1:40 pm
virPrague: VR 17
Reproductive bio-economies, i.e. economies that are built and function around assisted reproduction and reproductive tissues, cells and processes, are largely consolidated economies, which have seen considerable growth in terms of treatment cycles, technologies, revenues, numbers of actors, countries and stakeholders. Since the first IVF birth in 1978, reproductive bio-economies have expanded to include: IVF clinics, legal firms, gamete donors and surrogates, intermediaries and agencies, gamete and embryo banks, investment funds, research institutions and public health care centres, in a global network worth billions of Euros worldwide. Amidst this globally interconnected expansion, questions about the policy and governance of reproductive bio-economies become a matter of considerable interest. A consideration of regulatory systems that govern reproductive technologies raises questions about how bio-economies emerge within different national and supranational contexts, how and if they challenge existing governance arrangements and how existing or new policy frameworks contribute to the re/shaping of bio-economies. An exploration of the regulation of reproductive bio-economies allows for improved understanding of how "moral regimes directed towards reproductive behaviours and practices are fully entangled with political economic processes" (Morgan & Roberts 2012). Such an exploration allows consideration to be given to the distribution of actors and affects within different moral frameworks and regulatory formations.

Participants:

Alignments of State and Biomedicine within the Context of Reproductive Genetic Risk Governance in Turkey *Maria Kramer, London School of Economics*
The governance of reproduction has undergone significant changes with the relatively recent rise of new technoscientific modes of molecular-level intervention into vital processes. These ongoing transformations in the management of reproduction are well captured by "biomedicalization" theory (A. Clarke et al. 2010) according to which the growing salience of technoscience in biomedicine has given rise to new modalities of governing health and illness which are closely interlinked with the emergence of a new global biopolitical economy of health (care). While highly insightful for tracing "shifting political rationalities of reproduction" (Morgan/Roberts 2012), biomedicalization theory has paid less attention to the continuing salience of the state in the management of health. Focusing on alignments between biomedicine and the state within the context of reproductive genetic risk governance in contemporary Turkey, this paper seeks to complicate the notion of the state being "undermined" by expanding private interests. Based on PhD research data gained from an analysis of Turkish government policies and qualitative interviews with Turkish geneticists, it will explore mandatory premarital genetic carrier testing and genetic research practices in Turkey as two instances demonstrating complex entanglements of state and biomedical infrastructures. These entanglements not only point to a shifting landscape of reproductive governance marked by both a transformation and perpetuation of unsettling legacies of state intervention into family making and reproduction; they also reveal a state which is far from receding but rather emerging as a crucial driver of biomedicalization, reinforcing while rendering more sublime its hold on the family and reproduction.

Egg vitrification as routine: new challenges for European governance of reproductive bioeconomies *Vincenzo Pavone, Consejo Superior Investigaciones Cientificas (CSIC); Nicky Hudson, De Montfort University; Cathy Herbrand, De Montfort University*
Assisted reproduction techniques (ARTs) have changed the global reproductive landscape, transforming the scope of human reproduction, and IVF with third-party oocytes represents one of the fastest growing treatments. Due to egg vitrification, cross-border storage, shipment and trade of human eggs are now routine practice. This has a remarkable impact on egg donation, making it possible for donors to donate to women who are far from them in terms of place or time, for cryopreservation makes their use in the future possible, departing from the traditional one-to-one donor-recipient relationship. Scholarly debate has extensively discussed the ethical implications of egg donation, the variety of motivations mobilizing egg donors, and how egg donation contributes to these burgeoning reproductive bioeconomies. The complex interaction between the opportunities opened by as egg vitrification and the governance of egg donation has been relatively unexplored, especially in European comparative terms. Drawing from interviews with fertility professionals in the UK, Spain and Belgium (EDNA Project, ref. ES/N010604/1), we outline and discuss the multiple ways in which not only the relationship between donors and recipients, but also the existing business models and the related system of governance and regulation, are being re-shaped and re-imagined in the context of vitrification. As a result, egg vitrification represents an opportunity for STS inspired and political economy studies to refine their appraisal of bioeconomies in general and reproductive bioeconomies in particular.

Reproduction at the Intersection of Global, Regional and National Contexts: Challenging Reproductive Governance in Turkey *Safak Kilictepe, Kirsehir Ahi Evran University*
It has been more than a decade since Chairs Thompson (2005) suggested the term 'ontological choreography' to explain the various facets of individuals' involvement in reproductive technologies that include bio-economy. Scholars have come to argue that such choreographies are shaped within regional,

national, supranational contexts (Murphy 2012; Franklin and Inhorn 2016; Collier and Ong 2005). Although reproductive experiences are situated within socio-economic and political environments that individuals live in, its situatedness also depends on global bio-economies. Turkey – as one of the countries where the reproductive technologies market is widely used by its citizens and citizens of other countries – is an example of how local reproductive choreographies are the results of national and global connections. Reproductive market is strictly regulated by national laws with Islamic principles in Turkey. Regulated reproductive technologies are part of reproductive governance and of the State's population politics through which desired citizens are imagined and operated by the State. Yet, the reproductive governance, which is the result of global connections, takes an uncalculated shape in Kurdish populated area where the governance is challenged and re-formed. I show, in this paper, how ethnicized women's reproductive experiences stand at the intersections of global, regional and national bio-economies, and challenge reproductive governance. This paper draws from my long-term doctoral dissertation research on reproductive experiences of ethnicized Kurdish women living in Turkey. The research was carried out for seventeen months between 2016 and 2017 in the socio-culturally diverse capital Ankara (for five months) and the Kurdish populated metropolitan city Diyarbakır (for 12 months).

The story of one post-Soviet success: How Ukrainian fertility industry prospers, when everything else falls apart *Polina Vlasenko, Indiana University*

The "export"-oriented ARTs market in Ukraine is rapidly growing, while remaining largely unregulated. I examine how the country's shift from state socialist to market economy and its current peripheral position in the global economy and in the scientific community determine its place as a supply side in the global reproductive bioeconomy. This paper is based on my dissertation research, carried out for 18 months between 2014 and 2018. It draws on archival data and 70 interviews with directors and staff members of the 10 most successful fertility clinics in Ukraine that conduct a significant amount of cycles for foreign patients, including scientists who orchestrated the first IVF, gamete and embryo cryopreservation and surrogacy in Soviet Ukraine in the 80s and opened their private fertility clinics in the 90s. I argue that transformation of the ARTs in Ukraine from a narrow public scientific and experimental domain into a successful for-profit industry with a global scope was engendered by the economic liberalization and withdrawal of the state control in the 90s, combined with the growing dispossession of the people. This matter was intimately tied to the development of Ukrainian reproductive industry's reliance on the appropriation of cheap waged and unwaged reproductive labor of local women who have the phenotype and reproductive capacities demanded by couples from abroad. I reveal how the sexual division of labor and experiences of privatization and class after the collapse of the Soviet Union, functioning of the state and medical institutions and everyday practices of post-socialism in Ukraine have shaped the development of the ARTs market, experiences of local egg donors and surrogate mothers, and new understandings of work, family, and reproduction.

Session Organizers:
Cathy Herbrand, De Montfort University
Vincenzo Pavone, Consejo Superior Investigaciones Cientificas (CSIC)
Chair:
Nicky Hudson, De Montfort University

040. Economics/Economy, Governance and STS I
12:00 to 1:40 pm
virPrague: VR 18
Participants:

A market to whom? *Christian Frankel, Copenhagen Business School*

Studies of markets obviously inquire into markets. But the question of to whom the market inquired into is a market is generally not discussed head-on. The single market of the EU is here a case in point as it in more ways is not given to whom it is a market. To theories of markets as found in market studies (sociology, STS, anthropology), the single market is sometimes regarded an instance of market (in the sense proposed) and sometimes not. Analyzing the history of the single market with a focus on two particular texts the paper contends that the European Commission deals with the issue of to whom the single market is a market. This issue has in fact been central to how the single market is made as it has led to the active enrollment of and invigoration of European technical standardization in the work of making the single market. A better understanding of how actors understand markets promise a better understanding of markets and of how politics and technical issues are entwined in market-making.

Defining risk in legal disputes: how STSers promote scientific understanding in the justice system *Wen-Ling Tu, National Chengchi University; Hung-Yang Lin, Academia Sinica*

The No. 6 Naphtha Cracking Complex (No. 6 NCC) located in Yunlin County, Taiwan, is one of the largest petrochemical complexes worldwide. For over two decades, the numerous industrial accidents involving No. 6 NCC have terrified the people. In 2015, the people in Taixi Township located at the south of the complex filed a lawsuit against No. 6 NCC for its toxic emissions that have caused health hazards to the local resident. However, five years and over 10 trials later, the progress is stagnant and remains at the first instance stage. Although the parties agree that the factory does emit emissions, the factory emphasizes that all regulations and standards have been met, and the residents argue that long-term toxin accumulation is the key illness causing factor. From the late industrialism and STS perspective, we argue that the case exemplifies the obsolescence of the knowledge system in legal governance for the environmental health risk issues. Through first-hand court observations and in-depth interviews, we found that the scientific uncertainty in identifying hazardous risks and causal attribution, the judge's superstition of objective science to confirm the pollution exposures, the silence of lay knowledge under the authority of science and justice, etc., have made it difficult to achieve judicial progress. This study analyzes the political and social relationships behind scientific production, promotes interdisciplinary knowledge exchange and interpretation, and assists litigants to build the capacity in redefining pollution problems. The goal is to bridge the gaps between governance system, knowledge production, and residents' perception.

From RCB to RCA: Epidemiologic Causation and Legal Mobilization in Taiwanese Toxic Torts *Yi-Ping Lin, National Yang-Ming University*

On December 16, 2019, the Taipei District Court handed down a landmark verdict on a toxic-tort class action opposing the former workers of Taiwan Radio Corporation of America (RCA). The ruling was a fourth victory for the former RCA workers and the many lawyers, activists, scholars, and students working together in the long-fought lawsuit. Following the Radiation Contaminated Buildings (RCB) case in 2002, the judges applied "epidemiologic causations" in the RCA verdicts. "Epidemiological causation" was developed in post-war Japan in response to the difficulties in proving causations in the "Big Four" pollution cases I reviewed and discuss the scientific evidence in the RCB and RCA cases which included long term exposures of low dose radiation and mixtures of organic solvents. Both the RCB and RCA cases involved hidden exposures and uncertain health effects. Though there were epidemiological research conducted by Taiwanese scholars in support of the plaintiffs'' claims of environmental and occupational cancers, the scientific evidence was challenged by the defendants' hired expert witness. Further, as compared to the exposure assessments of radiation in the RCB case (buried in the steel of the buildings), traces of organic solvents in the air and drinking water in the RCA case were very difficult to established. I conclude that legal mobilization is crucial in environmental movement. The RCB and RCA cases involved the mobilization of many social actors. Moving from the street, to the laboratories, and finally to the courts, Taiwanese science, technology and society scholars

played important roles in the RCA case.

Session Organizer:
Christian Frankel, Copenhagen Business School
Chair:
Christian Frankel, Copenhagen Business School

041. 'Not doing' in times of crisis: agency and the urgency of pause and restraint
12:00 to 1:40 pm
virPrague: VR 19

In a time when many are finally responding to the imperative to "act now", what is the role and value of not doing as a feature of agency, and potentially a dimension of social and political change? Agency and action are considered to be inherently interlinked. And, by definition, they are commonly used in combination to define what an actor is. But the problem is, through narratives that stage action as positive, urgent and productive, forms of non-doing and absences (of people, actions, matter, ideas) tend to be conceived, by default, as negative, unimportant or simply as failings. As a consequence, at a time of ecological and political crises, important calls to "act now", non-action (e.g. to consume less, reduce our use of resources, or not participate) can often emerge as paradoxical imperatives. This panel theorises pauses, restraints, hesitations, inactions and silences. It thinks with the space created through these forms of non-doing by drawing on empirical examples of absences (of people, actions, matter, ideas) to explore the productive and creative role they may have, rather than simply them being conceived as failures or delays.

Participants:

Uncomfortable Knowledge and Non-Action as Ways to Care
Roger Strand, University of Bergen; Thomas Völker, European Commission - Joint Research Centre; Zora Kovacic, University of Bergen, Norway

For more than 20 years, the author and his colleagues have explored non-action-oriented roles as STS scholars involved in and around action-oriented research and policy (e.g. in bio- and nanotechnology, cancer research, research policy-making, environmental management and nexus governance). Our contributions have been designated "post-normal science"; "ELSI/ELSA" research; "ethics"; "Responsible Research & Innovation (RRI)"; et cetera. We have raised unwelcome questions without answers; produced uncomfortable knowledge (sensu Steve Rayner) that undermined assumptions of action-oriented institutional practices; and perhaps decreased actors' certainty about what is True and Good. What kind of practice is this, and what type of work does it do? Over the years, the author has come to identify with Zhuangzi's ancient tale about Confucius and Yan Hui, and how to give advice to the King: that less is more, that one should refrain from having strategies, and that the virtuous posture is that which Zhuangzi calls "the fasting of the mind", emptying oneself of plans and desires. In the context of the Norwegian Centre for Digital Life, RRI was perhaps most successful when it was untidy and unplanned. In the context of nexus governance (through the Horizon 2020 project MAGIC), we have theorized how the Daoist notion of wuwei, non-action, may provide clues to how escape the constraints of action bias and instrumental rationality that seem to obstruct and block opportunities for institutional and social change.

What Does 'Doing Nothing' Do When Talking About High-Risk Major Surgery?
Gemma Hughes, University of Oxford, UK; Lucas Seuren, University of Oxford; Sara Shaw, University of Oxford

Around a third of high risk patients undergoing major surgery in the UK experience serious complications leading to long-term decline in health and quality of life. Yet general awareness of these longer-terms risks is poor. To address this, we are investigating how these patients and their clinicians make decisions about major surgery as part of a programme of research concerned with improving shared decision-making. We have videoed decision-making consultations, interviewed patients, family members and clinicians and observed organisational routines associated with preparations for, and decisions about, surgery. We have observed that the option of 'doing nothing' is offered by some surgeons as they set out the choices available for patients, even when this option appears not to align well with clinical recommendations. We have taken a conversation analytic approach to focus on a sub-set of our video data to ask: how do clinicians and patients talk about the option of 'doing nothing' and what does this talk do in the decision-making process? Influenced by sociological concepts of illness trajectories, we understand decision-making to be part of the shared work between patients, families and clinicians that goes into managing the course of illness. We draw on the linguistic concept of talk-in-action to examine how decisions emerge from situated interactions, observed as talk which makes 'commitment to future action' (Huisman, 2001). In this context, talking about non-action appears to contribute to commitments to action by simultaneously constructing a rational choice and indicating, somewhat paradoxically, that something needs to be done.

What follows on from "doing everything"? Disentangling patients from systems of support in UK intensive care units
Annelieke Driessen, London School of Hygiene and Tropical medicine; Simon Cohn, LSHTM

When hospital ward teams do not know what to do, or find themselves ill-equipped to do what is felt to be necessary for their patient's immediate survival, this constitutes a crisis. Here, crisis is thus the combination of the health status of the patient combined with the (inevitably limited) possibilities to intervene. In such instances, the ward staff may refer the patient to the Intensive Care Unit (ICU). The ICU features as the space within the hospital with the most high-tech and resource heavy interventions, and thus offers the best possibilities to support such patients by "doing everything". Once in ICU, therefore, the sense of crisis is recast by the increased possibilities for intervention. In this paper, we draw on preliminary ethnographic work in a large teaching hospital ICU in London to explore how practices of disentangling patients in a critical condition from systems of support relate to the default mode of doing everything. When and how do these practices of reversing, diminishing, halting and weaning of interventions become available? How are they discussed, advocated, contested and done? What kind of trajectories do they enable, and how do they bring these about? In asking these questions we hope to contribute to conversations, theoretically, on action and agency, and, ethnographically, on 'appropriateness' of interventions when life is fragile.

Session Organizer:
Annelieke Driessen, London School of Hygiene and Tropical medicine
Chair:
Simon Cohn, LSHTM
Discussant:
Joanna Latimer, SATSU, University of York

042. Experimental Practices and Practical Experiments in an Uncertain World III
12:00 to 1:40 pm
virPrague: VR 20
Participants:

Researchers' Implicit Associations With Questionable Research Practices
Justus Maximilian Karl Rathmann, Universität Zürich; David Johann, Universität Zürich; Heiko Rauhut, Universität Zürich

Questionable research practices are an emerging issue in science studies. Although questionable research practices are not a crime according to legal definitions, it shares the basic definition of white-collar crime. Similar to white-collar crime, questionable research practices are committed by persons with high social status within their work environment. Studies from the field of criminology show that these behaviors are more often committed by men and persons high in the hierarchy. Conflicting evidence on the gender effect has been found in science studies while the effect of position in the hierarchy has yet to be studied. Since it is widely considered as unethical and, thus, socially undesirable, researchers usually not confess such behaviors in surveys. Hence, we introduce a single-category implicit association test (SC-IAT) in a large-scale survey of scientists in Austria, Germany and

Switzerland in order to investigate whether gender or academic position are correlated with scientists' associations with scientific misconduct. An IAT measures the relative strength of pairwise associations between concepts and attributes and has been frequently used in psychology to measure sensitive implicit attitudes. It can be used to reveal information participants might want to hide due to social desirability. Using the SC-IAT we examine whether researchers rather associate academic and professional success than academic and professional failure with scientific misconduct. The study allows us to explore factors that are related with associations with questionable research practices and, additionally, draw conclusion on how to deal with questionable research practices.

Science Busking, Recursivity, and Zones of Awkward Engagement in a Large-Scale Research Project on Embodied Digital Technology *Christian Pentzold, Chemnitz University of Technology; Ingmar Rothe, Institute for Media Research, Chemnitz University of Technology, Germany*

In our talk we discuss how science communication fosters a practical and critical engagement with embodied digital technologies (EDTs). Our insights stem from a multidisciplinary, four-year research endeavor where engineers, psychologists, natural scientists, and social science scholars construct and study artificial bodies moving in real or virtual environments as well as wearable devices extending or enhancing human bodies. We reflect on how the outreach activities seek to account for a situation that is marked by a vital entanglement of science, industry, politics, and civil society. There, EDTs are both a major focus of research and development and they increasingly form part of everyday sociomaterial encounters among the customers and adopters of these technologies. We look at how the project experiments with science busking formats so to establish a relationship between researchers and the general lay public, political actors, as well as industry representatives. This also encompasses prototyping and testing scenarios of EDT solutions where people can experience advanced forms of synthetic environments and participate in their analysis and construction. Beyond relaying the approaches, scientific insights, and innovations brought forward in the research center, these initiatives aim at building a recursive feedback loop between the research progress within the center and its multi-facetted environment. This is not a smooth process but rather these interfaces necessarily have to cope with misunderstanding and contradiction exactly because they strive to invite diverse perspectives. We argue that this friction cannot be resolved. Instead, science communication must create such "zones of awkward engagement" (Anna L Tsing) where diversity is articulated and can be negotiated.

Sociomaterial mediations and the politics of remote sensing in the Brazilian Amazon *Theodore Vurdubakis, Lancaster University Management School; Raoni Rajão, Federal University of Minas Gerais (UFMG)*

The 2019 Amazonian "burning season", which darkened skies from São Paulo in Brazil to Santa Cruz de la Sierra in Bolivia, also ignited still raging arguments regarding the "failure to protect" the rainforest. Inevitably, the digital apparatuses of deforestation detection - and the political and epistemological machinations that reverberate through them – came to figure prominently in these arguments. The present paper draws upon an on-going multi-sited ethnographic study of the agencies tasked with the protection of the Amazonian rainforest, of the devices that they use, and of the forms of facticity and legality that they enact. In particular, we focus on the role of satellite images in the everyday pragmatics and justifications of this work. We seek to highlight how the shifting sociomaterial arrangements for the production and circulation of such images, and of other remote sensing data, in turn generate particular – politically charged - forms of seeing and un-seeing, visibility and in-visibility.

Women in Exact Sciences and Technology Careers: perspectives and challenges *Gabriela Marino Silva, Universidade Estadual de Campinas, UNICAMP; Karoline Waitman de Barros, None*

The persistent horizontal and vertical segregation within the scientific field keeps potential researchers from the areas of Exact Sciences and Technology (S&T). At the time of development issues in a sustainability paradigm, it reiterates the need for participation of all social groups to achieve success. Thus, the present study analyzed 16 scientific articles, published between 2008-2018 in journals of technology and innovation, exact sciences and engineering, as well as interdisciplinary journals, in order to identify the concerns of this part of the scientific community regarding gender relations. The topics covered in the articles were: (a) career; (b) communicative practices; (c) education; (d) scientific production and (e) historical perspective of gender and S&T debate. Within the analyzed areas, the scientific production relating gender and S&T is marginal and comprises a set of descriptive studies, produced and published outside Brazil and that do not cite the main references of Gender Studies. Therefore, the purpose of this review was to analyze the selected articles from a perspective of gender innovation, illuminating the main issues faced today and making it possible to think of new ways of acting to reduce gender inequality in S&T. Key-words: gender and science; women in S&T; university-industry interface; gender innovation.

Session Organizer:
Heiko Rauhut, Universität Zürich
Chair:
Heiko Rauhut, Universität Zürich

043. Experiments with Algo-governance and Future-Making: STS Scholars as Designers I.
12:00 to 1:40 pm
virPrague: VR 21
Participants:

Algo-governance and Future Making: Unraveling Responsible Design *Gayathri Haridas, Singapore University of Technology & Design; Norakmal Hakim Bin Norhashim, Singapore University of Technology & Design*

Scholars have identified that speed, efficiency, fairness, and comprehensiveness makes algo-governance systems desirable while underscoring the social, ethical, legal, and political problems that they have reinforced (Gillespie and Seaver, 2016; Domingos, 2015). Following Kitchin's (2017) call for the need to critically understand how algo-governance systems are designed and implemented, and to demonstrate how social scientists can work with algo-engineers in designing more open and accessible systems, we are conducting the following study. Two teams of engineers will work separately to convert a problem into an algorithm that automates decision making within the domain of criminal justice which is an area that has seen the application of AI widely. The first team will work with a purely efficiency-based framework and the second team will have a social scientist working in tandem to help the team reflexively produce code in accordance with a more socially-conscious framework. The teams will use dummy data to map the output space of both resulting algorithms to see how results can vary between competing frameworks. This will demonstrate how theoretical constructs informing algorithmic models can impact real-world results and what the trade-offs are between the two methods. This study will develop a procedure to demonstrate how inter-disciplinary teams can work together to produce more transparent and ethical algorithmic governance systems.

Democratic Control Over Algorithmic Governance: Posing the Problem that We Wish to Solve *Ori Freiman, Bar-Ilan University*

'Algorithmic regulation', 'algocracy', and 'algorithmic governance', refer, roughly, to extensive usage of algorithms for achieving policy goals. Unlike social laws, algorithms cannot be broken or overridden: computer code runs ex-ante, according to predetermined rules. Code, unlike humans, cannot have autonomous intentions to conduct fraud. This have led to utopian visions of organizational processes that are algorithmically governed, where human misconduct is impossible. Nevertheless, unpredictable scenarios raise the need to govern algorithmic regulation: updating code to match new hardware, increase

performance, deal with security vulnerabilities, technical failures, bug fixes, and other reasons - require the supremacy of human agency over algorithms. In addition, real-world actions such as devising marketing plans, form business collaborations, or improve physical infrastructures also require human agency. Community-driven blockchain-based organizations are using blockchains to create new organizational structures. Governing blockchain-based organizations is a mixture of social practices that are sometimes embedded over technological platforms. Recent blockchain governing practices include ranked-choice quadratic voting, liquid digital democracy, and on-line deliberation. These practices render technical components and humane decision-making processes intertwined, and raise questions about directing trust towards the decision-making platform and its underlying reliability. How come a mechanism that allegedly involves trust in algorithms, rather than humans, turns out to be about trusting humans after all? To solve this question, I apply notions of epistemic trust (in the truthiness of propositions) and social trust (that social mechanisms assure the collective interests) to the socio-technical mechanism of blockchain-based organizations. I argue that an individual's trust in socio-technical systems has a dual, inseparable, nature: reliable production of truth and keeping the collective social interests.

Prototyping Nature's Data Futures in Emerging Database Architectures *hagit keysar, Museum für Naturkunde Berlin; Tahani Nadim, Museum fuer Naturkunde; Filippo Bertoni, Aarhus University; Felipe Mammoli, UNICAMP*

Over the last decades, the Museum fur Naturkunde Berlin has engaged in an effort to establish itself as a center for interdisciplinary, international, integrated research data management. Toward this goal, the institution recently received public funding for a large-scale digitization of its collections, which includes more than 30-million specimens. Planned as a 10-year enterprise, the future database is intended to democratize access, produce engagements with the collections for scientific and public purposes, and position the museum at the centre a growing field of data intensive research in the natural sciences. Our proposal seeks to further explore the assumptions embedded in digital governance and its production of publics. Rather than accepting the democratic character of prototyping as given due to its open and participatory process, we argue that prototyping can act as an experimental tool for sketching out problems of participation rather than simply seeking to solve them. We propose to prototype alternative data futures through the case of Neptune Sandbox Berlin, a database synthesizing microfossil occurrences from decades of deep-sea drilling, a unique tool for high temporal and taxonomic resolution analyses of marine plankton over the last 100 my. Using this database as a case-study, we first analyze the imprints of digital curation on shifting material specimens into digital data-points. Then, we propose a conceptual exercise in exploring its political potentials by hacking the database through injecting historical narratives that convey what is forgotten and what can be remembered; producing unexpected data-points for unexpected publics-in-the-making.

Session Organizers:
Denisa Reshef Kera, University of Salamanca
Galit Wellner, The NB School of Design & Tel Aviv University
Chair:
Tincuta Heinzel, Loughborough University
Discussants:
Judith Christine Igelsböck, MCTS, Technical University of Munich
Josef Holy, MSD

044. On the Interplay of Images, Imaginaries and Imagination in Science Communication (Interdisciplinary Focus)
12:00 to 1:40 pm
virPrague: VR 22
Tables, graphics and IMAGES – e.g. representations of small but complex macro-molecules in 'gestalt' of the Watson-Crick Double Helix or of even more immaterial objects like bits and bytes sliding down a curtain of

strings as green drops – play an important role in SCIENCE COMMUNICATION. This applies to processes of communication between sciences and the public as well as to those between or within scientific disciplines. The function of IMAGINARIES as associative complexes is to simultaneously shape and limit our understanding of scientific findings. The idea of gene expression within the relationship of DNA and entire organisms is an example here. Another is that of data mining with regard to the retrieval of information from networks of signal transmission. IMAGINATION, finally, points to some generative activity of creative minds figuring out how to recognize unknown phenomena or such not yet conceived nor determined in distinct structures. Albert Einstein who wrote about a dream in which he was riding on top of a sun beam during the time he was struggling to elaborate his theory of relativity, is an example here. How to detect and observe, analyze and understand the constructive dynamics unfolding within the INTERPLAY of images, imaginaries and imagination in science communication? We invited all kind of papers that can contribute to the challenging task of making progress with regard to the question of that interplay of visual, aesthetic, semantic and epistemic forms and practices. Those relevant to technology assessment, health research, informatics and studies of interdisciplinarity were particularly welcome. In this session of our open panel On the Interplay of Images, Imaginaries and Imagination in Science Communication we will hear 5 paper presentations and will discuss our complex topic with some INTERDISCIPLINARY FOCUS.

Participants:

Images, Imaginaries and Imagination in Metagenomics. Toward the Bridging of the 'Molecular' and of the 'Ecosystemic' Vision *Roberta Raffaeta'*

My paper will discuss the interplay of images, imaginaries and imagination that happens when researchers create knowledge about the microbiome. My insights are based on an ethnography across Italy and California in a field called 'metagenomics'. Metagenomics is the study of microbial communities in their natural environment made possible by the massive and parallel sequencing of a great number of microbial genomes. While scientists declare to be able to see microbes 'in-vivo', what they actually see are long reads of DNA sequence. Reads, and relations among them, translate in a number of images (two or three dimensional graphs). These images, and their imaginaries, are rooted in the 'molecular vision' of traditional molecular biology, criticized for its reductionism (Keller 2000). At the same time, metagenomics goes beyond reductionism: it studies communities of microbes and not singular microbes; moreover, microbes are mobile and polymorphous entities. These elements force metagenomics to hold an 'ecosystemic vision' too (Kelty and Landecker 2019). The bridging of the molecular and ecosystemic imagination is, however, achieved only by few scientists: I will illustrate the epistemic practices that keep researchers limited to the molecular view as well as the ontoepistemic but also biographical tensions, challenges and aspirations in bridging that with an ecosystemic view. The formal recognition of the bridging of these two imaginations would imply a reconfiguring of the imaginaries and images employed in metagenomics. For this process to be fully realized, interdisciplinary collaborations may be crucial.

Imaging Human Computer Interface in Film: from HAL to The Matrix *Naomi Mandel, The Hebrew University of Jerusalem*
The inability to perceive at the inhuman speed at which digital computers process information means that computer processing cannot be witnessed directly and must be imaged creatively or referenced obliquely. This paper will trace the development of imagery of computer processing in computer science and in popular culture in the last decades of the 20th century. These years saw the mainstreaming of graphical user interfaces (GUI), the Macintosh-Microsoft wars, and the competing operating systems of Linux and Windows. Accounts of these developments in the field of computer science demonstrate striking consistency in their terminology, employing imagery of transparency and opacity to express these issues and articulate their stakes (see N. Stephenson 1999, D. Thomas 2002, E.G. Coleman 2012, S. Turkle 2014). In tandem with these technological developments, landmark films depicting human/computer interaction grappled with how to represent computer processing onscreen. Stanley Kubrick's 2001: A Space Odyssey (1968), Joseph Sargent's

Colossus: The Forbin Project (1970) John Badham's WarGames (1983), and the Wachovski's The Matrix (1999), all present human interaction with a complex integration of multiple computer systems running under an AI. Kubrick and Sargent imaged these systems as an impalpable, ghostly presence that pervades hardware and infrastructure, that responds to human voice commands with synthesized speech (HAL) or split-flap display (Colossus); Badham imaged a black box: hermetic, static, and silent, its mighty processing power is hinted by the cryptic blinking lights on the machine's smooth surface; the Wachowski's iconic images of the matrix combine these visions: the matrix is figured as opaque code and interactive environment, impenetrable and manipulatable. Setting these disciplines together and mapping the overlapping of their imagery enables me to describe how technology and film worked together to elicit a new kind of relationship with the images on our screens at the dawn of the 21st century.

Concepts as Triggers of the Complex Triad of Imagination, Images and Imaginaries. A Philosophical Reflection *German A Duarte*

In Qu'est-ce que la philosophie? (1991) Gilles Deleuze and Félix Guattari define the philosophical reasoning as a creative process whose force derives from the creation of concepts. Therefore, according to them every concept is related to a problem, yet, a problem that is still blurred, that is a non-yet-existing problem. This notwithstanding, the concept testifies to a "there is" (Il y a…). And it testifies to it without identifying the problem, even without bringing the problem to an image. The concept, for the authors, represents a force of estrangement (Entfremdung) through which the subject dwells a possible space and experiences a possible image that doesn't belong to a declension of the present time, nor to an inscribed virtual. This paper will investigate, from a theoretical perspective, the notion of concept understood as the very first stage of the process that triggers the complex triad Imagination-Image-Imaginaries. In particular, through the lens of the notion of concept – as understood by Deleuze-Guattari – this paper seeks to identify the way in which that "there is" (Il y a…) sets in motion the triad Imagination-Image-Imaginaries. As case study, the paper will focus to science fiction narratives, considered as a privileged genre, a genre able at building a space in which concepts become image.

Session Organizer:

Andreas Metzner-Szigeth, Free University of Bolzano

Chair:

Andreas Böhn, Karlsruhe Institute of Technology

Discussant:

Luca Toschi, University of Florence

045. The tacit governance of decision-making in knowledge production

12:00 to 1:40 pm
virPrague: VR 23

Decisions in knowledge production practices are made on different levels and in different situations: in funding streams, evaluation procedures for proposals and careers, but also in everyday research practices. In the past decades, concerns have been raised that under conditions of hyper-competition for funding and careers, decisions in knowledge production are increasingly dominated by these competitive dynamics and researchers' focus may shift away from questions of societal relevance. Similarly, it has been questioned which kinds of researcher subjectivities and valuations are privileged within such conditions. Recent STS research has contributed to understanding how different aspects (such as (e)valuation practices, funding structures, temporalities, subjectification processes) come to matter in such decisions and what kinds of knowledge are made possible or unlikely within specific situated arrangements. This panel wants to foster a debate on how these aspects play together in tacitly governing knowledge production. In particular, this panel invites papers that discuss the advantages and disadvantages of different analytical dimensions such as valuation, subjectification, or temporality for studying decision-making practices in knowledge production. It also invites contributions that consider the potentially performative character of such analytical dimensions, as well as the added value of combining different analytical dimensions. The panel encourages reflections on questions such as: On which levels should we study decision-making in knowledge production?

What decision-making processes are accessible for investigation, and what decisions tend to stay unavailable for scientific studies and public scrutiny? Which methodological approaches allow studying the complex entanglements of aspects involved in decision-making in knowledge production?

Participants:

Is Innovative Research Good Research? How 'Innovation Demands' Are Perceived And Put Into Practice By Researchers *Ruth Falkenberg, University of Vienna*

"Innovation" or "innovativeness" is currently an omnipresent value, and increasingly also an important evaluative criterion in the sphere of research, as for example visible in research funding. While innovation or innovativeness are usually very positively connoted buzzwords and people would hardly question the value of being innovative, I aim to open up this notion and to gain a more detailed understanding of how current 'innovation demands' are perceived, interpreted and put into practice by researchers. Drawing on material produced with three research groups from the fields of crop and soil sciences, I ask, first, what kinds of innovativeness researchers see as being valued and promoted in the current research system and how this matches with their own ideas of how innovative research can and should look like. In a second step, I move from this level of sense-making to that of practice, exploring how these innovation demands shape researchers' practices and decisions. This also means inquiring into epistemic consequences, i.e. what questions are privileged and which ones are potentially left unexplored within these dynamics? And how does this relate to researchers' understandings of what 'good' and 'relevant' research should look like? Furthermore, how can we understand the relation between broader societal discourses about innovation and how these are reflected and lived in research? In asking these questions, my work is always sensitive to the valuations that are entangled with innovation demands and researchers' interpretations and enactments of them, as well as to the temporalities that are inherent here.

Career Decision-Making Among Astrophysicists *Jarita Holbrook, University of the Western Cape*

Knowledge Production and career building are intertwined in that certain positions/institutions have the resources to be career-enhancers in terms of less teaching duties, subscriptions to telescopes, travel funds, etc; but who are those places attracting/enhancing? The ASTROMOVES project focuses on the career decision making of astrophysicists that are greater than two career moves past their doctorate. ASTROMOVES is motivated by the desire stated by the astronomy & astrophysics community to become more inclusive/diverse including gender equity. Using interview based inquiry, each scientist is asked about each phase of their career decision-making. In terms of the visible, scientists career decisions are public in their bios, cvs, and on social media sites such as LinkedIn. Astrophysics is unique in that there exists a site that lists job rumors by year reporting the short lists for various positions (see https://www.astrobetter.com/wiki/Rumor+Mill+Faculty-Staff+2018-2019). This presents public information about the career options of some astrophysicists, but for the most part the career options are only accessible through interviews. Thus, career options are largely invisible, but more invisible are the decisions where scientists have chosen not to apply for positions which they are qualified for and/or could be career enhancing. Their refuse-to-apply list and the causal factors are among the invisible data made visible via the ASTROMOVES project.

Epistemic Laundering: A Typology of Transformations *Nicole C Nelson, University of Wisconsin Madison; Sergio Sismondo, Queen's University*

This presentation develops the concept of epistemic laundering, using money laundering as a metaphor to examine transformation processes in knowledge production. Like its financial counterpart, epistemic laundering involves the introduction of information into the scientific system, layers of transformations, and integration into venues such as academic journals where it generates value. We are interested in a particular subset of these processes—those that would be objectionable an observer grounded in the norms of a particular scientific field, if the

observer were able to see the entirety of the process. Discussions about reproducibility offer numerous examples of outcomes that scientists deem objectionable. Statistician Andrew Gelman has expressed concern that "statistics is often sold as a sort of alchemy that transmutes randomness into certainty," a process he dubs "uncertainty laundering." Rather than locating the problem in specific practices such as significance testing, we consider how chains of practices—many of which appear perfectly legitimate when considered individually—produce results that can be seen as distortion. Indeed, it is the very legitimacy of the individual techniques that makes laundering effective. Using case studies from the STS literature and our own research, we illustrate how laundering schemes such as "bulk cash smuggling" and "bank capture" can be useful tools for thinking about epistemic transformations and the difficulty of apprehending these transformations in their entirety. We will conclude with a case where anomalous research outputs in psychology raised suspicion about the underlying processes, and how theorizing about epistemic laundering might contribute to its detection.

Session Organizers:
Ruth Falkenberg, University of Vienna
Maximilian Fochler, University Of Vienna
Ruth Müller, MCTS TU München
Lisa Sigl, Research Platform Responsible Research and Innovation in Academic Practice, University of Vienna
Chair:
Maximilian Fochler, University Of Vienna

046. STS, Technoscience and How Discontinuation Matters I
12:00 to 1:40 pm
virPrague: VR 24

Abandonment of technologies and socio-technical systems occur not infrequently. However, the social construction of technology, everyday use, innovation management, technical maintenance and governance of technologies and socio-technical systems have preferentially been associated with advancement and innovation. Discontinuation is, at most, discussed as regime change, innovation setback or failure—as if advancement and innovation was the only direction in which socio-technical development and its governance would go. STS is no exception to this observation, although there are in STS important studies addressing the issue of ending directly, like Aramis in France (Latour 1992), or studies that can, in retrospect, be seen as descriptions of technologies that were, after all, abandoned, like the "male pill" (Oudshoorn 2003). Script analysis may offer another lead, e.g., when Akrich and Latour (1992) are referring to 'de-inscription', Geels and Schot (2007) to 'de-alignment', Kuhn (1962) to 'paradigm shift', or Utterback (2003) to 'product and manufacturing discontinuities'. The empirical cases are legion, though. However, it is crucial to see how socio-technical systems, technological regimes, or technologies are (or have been) disappearing or are being brought to an end.

Participants:

A New Era: The French Nuclear Socio-Technical System Facing Discontinuation *Martin Denoun, GSPR/EHESS*

The French nuclear socio-technical system has known multiple changes through the last 20 years. The ability of this system's actors to build a future which could be bright again has been weakened. I study how these futures mutated in the last decades in France. Being the incarnation of the new science after WW2, the nuclear technology has been historically rooted in the idea of innovation. Being the incarnation of long-term future with promises of almost eternal energy supply, the actors of the nuclear large technical-system were used to project/prospect a future in the long term. In France at least, this is no longer the case. Relying on my PhD research (based on 79 interviews with high-ranked actors, grey literature and ethnography of professional conferences) about the production of futures in the French nuclear sector, I will show how discontinuation has become today the main way of thinking the future. The infrastructure of the system presents more and more weaknesses as time passes, and the new reactor technologies are less and less expected to take over the current fleet. Actors of the nuclear industry are haunted by the possibility of its ending. I suggest that this perspective of discontinuation is the new paradigm for the French nuclear system. How are French nuclear actors facing

this horizon of discontinuation? I will show how this discontinuation horizon has slowly emerged in the last decades. Originally a demand by the antinuclear movement, then the object of counterfactual studies by pro-nuclear actors, the phase-out scenarios are now produced by the nuclear actors themselves.

Why Is It So Hard To Discontinue Nuclear Power? Neglected Military And Democratic Considerations *Andy Stirling, Science Policy Research Unit, University of Sussex; phil johnstone, Science Policy Research Unit, University of Sussex*

Major long-run global energy trends are raising serious questions about the persistent intensity of some government attachments to civil nuclear power. Alternative low carbon energy service options are now generally recognised worldwide to be growing radically more favourable. This paper examines why it is in certain contexts, that discontinuation of nuclear energy appears to be such a challenging prospect despite the disadvantages of nuclear compared to alternative low carbon options. We identify that a key but neglected reason for this relates to strong pressures to maintain broad military nuclear capabilities reliant on the civil nuclear industrial base. We explore this hypothesis through a systematic criteria-based analyses. First, we identify general global patterns in commitments to civil and military nuclear infrastructures. Second, we use criteria drawn from prevailing theories of 'sociotechnical incumbency' interrogating the particular contrasting dynamics of the German 'Energiewende' and UK 'nuclear renaissance'. Third, in an in-depth interpretive analysis, we triangulate documentary evidence across energy and military policy sources in the UK. This confirms the significant roles played by military considerations in entrenching civil nuclear commitments. One result of this, is effectively to slow down and elevate costs to consumers and taxpayers of a zero-carbon transformation. That these pressures are so well acknowledged in defence literatures yet so unaddressed in energy policy debates also raises wider concerns with regard to the rigour, transparency and democratic accountability of UK policy making in these fields. Importance implications therefore emerge for attending to the importance of 'qualities of democracy' in discontinuation governance.

Phasing out, not (dis)continuing: towards a nuanced and normatively inclusive understanding of infrastructure in transitions *Aad Ferdinand Correlje, TU Delft; Toyah Rodhouse, Delft University of Technology; Eefje Cuppen, TU Delft*

Phasing out fossil fuels is considered desirable. How to realise systematic decarbonisation, however, is an ongoing discussion – one in which re-use of existing infrastructures becomes scrutinized. For some, these infrastructures are controversial as they enable incumbent influence and perform institutionalised values. It is a critical question, whether existing infrastructures can adapt to diverse and emerging societal needs, desires and values around energy. Current theoretical approaches generally do not present nuanced studies as regards emerging normative diversity in transitions. Often, polarizing dichotomies are suggested: 'regime vs. niche', 'continuation vs. discontinuation', 'incumbent vs. newcomer', 'polluting vs. clean', etc. In this paper, we offer a more balanced account of how governance actors envision and enact the phase out of fossil systems. We demonstrate the considerable normative diversity that exists in governance of gas infrastructure in the Netherlands. The government decided to stop natural gas production in Groningen by 2030, and natural gas use by 2050. Whether the country's elaborate gas infra should be (re-)used, what sort of 'good' it must aim to distribute, and what values it should assure remain debated. Applying Q methodology, we uncovered six futures for gas infrastructure – based on differing value systems – currently present in gas governance. These perspectives are: (1) In gas (infrastructure) we continue to trust. (2) Towards carbon neutral, decentralized & publicly accepted energy. (3) A new, sustainable economy with renewable (heat) entrepreneurs in the lead. (4) Societal controversy threatening system stability. (5) In technology we trust. (6) Towards fairer energy provision (without Groningen gas).

Strategic options for policy to discontinue of socio-

technological regimes *Stefan Kuhlmann, University of Twente; Peter Stegmaier, University of Twente*

What are feasible policy options for active discontinuation of incumbent and unsustainable socio-technological systems? The active discontinuation of socio-technical trajectories can be seen as a key element of transformative policymaking. Strategy-makers would first have to identify and understand the characteristics of sociotechnical trajectories in question and the configurations that may allow for opening a window to discontinuation. Trajectories can be in the state of emergence, maturation, or weakening. We have identified a number of ways of active discontinuation of socio-technical trajectories becomes possible: the characteristics of the wider trajectory and of the targeted trajectory (from the strategic perspective of discontinuation governance); the existence of emerging rivalling trajectories; the role and impact of technological replacements; the discontinuation strategy chosen by relevant actors; the actual pretence to finalize a trajectory; and the eventual effects on the trajectory. In our studies of the phase-outs of the incandescent light bulb, nuclear power production, the DDT ban, and early efforts of phasing out the internal combustion engine for cars, we have found the following options for agency and governance are strategies in our empirical analyses: (1) strategies meant to identify and understand the trajectories and configurations bearing the possibility of intentionally bringing to an end a socio-technical configuration through deliberate governance action by seeking closure for socio-technical regimes that have broadly lost their legitimation, as well as (2) options for agency within such configurations by creating and (3) utilising momentum. Discontinuing socio-technical regimes is a very practical challenge to innovation and transformation policy.

When phasing-out technology strikes back: A social practice theory exploration of cloud seeding *Zahar Koretsky, Maastricht University; Harro van Lente, Maastricht University*

More attention in STS has been paid on investigating new technologies than on abandoning well-established ones, while there is a gap of knowledge on technology phase-outs. Technology phase-out brings along many empirical, theoretical and practical questions about the dynamics of socio-technical change. In the paper, I understand phase-out as a scaling-down of research, production and/or use of particular equipment, processes and associated practices to the point of their abandonment. Prominent approaches in STS do not have much to say about the phenomenon of technology phase-out. They tend to focus on prior stages in life of a given technology, or have a different object of study (e.g. industry, policy conditions). In this paper I ask: how to study technology phase-outs? I look beyond the prominent theories and argue that social practice theory offers viable starting points for the exploration of phasing out. I develop a heuristic based on the basic understandings of social practice theory. I conducted fieldwork, analysis and comparison of two historical cases of incomplete and complete phase-outs: cloud seeding (USA) and an early computer model (Russia), respectively. Tentatively, my findings confirm that social practice theory can be applied to better understand the phenomenon of technology phase-out. The paper offers insight into how phase-out processes can be explained via the disruption of linkages between the material, cognitive and symbolic elements of the technology. I also show how phase-outs can themselves generate knowledge spillover and innovation by freeing up the previously occupied resources.

Session Organizers:
Peter Stegmaier, University of Twente
phil johnstone, Science Policy Research Unit, University of Sussex

Chair:
Pierre-Benoit Joly, Lisis

047. Bristol University Press - Meet the Editor | 18 August
1:40 to 3:00 pm
virPrague: VR 01
Visit this session to meet senior editor Paul Stevens, who is responsible for our new list in science, technology and society:

bristoluniversitypress.co.uk/science-technology-and-society. Paul will be delighted to speak with you about your publishing plans. He'll be available at the times listed below, so if you'd like to set up a separate meeting then please drop him a line (paul.stevens@bristol.ac.uk). August 18: 13.40 – 14.40 (CEST) August 19: 13.40 – 14.40 (CEST) August 21: 13.40 – 14.40 (CEST)

Session Organizer:
Bahar Muller, Bristol University Press

Chair:
Paul Stevens, Bristol University Press

048. 'Wenbing' Pandemic Outbreak in Australia
1:40 to 3:00 pm
virPrague: VR 04
As COVID-19 spreads globally and as we act in accordance with 'the seasonal, geographical and personal factors' how should we in Australia and the rest of the world deal with it (coronavirus) in our local real time situation? According to the late Joseph Needham we should use acupuncture or chronoacupuncture's 'immunological' and 'cortisone-like effect' to fight the invading organism by strengthening the patient's body resistance.

Session Organizer:
Rey Tiquia, University of Melbourne

Chair:
Rey Tiquia, University of Melbourne

049. SUBPLENARY: STS Enters the Transnational Covidscape: The Political Ecologies and Inequalities of COVID-19
3:00 to 4:40 pm
virPrague: VR 00
As the COVID-19 pandemic spread around the world, devastatingly so within racial and ethnic minority communities, researchers have documented its distinctive social and spatial patterns. Seroconversion and the course of the disease are consistently indexed along already harmful forms of ecological toxicity including air pollution, food injustice, and climate change. The risks of exposure to the novel coronavirus are tied not just to who a person is and who they've come into contact with, but where and how they live, work, eat, and breathe. Moreover, governments' responses to the pandemic, and to the underlying inequalities it thrives upon, have been woefully inadequate and have called into question how we should understand the role of nation states and international health organizations in governing global public health. The pandemic is rendering transparent power relationships that are mostly hidden from view, especially those relationships that produce pandemic illnesses in societies and those that govern the production of scientific knowledge about pandemics themselves. Science and technology studies (STS) can help us understand and respond to the COVID-19 pandemic, but only insofar as it can offer accounts of the political ecologies of the virus that map how power relations till the social, spatial, and epistemological grounds over which it travels. This subplenary brings together scholars working at the intersection of STS, political theory, and history across national boundaries and international contexts to explore how STS can contribute to our understanding of ecologies and inequalities in the wake of the global pandemic.

Session Organizer:
Tereza Stockelova, Institute of Sociology of the Czech Academy of Sciences

Chair:
Joan Fujimura, University Of Wisconsin-Madison

Discussants:
Warwick Anderson, University of Sydney
Anthony Ryan Hatch, Wesleyan University
Duygu Kasdogan, İzmir Katip Çelebi University

050. Making Time
3:00 to 4:40 pm
virPrague: VR 01
This panel examines how time gets made, remade, and unmade through science and technology. It carefully traces the construction of time and temporalities to various empirical sites and explores how time-making is always already a political project tied up in concrete efforts to govern. Situated in the emerging field between political theory and science, technology, and society (STS), the presentation will present a set of in-

depth empirical investigations that reflect the broad topical scope of STS and its dedication to empirically rich scholarship. The presentations will each unfold an original case, giving deep insights into how, where, and by which means time is made in and through science and technology and the implications of this for the exercise of power. Together, the presentations cover a broad spectrum of topics while being committed to the same project of understanding, from an STS perspective, the connection between time, politics, and science and technology. We expect that applying the empirical sensibilities and constructionist analytics of STS will advance our knowledge of power, normativity, democracy, public reasoning, and subject formation in relation to the making of time, and open up a transdisciplinary field for the deliberation and conceptualization of the relation between science, technology, time, and politics. In doing so, the panel will be an important preliminary step to for future research in STS, political theory, and neighboring fields.

Participants:

Too big to fit: the coproduction of despair *Gabriel Dorthe, IASS Potsdam / Harvard STS*

Several contemporary activist movements frame their apparently competing claims into a narrative of dramatic acceleration and urgency, which takes the risk of short-circuiting public deliberation and blurring intermediary governance levels. While transhumanists activists seek to propel and tame technological progress in order to ensure its benefits and minimize its downsides, collapsologists or Extinction Rebellion-activists warn about the ecological disaster and call for far-reaching societal changes. Rooted in a long-term ethnographic study of the transhumanist movement and its adversaries, this presentation aims at exploring how these narratives share a way of enlisting relevant information into a grand narrative of unprecedented risk of loss of control as well as a call for urgent (re)action. This elicits a dialectic between disempowerment and renewed mastery and place politics under the sign of a precarious future. The presentation thus asks: how is politics coproduced with urgency and what other narratives are curtailed and at which cost?

The Making of a "Slow, Silent Genocide" Across Argentina's Soy Belt *Geneva Smith*

This presentation examines how Las Madres de Ituzaingó Anexo, a group of mothers organizing to regulate agrochemical use in Argentina's GM soybean belt, engage in a politics of time to raise a state capable of responding to a growing crisis. Based on ethnographic fieldwork, I propose a theory of citizenship in which ghosts of the prior are strategically marshaled to highlight how state violence remains unsettled and thus repair for families and the state elusive. I argue that it is by indexing the older human rights movements, Las Madres and Las Abuelas de la Plaza de Mayo, that they make their case against unmitigated agrochemical use by showing it to be a symptom of ongoing state violence rather than an inevitable byproduct of cultivating soybeans. This form of activism thus reflects a nostalgic yearning for a future that ought to already have arrived infused with a sort of resignation that the instability and corruption with which they have always lived might just be unshakeable. Repair, in this sense, is not a final state that can be attained but rather a future always in the making.

Fighting over time: Germany's struggle to phase out coal *Jens Marquardt, Department of Political Science, Stockholm University*

According to a 2018 IPCC report, reaching the Paris Agreement's target to keep global average temperature increase below 1.5°C requires reducing global greenhouse gas emissions by 45% in 2030, reaching net-zero by 2050. While these climate mitigation trajectories are scientifically grounded and seemingly neutral, we argue that they represent highly political and socially constructed timescales of decarbonization. Exploring how these dates emerge, get mobilized and translate into political programs, we investigate Germany's plan to phase out coal. Various actors have argued for different dates and timescales based on science and technology in conjunction with competing ideas of a future (coal-free) society. Drawing on the concept of sociotechnical imaginaries, this presentation demonstrates how the discourse around time is not only embedded into long-lasting debates about the country's transformation of the energy sector but also reflects political conflicts and societal cleavages alike.

Clocking Value in the Bioeconomy *Tess Doezema, Arizona State University*

The bioeconomy is an expert discourse based on projections of potential futures attainable through the perceived promise of biological knowledge production. It is positioned as a response to existential threats articulated at the global level, such as population increase, limited resources, food security, human health threats, and climate change. Underwritten by a sociotechnical imaginary of proliferation of global biological good, the bioeconomy serves as a shared way of justifying research trajectories, regulatory choices, resource allocation, and the wider credibility economies around finance and incentive structures for scientific research and environmental governance. This presentation examines three distinct yet overlapping ways bioeconomy discourse constructs time, positioning global temporal unity and continuity next to multiple conflicting possible futures, and beside a revolutionary temporal disjuncture projected to flip systems of biological valuation. Each brings together ways of knowing the world that have endured from responses to past environmental crises, projections of future good, and characterizations of urgency of action in the present. These technological timescapes subtly delineate responsibility across actors and institutions, frame value propositions of biotechnological innovation, and preclude particular forms of political and economic agency.

Nuclear futures, Japanese pasts *Makoto Takahashi, Technical University Munich*

In Fukushima, Japan faced first a crisis, then a prolonged disaster. Amid efforts to decommission the stricken nuclear plant, and decontaminate the affected territories, questions about what a future beyond this nuclear event might look like continue to be posed. Using the concept of sociotechnical imaginaries, significantly developed by Jasanoff, this presentation takes as its object competing visions of a 'Japan after Fukushima Daiichi', which animate actors' responses. Drawing on over a year of residential fieldwork and 47 interviews with politicians, scientific advisors, and prominent protestors, this presentation argues that popular histories are central to actors' responses to the disaster. Contrary to an article of conventional wisdom, which states that 'one cannot build the future from the past,' I argue that the establishment of possible futures as plausible and desirable is inseparable from the narration of the nation, and prefecture's, past. In so doing, I detail how the disaster has been variously presented as: an unforeseeable perturbation in the progress of Japanese modernity; a short, sharp, shock that might wake a stagnating nation from its stupor; or part of a cycle of suffering, endured by Japan's internal colonies for the good of its urban centres.

The Politics of Epochalism *Kasper Hedegaard Schiølin, Harvard STS Program, Harvard Kennedy School*

Increasingly, corporate leaders, scientists, sociologists, and journalists are putting themselves in the role of diagnostics, zealously deciding, what stands out in the present as unprecedented and exceptional, and hence what is important, what we should pay attention to, what we should talk about, what we should decide upon. By appealing to the feeling that the present is an unparalleled moment of historical significance, they produce what some scholars have referred to as 'epochalism', that is, a shared sense of belonging and identity that can be employed to legitimize far-reaching politics. This presentation describes three cases of epochalism – the fourth industrial revolution, singularity, and Artificial Intelligence (AI) – eachl mobilizing technology in making epochs with clear political aspirations. Through these cases, and with the inclusion of literature on millenarianism, exceptionalism, and eschatology, I unfold the politics of epochalism and offer a more developed conceptual framework for analyzing the making and reception of epochalism.

Session Organizer:
Kasper Hedegaard Schiølin, Harvard STS Program, Harvard Kennedy School

Chair:
Stefan Schäfer, Institute for Advanced Sustainability Studies

051. Choreographies: Rhythms and Movements in Research, part 3
3:00 to 4:40 pm
virPrague: VR 02
Participants:

Bodies In Motion: Spatio-temporal Choreographies In The Study Of Physical Activity During Pregnancy *Julie Bønnelycke, Roskilde Universitet; Astrid Jespersen, University of Copenhagen; Maria Larsen, University of Copenhagen the SAXO institute*

There are few physical conditions more elusive and ambiguous than pregnancy. Pregnancy is a state of constant flux, of growth and transformation, both physically, mentally and socially. A present RCT; The FitMum Study, based at a hospital in the Capital Region of Denmark, investigates different models for physical activity for pregnant women. The study of pregnant research subject is a rare feature in RCT's, due to the notoriously unstable state of the pregnant body: Pregnancy is a 9 months' permanent state of liminality. A state of permanent exception as a deviation from the normal, controllable, and stable body, and yet a perfectly normal 'condition'. Neither disease nor the opposite, but an ontological tangle. In the trial, several bodies and temporalities coexist and intermingle in what is both an ontological and temporal choreography. The pregnant woman participates as subject and object, as a test body, a women in transition between roles, and as a host to the fetus; an ambiguity that comes to the fore for instance in classification disputes regarding to whose body the umbilical cord belongs – mother, child, neither or both? Trying to latch on to the bodies in constant motion, the researches and the entire trial apparatus need to constantly adapt to not only produce samples and data representing incisions in time, but also to engage with the body-at-present in relation to past-and-future-bodies. In the trial, several temporalities coexist and intermingle, as the present state of the body is always handled, assessed and understood in light of past experiences and future changes. In this paper, we address and discuss how the fluidity of bodies and the entanglement of temporalities affects our research approach and assists us in reconceptualising notions of normalcy and stability when working with test subjects, bodies and selves.

Choreographies of making archaeological data *Isto Huvila, Uppsala University*

Archaeological fieldwork is a complex collective exercise. It unfolds as a 'dance' that brings together archaeologists working at the fieldsite, a vast number of material artefacts from the present and the past, in and out of the archaeological stratum and including tools and documentation equipment. It engages people from the broader archaeological community, the peoples of the past, and to an increasing extent through public and community archaeology initiatives, the local population and the society at large. Even if fieldwork project is often a short-term exercise, its temporalities span from the distant past to the future, and its locality to a specific small area of land expands to cover a broad scope of spatial entanglements. Understanding the rhythms, openings and closings of the choreographies of how archaeologists work in field is a key to understanding what goes in and happens within, and what comes out of archaeological fieldwork, what is the 'data' that archaeologists are collecting and documenting according to fieldwork manuals, and what charactecterises archaeological making. Drawing on an observation study of an archaeological teaching excavation in Scandinavia, this paper inquires into the choreographies of archaeological fieldwork, and more specifically, how a better understanding of the epistemic choreographies of scientific and scholarly work can help to unpack its inputs and outputs, what it achieves and how it is made in the longue durée and vaste ampleur of its space-time.

Matters of Emergenc/y: Breakdown, Crisis and the Production of Scientific Knowledge *Stephanie Beth Jordan, Michigan State University*

Environmental crisis, financial crisis, states of emergency and urgency: crisis forms the backdrop of contemporary debates about the role of science and technology in society. Through ethnographic fieldwork in oceanographic and climate-oriented research endeavors over the better part of the last decade, this work collects dialogues in STS concerning the practices of knowledge production central to both disaster studies and repair studies and emphasizes the critical role of temporality, where various political, environmental, and financial crises restructure the scientific landscape through momentous events with long-lasting repercussions. These can be episodic, rhythmic, eventful, or long-standing temporalities that reorient, squeeze and redefine timelines, reassemble group structures and dynamics, attend to new first order concerns and leave others to fall to the backburner. Through the lineage of Matters of Fact, Matters of Concern, and Matters of Care, Matters of Emergenc/y identifies where breakdown, crisis and other temporal forms of emergenc/y critically redefine who has the time to care and through what means. There are new temporalities at play that can set into action longstanding norms and new standards. When decisions need to get made quickly: who is making decisions, who and what gets privileged over other things, who gets to make the rash decisions and final calls, what do they care about, and what are their accountability structures. In fast times, we need to consider care - who and what are we caring for over other things? What falls out of favor and never returns? Who has the time to care?

Session Organizers:
Niki Vermeulen, University of Edinburgh
Andrea Schikowitz, TUM
Filip Vostal, Institute of Philosophy of the Czech Academy of Sciences
Chair:
Andrea Schikowitz, TUM
Discussant:
Charis M Thompson, Princeton / London School of Economics and Political Science

052. Building Digital Public Sector: Automated decision-making across countries
3:00 to 4:40 pm
virPrague: VR 03
Participants:

Automating Welfare: Consequences of Automated Decision-making for Democratic Values *Anne Kaun*

In a world where automation is thought to increase productivity and efficiency with less effort and at lower costs, what happens to democratic values when this logic is deployed to support decisions in the welfare sector? The project on which the presentation is based investigates the extensive implementation of automated decision-making in the welfare sector across Europe linking automation to questions of shrinking trust, decline in civic participation and in extension challenges for democracy. The starting point is that data-based infrastructures for public administration are shaping not only welfare provision, but also state-citizen relations and open up questions of ethics and accountability, human agency in relation to complex socio-technical systems as well as biases and inequalities. The presentation draws on a case study of the Swedish Public Employment Services and their algorithmic automation practices. Based on interviews with civil servants, middle management and IT project leaders, I explore current pilot projects employing machine learning as well as implemented forms of automated decision-making at the public agency. I focus in particular on the ways in which the organization is reimagined as whole in connection with the increased delegation of task and decisions to algorithmic systems. The imaginaries provided serve as an example for who the future of the digital welfare state is constructed more generally.

A Datafied Norwegian Public Sector – The (Re)configuration of Data Driven Public Administration *Lisa Marie Reutter, NTNU*

This paper presents an ethnographic encounter with two public sector data teams engaging in datafication practices. The Norwegian public sector is undergoing a profound digital transformation, promoting the idea of data driven government. Data driven government aims to promote the idea of data as an

asset that needs to be highly integrated into policy making, service delivery, organisational management and innovation (Ooijen, Ubaldi, & Welby, 2019). Machine learning fed with big government data seemingly offers a simple, technical solution to a variety of complex societal challenges. Datafication therefore lies at the heart of the future imagery of the welfare state. Researchers have however identified a variety of shortcomings resulting from the datafication of public administration, such as an impenetrable opaqueness, reinforcement of discrimination and facilitation of surveillance. The core of this critique is the potential for a shift in the power dynamic between government and citizen, as datafication enhances the possibility to understand, predict and control citizen activities (Hintz et al., 2018). Through an ethnographic encounter with the Norwegian Labor and Welfare Administration and the Tax Administrations' data teams, this paper asks how imaginaries of sociotechnical futures are already reconfiguring local centers of power and knowledge within public administration. Focusing on negotiations and encountered challenges by the data teams, I will argue that despite the popularity of terms like fairness, accountability and transparency in the field, broader epistemological, ontological and political questions about datafication have not been addressed by politicians and practitioners alike (Seaver & Moats, 2019). This opens up for an interdisciplinary dialogue between STS scholars and public administration to reconfigure the idea of data driven government.

Algorithmic Profiling of Job Seekers in Austria: How Austerity Politics Are Made Effective *Gabriel Grill, University of Michigan; Fabian Fischer, TU Wien; Doris Allhutter, Austrian Academy of Sciences; Astrid Mager, Austrian Academy of Sciences; Florian Cech, TU Wien*

As of 2020, the Public Employment Service Austria (AMS) makes use of algorithmic profiling of job seekers to increase the efficiency of its counseling process and the effectiveness of active labor market programs. Based on a statistical model of job seekers' prospects on the labor market, the system—that has become known as the AMS algorithm—is designed to classify clients of the AMS into three categories: those with high chances to find a job within half a year, those with mediocre prospects on the job market, and those clients with a bad outlook of employment in the next 2 years. Depending on the category a particular job seeker is classified under, they will be offered differing support in (re)entering the labor market. Based in science and technology studies, critical data studies and research on fairness, accountability and transparency of algorithmic systems, this paper examines the inherent politics of the AMS algorithm. An in-depth analysis of relevant technical documentation and policy documents investigates crucial conceptual, technical, and social implications of the system. The analysis shows how the design of the algorithm is influenced by technical affordances, but also by social values, norms, and goals. A discussion of the tensions, challenges and possible biases that the system entails calls into question the objectivity and neutrality of data claims and of high hopes pinned on evidence-based decision-making. In this way, the paper sheds light on the coproduction of (semi)automated managerial practices in employment agencies and the framing of unemployment under austerity politics.

The AMS-Algorithm In Austria: Questions Of Discrimination And Democratic Legitimacy *Paola Lopez, University of Vienna*

Starting in 2020, the Public Employment Service in Austria (in short: AMS) has been using an algorithmic classification system to segregate the unemployed into three groups with different eligibility for support according to their predicted "chances" on the labour market. This system was developed under the leitmotif of efficiency, and it became known in the media under the name "AMS-Algorithm" with the publication of its accompanying method paper: It is stated explicitly in the paper that the data entry "Gender: Female" results in an automatic deduction of points, which means that a woman can be assigned to a less eligible group solely on the basis of her gender. Further potential point deductions according to personal data, such as age, childcare responsibilities, disability or citizenship, lead to an intersectionally compounded disadvantage. This paper identifies three mathematical conceptual building blocks of the AMS-Algorithm, and it shows that each building block is based on human decisions so that obvious societal bias can be located easily. Furthermore, the AMS-Algorithm is used as an illustrative example to address the larger question of what can be expected when predictive data-analytics become an integral part of government agencies. If data-based predictions result in unquestioned and confirmatory measures such as the allocation of welfare resources, a reproduction and reinforcement of inequalities becomes inevitable. This paper concludes by discussing two issues around data-analytics in state action that become visible when one examines the very epistemic mathematical fabric of data-analytics: the risk of discrimination, and the questionable democratic legitimacy.

Session Organizers:
Marta Choroszewicz, University of Eastern Finland
Marja Alastalo, University of Eastern Finland
Chair:
Marta Choroszewicz, University of Eastern Finland

053. Performative Futures: Fighting Reification Inertias through Open Anticipations
3:00 to 4:40 pm
virPrague: VR 04

Science and technology practices are crucially shaped by representations of the future. Expectations, socio-technical imaginaries and techno-visions are constitutive elements in the de facto epistemic-political governance of research and innovation. Some science and technology scholars (e.g., van Lente, 2006; Jasanoff and Kim, 2015; Konrad and Palavicino, 2017; Lösch, 2017) as well as certain research policy frameworks (e.g., technology assessment, anticipatory governance, RRI) have emphasized this performative character of futures by approaching it as an object of responsibility. This intellectual endeavor has been especially fruitful in relation to the visualization and critique of existing reification inertias. That is to say, the frames, regulations, commitments, feelings and so on, orienting and constraining (i.e., reifying, or closing-down) the processes, outcomes and ends of research and innovation practices. This panel aims to explore the theoretical and practical possibilities of developing interventive, anticipatory resources that are capable of instrumentalizing the future in more open, inclusive and reflexive ways. Some potential questions include: To what extent are anticipatory narratives and practices within research and innovation policy systems open, inclusive and reflexive? What constraining/enabling roles do socio-technical expectations, imaginaries and techno-visions of the future play in research and innovation practices? What potentials and limits do anticipatory methods (e.g., scenario-building, science-fiction prototyping, technology roadmapping, etc.) display with regard to reflexivity and de-reifying dynamics? How is/ should the epistemic-political quality of open anticipatory practices be enacted and/or assessed? What role and relevance does anticipatory governance display in relation to more recent policy frameworks such as RRI and "Open Science"?

Participants:

Exploring the Interaction of Technological Futures, Science Fiction and Utopian Thinking *Andreas Metzner-Szigeth, Free University of Bolzano*

The paper summarizes the results of a combined research and workshop project focussing on an exploration of the role of literary, artistic and media utopias within societal discourses about the development of technology and their interaction with scientific approaches to the future. Focusing on the genre of science fiction it shows that the design of negative (dystopian) and positive (eutopian) scenarios in its works not only represent a valid examination of futures but have a significant impact on their shaping as well. Taking up movements and moods within society, they represent soft factors that are as driving forces as effective and consequential as hard factors. Thus, they offer complementary insights that an analysis of the hard rational-scientific, political and economic factors and their consequences for the future cannot provide. Literary, artistic and media utopias enter moreover into a complex interaction with science in general and futures research in particular (particularly as well with technology assessment, science and technology studies and similar interdisciplinary future-oriented academic endeavors).

Against this background it becomes evident that literary approaches to the future can have an important (indirect mediating) impact on the processes shaping techno-scientific and industrial developments. Furthermore, they seem to exert a decisive influence on their social acceptance and on the framing of public funding programs that are not only promoting R&D projects, but are also trying to direct the paths of innovation.

Futures Scenarios As Tools Of Participatory Science Communication In Ecosystem Management And Governance *Ludwig Weh, Freie Universität Berlin*

Ecosystem scenarios map alternative future developments of ecosystems impacted by biophysical and human factors. An ecosystem services tool with rational, normative and esthetic elements within sustainability sciences, GIS-based data visualization scenarios connect geographic variables with narratives of desirable ecosystem management and governance. As decision-makers are often familiar with scenarios, the method appears as easy-access comprehensive science communication and links with policy cycles to support good governance [Bennett et al. 2003, Börjeson et al. 2006, Berg et al. 2016, Chaplin-Kramer et al. 2019]. Combining technology with participatory elements e. g. in data mapping / participatory GIS, narrative construction or scenario building, the method includes critical and reflexive elements for de-reification of established pathways towards diversified (democratic) negotiation of desirable development, improving identification, embodied knowledge and subsequent formulation of action strategies. Technically, this can be implemented with action scenarios based on internal drivers with high local, contextual and personal relevance. Conceptually, this individualized, dynamic exploration encourages discourse of spatiality as perceived (data) and conceived (human) concept merging in enacted (social) space, where transformative action can be planned and implemented in a science-society approach [Soja 1985]. Demanding of scientists recurrent self-reflection and process adaptation to stakeholder requirements, participatory knowledge creation in ecosystem scenarios elicits identification with the research process and results across different levels of decision-making and encourages revision of path dependencies and pre-existing imaginaries in ecosystem management. This theoretical method advancement represents a collaboration between M.A. Futures Studies, Freie Universität Berlin (GER) and Natural Capital project, Stanford University (USA). Bennett, E. M., Carpenter, S. R., Peterson, G. D., Cumming, G. S., Zurek, M., & Pingali, P. (2003). Why global scenarios need ecology. Frontiers in Ecology and the Environment, 1(6), 322-329. Berg, C., Rogers, S., & Mineau, M. (2016). Building scenarios for ecosystem services tools: Developing a methodology for efficient engagement with expert stakeholders. Futures, 81, 68-80. Börjeson, L., Höjer, M., Dreborg, K. H., Ekvall, T., & Finnveden, G. (2006). Scenario types and techniques: towards a user's guide. Futures, 38(7), 723-739. Chaplin-Kramer, R., Sharp, R. P., Weil, C., Bennett, E. M., Pascual, U., Arkema, K. K., ... & Hamann, M. (2019). Global modeling of nature's contributions to people. Science, 366(6462), 255-258. Soja, E. W. (1985). The spatiality of social life: towards a transformative retheorisation. In Social relations and spatial structures (pp. 90-127). Palgrave, London.

Modelling as anticipation: how computational models stabilize ideas of risk governance *Daniela Fuchs, Institute of Technology Assessment of the Austrian Academy of Sciences (ITA-OeAW); Anja Bauer, University of Klagenfurt; Titus Udrea, Austrian Academy of Sciences, Inst. of Technology Assessment (ITA); Leo Capari, Institute of Technology Assessment, Austrian Academy of Sciences*

Nanotechnology has served as a showcase for new, reflexive approaches of anticipatory governance, including RRI. However, in practice, formalized risk analysis still largely draws on traditional scientific perceptions of an objective calculation of hazards and exposures. Such closing down of risk assessment has been widely problematized by both STS and risk governance practitioners. In this presentation, we focus on a recent development in anticipatory nano risk governance, i.e. computer-assisted assessment methods that are increasingly combined and integrated into comprehensive modelling frameworks, bringing together risk assessment and safe(r) innovation. Based on expert interviews and key documents relating to selected modelling tools developed in EU projects, we reconstruct how understandings of risks and risk governance are being negotiated between science and policy when developing and conducting computer-assisted risk assessment. We are especially interested in moments of openness and closure and how these may be introduced in such negotiations. We first explore opportunities for openness built in such modelling tools, on a technical (e.g. categories within models) as well as a conceptual level (life cycle thinking, safe-by-design). We will then discuss the implications of such extensions with regard to actors and stakeholders to be involved in such modelling activities, before finally reflecting on how integrative modelling tools contribute to a stabilization or re-configuration of ideas of risk governance as a technocratic vis-à-vis reflexive venture.

Opening Up Smart City Visions to Citizen Perspectives Through Art & Play *Aafke Fraaije, Vrije Universiteit Amsterdam; Frank Kupper, Athena Institute, VU University, Amsterdam*

Smart cities are often driven by a limited range of values like efficiency and economic growth, and public debates about smart cities are often dominated by corporate visions. Our project aimed to open up smart city futures to citizens, both for the sake of inclusion as well as with the aim of broadening the range of visions considered in smart city developments, hence contributing to more socially responsible (smart) cities. To this end, we first elicited visions on smart cities from about 140 citizens by performing our speculative participatory street theater and playing our community boardgame in and around three community centers in Amsterdam. In parallel, we elicited smart city visions from 20 smart city professionals through in-depth interviews. We then used these lay and professional visions to create a participatory theater performance for our participants so that they could exchange and potentially broaden their visions on smart cities. Our preliminary results indicate that although smart city professionals and citizens were quick to envision smart city initiatives as a magic solution to complex social problems, our artistic and playful interventions were able to elicit various alternative visions from both professionals and citizens. Each vision highlighted a specific matter of concern such as growing social inequality or invasion of privacy & safety. To capture the contribution of single events like these to the work practice of smart city professionals and hence RRI, we argue that the events should be studied as part of an ecology of participation rather than in isolation.

Opening Up Sociotechnical Entrenchments through Anticipations: Relational Quality and the Heuristics of Foresight *Sergio Urueña, University of the Basque Country UPV/EHU; Hannot Rodríguez, University of the Basque Country UPV/EHU; Andoni Ibarra, University of the Basque Country UPV/EHU*

Over the last decade, diverse science policy frameworks that seek to politicize the entrenchment, or closure, of science and innovation systems have emerged. Examples include Responsible Research and Innovation, Anticipatory Governance, or the most disruptive interpretations of Open Science proposals. Although each of these normative frameworks is based on different assumptions, they all focus on inclusion and anticipation/foresight as key dimensions for promoting more responsible science and innovation dynamics. In particular, the former dimension involves the participation of an ample variety of societal actors in research and innovation processes, while the latter aims to increase reflexivity regarding the sociotechnical futures (e.g., visions, expectations and imaginaries) that de facto guide our decision-making processes in the present. In this presentation we will argue that although anticipation and foresight are valuable practices for fighting uncritical entrenchment inertias of sociotechnical systems, their more radical socio-epistemic heuristics do not come from their products (i.e., the representations about the future per se). Rather, anticipatory knowledge would emerge as the result of a process involving the co-creation of future scenarios and the negotiation of the desirability and plausibility of those scenarios.

Specifically, we claim that the heuristic force of anticipation and foresight depends on the socio-epistemic robustness of that process, which lies on the relational quality of the interactions underlying the production and assessment of alternative futures.

Session Organizers:

Sergio Urueña, University of the Basque Country UPV/EHU
Hannot Rodríguez, University of the Basque Country UPV/EHU
Andoni Ibarra, University of the Basque Country UPV/EHU

Chairs:

Sergio Urueña, University of the Basque Country UPV/EHU
Hannot Rodríguez, University of the Basque Country UPV/EHU

054. Global Prospects and Perspectives on Responsible Research and Innovation

3:00 to 4:40 pm
virPrague: VR 05

Responsible Research and Innovation (RRI) reflects an innovation paradigm that acknowledges that market innovations do not automatically deliver on socially desirable objectives, and requires a broad governance of knowledge coalitions of governmental bodies and industrial and societal actors to address market deficits. The STS community has adopted responsible research and innovation as an important subject matter and have helped to bridge policy makers, practioners of technology assessment, ethicists and economists to work together to advance both theory and practice of responsible innovation as demonstrated by the numerous nationally and internationally funded research and innovation actions in this field The session will take stock of the global prospects and perspectives on responsible research and innovation in China, Japan, Europe and the United States. It will explore and discuss both specific local challenges and challenges at the global and regional levels. Responsible Innovation will be understood as a new paradigm for innovation which requires institutional changes in the research and innovation system and the public governance of the economy. It also requires the institutionalisation of an ethics of co-responsibility as well as the introduction of new standards and certification processes for products

Participants:

Institutional change for making responsible innovation a reality *rene vonschomberg, European Commission*

I will introduce 'Responsible Innovation' as a new paradigm for innovation, contrasting it with conventional market-innovation and state regulated technology control paradigms. The contrast will clarify the requirement for institutional changes in the research and innovation system in order to make 'responsible innovation' a reality. The following requirements for institutional change will be discussed: 1. A change of the recognition and reward system for researchers at universities and public research institutes, among other with a view to reward open knowledge practices and value-driven innovation 2. A change of public governance of the economy: addressing market-failures in delivering on societal desirable innovations/sustainable development goals) and addressing innovation management by the introduction of new standards and certification of innovation for business operators 3. Institutionalization of anticipatory governance in public policy, with redefined roles for technology assessment and technology foresight 4. Institutionalization of an ethics of collective co-responsibility, enabling to establish an ethics as a driving force for innovation rather than a constraint.

How would a theory of de facto responsible innovation account for pluralities in global perspectives? *Sally Randles, Manchester Metropolitan University*

De facto responsible innovation highlights the emergence of recognisable 'pattern' as bottom-up or 'local' institutionalised normative understandings and practices of responsibility come into contact with, adapt and translate 'top-down' policy and prescriptions of responsibility, into local settings. Depending on prior conditions of institutionalisation, including the role of incumbents, vested interests, and the degrees of isomorphism currently prevailing, institutional change towards new understandings of what it means to be and act 'responsibly' may or may not occur. And processes and outcomes of institutional change may be considered 'deep', 'shallow' or some

combination of the two, in terms of empirical manifestation of (de)institutionalisation process. De facto responsible innovation takes history seriously, as new institutional logics of responsibility in research and innovation settings are held to 'sediment' atop earlier understandings, rather than erase or replace them. De facto responsible innovation equally takes agency seriously. It proposes that where particular 'world-views' prevail that encourage boundary-crossing normative and social-purpose oriented modes of institutional entrepreneurship within local political economy, then these combinations and alignments potentially facilitate an evolving, variety-generating dynamic of de facto responsible innovation. The paper uses these foundations of new and emergent theory to reflect upon how global pluralities of responsible innovation would be accounted for under de facto responsible innovation.(co-authored with Philippe Laredo)

Responsible Research and Innovation (RRI) and the classical view of responsibility of scientists: Prospects and Perspectives of RRI in Japan *Yuko Fujigaki, University of Tokyo*

I will contrast the type of responsibility assigned to scientists in the discourse on Responsible Research and Innovation with that of the classical view in Japan. There is a long history of discussion on the responsibility of scientists, notably concerning physicists in the aftermath of the employment of atomic bombs on Hiroshima and Nagasaki in 1945. I will compare the origin of RRI and the history of the discussion on SSR (Scientists' Social Responsibility) and elaborate on their differences. By analyzing the history of the classical view on the responsibility of scientists in Japan, as well as by examining the recent changes in the Japanese Science and Technology Basic Law, which now includes the humanities and the social sciences, this presentation, will show the prospects and perspectives on RRI in Japan. In addition, it will show the trial of the Moonshot program by the cabinet office in 2019 and networking efforts of RRI/ELSI researchers in JST (Japan S&T Agency) and the private sector foundation, SECOM S&T foundation.

Towards a Paradigm Shift in the Innovation Discourse: the epistemic, political, and conceptual challenge of Responsible Innovation *Lucien von schomberg, Wageningen University*

In launching the International Handbook on Responsible Innovation, René von Schomberg & Jonathan Hankins (2019) brought together renowned authors from around the globe to address the need for a paradigm shift in the innovation discourse, driving innovation away from mainstream economic interests towards societally desirable outcomes. This aspiration comes with several challenges. At an epistemic level frameworks of responsible innovation face the complexity of anticipating the unexpected outcomes of innovation, which conflicts with the ideal of steering innovation into a predetermined direction (Grunwald 2019, Nordmann 2014). With regard to this predetermined direction, these frameworks have also been questioned at a political level for insufficiently addressing the different values and interests of stakeholders involved in the innovation process (Blok 2019, Van Oudheusden 2014). Moreover, at a conceptual level the discourse of responsible innovation is arguably confined to an intrinsic relation between technology and the market, thereby undermining its attempt to liberate innovation from economic ends (von Schomberg & Blok 2019, Blok & Lemmens 2015). The presentation will provide an analysis of these challenges–respectively the epistemic, political, and conceptual challenge–and discusses what steps are needed to overcome them.

RRI in Quadruple Helix: how to practice co-responsibility in China's STI system *Miao Liao, Changsha University of Science and Technology*

China's science and technology policy is increasingly echoed and even influenced by the concept of Responsible Research and Innovation (RRI). In this presentation, I will elaborate on the impact of the rapid social change in China on its science and technology policy and its implications for implementing Responsible Research and Innovation. Furthermore I will discuss the current challenges for implementing RRI, among others: 1. Institutionalization of dialogue among stakeholders is lacking.

Interviews shows, for different kinds of stakeholders, responsibility to broader society is not their primary responsibility, compared to catching up with their international peers through innovations.   2. Quality of communication across the Quadruple Helix is still weak. Communication between scientists and society is far from enough. A survey shows around 40 percent of the scientific personnel believed that there is a serious lack of communication between scientists and public, while 42 percent think that there is a serious lack of communication and cooperation between scientists and enterprises in China. 3. Public trust is another factor impeding communication and coordination between social actors. Some studies showed that the popularization of the Internet and new media within the Chinese public had greatly enlarged their access to diversified information, especially negative information about scientists, and thus reduced their trust in them. Finally I will illustrate the challenges of RRI on the recent case of gene-edited babies in 2018-2019, showing a picture of interaction among scientists, public, industry, government and media of responsibility allocation regarding emerging scientific researches and technologies.

Session Organizer:
rene vonschomberg, European Commission

Chair:
rene vonschomberg, European Commission

Discussant:
J Britt Holbrook, New Jersey Institute of Technology

055. Constitutional moments: re-ordering science, democracy, and society

3:00 to 4:40 pm
virPrague: VR 06

Societal transformations do not always evolve smoothly but often occur discontinuously when being shaped by particular "constitutional moments". Jasanoff (2011) has defined such moments as brief periods in which basic rules of political practice are rewritten, thus fundamentally altering the relations between citizens, experts, and the state. In such constitutional moments, the use of expertise and its power by authoritative institutions is renegotiated in society, thus allowing for new ways of thinking social order and organizing democracy to emerge. When made explicit, such alternative approaches to social and political ordering may enter the political sphere. This panel explores how such constitutional moments are related to sociotechnical imaginaries in a society. It will discuss the complex entanglements of sociotechnical imaginaries and "constitutional moments" and ask the following questions: What role do sociotechnical imaginaries play for the emergence of "constitutional moments"? Are imaginaries transformed in such moments, or do they persist in a political culture despite of potentially disrupting constitutional moments? Do such moments provide a space in which such imaginaries are explicitly or implicitly mobilized as powerful resources or are they ignored to allow for other imaginations to rise? Do constitutional moments allow sociotechnical imaginaries to circulate? And in what ways do imaginaries contribute to the closure of such societal "windows of opportunities"?

Participants:

(Re)framing Imaginaries: Exploring a constitutional moment in German AI governance *Regula Valérie Burri, HCU - HafenCity University Hamburg*

Artificial Intelligence has recently been identified by German policy actors as a key enabling technology that will affect society at large. The German government plans to invest large sums into AI research and applications, taking also a broad set of infrastructural measures into account. After a vast consultation process, in which a large numbers of societal actors and institutions were involved, Germany defined a national AI strategy that was published in 2018. The rapid advances in AI technologies have been forcing policymakers and societal actors to consider the ways these technologies should be governed, thus opening up potential "constitutional moments" (Jasanoff), in which the relations between citizens, experts, and the state may be altered. In my paper, I will inquire into the sociotechnical imaginaries expressed in and underlying the German AI strategy. I ask how the specific constitutional moment, in which the governmental strategy was framed, offered space for the re-interpretation and re-negotiation of existing institutions and

norms, thus allowing new sociotechnical and democratic orders to emerge. By drawing on policy documents that define the AI strategy, and a comparative analysis, I explore continuities and discontinuites of the imagined sociotechnical orders. The case of AI in Germany suggests that imaginaries are both stabilized and transformed in a specific constitutional moment, while being entangled with particular technologies.

In A Constitutional Momentum? Fixing Innovation with RRI in Global Governance *Nina María Frahm, Technical University Munich, Munich Center for Technology in Society*

Recent public skepticism towards innovation marks a break from what has long been perceived as an era of extreme innovation optimism, where technological fixes figured centrally in the societal imagination of desirable futures. In contrast to such panacea rhetoric, current discourses around innovation point to a shift in framing innovation strategies as failing to remedy social problems, and indeed exacerbating many of them (e.g. GM Food Wars, CRISPR Moratoria, AI Ethics). Particularly in institutions of global governance, such a 'crisis' of imagining innovation as a key force of social good has opened up a 'window of opportunity' for innovation policy to become more democratic, responsible, and ethical. As exemplified by the rapid rise of Responsible Research and Innovation (RRI) in the European Commission and the OECD, the current crisis authorizes new forms of expertise to enter political cultures, including STS research and engagement. By proposing new approaches to innovation governance, RRI advocates also evoke alternative imaginaries of democratically controlled, socially robust, and ethically sound socio-technical futures vis-á-vis top-down, expert-driven, and growth-oriented governance models that served socio-technical imaginaries of innovation in the past. Yet, changing understandings of what (responsible) innovation is are shaping social, political and economic orders of core interest to international organizations, which reconfigure these understandings in ways that reflect prior normative commitments to a market-liberal global order that embraces innovation as a growth engine. Rather than in a constitutional moment, new forms of innovation governance hence build constitutional momentum for re-stabilizing socio-technical imaginaries under the global innovation imperative.

Imagining the Possible During Constitutional Moments: Revisiting the Rise of Personal Genomics *Stephen Hilgartner, Department of Science & Technology Studies/ Cornell University*

This paper explores the constitutional moment in which "personal genomics" emerged in the United States. The development of molecular genetic tests in the 1980s and 1990s inspired much debate about their appropriate regulation, with concerns about how state agencies, medical professionals, and industry should manage questions about safety and efficacy, informed consent, gatekeeping, quality assurance, and credible interpretation of results. A US genetic testing vanguard—consisting of regulators, industry, medical geneticists, disease groups, bioethicists and others—debated how control over testing should be allocated among state, market, profession, and patient. Yet even as the 1990s drew to a close, this vanguard did not imagine the rise of companies like 23andMe, which less than a decade later constituted orders that allocated control and constituted agents in ways that had not previously appeared on the radar. The genetic testing vanguard's "failure" of imagination, along with the ability of a new vanguard to envision and constitute personal genomics, offers an opportunity to analyze how vanguards assemble visions during constitutional moments, as they selectively draw on extant sociotechnical imaginaries to frame futures, mobilize support, and render specific changes plausible and palatable.

Envisioning „the digital". Controversies about the Smart Home and the re-configuration of everyday life *Friederike Rohde, Institute for Ecological Economy Research (IÖW) and TU Berlin*

Since the "digital" is permeating nearly all areas of social life, it shapes social practices and is re-assembling social order (Lupton 2014, Marres 2017). Coming up with narratives of resource savings and the empowered citizen, the so-called „technological

solutionism" (Morozov 2014) propagates the notion that „smart" technologies will fix nearly every societal problem we are facing. But who defines what technical solutions and forms of technology use are considered legitimate and desirable? What shared ideas and normative orientations are associated with certain digital solutions and who drives their development? For the rise of digital technologies „socio-technical imaginaries" play a crucial role, because they serve as collective visions of a good desirable future (Jasanoff and Kim 2015) and guide and coordinate action (Lösch et al. 2019). This paper attempts to illustrate how collective visions shape and manifest in the socio-materiality of everyday life. This work is based on the assumption, that the performative power of socio-technical imaginaries is closely linked to narratives about how people embed these technologies into their actions in everyday life. The re-configuration of housing and the home through the rise of digital technologies is a sound example for this notion (Strengers 2016, Strengers and Nicholls 2017, Cherry et al. 2017). The manifestation of these collective visions in socio-material configurations alter normative assumptions about what forms of life are asserted as desirable. The empirical investigations of this contribution are based on a Discourse-Network-Analysis of the controversies on the Smart Home in Germany.

Reimagining sustainable transformation in a digital world: The vanguard vision of the German Advisory Council on Global Change *Christine Polzin, UFZ Leipzig; Nele Kress, UFZ Leipzig; silke beck, UFZ Leipzig*

This paper takes so-called flagship report 'Towards our Common Digital Future' published by the German Advisory Council on Global Change (WBGU) in 2019 as starting point for reconstructing the emerging sociotechnical vanguard vision of digitalization in Germany. The WBGU is a scientific advisory body to the German Federal Government. It was established in 1992 in the run-up to the Rio Earth Summit (UNCED) in order to translate the work of international bodies such as the Brundtland Report and Club of Rome into the national discourse. Shortly after the nuclear accident in Fukushima, it published its report 'World in Transition: A Social Contract for Sustainability', which received much attention in the national discourse on societal transformation and set the stage for this discourse. In this seminal report, the WBGU promoted a social contract for innovation in the form of a new kind of discourse between governments and citizens. In its novel report, the WBGU calls for a "sustainable, digitally supported model for the future that differs from the existing models in China and the USA" (WBGU 2019: 17). This paper considers the WBGU report as vanguard vision (Hilgartner 2015) and asks the following questions: • How does the WBGU appropriate the digital in order to reimagine Germany as environmental forerunner and establish a link between Germany's technoscientific past and a bright digital future? • How are opportunities and risks of digitalization framed by this flagship report? • What models of statehood and citizenship/ agency are being reimagined and what requirements for data protection and privacy access to infrastructures and decision-making processes are recommended by the WBGU? How is the participation of citizens with respect to the benefits of technological progress justified?

Session Organizers:
silke beck, UFZ Leipzig
Regula Valérie Burri, HCU - HafenCity University Hamburg
Chair:
silke beck, UFZ Leipzig

056. FLIPPED | Transnational STS: Theories, Practices, and Pedagogies (I)
3:00 to 4:40 pm
virPrague: VR 07

*You can access all presentations on the STS Infrastructures Platform (https://stsinfrastructures.org/content/open-panel-4seasst-2020-transnational-sts-theories-practices-and-pedagogies/essay) STS scholarship has flourished in diverse regions and institutional spaces, creating a deeply transnational, interdisciplinary research field. Further, STS scholars in diverse places often study global circuits of ideas, technologies, experts, development models, and so on. Transnational STS thus has many facets

and potentials. Building on continuing dialogue about transnational STS in recent years (especially since the 2018 4S conference in Sydney, where TRANSnational STS was the conference theme), this panel will bring together presenters working to conceptualize, practice and extend Transnational STS in different ways. In conversation with STS scholarship that focuses on the constitution of modern technoscience across and between nation-states, this panel seeks to reflect on the transnational character of STS at theoretical, methodological and empirical levels from a comparative perspective. Rather than approaching "transnational" as an ideal temporal-spatial universalism to be achieved, this panel particularly aims to elaborate on and question STS praxis that centers on the analytic of the "nation-state" in studying technoscientific developments as well as reflecting on the uncritical utilization of STS concepts/theories across different contexts. Through opening a self-reflexive space about methodological nationalism and neocolonial orientations in our praxis at this very moment when we witness the haunt of the far-right movements, authoritarian states, post-truth politics, and intentional denial of socio-ecological crises across the world, we invite contributions that reflect on theoretical and methodological capacities of STS to imagine and reclaim for science(s) otherwise. Contributions may address, among others, the following questions: What makes STS transnational? How can we think about "transnational STS" in juxtaposition to other concepts, e.g., international, multinational, postnational, supra-national, anti-national, global, cosmopolitan, universal, imperial, and translocal? What becomes visible when nation-state as the only analytic breaks down? What is the role of the nation-state with regard to education, research activities and the regulation of technologies in the contemporary period? How do STS theories and concepts travel, get used and modified around the world? Are the directions of the flux of theories and concepts changing? To what extent do STS theories and concepts reflect on the inadequacies of existing categories -e.g., "East and West" ; "center and periphery"; "developing and developed"? What can we learn from South-South dialogues in STS? How are transnational research networks formed and organized? How do these networks set research agendas? What infrastructures can support transnational STS formations? What are the methods and methodologies used to foster transnational knowledge production in a collaborative manner? How would transnational STS add to the interdisciplinary and transdisciplinary character of the field? What are exemplary cases that demonstrate transnational STS sensibilities? How can transnational STS contribute to STS teaching? How can transnational STS add to local efforts in engaging with multiple publics, decision-makers, scientists, activists, and other related actors? How can transnational STS contribute to the future of the field? What are the limitations of doing transnational STS?

Participants:

Science and Technology as a Global Challenge: Evaluation of Attitudes and Notes from the course "Global Innovations" *Octavio Mucino-Hernandez, SFIS - Arizona State University; Annel Vasquez, Universidad de Guadalajara; Tomás Carrozza, Universidad Nacional de Mar del Plata; Jeanne Simon, Universidad de Concepcion; Martin Andrés Perez Comisso, SFIS - Arizona State University; Lindsay Adams Smith, Arizona State University; Mary Jane Parmentier, SFIS - Arizona State University*

In this study, we present the results of a pedagogical experiment called "Global Innovations: Latin America", a bilingual, multi-modal, hybrid and synchronic course developed in Arizona State University (US), Universidad de Mar de Plata (Argentina), Universidad de Concepción (Chile) and Universidad de Guadalajara (Mexico). This course analyzes the intersection of society, science, and technology from a decolonial perspective, with the purpose of providing the students with the concepts and research methods for collaborative, international and horizontal research-experience. Students from different geographical regions become peers and investigate the social and human impact of emergent technologies in their respective locations and create meaningful products that contribute to knowledge mobilization in their communities or groups. The students have a global research experience through digital means that helps them to situate their own positionality (gender, class, ethnicity, values, political orientation) regarding the advancement of technology and scientific production in their regions. Using a mixed methodology, we compare the attitudes and perceptions of the students with the learning outcomes. Throughout the study, we describe the process of the creation and application of this model,

assessing the achievements and areas of improvement from an institutional perspective. This presentation will focus on (1) the governance of a multi-university pedagogical experience, (2) the processes of collaborative curricular design, (3) the learning outcomes of the students and (4) the implications of this kind of pedagogy in the construction of professional skills and critical thinking in college-level and grade-level students in the American continent. Global Innovations is relevant in the articulation of new institutional and intellectual alliances for inclusive foresight and anticipation of emerging technologies in different countries, and the co-production of new interactive tools for global knowledge mobilization.

"Chinese Privilege": Teaching Race and Technology in Singapore *Monamie Bhadra Haines*

What does it mean to teach undergraduates about race and technology in a Singaporean context where race is the veritable "superstructure" of society, with nationally-recognized races divided into Chinese, Malay, Indian or Other? Why should Singaporeans learn about the global slave trade and anti-racist activism in the United States? These are questions I grapple with in teaching students about race and technology in a nonliberal-democratic context where meritocracy is the dominant ideology, and where the majority of students view race as biological, and technology as deterministic. Drawing on auto-ethnographic experiences from (1) teaching contemporary social theory and STS at Nanyang Technological University, (2) my participation in Singapore's "Invisible Privilege" conference in 2019, as well as (3) analyzing the recent "brownface" controversy, I articulate the challenges of teaching about race and technology, both separately and together, in Singapore. In particular, I discuss attempts by scholars to distance themselves from importing "liberal" critiques of race and technology from Western contexts. Singaporean scholars argue that Singapore's historical trajectory diverges from the West's history of slavery and violent racism, and as such, liberal theoretical constructs of critical race theory do not apply. Instead of theorizing racism as embedded in discourses of structural violence, Singaporean racism is viewed as more "nuanced" in Singapore. To this end, I discuss the pedagogical challenges of situating Singapore and so-called "Chinese privilege" in a context of white-supremacy and anti-blackness, especially when considering the work of migrant construction and foreign domestic workers from South and Southeast Asia.

The Transnational Politics of the Wuhan Coronavirus *Joji Kijima, University of Tsukuba; Ryosuke Ohniwa, University of Tsukuba*

This comparative analysis on the Wuhan coronavirus or COVID-19 examines how different countries cope with the same global pandemic. This paper argues that the new coronavirus could have been contained earlier if Chinese officials had not autocratically concealed information from the public. It utilizes a social constructivist approach to reveal the de-sinicization of COVID-19 from a transnational perspective. In effect, this paper contributes to the field of science, technology, and society by highlighting the social responsibility of scientists and decision-makers across national borders. First, this paper sheds light on different interpretations of the outbreak of the new coronavirus in China and how the World Health Organization (WHO) and different countries reacted to it. Second, it shows the limits of Chinese sovereignty in the face of a real global pandemic by analyzing the case of Taiwan's participation in WHO. Third, it turns to the case of the cruise ship Diamond Princess with infected passengers anchored off the coast of Japan and draws a lesson for crisis management. Fourth, it points out the ideological divide over quarantine policies towards China by highlighting the case of Cambodia's acceptance of the cruise ship MS Westerdam. Fifth, it traces the development of vaccines and test kits by comparing cases such as the trials of traditional medicine in China and a vaccine made in Japan. Finally, it examines China's reverse quarantine policy towards Korea and Japan and its medical diplomacy to de-sinicize the Wuhan coronavirus.

Illiberal science and STS: new directions in the studies of science in state dictatorships. The case of forensic science in Soviet Russia *Volha Parfenchyk, Department of History and*

Art History, Utrecht University, Utrecht, The Netherlands

Recent studies in the history and sociology of science have seen two converging trends. On the one hand, scholars in science and technology studies (STS) researching science practices in Western liberal democracies have contested a long-held assumption about the neutrality and objectivity of scientific knowledge (Jasanoff 2004). On the other hand, studies in the history of science in state dictatorships have disproved earlier claims that science in countries with a dictatorial regime constituted a mere product of state coercion (Kojevnikov 2004). Rather, according to them, scientists often acted independently from the state or used state ideology to conduct, what they believed to be, a 'proper' scientific research. Hence, both lines of research seem to converge on the same point: a social element stands behind all scientific research, whether produced in liberal West or in state dictatorships. However, despite this apparent conceptual and methodological rapprochement between the two lines of research, they have rarely engaged with each other in practice. For example, STS rich conceptual toolkit has been rarely used to explore the intricacies of knowledge production in dictatorships. In my paper I will make an attempt to do so. Taking as an example the development of forensic psychiatry and psychology in Soviet Russia, I will discuss the benefits and pitfalls of looking at scientific practices in dictatorships through the prism of STS. I aim to show that, although STS has a great potential to advance our understanding of knowledge production practices in dictatorships, key STS concepts require adjustment to capture and give justice to their specificity and illiberal origins.

Transnational Transformations: Daoism, The Neurosciences, And The Politics Of Knowledge *Johanna Pokorny, University of Toronto*

This paper follows on a moment during my ethnographic research with a neuroscience laboratory in Canada when scientists discussed connections between the Daoist Zhuangzi, Chinese medicine and the neurosciences. The moment was the result of transnational collaborations with scholars from Taiwan and China. At first, this moment might be surprising given the ways in which Daoism's analytic possibility has been unworlded, that is, when it is taken as not belonging in a scientific lab, its influence is unacknowledged or excluded (Zhan 2011, 2018, Law and Lin 2017). Instead, I argue the moment is not surprising but symptomatic of changes occurring more widely in the neurosciences through transnational connections with China and Taiwan. In both Taiwan and China, the neurosciences have been expanding, and, in the latter especially, the field connects with Chinese medicine, though this is not much reported in the "West." In other words, the transnational movement of neuroscience reproduces an uneven politics of knowledge. Even further, I show that there have been multiple historical sideways connections between the neurosciences, Daoism and Chinese medicine, but that these are either not taken seriously or interpreted as science-at-its-limits, intersecting with religion or mysticism. I argue that these interpretations are problematic, especially when this conceit is reproduced in STS. A question that emerges is how to analyze critically the transnational movements of science and its accompanying transformations without relying on approaches that inadvertently reiterate uneven analytic constructs. I also raise the possibility of sideways connections with Daoism in STS that remain unacknowledged.

Session Organizers:
Kim Fortun, University of California Irvine
Noela Invernizzi, Universidade Federal do Parana
Duygu Kasdogan, İzmir Katip Çelebi University
Aalok Khandekar, Indian Institute of Technology Hyderabad
Angela Okune, University of California - Irvine

Chair:
Angela Okune, University of California - Irvine

057. The 'elsewhere' of sociotechnical life at night
3:00 to 4:40 pm
virPrague: VR 08

This panel invites the speakers from the previous session of the same name, to a wider discussion about the importance of considering planetary

'elsewheres' of sociotechnical life at night. By asking how planetary 'life' should be rethought, reimagined and reworked through 'light', the panel will engage interdisciplinary debates that (re)consider the importance of night and artificial lighting to STS studies and wider debates.

Participants:

Frontstaging nightlight - ALAN research as a 'reflexive elsewhere' of socio-technical life at night *Markus Rudolfi, Institute for Sociology, Goethe University, Frankfurt; Nona Schulte-Römer, Helmholtz Centre for Environmental Research - UFZ; Friederike Klan, Deutsches Zentrum für Luft und Raumfahrt; Helga Kuechly, GeoForschungsZentrum Potsdam; Christopher Kyba, GeoForschungsZentrum Potsdam*

This paper explores transdisciplinary research on artificial light at night (ALAN) as a 'reflexive elsewhere' of socio-technical life at night, that is an intellectual space for knowledge generation and exchange that responds to and reflects lighting practices and light pollution. ALAN research shows that the use of lighting technologies has unintended side effects on ecosystems, human activity and potentially our health. This research has been accompanied by the emergence of a loose, globally dispersed and transdisciplinary research community that communicates via social media, gathers in conferences and collaborates in projects. Our paper gives an overview of the 'reflexive elsewheres' proposed by the ALAN community ranging from scientific field experiments, the designation of dark sky areas to citizen science initiatives. We then focus on our citizen science project "Nachtlicht-BüHNE" where we design two smartphone apps, one for documenting fireball sightings and the other for counting private and public sources of light pollution in a given inhabited space. Our guiding question is how the co-design process enacts new and existing knowledge as a basis for 'imagining, representing, practicing and performing sociotechnical life at night.' To answer this question we outline how the project encourages citizens and researchers to engage in new ways with their night-time environments while they design and test the user interface of the smartphone apps. In our conclusion, we will systematically explore how science-driven 'reflexive elsewheres' relate to a reconsideration and appreciation of darkness that is currently observed by social scientists and historians.

Seduction and violence in the vertical night *Casper Laing Ebbensgaard, University of East Anglia*

In response to the global surge in construction and design of residential high-rise buildings and the subsequent claims about their apparent sensitivity towards psychological, social and environmental impacts on inhabitants and surrounds, the paper explores the affective and aesthetic effects of designing residential high-rise buildings for the night on everyday life in the vertical city. By drawing on accounts from residents, building managers, architects and designers involved in specific high-rise developments across east London, the paper explores how light and darkness impacts on residents' abilities to form attachments to places, in the home and wider city, in ways that are meaningful to them. The paper demonstrates how light and darkness shapes a sensory and aesthetic form of violence that is endemic to the continued advance of vertical urbanism. By drawing critical attention to the ambivalent, ambiguous and often contradictory ways that people relate to light and darkness in the vertical city and the violent forms they take in their intimate spaces of their homes, the paper aims to rework ways of representing and thinking about sociotechnical life at night. By proposing an ontological shift towards appreciating the 'elsewheres' of the vertical night – the urban 'atmosphere', socially marginalised residents, energy efficient lighting technologies – the paper seeks to address and undo present ways of living in un/desired ways that reconfigure ways of being human through alternative imaginings and representations of sociotechnical life at night.

Timing Sleep: Arctic Sleep Devices And The "Sleep of Any time" *Julie Sascia Mewes, Ruhr-Universität Bochum*

Hospital staff belongs to a high-risk group suffering from sleep deprivation and sleep disorders while, simultaneously its work environment demands a high level of concentration, rapid decision-making, and empathy. Nurses and MDs working night shifts above the Arctic Circle are additionally challenged by extreme circadian changes during the polar night and midnight sun periods. In the dominant discourse's reading, sleep devices (e.g. sleep tracking apps) focus on 'improvement' or 'optimization' in terms of individual performance and health within the given circadian rhythm. Due to rotating shifts, and polar nights and days, Nordic hospital staff's sleep rhythms are considered to sleep continuously out-of-sync. Local materialities of sleep at home, work, or in public related to light/darkness exposure (e.g. ultrabright street lighting) imitate the day-night-rhythm and thereby shift the aim of enhancement from the individual towards the environment. This problem context is relevant to STS conversations on the entanglements of everyday/night life practices, its matters, and temporalities and imaginings of alternative light infrastructures. I contribute to this conversation by drawing on my ongoing study "Matters of Sleep" with which I aim to better understand the usage of devices for sleep enhancement under extreme work conditions and seasonal variations of light/dark exposure. Analyzing practice-based ethnographic interviews with health care professionals working rotating shifts in sub-Arctic Norway, I critically discuss the hypothesis that the "matters of sleep" under extreme conditions allow a 'sleep of any time' and try to disprove common conceptions of 'natural' (or healthy) sleep patterns, its temporalities and rhythms. Keywords: sleep enhancement, sleep devices, light/dark exposure, extreme sleep conditions, polar nights/midnight sun, temporalities, shift work, arctic ethnography

How do we get everyone to space? *Noah Etka, James Madison University; Kostas Thanos Polyzos, James Madison University; Brenda Trinidad, Insights El Paso*

In a world ravaged by light pollution, with no stars to see, how will future generations understand their place in the cosmos? With our place in the universe veiled in darkness by an excess of light, perhaps enabling interaction with the cosmos becomes a pilgrimage for all humans. The Overview effect, coined by Frank White, refers to the mental model shift that occurs when one leaves the atmosphere and sees Earth from "above" for the first time. Perhaps we would all feel more human than ever before by leaving the only place we have ever been. How do available resources and needs of Earth affect the methods that we could use to get people to space en masse? How do different discourses around space tourism reflect underlying assumptions about Earth, space, and what it means to be human? What could space travel look like if it were conceptualized, from the outset, as a human right? This project uses an STS lens at the intersection of space and publics. I explore and challenge assumptions regarding who goes into space, and for what reasons. As an undergraduate student in an Applied STEM program performing research in an STS Lab, my work-in-progress analyzes the relationship between publics and space through research I conducted in my role as a founding editor and writer for an anticipatory science journal centering around futures of space. This initial research was conducted with my founding co-editor, Kostas Polyzos, who has given permission for its use in this presentation.

Session Organizer:

Casper Laing Ebbensgaard, University of East Anglia

Chair:

Casper Laing Ebbensgaard, University of East Anglia

058. Classic STS Papers: Session 1

3:00 to 4:40 pm

virPrague: VR 09

Participants:

Analogy, Ontology, and Psychology: Revisiting Theoretical Sources of Bloor's 'Knowledge and Social Imagery' *Andrei Kuznetsov, European Univeristy at St. Petersburg; ITMO University*

Bloor's Strong Program (SP) is one of the classical approaches in STS. Since the 1970s SP aroused much controversy. Most of the discussions were focused on SP's explanatory strength, on the consequences of its declared relativism for a philosophy of science and epistemology, and later on its relationship with the

Wittgensteinian heritage. However, immediate theoretical sources of SP and its 'logics' of theorizing were for the most part overlooked. This paper is intended to fill in this gap. First, I bracket out Barry Barnes' contributions for analytical purposes and concentrate on Bloor's SP only. Then, I will articulate Bloor's SP relations with Mary Hesse's philosophy of science, Kuhn-Popper debate, and older tradition of empiricism that predated logical empiricism. I will argue the following: Following Hesse Bloor's SP use analogical reasoning, combines the principle of correspondence and that of coherence despite its declared relativism, and located itself in the paradigm of confirmation as against the paradigm of falsification where the whole Kuhn-Popper debate was located. Bloor's ontological turn away from Popper's theory of three worlds was crucial for the early development of his SP. Bloor creatively appropriates Hesse's network model of science by reconciling it with the older tradition of empiricism construed as philosophical psychology. These insights allow revisiting Bloor's classic 'Knowledge and Social Imagery' by showing how these early developments are implicated in SP's explanatory model. As a result, the opportunity to reassess the declared relativism, symmetry, and sociological status of Bloor's SP will be opened.

Reintroduction to Cybernetic Primitivism *William J Lockett, Massachusetts Institute for Technology (MIT)*

Gregory Bateson, in Steps To an Ecology of Mind (1972), attempted a synthesis of modern logic, communications theory, and anthropology. I revisit Bateson to rediscover in his cybernetic philosophy of mind a template for discussions of computational media in STS. Media studies scholars look for diagrams of signal transmission and logical form; they then argue that these inscription-circulation templates determine 1.) the possibility of knowledge production and 2.) the formation of worlds composing human and nonhuman entities. I argue that Bateson provided a vision of how that method works for computational media. Long before recent talk of nonhuman agency, such ontological primitivism returned in the 1950s, through cybernetics, in the form of what I call "logical primitivism": the search for eminently programmable elementary logical formalisms. In Steps, Bateson defined the "primitive" as a logical agency animating both nonmodern psychological and social forms and inspiring research into new forms of programmability. When Jacques Derrida, in Of Grammatology (1967), called cybernetics a new kind of writing, he did so as a warning: computation would become a key site of ethical reflection on how new systems of inscription circulation influence the formation of ontological and political boundaries. Gayatri Chakravorty Spivak renews this argument in her recent reading of Bateson from An Aesthetic Education in the Era of Globalization (2013). Could STS, media studies, and anthropology define the determining agency of logical primitives, such a pairing, grouping, and limits? Could that delimitation of logical determination bridge formalist methodologies with discussion of activism and policy?

Agre's „Surveillance and Capture" Today *Jan C Dittrich; Lisa Conrad, Leuphana University*

„Surveillance and Capture" is now 26 years old, yet we feel it can tell much about our data-ified economy and how it influences our intertwined digital and analog lifes. The term "capture" never made it into many discussions. We still talk about "online surveillance" and "surveillance capitalism". Arge argues that the idea of "surveillance" is build upon metaphors of secret state police. "Surveillance" thus might conceal on which which assumptions data-ified systems operate. "Grammars of action", which prescribe actions which can be tracked bridgedigital and analog world and by that influence both. Countless "grammars of action" have been created and (unknowingly) followed since the publications. They made datafication of large parts of our daily lifes possible, from facebook to pokemon Go – yet, it was written only a year after the first graphical web browser was introduced Agre uses specific and graspable examples for tracking systems, filling more than a page of the original paper. Based on these examples, he develops an abstract, yet useful way to describe the creation of data and its consequences. This is reflected in the publications language which is example-rich, precise, yet well readable. We suggest „Surveillance and Capture" for discussion

in the Classic STS Papers panel, since we find to give a much needed perspective on an important topic. Sadly, its relevance seems to be far bigger than the appreciation it gets. Thus, we would like to re-enact our reception of it in the light of the socio-technological developments of the 26 years since its writing.

Relocating practices of production: the optical pulsar paper (Garfinkel et al., 1981) and its legacy. *Laurent Camus*

Through the seminal text of Garfinkel, Lynch and Livingston (1981), "The work of a discovering science construed with materials from the optically discovered pulsar", the presentation aims to put into perspective the approach of retemporalization and relocation of scientific practices highlighted in the article with more recent STS and ethnomethodologically inspired developments (Lynch, 1993 ; Garfinkel, 2002 ; Koschmann and Zemel, 2009 ; Sormani, 2016). The aim of Garfinkel et al.'s paper was to study scientific productions by focusing on the local practices that constitute them. The authors used recordings of interactions in the laboratory during a scientific discovery. They confronted the recorded data with the final article, which relates the experiment regardless of the emergent and contingent dimension of the discovery. In our view, the interest of such a perspective on action and its temporality goes beyond the strict field of the study of science and is of interest to study new practices of perception and visual representation in the digital age (e.g. Broth et al. 2014). It allows to re-evaluate the role of technical objects in interaction (Heath & Luff, 2000 ; Nevile et al., 2014). In addition, this contribution will be illustrated by a video analysis of broadcasting and heritagization practices of a traditional Swiss festival with an international audience by professionals of the national TV company. We will compare the images produced with their local production, by relying on the recordings made in the control room and during the editing of the video.

Session Organizers:
Nicole C Nelson, University of Wisconsin Madison
Sergio Sismondo, Queen's University

Chair:
Nicole C Nelson, University of Wisconsin Madison

059. Exploring Otherworldly Ecologies

3:00 to 4:40 pm
virPrague: VR 10

Participants:

An Ecology of a Smart Planet: Algorithms, Space Data and Sustainability *Matjaz Vidmar, The University of Edinburgh*

A key trend in the development of Space/Earth Observation (EO) data processing is the use of machine learning technologies in data management and analytics. This is now evolving towards full-scale artificial intelligence (AI) solutions, which may take the form of production of new multi-layered data-rich valuation-logic based algorithms, thus transcending human perception. These advanced computational methods are inherently socially, politically and economically contentious and problematic, as they generate (severe) knowledge asymmetries in the user-algorithm, developer-algorithm and algorithm-algorithm interactions. These problems are exacerbated by the (relative) homogeneity of algorithmic logic in contrast to (social, political and economic) heterogeneity of (communities of) users and developers. For instance, as part of the Frontier Development Lab (FDL) Europe (sponsored by ESA Centre for Earth Observation), AI developers and Space Data experts were (uncritically) tasked to (conceptually) design "Mission Control Earth", "where AI workflows automate the task of large scale multispectral data fusion and change detection" to "allow a strategic overview, allowing more co-ordinated responses, targeted warnings and quicker deployment of help and aid" during natural disasters and other emergencies. Though the conceptual vision behind this and similar "challenges" is still somewhat limited (in data integration, modelling power, decision making scope, etc.) and often the offered "solutions" are largely conceptual, they nonetheless point to the direction of development of socio-technical solutions for a "Smart Planet" ecology in the not so distant future. With Sustainable Development Goals' (SDG) political horizons emerging as the (current) goalposts for the interpretation of EO

data, how may the algorithms be (co-)shaping and/or disrupting the ethical systems governing the importance and viability of ecological perspectives? In this paper, I will outline a research programme proposal to engage closely with these R&D processes.

Why we need a cultural ecology of Environmental Research to conceptualise Climate Change as a emerging field of Transplanetary complexity *Sigrun Strange, Berlin Brandenburg Academy of Sciences and Humanities*

As the awareness of Environmental change have become more widespread and a public topic of concern so has different disciplines within which environmental sciences developed in order to establish environmental change as an epistemic area of research. The goal of environmental research is to develop applicable technical solutions within as context aiming at social transformation towards sustainable societies. The different styles of knowing and application of disciplines within environmental research has lead to branches of highly specialised fields, where cross-disciplinary methods between knowledge and application spanning the natural sciences, social sciences and the humanities still are posing questions regarding how to overcome spherical specialisation towards question based and problem based thematic research. Furthermore often cross-disciplinary approaches have the same blind spot that the different branches of science have as well: namely that of considering the applied material science in relation to short term narrowly specified material-epistemic results. Conceptions for tent poling this change are still under way. Developing a cultural ecology as a method to cultural adaptation of global environmental change must thus account for adaptations across several layers of analysis, accounting for cultural imaginings, natural scientific development of methods and evidential epistemic claims for the occurrence of environmental change on a global scale. Furthermore the causes of environmental change must also be epistemically substantiated beyond the boundaries of earth. The development of a for the affect and spread of knowledge about global environmental change has on cultural imaginings of human-environmental perceptions and both optimistic and pessimistic imageries of future oriented speculations of transformative future scenarios.

Nocturnal | Intertidal: On The Moon's Influence On Terrestrial Ecologies *Tamara Alvarez, The New School*

In 21st century Euro-American lunar exploration plans, the Moon is conceived as a distant yet earthly land, a hazardous environment that humans, aided by sophisticated technologies, can and will settle. In these schemes, the Moon is also a stepping-stone to Mars, a new tourist destination, and for some, particularly Silicon Valley entrepreneurs and other advocates of off-Earth extraction, a solution to Earth's resource scarcity in the face of a thriving human population. When confronted with other ways of looking at the Moon –the satellite's role as divinity, astrological luminary, and timekeeper of agricultural cycles, for example—space experts have been quick to categorize them as superstition or just "culture," a realm subordinated to the technoscientific and economic rules governing their work. Some in the space science community study the Earth-Moon System and the relations of Earth's satellite with other astral bodies; however, these studies are mostly planetary in their scale and ignore the Moon's mighty agential capacity to shape terrestrial ecologies where the local and the planetary meet. In the social sciences, attention has been paid to the ways in which Earth's environments and systems of governance are being extended into outer space (Olson 2012), but astral bodies' influence on our planet remain undertheorized. Drawing on ontological literatures and indigenous STS, this paper explores two ways in which the Moon co-produces terrestrial ecologies, namely, the impact of tides and changing moonlight on more-than-human relations.

Simulating Spacesuits for Mars *Veronika Nowak, University of Vienna, Department of Science and Technology Studies*

After successful deployments of orbiters and rovers to the Red Planet, large actors like NASA or China are increasingly investing in efforts to send humans not only into orbit, but to the Moon and, ultimately, to Mars. The development of technologies for human Mars missions has been going on for quite some time,

often by smaller institutions. This paper focuses on one such institution: the Austrian Space Forum, which builds spacesuit simulators for extra-vehicular activities on Mars and trains so-called "analog astronauts" to test those spacesuit simulators in the field. Drawing on document analysis and interviews, I will investigate how the Austrian Space Forum designs and uses simulation in order to produce knowledge for future human Mars missions, and what sociotechnical imaginaries are thereby at play. In addition, I will link work in STS on sociotechnical imaginaries to an analysis of selected Science Fiction (SF) novels featuring spacesuits and/or humans on Mars, asking how SF is co-productive of sociotechnical imaginaries about spacesuits for Mars. The paper aims to add to STS scholarship on Mars exploration (e.g. Vertesi 2015) by investigating the work of the Austrian Space Forum and its role in building sociotechnical imaginaries of human missions to Mars, with special attention to spacesuits. Through the analysis of SF literature, I will link social-scientific empirical work to a long-standing cultural venue of 'space imagination'. Vertesi, J. (2015). Seeing like a Rover: how robots, teams, and images craft knowledge of Mars. The University of Chicago Press.

Making (S)kin in Astrobiology: planetarity and beyond *Alessandra Marino, The Open University*

In Death of a Discipline (2003), Gayatri C. Spivak famously proposed the concept of 'planetarity' as a possible figuration of a defamiliarised planet Earth as 'home' - open to unexpected ways of being with otherness - and a critique of globalization. In recent years, there has been a surge in social sciences works engaging with and re-working this concept - from media theory to philosophy and environmentalism (Bratton, Gabrys, Likavčan). However, a critical understanding of planetarity has not filtered into current discussions of planetary ecologies within astrobiology. In this talk I work through the concepts of 'global' and 'planetary' and propose a dialogue that knits together postcolonial studies, STS and astrobiology. I argue for an understanding of planetarity as bound up with colonial categories of modernity and logics of resource extraction and accumulation. But also, in rethinking ecologies beyond earth, I look at what the concept of planetary does and can do to anti-humanist world-views and through astrobiology. I use the figures of planetary skin and planetary kin to propose a shift towards ecologies that foreground multispecies justice (Haraway) in the process of becoming inter-planetary.

Session Organizers:

Michael Clormann, Munich Center for Technology in Society, Technical University of Munich

Matjaz Vidmar, The University of Edinburgh

Chair:

Michael Clormann, Munich Center for Technology in Society, Technical University of Munich

060. Alchemical Transformations 1: On Matters of Substance and Change
3:00 to 4:40 pm
virPrague: VR 11

This panel explores transformation through the lens of alchemy. We conceptualize alchemy capaciously, emphasizing acts of transubstantiation in which matter undergoes physical and discursive change, thereby acquiring new value, vitality, or meaning. Medieval alchemists sought to transform base into noble metals through proto-scientific practices. Catholic Christians convert bread into the body of Christ though ceremonial consecration. Alchemical transformations abound. Fermentation and prescribed fire, DIY drug labs and biotech benches, compost teas and artisan cheese: everywhere are transitions of raw to cooked (Lévi-Strauss), profane to sacred, waste to worth, and rot to regeneration—not necessarily in that order, not necessarily for the good. Alchemical change occurs at the levels of substance and symbol. It is mediated by rituals, regulations, institutional regimes, and technical apparatuses. Of interest are black boxes and boundary objects—occult or opaque technologies of transformation and the mutable materials that traverse them. Alchemical transformation invites examination of matters at once ontological, political, epistemological, and ethical. These papers explore alchemical transformations, material and metaphoric, that are attentive to matters of concern as well as care (Latour, Puig de la

Bellacasa). What is modern alchemy, and how might alchemical transformations inform our understanding of (alter) scientific practices, bio-capitalism, ecologies of production, intra-action, and social change? We strive to bring decolonial and feminist science studies into dialogue with "alternative" sciences to better understand processes of transformation and the agency of STS (its subjects and objects) in a time of accelerating change and emerging worlds.

Participants:

Alchemy, Vital Nature, and (Bio)Dynamic Matters: Preparations for Life *Bradley Jones, Washington University in St. Louis*

Committed to the practice of looking for life in the ruins of capitalism and its problematic logics (Tsing 2015) this paper focuses on an alternative form of agricultural production known as biodynamics and examines its roots in alchemical theory and Goethean science. Drawing on 15 months of ethnographic research with biodynamic farmers and the knowledge communities they foster, I first introduce biodynamics as a fringe form of agricultural practice with extra-ordinary elements—complete with ceremonies, compost teas, planetary consciousness, a perspective of people as plants/plants as people, and alchemical transubstantiations of spiritual matter(s). Building on this foundation, the analysis is grounded in an experiential workshop producing biodynamic preparations, ritually-produced ferments that are believed to enliven nature through exposure to cosmic forces. I argue that such workshops are oriented to cultivating an alternative way of knowing that challenges reductionist knowledge regimes and the "monocultures" of modernity and mind (Shiva 1993). The "delicate empiricism" being inculcated is a situated knowledge (Haraway 1988) in which human/environmental relations are reconfigured. Amplifying the emic perspective offered in these spaces, I argue that the way we know nature—quite literally—transforms the nature we know. As a direct descendant of alchemical theory, such trainings in biodynamic praxis ultimately offer lessons in learning to be affected (Despret 2004), cultivating response-abilities for more-than-human worlds. Entangling meaning and vital matter (Barad 2007, Bennett 2010) such sciences potentiate paradigms for living and dying otherwise on a damaged planet (Tsing et al. 2017).

Soils of Remediation, Waters of Redemption: The Ambivalences of Ameliorative Alchemy in „Post" Mining Landscapes *Cynthia Browne, IASS Potsdam / Harvard University /Ruhr University*

This paper focuses on the ameliorative efforts through respectively, the labor of plants and the chemistry of water, as a lens to examine processes of value inversion, material transmutation, and future-making within „post"-mining landscapes of Germany. The case studies of remediation efforts in the Ruhr Valley and the Lausitz region foreground how the material and the political intertwine in the respective efforts of these two regions of Germany to remake former sites of mining into paragons of a new post-industrial future. This paper draws upon parts of my doctoral thesis, as well as current field research in the Lausitz, and argues how the materiality of these sites introduce alternative temporal dynamics that undercut the dominant linear narratives and aspirations of the state. In short, whereas the image-making, initiation of new rites and „inaugural events" (Harvey 2019), and visualization of these new landscapes, serve to buttress such narratives to a broader set of publics, the material dynamics—based on the influx of material across surfaces and interfaces, to paraphrase Tim Ingold—expose other sets of temporal dynamics that animate the „in-betweenness" of this transition. Alchemical change in this instance thus enables both the promise of the post-mining future as well as its perpetual hindrances, showing how symbolization and substance can produce frictional forms of knowledge and affect about the future and history of such landscapes.

Genesis 3.0: Engineering Against Xoo *Elaine Gan, New York University*

Xanthomonas oryzae pv. oryzae, or Xoo in short, is a bacterium that causes rice leaf blight, one of the most virulent plant pathogens in commercial agriculture. Xanthomonas Resistance 21 or XA21 is a gene taken from Oryza longistaminata, a wild species from Mali that confers immunity against Xoo-induced blight. In 1995, a molecular biology lab at University of California Davis developed XA21 Rice, a "new and useful" transgenic organism that is disease-resistant and patentable as a scientific invention that exists outside "natural" evolutionary pathways. Playing with the panel's theme, this paper considers the genetic engineering of XA21 Rice as a series of alchemical transformations in which rice as a semi-aquatic self-pollinating grass becomes a landrace, a genome or nucleic acid sequence, intellectual property, and food in/security at the turn of a new millennium. These transformations are more than human, operating contingently at a conjuncture of multispecies relations (Haraway, Tsing), technoscientific apparatuses (Mol, Latour, Barad), corporate sovereignties and postcolonial computational logics (Mbembe, Philip, Irani). These transformations undergird the next Green Revolution, or Genesis 3.0. What kinds of alchemical analyses might XA21 and its nemesis Xoo — a relation that is simultaneously organic, machinic, and algorithmic — require? The need for food security and high-yield agriculture vs. the need for biodiversity and environmental conservation are increasingly at odds. The case of XA21 and Xoo as more-than-human alchemy calls for situated transdisciplinarity (cyborg arts, sciences, and humanities) that can move beyond modernist deadlocks.

Living Fossils: Care and Curation in the Afterlives of Unhatched Eggs *Alison Laurence, Stanford University*

Fossils—bone that has become stone—are the result of a protracted process of subterranean transubstantiation many millions of years in the making. Preserved in death, mineralized animal matter is made lively once more in the afterlife through scientific study, popular discourse, and museum display. No fossils are more pregnant with suspended possibility than fossilized eggs, like those laid by a dinosaur during the Cretaceous period some seventy-five million-or-so years ago, unearthed in the Gobi Desert in 1923 (by Western scientists, at least), and transported to New York City for exhibition at the American Museum of Natural History. These fossilized eggs are life not yet and never to be, paused in a state of permanent potential; yet, their afterlives are characterized by frequent change of a symbolic kind. Thus, while material transubstantiation is a necessary precondition, this paper attends to subsequent metaphoric shifts. In particular, I focus on historical instances in which scientific description and exhibition of these fossils obfuscated the labor that produced them. For as museum scientists, staff, and visitors assigned new values and vitality to these specimens, they also erased or elided the many forms of care that brought the eggs into being. Based on archival research in the papers of American Museum staff, evaluation of museum displays, and analysis of scientific re-interpretations, I augment scholarly conversations surrounding multispecies relations and museum cultures with this case study that demonstrates how curation has subordinated other forms of care while imposing a situated vision of planetary past and present.

Session Organizer:

Bradley Jones, Washington University in St. Louis

Chair:

Heather Paxson, Massachusetts Institute of Technology (MIT)

061. Flows and overflows of personal data S1

3:00 to 4:40 pm
virPrague: VR 12

Participants:

How Do Biomarkers Mark? *Moran Levy; Elena Esposito, Bielefeld University*

Biomarkers and their relationships to the conditions and events they signify or predict are heterogeneous and underdetermined by design. While biomarkers are often grounded in statistical correlations that generate scientific hypothesis for further research, efficient biomarkers, enable researchers and clinicians to manage risk and diseases while avoiding slow and costly investigations into disease aetiology. Biomarkers, therefore, depend on the balancing of knowledge and non-knowledge. In this paper we examine the duality of biomarkers and the clashing

logics underlying their development. Focusing on the case of cancer epidemiology, we aim to identify the organizational and institutional factors that shape professional approaches to the development and implementation of innovative tools for clinical prediction. Drawing on materials from NIH R01 grants, published medical literature and interview data, we aim to explore the approaches of various actors to biomarkers: under what conditions do we seek to black-box biomarkers, and under what conditions do biomarkers become starting points for investigations in basic science? When do we use biomarkers as tools for optimising and standardising clinical decision-making? And what strategies are employed by experts to counter standardisation and gain control over the interpretation of values and measurements? Lastly, when do biomarkers become entry points for the inclusion patients' input? By analysing the controversies around biomarkers and their various functions in clinical prediction and care, we aim to contribute to the broader sociological understanding of the dialectic of trust (Eyal 2019) with the rise of data-driven forms of expertise.

The promise and politics of AI-driven testing in healthcare: 'dataveillance' and the making of new health subjects *Alan Petersen; Kiran Pienaar, Deakin University*

One of the major promises of testing in healthcare is early detection and hence prevention or treatment of disease. Whether used in the context of screening or clinical diagnosis, testing generally provides the front door to healthcare involving further testing and prescribed treatment or a risk management plan. However, the growing use of so-called big data analytics for purposes of diagnosis and screening signals a significant step change in the practices of healthcare. The use of data drawn from diverse sources, including patients' medical records, medical imaging and real-time behaviours, which is then aggregated and analysed ('mined') at great speed to reveal underlying patterns, threatens to disrupt how health and risk are understood and how healthcare is practised. Big data analytics promises earlier, more accurate diagnoses based on interpretations of data rather than direct clinical indications. This paper explores the socio-political implications of the promissory discourses of big data-/AI-driven testing in healthcare. Drawing on STS ideas on the dynamics of promissory discourses, hope and expectations, and reflecting on recent developments and innovations in healthcare, the paper will explore how big data analytics is reshaping the landscape of healthcare, focusing on some of the key actors and actor networks (e.g. Google Health and its collaborations with NHS), supporting infrastructure (e.g. cloud computing), and technologies that have been approved already (e.g. AI-driven diagnosis for diabetic retinopathy) or are in development. It will identify some of the main implications, including related surveillance ('dataveillance') and the creation of new inequalities.

When do human genomic ancestry datasets become biomedical datasets? *Carlos Andrés Barragán, University of California, Davis; James Griesemer, University of California, Davis*

In this talk we offer ongoing archival, ethnographical, and conceptual analyses about the current dismantling and re-situation of a global human genomic ancestry data infrastructure: The Genographic Project. Launched in 2005 with financial support of IBM and the National Geographic Society, the project was framed as a large-scale genetic sampling initiative in order to model the pattern of migrations of Homo sapiens. In May 2019, the steering committee announced that the project would no longer sell their pioneering GenoKits. The project's website will allow customers to use its interface to display and download data until June 30, 2020. The news generated multiple reactions and questions among participants, but mostly, a profound sense of what we call "dataset homelessness" followed by the urge to salvage, migrate and repurpose their genomic datasets (or create new ones) in similar infrastructures. One such platform is Insitome, a company founded by Spencer Wells in 2017 —two years after stepping down as senior scientist of the Genographic Project— with the aim of reshaping the future of consumer genomics via digital apps for ancestry and now biomedical traits. Genographic users are exploring how to turn their ancestry data into health data as they migrate datasets to platforms like Insitome. This case study offers insight about (a) current understandings, circulation, and the unprecedented scale of repurposing genomic datasets by over 1,006,441 participants across the globe, and (b) the uncharted challenges such re-situations of digital DNA pose for informed consent, data ownership, privacy, and biomedical risk analysis.

Evidence and conversation: some thoughts on pluralism, epistemic conflict and health platforms *Niccolò Tempini, University of Exeter, Egenis; David Teira, UNED*

This paper investigates the significance of web-based communication and coordination for practices of evidence-generation among users of web platforms. In particular, it is interested in what links the beliefs held about the same compound in disparate domains including among others the professional scientific context of a clinical trial, the initiatives of citizen scientist patients, and the schemes of quacks selling snake-oil remedies. We investigate whether evidential claims about a chemical compound spread from a specific domain of social practice to substantiate claims in other contexts, and if so, how connected these different online spaces are. We reflect on participatory initiatives that were started to combat misinformation and the misunderstanding of the health benefits and risks of remedies, and observe how organising initiatives capable of cutting across boundaries that are also sustainable in the long term remains a hard challenge for fostering robust evidential practices on the web, despite misinformation seems to travel quite well nonetheless.

Session Organizer:
Niccolò Tempini, University of Exeter, Egenis
Chair:
Niccolò Tempini, University of Exeter, Egenis

062. Decentralisation and Distribution as Means of Change and Hegemony
3:00 to 4:40 pm
virPrague: VR 13
Question on how technologies and societies are changing each other have been long the subject of study in STS. In this session we aim to focus on a relatively new, distributed technology of blockchains and it's promised disruptive character, normative claims, and visions for change. However, this rhetoric of change often leads to reinforce established hegemonies. What is changing with this technology that has been so trendy in the recent years?
Participants:

Blockchain Unpacked: An Agent-Based Model of Centralization of Computation and Its Implications for Technology Governance *Joonhyeok Park, KAIST Graduate School of Science Technology Policy; Kibae Kim, KAIST (Korea Advanced Institute of Science and Technology); So Young Kim, KAIST STP*

Hailed as the technology liberating transactions among free individuals from central or third-party control, blockchain has recently received great attention from both technological optimists and pessimists. On one hand, anarcho-capitalists espousing the Californian ideology find in this technology enormous potential to transform current socioeconomic systems into truly libertarian society by getting rid of traditional intermediaries. On the other hand, those scholars studying the meanings of information technologies on labor caution that machines and algorithms may intensify existing inequalities by replacing human labor and reinforcing capital accumulation. Our study is an attempt to explain these contradictory predictions on the socioeconomic dynamics of the Fourth Industrial Revolution – by opening up the black box of blockchain that apparently embodies both of the philosophies of technology in capitalist society. We design an agent-based model of a blockchain algorithm comprised of machines and the reward scheme to participants in the trust-building process. Our simulation results demonstrate that the 'reinvestment' and 'redistribution' of rewards have distinct effects on the centralization of computation and the subsequent dynamics of economic inequality among participants (i.e., machines in the context of blockchain). Foremost, the reinvestment of the reward in computational power

tends to shape the pattern of wealth distribution in a way to centralize computation in the hands of a few in a competition-based algorithm, while the 'redistribution' mitigates this pattern. With our numerical anatomy of the blockchain algorithm, we hope this study to boost further effort to look into internal mechanisms of cutting-edge technologies and their governance implications simultaneously.

Building something new in the shell of the digital: The prefigurative politics of the Decentralized Web *Daniel Staemmler, Freie Universität Berlin*

The hegemony of surveillance capitalism makes the Internet's promise of democratization through the diffusion of knowledge and participation vanish. Advertisement-driven platforms, their infrastructures and interfaces promote user engagement in the name of the attention economy, thus limiting the agency of users and developers. Resistance and protest against the ongoing centralization of the Internet is currently being expressed in political advocacy, individual obfuscation or even abandonment of online communication. Meanwhile, collaborative projects such as Mastodon, Solid and Matrix are developing and maintaining protocols, platforms and services with the explicit goal of (re)decentralizing the Web. These digital infrastructures stand for openness, interoperability and the protection of privacy by design, while the distribution of power relations suggests a renewal of the promise of digital democratization. Here, the Decentralized Web appears as a contemporary form of digital activism that enables individual and collective resistance to datafication, and thus attempts to prefigure alternative digital realities. However, despite the common effort to reconfigure the sociotechnical framework of online communication around individual sovereignty, the field remains highly fragmented. Questions of unifying standards and the manner of decentralization remain highly controversial, leaving open what realities are intended beyond decentralizing and distributing. Based on observations, interviews, and document analysis from an ongoing research project, the presentation will bring to light the imaginaries of decentralization that are inscribed into the projects' digital infrastructures. Against the background of the political and socio-technical history of decentralization, the talk concludes by classifying the extent to which the Decentralized Web opens up moments of democratic agency.

Change the Web by Decentralizing Power: Resistance through Alternative Infrastructures *Dawn Walker, Faculty of Information, University of Toronto*

Calls to "decentralize" the web and underlying internet have become more popular as a growing set of projects build alternatives to existing network platforms and infrastructures. Often referred to as the "decentralized web" or "Dweb" and relying on peer-to-peer, offline-first, local, or blockchain technologies, these projects seek to ameliorate issues ranging from the lack of control of personal data and online harrassment, to the concentration of power in web platforms. These emerging attempts at re-distribution and forms of resistance however, have provoked questions around the new configurations of power they enable (Schneider, 2019) as well as the nature of their relationship to the existing internet. In other to unpack these concerns, this paper draws on recent interviews with people building the decentralized web alongside historical accounts of alternative digital communications. It argues that alternative networks have long held a fraught position; as "alternative" to a mainstream they provide space to imagine otherwise and respond to unmet needs, yet they can serve to collapse pluralistic currents and practices within the dominant network infrastructure as they produce 'master narratives' of their own (Star, 1999). By attending to the ways power is intentionally and unintentionally re-configured, this paper identifies how these decentralizing infrastructures resist and are co-opted by the status quo as they scaffold sites for potential forms of social transformation.

For A Material Semiotics Of The Cryptographic Token *Pedro Jacobetty, The University of Edinburgh*

Blockchain is a distributed ledger technology that is increasingly being heralded as a revolutionary technological solution that can offer verified records of information and value, namely property registration and cryptocurrencies. Its distributed quality makes it possible for individuals to jointly create, control and maintain decentralized but reliable information records. Blockchain is increasingly underpinning utopian visions of a digitally connected global society, in which frictionless interpersonal interaction and exchange take place without trusted intermediaries such as central banks and property registers. This paper relies on technical interrogation and discourse analysis to explore the connections between social projects, utopian / dystopian visions of the future and the ontological status of the cryptographic token. The main focus is the performative power of the immaterial, formally defined, enormous virtual domain of the output space of the cryptographic hash function, combined with the very material calculation devices with limited computing power that churn through endless strings of bits. This combination allows the formulation of complex, computationally hard to solve problems that are in the basis of the popular "proof-of-work" blockchain consensus mechanism. It is through mathematical and game theoretical knowledge – and the gap between formal and actual computation – that blockchain technology came to be understood as a reliable technical infrastructure for registering and regulating social activities. The objective is to reflect on the boundaries between digital representations, abstract conceptual structures and the material flows of people and things in ways that push the boundaries of analytical apparatuses such as political economy and material semiotics.

Session Organizer:
Victoria Neumann, Lancaster University

Chair:
Anna Adamowicz, Institute of Philosophy, Adam Mickiewicz University

063. Unpacking the Foundations of the Current Biometric Moment: Biometric Machinations of Belonging
3:00 to 4:40 pm
virPrague: VR 14
Participants:

On Categorizing. Doing and undoing "refugees" in the aftermath of large scale displacement *Andrea Behrends, Universität Bayreuth*

After more than a decade of intervention the UN Refugee Agency is preparing its exit from the Chad-Sudan borderlands. Currently, about 200.000 people live in twelve camps remaining on the Chadian side of the border as they do not feel it safe enough to return to their Sudanese home villages and towns. This presentation takes the 'integration' measures adopted by this organization, in concert with the Chadian state, as a starting point to study the relations of people inside and outside the camp. Based on recent studies that focus on the "contingency of social belonging" (Hirschauer 2014), I highlight the interplay of knowledge and practice to 'un/do' differences in the interrelated use and translation of human categorizations as processes that influence lives in uncertain circumstances. Two examples of undoing the category of 'refugee' are in the foreground: attempts to mix the refugee camp dwellers with the surrounding villagers, and a process of biometric registration to change the camp dwellers' status from 'refugees' to 'refugee citizens.' Although both procedures follow stringent rules, they likewise represent the contingency of everyday practice, on the part of both institutions and their addressees. This presentation is based on my long-term anthropological study carried out in collaboration with Chadian research partners in phases between 2000 and 2019.

A Biometric Double-Bind: Refugees and Digital Humanitarianism in Lebanon *Jenna Harb, Australian National University; Kathryn Henne, Australian National University*

Imaginings of digital humanitarianism tout myriad interconnected benefits through the embrace of data-driven solutions in social welfare and aid delivery. Chief among them are cost-savings, administrative efficiency, empowerment, financial inclusion, fraud prevention, and more accurate and reliable information. Recent reports on the UNHCR's biometric

identity management system and the rise of the 'digital welfare state', however, point to emergent concerns around privacy, consent, and the growing involvement of "Big Tech", which—as stated by Philip Alston, UN Special Rapporteur on extreme poverty and human rights—operates in a space absent of human rights protections. With biometric registration and digital identity projects becoming formal requirements in the process of seeking asylum, we ask: How do these shifting technosocial assemblages inform the becoming of refugee subjects? Here, we draw upon insights from an ongoing multi-sited ethnographical study to explore a particular case of digital humanitarianism, the Lebanon One Unified Inter-Organisational System for E-Cards (LOUISE). In outlining practices of biometric authentication and verification in this context, we highlight three strategies employed by Syrian citizens in Lebanon: consciousness raising, evasion, and active resistance. Each reveals distinct formations of agency and engagement with humanitarian and aid systems. Taken together, they reflect what can be understood as a double-bind in which interventions envisioned to facilitate life-saving aid simultaneously generate new formations of precarity, insecurity, and inequity.

Women and the Biometric State: A Case of Aadhaar and Welfare in India *Bidisha Chaudhuri, International Institute of Information Technology Bangalore; Hartej Singh, IIIT Bangalore*

While biometric technologies bear a long history in governance, digital biometric technologies have proliferated as one of the prominent state technologies in the Global South in last decade or so. India's digital biometric ID system, Aadhaar has been a pioneering initiatives in this regard. Starting as a voluntary identity platform, Aadhaar has become a foundational ID infrastructure encompassing the state welfare system in India. Earlier studies have already shown that the use of biometrics for accessing social welfare schemes can have serious damaging effects on certain populations due to their lack of capacity to enroll and verify their biometric data (Wickins 2007, Magnet 2011). They highlight the recurring case of false negatives for certain categories such as, physical or learning disability, elderly, mentally ill, certain races, gender and religions, and homeless. Aadhaar is no exception in this regard. In this paper, we explore the effects of exclusion through the lens of gender. Drawing on multi-sited ethnographic fieldwork in India, we focus on two moments of interactions that are crucial for beneficiaries while accessing welfare through digital ID system: moments of identity authentication and moments of receiving welfare. We show how women's experience at both these moments reiterate gender based social exclusion that counter the universalising claims of any large-scale technological system. At large, we examine Aadhaar as locally embedded sociotechnical system and not as an external factor affecting welfare system.

Seeing Like An Algorithm: Facial Recognition Systems And The Politics Of Pattern Recognition *Abigail Nieves Delgado, Ruhr University Bochum*

The use of pattern recognition algorithms in different scientific and societal fields, such as health, security, and finances, among others, is rapidly growing. As part of this trend, the use of facial recognition systems for identity verification and surveillance is of great concern. This is because these technologies grant or restrict individuals the possibility to cross borders, vote or access to medical services and social benefits. For this reason, it is important to understand how these technologies see. Facial recognition works by converting body shapes into relevant patterns of recognition. But, what is a relevant pattern? And how do these patterns influence contemporary politics of identification? To answer these questions, I look to the most influential series of competitions to develop and improve how facial recognition algorithms see. Since the competition FERET "Facial Recognition Technology" in 1993, the National Institute of Standards and Technology (NIST) (USA) organizes challenges to shape the development of the field. These competitions establish which tasks and characteristics should be improved according to specific benchmarks, standards, and guidelines. Every algorithm needs to be tested against these contests to back up their performance claims. Thus, by looking at

this competition's series we can understand algorithm development as an historical, social, political and scientific process. Under this light, a "relevant pattern" is the result of preferences that are established by communities in specific contexts over time. This reading of technology design help us to question the current hegemony of biometric technologies and the politics of identification embedded in them.

Session Organizers:
Ranjit Pal Singh, Cornell University
Michelle Spektor, Massachusetts Institute of Technology
Chair:
Michelle Spektor, Massachusetts Institute of Technology

064. Inclusion in scientific communities I
3:00 to 4:40 pm
virPrague: VR 15
The original conception of scientific communities by Robert Merton, Thomas Kuhn and Michael Polanyi implied the idea that all members of scientific communities equally participate in the production of scientific knowledge. Meanwhile, science studies have uncovered many constraints that limit the participation of researchers in the knowledge production processes and decision processes of their scientific communities. Examples include constraints based on gender, ethnicity, access to means for research, or non-mainstream approaches in research. At the international level, several scientific communities have begun a discussion about a North-Western dominance in the selection of topics and approaches. In addition to these constraints, which could be considered endogenous to scientific communities, political decision produce constraints by limiting access to resource, imposing secrecy, or restricting travel and other forms of communication and collaboration. The purpose of this open session is to explore the potential of studying these phenomena from a perspective of researchers limited inclusion in (or exclusion from) their scientific communities. We suggest considering inclusion as the way in which researchers participate in knowledge production and decision processes of their scientific communities, and to look at mechanisms that constrain inclusion from a comparative perspective. How are opportunities to participate in knowledge production and decision-making distributed in international scientific communities? Whose participation is restricted, and in which ways? What mechanisms restrict inclusion? How does the inclusion of researchers, national scientific communities, and world regions in the international production of scientific knowledge change historically?
Participants:

Endogenous and exogenous causes for constraints on inclusion *Jochen Glaser, TU Berlin*

To be included in one's community's knowledge production means a) producing contributions that are used by other community members, b) developing a reputation as a contributing community member, and c) exercising authority over community matters. Inclusion in these three dimensions varies due to endogenous causes (causes that emerge from interactions in scientific communities) and exogenous causes (causes that emerge in the societies scientific communities are embedded in). The aim of this presentation is to identify the mechanisms of knowledge production through which endogenous and exogenous causes shape inclusion. The fundamental condition that forms the background of exclusionary practices is the oversupply of research findings in most scientific communities. In order to be able to contribute to their community's knowledge production at all, community members must be selective in their perception and use of findings offered by fellow community members. These selection mechanisms are the basis for exclusionary practices. Many of them cannot be based on content (and thus, intrinsic merit) of contributions but use secondary criteria, namely (1) visibility/ ease of access, (2) author reputation, and (3) fit with the state of the art. These criteria are applied in the community's selection of contributions, control of communication channels and funding. They disadvantage newcomers (e.g. early career researchers and intellectual migrants), non-English speakers, and unorthodox researchers. They are also self-reinforcing. Major exogenous factors that limit inclusion operate in the same selection processes. They include prejudices, the unequal distribution of means of knowledge production, and political restrictions.

The ambivalence of integrating African scholars into the world

science system through PhD-training: Old issues, new approaches *Stefan Skupien, WZB Berlin Social Science Center; Nelius Boshoff, Stellenbosch University*

African governments frequently declare to increase science and innovation funding in order to contribute to the development of their economies and social welfare and to compete in the global knowledge economy (e.g. AU 2005). One million PhD-scholars are estimated to be needed to become comparable to countries such as the United States, United Kingdom and Canada (Christoffels 2019). However, because substantial endogenous resources are still lacking, many PhD-scholarships come from outside Africa. PhD-training has indeed been a longstanding instrument of external powers to attract talent, to educate elites, and to extend their access to scientific resources. While this integration into scientific networks has fostered the careers of first generations of scholars it has also contributed to brain drain and migration. From an epistemological viewpoint, foreign PhD-training is critised as distracting scholars from issues and topics that are relevant to their home countries. Our paper focuses on the career trajectories and the social and economic contributions of scholars that received their training through international funding either at African universities or abroad, and we do so with reference to social identity. We operationalize the concept of identity for a longitudinal study and deliberate on the effects of PhD-training as one key mechanism for integration into a world science system. Negotiations between a PhD-scholar's professional identity and (foreign) training, on the one hand, and expectations from their communities, families and peers of their country of origin, on the other hand, are expected to remain a constant feature of academic careers in African countries.

The Failed Revolution: Technological Determinism and the Global Production of Knowledge *Marcel Knöchelmann, University College London/Yale University*

In its early conceptions, open access to scholarly publications (OA) faced a variety of potential futures: revolutionary ones, focussing on democratising knowledge as well as limited ones, focussing on mere access while retaining the established order in the Global production of knowledge. I argue that the recent development of OA provides evidence that it is only a means to differentiate access instead of revolutionising scholarly communication. The early ideals of OA seem to be but technological determinism. Since it has been repurposed by commercialisation, the neoliberal agenda underpinning Western academia takes OA to be a competitive advantage. There is no interest in a democratisation of knowledge through OA since overcoming epistemic injustices would require a redistribution of the governance of the means of communication. Western academia, however, can reinforce its hegemonic power by solidifying the contemporary hierarchies of scholarly communication through OA. OA, therefore, is devoid of any revolutionary meaning in terms of a democratisation of knowledge and instead solidifies epistemic injustices and intellectual oppression. I highlight the development of OA in Western academia through cases that evidence ideals and purposes tied to OA. Other than most preceding conceptions, these cases highlight the neoliberal agenda that is taking advantage of OA in unprecedented ways. I discuss that the problem of epistemic injustices is not tackled by OA; I propose three forms of such injustice that are solidified by the current mode of scholarly communication. This is an important contribution to Science and Technology Studies in that it adds a social epistemological perspective to a discourse that usually gives primacy to technology.

Unemployment = exclusion? *Susanne Wollin-Giering, TU Berlin; Markus Hoffmann, TU Berlin*

A researcher's integration in their scientific community depends on the extent to which scientists select research problems considered important by the community, generate knowledge relevant to the community and collaborate with community members (Laudel/Gläser 2001). The opportunities to do so strongly depend on having a position at a university, which provides income, infrastructure and resources for research. The increasing precariousness of academic careers means that unemployment becomes an increasingly common career phase characterised by the absence of university's infrastructure and resources necessary for carrying out research as before. In this phase, the unemployed researcher's further career is endangered because their integration in the scientific community becomes unsettled. We report findings of the pilot study of a larger project on functions and consequences of unemployment in careers of researchers. Based on interviews with unemployed sociologists and auto-ethnographic observations, we will show   1. which research activities these unemployed sociologists continue in order to stay integrated in their scientific community (and to become organisationally reintegrated again), 2. which workarounds they develop to overcome or compensate for the missing access to organisational resources, 3. that unemployment can at least initially be seen as an exclusion from the organisation 4. that findings might be field-specific because other disciplines require different sets of resources and infrastructure, and 5. that the time for which scientists are able to stay integrated in the scientific community after being organisationally excluded through unemployment might also be field-specific. Laudel, G. and J. Gläser (2001). Outsiders, Peers and Stars: Analysing Scientists' Integration into Scientific communities with Scientometric Indicators. Second Berlin Workshop on Scientometrics and Informetrics 'Collaboration in Science and Technology'. F. Havemann, R. Wagner-Döbler and H. Kretschmer. Free University Berlin, Germany, September 1-3, 2000, Berlin: Gesellschaft für Wissenschaftsforschung: 129-141.

Session Organizers:
Jochen Glaser, TU Berlin
Nelius Boshoff, Stellenbosch University
Chair:
Nelius Boshoff, Stellenbosch University

065. Means And Ends Of STS (Part II): Trust, Knowledge And Social Media
3:00 to 4:40 pm
virPrague: VR 16
This is the second session in a set of three examining the role and contribution of STS in a post-truth context. The papers in this session focus on how the how knowledge comes to be trusted, with particular emphasis on the role and influence of social media.

Participants:

Governing the Median Estate: Hyper-Truths and Post-Truth in the regulation of digital innovations *Kjetil Rommetveit, University of Bergen, Norway; Niels van Dijk, Vrije Universiteit Brussel*

This contribution focuses on two cases in ICT-driven fields, where legal rights and moral principles increasingly become matters of engineering, design and risk management, and where facts and values are blurred by way of intention. First, practices of 'privacy by design' aim to hardcode fundamental rights into information infrastructures. Second, coding moral principles into robots is quickly moving from science fiction to a real concern for engineering and robo-ethics. These developments slowly shift the seat of articulation for legal and ethical principles away from traditional sites, to contexts of interdisciplinary team management. Boundary work turns to boundary fusion, in moving from the periphery to the intermediary region "between" institutional or disciplinary "silos" like policy, law, ethics, science and technology development. The notion of a Median Estate demonstrates a movement from 'the margins into the center', in which once influential counter-frames are taken over by entrepreneurs and powerful actors. Whereas STS and related disciplines have for long mobilised and celebrated hybridity, networks, constructivism and co-production of science and society, these tropes now have been mainstreamed. This indicates relations between post-truth, contemporary innovation agendas and STS research, but also that these interrelations are too complex for any simple allocation of blame (for 'having contributed to post-truth). What is needed are re-articulations and new starting points that retain the critical intent of STS and related fields of study.

Hidden Virality: an Analysis of Epistemic Injustice and Online Movements *Britt Paris, Rutgers University, School of*

Communication and Information

This paper theorizes hidden virality, that characterizes how uncheckable, insular discourse proliferates in private groups meeting online – hidden from public view –encourage smaller groups of like-minded individuals to sediment and reify in-group narratives and can move offline, where it can take on a character of truth to be reckoned with. Hidden virality is a global phenomenon that weaponizes tensions between evidence and expression, dominant and subcultural histories, material inequalities, perceptions, and trends to bring real world consequences. While platforms profiting from the spread of viral content never meant for this to happen, they are complicit. Their construction and roll-out of technical systems misunderstood how people use such technologies historically and across global contexts. This paper draws from social shaping of technology (SST) literature to present an analysis of data from public WhatsApp groups, private Facebook Groups, and private WhatsApp groups and interviews with people in these groups to uncover how misinformation spreads in these private groups. The analysis contributes to STS as it presents a sociotechnical analysis of modes by which contemporary information and communication platforms allow the public to circumvent traditional institutions and gatekeepers as they leverage unvetted information to mobilize people for a range of causes. Countering the harmful aspects of this phenomenon requires stakeholders to engage in analyses of power and commit to a set of pro-social values.

Tracing Networked Infrastructures for Post-Truth. Public Dissections of, and by Techno-Political Leviathans *Niels van Dijk, Vrije Universiteit Brussel*

Contestations of standards of truth have coincided with a decline of authority of established societal institutions such as science, government, courts and the media. This has given rise to a self-reflective debate by STS scholars on whether their detailed descriptions of the infrastructures and networks of the techno-sciences, which allowed for the (de-)construction of facts and truths, have contributed to this post-truth situation. This presentation will explore a neglected counter-question to this debate, by symmetrically asking: What are the infrastructures for post-truth? How is fake news produced and distributed? To address these questions, we will turn to empirical investigations of the Cambridge Analytica scandal around Brexit and the 2016 US presidential election, where disinformation phenomena touched the heart of democratic political institutions. Here we focus on the different sites, actors, networks and technologies involved in the production and distribution of information, and the types of knowledge and some of the notions of fact and truth that underpin them. At the same time, it also requires a focus on the actors engaged in exposing these networks by tracking disinformation campaigns including investigative journalism, media studies and data scientists, but also traditional regulatory institutions trying to reassert themselves as sites for public dissections of these infrastructures. This controversy reveals a struggle for control of the median ICT infrastructures in the networked society. It gives some insights in the attempts and counter-attempts of how actors are trying to unscrew the old sovereign state Leviathan, whereas simultaneously re-assembling techno-political new ones.

Session Organizer:

Rob Evans, Cardiff University

Chair:

Johan Soderberg

066. FLIPPED Acknowledging Residues: the (un-)making of an environmental concern - I

3:00 to 4:40 pm
virPrague: VR 17

Residues are reduced and transformed remnants of formerly present materials, events, or actions. Frequently associated with chemicals, pesticides, and waste, they are also the result of discard and excess, sticky – yet unruly – bordering both the visible and the invisible. A consequence of past and present material legacies, they pervade and persist in environments, humans, and non-humans alike, carrying with them potentially hazardous or toxic afterlives. Yet, residues do not always emerge as environmental concerns – nor as bodily, political, or material ones. Rather, they are often a (non)-concern, sometimes evading recognition and response, despite their ubiquitous presence. This open panel invites contributors to critically engage with the question of when, how, and to whom residues become a concern. It asks under what circumstances particular forms of residue might rise to levels of acknowledgement and political engagement – thereby constituting a call for action – while other forms of residues are silenced, muted, or overlooked. Attending to the practices, politics, histories, and technologies that go into the making of residues as concerns, it wishes to remain attentive to the (potentially) hazardous materialisations of residues and their ecological and embodied outcomes. This means acknowledging past legacies as well as lasting effects and generated inequalities. This allows for a careful engagement with potential threats embedded within these issues as with political possibilities that might arise from such recognition.

Participants:

Sludge Stories – a journey into the indeterminate world of waste water residues *Linus Ekman Burgman, Department of Thematic Studies - Technology and Social Change, Linköping University*

In January 2020, it finally arrived. The governmental inquiry on how to recover phosphorus from sewage sludge in Sweden was published. It is the fourth inquiry in the last two decades concerning the treatment of sewage sludge, the residue from waste water treatment. Despite the vast numbers of pages and work done throughout the decades by secretaries and expert committees, the law from 1994 is still unchanged and the path ahead is still uncertain. What should be done is still to be settled. Is it a resource, valuable as a provider of nutrients for agriculture? Or the concentrated pollution of the societal liver that should be disposed securely? With a combination of archival material from the previous, and interviews with experts from the recent, governmental inquires, this paper sets of on a journey into the indeterminate world of sewage sludge. Different narratives are enacted through and by the inquires in a search for a technology that will remedy both pollution and the waste of resources. Over time, the goal of increasing application on agricultural land is gradually replaced with a pre-cautious concern for the unknown. In this way, the case of Swedish sewage sludge contributes to research on waste and sustainability and the desire to find a gem hidden in the dirt.

Locating residues of concern. Scouting and mapping sites for Persistent Organic Pollutants in Dar es Salaam *Franziska Klaas*

Persistent Organic Pollutants are invisible, yet ubiquitous, though unevenly distributed. As residues they travel the earth, bio-accumulate in animals and humans, reside in soil, water and air. Due to their distinctive properties, such as being toxic, they have been classified as chemicals of concern, ultimately since their regulation under one joint convention, the Stockholm Convention. Based on ethnographic fieldwork with chemists and eco-toxicologist in the urban setting of Dar es Salaam, I attempt to explore the practices that are required to make these ubiquitous residues scientifically tangible. For that purpose, I will illustrate the challenges scientists encounter in determining "the right spots" for sampling, tracing residues of organic pollutants in different matrices such as air, soil and biota. Therefore, I will emphasise the practices of mapping and scouting in their correlation with the determination of "hot spots" and "transects", as two ways of identifying sampling spots. My goal is to unpack the challenges "field scientists" encounter when they have to translate their methods and practices from "a natural environment" to the urban environment of Dar es Salaam. Here I take scouting and mapping to signify order-creating practices, attempts to master the supposed chaos of the urban environment against the backdrop of a "natural environment". They simultaneously serve as a reference for contemplating the particularities of knowledge production on chemical residues, such as Persistent Organic Pollutants, in an urban setting.

The Making and Effects of "The World's Largest E-waste Dump." *Grace Akese, University of Bayreuth*

Over the last two decades, e-waste has become a crisis. It has received significant attention from activist, environmental

groups, policymakers, news media, and academics. E-waste processing hubs in Africa and Asia pejoratively labelled "digital dumps" are at the center of the e-waste as an environmental concern. In this paper, I focus on Agbogbloshie, a site in Accra, the capital of Ghana, ostensibly "the world's largest e-waste dump." I will examine the making of Agbogbloshie as the epicentre of the so-called e-waste crisis. What geographical imaginaries are central in representations of the site? On which grounds are these built? and what are the effects of their circulation? In doing so, I engaged with the knowledge-making practices central to representations of Agbogbloshie as an environmental concern and a "problem space" in need of interventions.

Closer to the Ground: Patchy Radiation, Children's Body, and the Stakes of (Un)Knowing in Post-Nuclear Fukushima
Jieun Cho, Duke University

How are citizen science projects giving rise to new forms of life that challenge the standard models of the body and environment in nuclear science and radiation exposure? In the wake of Fukushima Daiichi nuclear disaster, many citizen science projects emerged in post-Fukushima Japan, garnering hope and support as a corrective to state neglect amidst prolonged exposure situations. As anthropologists astutely analyze, however, such projects are often prone to austere empiricism, raising concerns over the normalization and nominalization of radiation risks while reproducing scientism (Kimura 2016; Polleri 2019). In this paper, I engage an alternative citizen science that amplifies the perspective of "the living person" who resides amidst residual radioactivity in the aftermath of the Fukushima disaster. Informed by the positionality of the caregiver, its methodology is to mimic and imagine the child's body in acts of measuring radiation in order to recalibrate the standard models to the shifting local environments and everyday living. Repetitive performance of the abstract body to account for the environment not only generates concrete data, but also, albeit inadvertently, forges a livability in a home shadowed by patchy and unpredictable forms of radioactive contamination. When the global standard models tend to overlook the realm of living by reproducing the untenable separation of the body and environment, such forms of livability deriving from embodied practices are proof of how more, not less, use of the body can bring together hope and knowledge in the context of environmental uncertainty.

Session Organizer:
Franziska Klaas
Chair:
Signe Mikkelsen, University of Oslo
Discussant:
Susanne Bauer, University of Oslo

067. Economics/Economy, Governance and STS II
3:00 to 4:40 pm
virPrague: VR 18
Participants:

Governance and Transition of the Electricity Sector to Sustainability The Case of Solar Energy in Brazil *Jean Carlos Hochsprung Miguel, Federal University of São Paulo*

The fundamental theme of this research is the transition of the Brazilian electric sector to sustainability. It aims to understand how the dynamics of transition to sustainability occur in the Brazilian electricity sector. More specifically, the research focuses on the governance of solar energy in Brazil. It seeks to describe how networks of agents and users of solar energy were formed; how they are currently organized and how they participate in decisions regarding the management and planning of the Brazilian electricity sector; and how they influence transition dynamics in the electricity sector to sustainability. For this purpose, this investigation will have the period from 2012 to the present days as a time frame, considering the publication of Normative Resolution 482 of 2012 by the Brazilian Electric Energy Agency (ANEEL), which regulates and encourages the generation of solar energy in Brazil. , until its conflicting change process started in 2019 and which reaches the present day.

During this period, it is described how the socio-technical regime of solar energy evolved with the structuring of governance networks that influenced the expansion of this type of energy in Brazil.

"Let's Not Have the Perfect Be the Enemy of the Good": Social Impact Bonds, RCTs, and the Valuation of Social Services
James Williams, York University

In 2010, the UK Ministry of Justice announced the first pilot of a new model for funding social services, a "social impact bond." The idea was that private investors would invest in a social program and the government would repay the principal and provide a return depending on the degree of success and based on the cost savings realized from reduce future demand on public services. Central to the SIB model is a question of evaluation, specifically the type of methodology that would be used to determine program outcomes and investor returns. In the U.S, the dominant method has been the randomized controlled trial (RCT). However, the use of RCTs in this context has generated considerable criticism and controversy. SIB practitioners and investors have suggested that, while this may be a perfect tool in an academic sense, the effort to develop and scale the SIB market demands a more pragmatic approach. Drawing from the results of a three-year study of SIBs in Canada, the U.S., and UK, and informed by STS-inspired work on valuation and the social life of methods, this paper explores RCTs as both a valuation device and the focal point for a micropolitics of valuation which has impeded SIB development and led to the search for more practical alternatives. This analysis provides valuable insights into the relationships and tensions between evaluation and valuation in the social sector (and beyond), and how social science methods are being challenged by those seeking more nimble articulations of financial value.

Assembling 'plastic policy objects' in EU regulatory spaces
Artemis Papadaki-Anastasopoulou

Everywhere we look there is plastic. While plastic plays a major role in the economy, rising environmental concerns have created an imperative to regulate plastic. In 2018, the European Commission published the EU plastics strategy, a first of its kind to target plastic as a 'policy object' outside of other - waste, packaging or chemical - legislation. Part of its action plan is the so-called Single Use Plastics Directive (SUP), which focuses on ten selected plastic objects most commonly found on European beaches. However, when taking a closer look, plastic seems to be everything but a clear-cut regulatory category. In this paper we ask how plastic comes into being as an EU policy object through and for the Single Use Plastics directive? The paper aims to unpack how this new legal instrument not only regulates plastic, but also brings new material-object relations into being. We will follow the reconfiguration of 'plastic policy objects' through three regulatory spaces, around the EU Commission, the EU Parliament and the implementation of the directive in Member States. Following Löw (2008), we understand space as relational and action-oriented. In these regulatory spaces 'plastic policy objects' are assembled in specific ways which open up questions of their ontological politics. The paper is based on the analysis of EU documents (directives, impact assessments, working documents, reports), minutes of debates in the EU parliament and participation in stakeholder events.

Higher education governance: a moral economy of value *Tamar Nir, King's College London*

The British higher education sector has been undergoing a series of financial reforms, in its centre a market which hinges on the student-as-consumer. In an attempt to justify choice making practices, a new government sponsored dataset named Longitudinal Education Outcomes (LEO) has been devised. Its novelty; a conflation of all the various data that have been made available to inform policy makers and sector leaders, putting an end to a reliance on self-reporting surveys, meaning LEO is competent not only in providing a larger range of a temporal scope but displaying 'real time' data taken from the English Student Loan Book with tax and benefits from the HMRC. The aim of this paper is to point out the moral problems LEO poses for the sector, as following the assumptions involved exposes the type of practices data enhances, which are amplified under the

state. Yet more importantly, to unpack the crux the dataset and its design hold regarding the value of certain skills, courses and universities. By tying 'value for money' to statistical measurement as reliable instruments, the government are able to control the idea of what values such as 'best' should strive to be. This paper seeks to engage with a form of STS that brings into focus a critical attention to objects that may seem 'ready-made' or 'finished' (Mol, 2013). In this sense, the choice of attending to LEO is to question the morality of its role as being in and of itself a market device that is made and re-made through real time data. https://www.youtube.com/watch?v=sA9SBq4zVU8

Session Organizer:

James Williams, York University

Chair:

James Williams, York University

068. More-than-Human Ethnographies of Global Health

3:00 to 4:40 pm
virPrague: VR 19

Global Health initiatives are a productive site to reflect on the role of non-humans as driving research and technology on health around the world. Non-human creatures are often framed as a (future) threat causing pandemics and pestilence. Movement of pathogens, insects, and pollutants that defy national borders are but some examples of non-humans that animate much of the Global Health research and policy today. STS scholars have examined the role of non-human entities in biomedicine as either functional assets (e.g. mice in labs), or outright detrimental to public health, a target to be controlled (as vectors of disease). Instead, this panel invites scholars to reflect on the role of non-human entities as analytically central to the ways in which Global Health collaborations are organized, where the non-human entities are at times symbiotic, at times commensal, and even parasitic. In this panel, we invite papers to reflect on how universalist Global Health is problematized by non-humans in the particular policy and scientific spaces where global health programmes are implemented. This highlights the differentiated multi-species entanglements that make visible infrastructural divergences, unequal power dynamics, and different rationales of global health projects. How are non-humans considered to be limiting or enabling these kinds of projects? How are different ways to know and live with non-humans rearranged or erased in the implementation of these initiatives? The discussions will allow us to investigate: how might an analysis attentive and attuned to the more-than-human entanglements offer a new perspective on global health collaborations?

Participants:

Hydrating in the Wake of Cholera: Bottled Water and Haunted Entanglements in Haiti *Victoria Koski-Karell, University of Michigan*

In Haiti, a new surge of water products emerged in the wake (Sharpe 2016) of the nation's first-ever cholera epidemic. Pathogenic Vibrio cholerae—a waterborne bacteria that causes sudden and life-threatening diarrhea—leaked from a United Nations base and into the Artibonite River in October 2010. As an abyssal beginning (Glissant 1990) and 'cultural' encounter (Mintz 2012), the epidemic constituted an event that transformed not only each species, but also the substance linking them: water. Between 2015-2019, I spent over 12 months conducting multi-method ethnographic fieldwork to better understand Haiti's burgeoning water market. The ways people pour affect into their drinking-water challenge universal categories of potability and exceed dominant paradigms that attribute market expansion to structural constraints or opportunities. Water commodities proliferate, but their consumption varies in ways largely invisible to global health investigations. Piped water services remain a luxury for the majority of residents in Haiti. Despite prohibitive prices, a growing proportion of Haitians are turning to the private sector for drinking-water. Facing the predicament of living in precarity and invested in survival, people craft materially and affectively contingent "water ways" (Hauser 2017) by which bottled water is the only generally safe and readily available hydration source. Bottled water redefines nature as an asset invested with economic value while simultaneously serving as a reminder that without water—or when contaminated—people cannot exist. I contend that the human-water relationality haunted by cholera dissolves the seeming boundedness of bodies and generates space for relational care among humans and

nonhumans.

Re-imagining Outbreaks: Considering Posthuman Understandings of Cholera Through the Development of a Biosensor *Paula Palanco, KU Leuven*

We inhabit challenging times - the times of antimicrobial resistance, of epidemics that easily could become pandemics, of realising that current paradigms might not be enough to cope with the public-health issues that increasingly ask for our attention in the global arena. We are in need of a different perspective of our world, of re-imagining our role in it among all its other inhabitants. This paper intends to be a contribution to this re-imagination process by analysing the development of a cholera sensor in a posthumanist light, drawing upon my fieldwork experience in Cameroon as a member of the AEGIS Project (a University biotechnological initiative). Through the identification of several different human-(non)human assemblages, traditional approaches to outbreak management are questioned, challenging the constructed idea of 'the huMan' as centre of creation; this breakage ultimately leads to a better, fairer, designing of public-health policies.

Scale-making with microbes: global, local and other situated human-microbial engagements *Jose A. Cañada, University of Helsinki*

The multi-scalar dimension that characterizes the science-policy interface at the global level has been a long-standing concern in STS. Authors have found different ways to approach this issue, from its conceptualization in terms of different levels (Fortun, 2009) to notions of partial connections (Strathern, 2004). This topic is of especial relevance in the area of global health and in relation to health threats formulated in terms of microbial pathogenicity. One of the most relevant examples in the current global landscape is that of antimicrobial resistance (AMR). The topic has seen a growing interest from STS and social sciences generally. Such interest focuses on understanding how AMR discourses, knowledges, and practices emerge in the different contexts in which resistant microbes are key in understanding human and nonhuman health. Relying on fieldwork conducted in West Africa that follows the national implementation of global AMR policy, I discuss what multi-scalar work with microbes might look like. Microbes emerge in different forms across the different levels of the global health policy implementation: a rather stable role as resistant pathogens in AMR policies, a scientific object that requires characterization in laboratories, or their invisible manifestation through persistent infections in human and animal health. Using these examples, I analyse how the different actors involved in AMR make scale work more or less successfully in their everyday lives while, at the same time, I reflect on the methodological challenges posed to the researcher interested in understanding how microbes emerge across spatial, sociotechnical and temporal scales.

Towards a Viral Ecology: Virus Hunting and Strategic Predictions on 'Emerging Mosquito-Borne Diseases' in Brazil *Tullio Dias da Silva Maia, University of Exeter*

These are the first notes of ongoing ethnographic research being produced at two laboratories of the Federal University of Sergipe, Brazil. In the light of STS studies, I aim to understand some social, political, ecological and economic effects of science making in the context of vector diseases in Sergipe state. Collaborative activities among laboratories, health centres, city halls, the Brazilian Ministry of Health and other institutions are key here. Annual cases of dengue, Zika and chikungunya, and the imminence of Mayaro and urban yellow fevers in the state reveal researchers 'hunting' viruses of 'medical importance' in mosquitoes' bodies. These practices also generate an amount of 'wasted' or 'secondary' data, in parts, due to the low interest of sponsoring institutions in what is beyond epidemics. The low interest and the recent severe austerity in public spending in Brazil lead researchers to fit complex ecological intra-actions into an epidemiological matter. That is, the investigation of a broader viral ecology is constrained by the sponsors and policymakers' imposing logics of 'imminent epidemics'. This scenario stimulates scientists to develop some strategies such as remark already known and imminent viruses as the 'flagship species' of projects aiming to understand a broadened viral

ecology. In addition, in the hands of these researchers, the prediction of yet-to-come arboviruses becomes a research-funding guarantee. Finally, these are notes about viruses, mosquitoes, and diseases becoming totems of scientific uncertainties on a severe austerity on public research spending in Brazil in the near future.

Moving Between Public and Global Health: Wolbachia-infected Mosquitoes across the City of Rio de Janeiro *Luisa Reis Castro, Massachusetts Institute of Technology (MIT)*

At the early hours of dawn, a car drives slowly, with the window open just enough so that a global health technician can release a few hundred mosquitoes. The car follows a predefined route, but there are some areas it will not go. In certain "territories," as my interlocutors call it, it is a public health worker who must walk to do the releases, opening tubes filled with mosquitoes as he moves. In gated-communities, where entrance is barred for health workers, the solution is to drive around it, trying to throw mosquitoes across the fortification in the hopes these insects will cross the physical and class barrier these walls represent. These are snapshots of my fieldwork accompanying a new strategy being implemented in Rio de Janeiro, which uses the Aedes aegypti mosquito in efforts to control the viruses this insect can transmit, namely Zika, dengue, and chikungunya. Brazilian researchers are part of an international Gates Foundation-funded project, which proposes to release A. aegypti infected with Wolbachia bacteria, a microbe that can inhibit the mosquito's capacity to transmit pathogens. Ethnographically attending to the movement of mosquitoes and the humans who must walk and drive through the city to release them, my work examines how these releases show the alliances and frictions between global and public health, between geographies of health and science, of violence and inequality, of precarity and austerity.

Session Organizers:

Jose A. Cañada, University of Helsinki

Luisa Reis Castro, Massachusetts Institute of Technology (MIT)

Chair:

Jose A. Cañada, University of Helsinki

Discussant:

Salla Sariola, University of Helsinki

069. Experimental Practices and Practical Experiments in Uncertain world IV

3:00 to 4:40 pm

virPrague: VR 20

Participants:

Technologies of Resistance and Control in the 2019 Eurovision Song Contest Controversy *Alexei Tsinovoi, University of Copenhagen; Anders Kristian Munk, Aalborg University*

The Eurovision Song Contest (ESC) is one of the most popular cultural events worldwide. Beside the celebration of joyful musical Kitsch, the event is however also considered a salient political arena, where states attempt to perform their belonging to a common European identity, reenact international conflicts and grievances, and engage in various nation branding campaigns. Media technologies play a central role in the event, both in making it visible to millions of viewers, but also by enabling citizens to become part of European publics through the practice of voting. Today new media platforms play a central role in the formation of publics, and the traceability and aggregability they afford open up new avenues to study this mega-event. Moving away from liberal optimism on the one hand and Orwelian pessimism on the other, STS-informed new media research - often under the umbrella of the digital methods approach - has played a central role in advancing theoretically, methodologically and empirically the study of the actualized role of social media in politics, as a complex and open-ended process of mediation rather than a deterministic optimist-pessimist binary. Following this approach, this paper explores the political controversy around the 2019 ESC taking place Tel Aviv. Using digital methods and Twitter's API data we examine how the platform became a central site for resistance politics trying to boycott the event, the new medium-specific political intervention strategies employed by the actors, their propagation and impact, and the response by the state.

The Case for Intentional Language: Rhetoric and engagement in the museum space *Pamela Camille Perrimon*

The Natural History Museum of Los Angeles County plays host to a variety of programs whose purpose is to engage the public with its on-display collections and behind the scenes projects. This submission considers the language practices of public programs staff and public facing personnel in the NHMLA. Growing from a traditional rhetoric base this study discusses practices of intentional language use in promoting engagement, inclusivity, and message framing in presenting the scientific process. This paper draws from a dramatistic and theatrical rhetorical approach to analyze public facing staff language and examines it through a materialist perspective of the museum in context. It argues that the role of agent and agency in scientific spaces is the key to effective engagement. The site study concludes that certain intentional practices have been developed to engage the variety of publics the museum interacts with and that these choices not only make the natural sciences legible, but accessible to the communities that NHMLA serves. Additionally, the languages in programs position the visitor as the scientist that empowers participants to engage with the NHMLAs many community science projects and critical scientific thinking outside of its walls. This paper merges popular ideas of science rhetoric with studies of public engagement that showcases the museum programs from a language first perspective. Finally, it promotes the importance of language intentionality in the field of STS and engagement studies to argue that language training can potentially be a powerful and effective first step in sustainable engagement and educational practices.

The Desire to See: Binary System, Architectural Space and the Ontology of Being-with *Yijun Sun, UMASS-Amherst*

Starting with Foucault's differentiation between spectacle and surveillance (or the amphitheater and Panoptic machine) in Discipline and Punish, this paper examines the relationship between the 19th century European architecture and the desire to see as an extension of Enlightenment ideology. Focusing on Ledoux's design of the salt factory Saline de Chaux, Schinkel's panoramic facilities and the ancient Roman theaters described by Vitruvius, I suggest that what was situated at the center of all these designs was a binary system of the center and the periphery where the architectural interior could be paralleled to an optical device. By detaching vision from touch and projecting/exteriorizing it into the center of buildings, the 19th-century design merged spectatorship and surveillance. The emerging de-corporealized vision was no longer derived from the act of seeing from the physical body, but from the monocular eye at the center of the optical apparatus. Yet this concretized version of the desire to see also creates a new form of collective subjectivity among those who are seen – and who want to see – thereby offering the same topology between theatrical spaces as well as control machines of the sovereign state. By showcasing how these seemingly apart regimes of power can entangle with each other in the optical operations of the desire to see – and how they create communities – this paper offers a historical corrective to the contemporary modes of (digital) surveillance, which are argued to blend control and pleasure in the same machines.

The erratic progress of science and technology in archaeology *Mike Kelly, UNIVERSITY OF BRIGHTON*

Archaeology is a domain in which the difficulties of understanding are amplified by the temporal remoteness of the subject under examination and the conspicuous gaps in the evidential record. It straddles many disciplines and tries to accommodate the methods and findings of experts in diverse fields, bringing natural science techniques to bear on humanities and social science questions. As a result it arguably brings into extreme relief issues which are key to all areas of knowledge scholarship. In this paper I discuss some of the convulsive shifts, negotiations and controversies in the historical development of archaeological epistemologies and consider these in relation to evidence from interviews with working archaeologists, with a view to exploring the roles of technology in archaeology and their influence on approaches to research. In light of these

findings I explore the implications of the affordances of digital communications for archaeological research, and discuss whether technological innovation can be an enabler of values such as inclusivity, diversity and increased transparency and interrogabilty in representations of knowledge claims. The paper draws on semi-structured interviews conducted with 15 archaeology professionals as part of a PhD study of the representation of knowledge in Cultural Heritage, and approaches the issue of technology's place in scholarship through the frameworks of actor network theory and feminist perspectives on archaeology.

Session Organizer:

Mike Kelly, UNIVERSITY OF BRIGHTON

Chair:

Mike Kelly, UNIVERSITY OF BRIGHTON

070. Experiments with Algo-governance and Future-Making: STS Scholars as Designers II.

3:00 to 4:40 pm

virPrague: VR 21

Participants:

Legal Aspects of Patterns *Tincuta Heinzel, Loughborough University*

Based on a series of examples related to patentable status of patterns, this intervention will question the ambiguity of the notion of pattern, defined equally as a decorative form, an algorithm (or best practice design solutions for specific user-focused tasks, as British government uses to define them) or a notation, as well as legal interpretations given so far. The aim of this intervention is to think to strategies that critically address the intellectual property aspects in the digital era. References: Heinzel, T. (2018). Patented Patterns: On the art and science of patterns. A critical inquiry, Proceedings of "Politics of the Machine" Conference, 15 - 17 May 2018, Copenhagen, Denmark, Accessed on-line: https://www.scienceopen.com/hosted-document?doi=10.14236/ewic/EVAC18.8

Ventriloquist Ontology *Afroditi Psarra, DXARTS, University of Washington*

Inspired by Alejandro Jodorowsky's dystopian theatrical play "The School of Ventriloquists" I propose the creation of a wearable that takes over the wearer's body and converts them into a puppet who' s movement is dictated by what they wear. The continuous implementation of AI and ML systems in all areas of technological artifacts, including art, is challenging the ways in which we understand the world around us and urge us to consider other than human entities and "objects" as equally important as human beings. In an exploration of such philosophical ideas that stem in the realms of Posthumanism (Lyotard), Actor Network Theory (Latour) and Object-Oriented Ontology (Harman and Morton), I propose on explore the creation of a modular wearable, that will be trained using Reinforcement Learning (RL) to create its own personality that manifests in the form of sound and movement actuation. During the "Workshop on Experiments with Algo-governance and Future-Making" at 4S I would like to discuss and explore what type of data would be used to train the model and speculate about the "conscious" aspect that RL technique can produce. Possible data sources to connect to the ML model could be to policies around quantified self data and their value, gender and body politics and bioethics (p.e. genetic modification laws etc). This speculative prototype pertains to the approximation of the concept of algorithmic governance of the body, but also to experiment with policies around "bodies" as a means of creating sentience.

Feminist Hardware Workshop *Stefanie Wuschitz, Academy of Fine Arts Vienna; Patricia Joan Reis, Academy of Fine Arts Vienna*

The project proposes to examine the potential of feminist hacking and feminist hardware as a medium of diversified artistic expression. Furthermore it addresses the disbalance in presence and engagement of women* and non-binary artists. We are a group of female* artist researchers that will intervene in the hardware production cycle by connecting with ethical hardware manufacturers. We will work in a systematic manner with manufacturers who are specialized in open and ethical hardware enabling production to be conducted in mindful architecture. In a first phase specific tools for media art projects will be developed taking into account fair modes of hardware production and its future open access and modification (licensed as open hardware). In a second phase, the hardware will be used and implemented during artist residencies at our national collaboration partner Mz* Baltazar's Laboratory. The outcome will be presented in a mid-term presentation at our national collaboration partner ESC media art lab. This feedback will inform the next phase in which we host a series of workshops on the development and use of feminist hardware. Finally, we will publish extensively on documentation of our research process, focusing on the collaboration with ethical manufacturers demonstrating the particularities of the feminist hardware we developed in the form of an exhibition.

Ecosystemic Value Mapping *Marie Davidova, Welsh School of Architecture / Collaborative Collective*

The workshop will map and discuss the values of agency of individual and collective members of ecosystems. It will speculate on token economy that covers more than human participation. Can we give tokens to butterflies for pollinating our gardens? Can they buy and support blooming meadows for that? Can a bat buy an insect hotel, being its fast food restaurant? Our life on Earth can flourish only with cross-species participation. However, the today economic models do seem not to recognise other than human agency in it. The workshop will cover hands on city mapping as well as gigamapping (visual complexity codesign tool) for the proposed economic relations. It will benefit from a WIP project of revitalisation of a city park in Uhříněves, Prague 22 city municipality. Various results of the mapping can get integrated into the real project through codesigning with the residents and other stakeholders.

Session Organizer:

Tincuta Heinzel, Loughborough University

Chairs:

Galina Mihaleva, Nanyang Technological University

Hannah Perner-Wilson, Kobakant collective

Discussants:

Denisa Reshef Kera, University of Salamanca

Josef Holy, MSD

071. Radical and Radicalizing Workers In The Scientific Enterprise

3:00 to 4:40 pm

virPrague: VR 22

As the scientific enterprise grows amid broader political and social inequality, there is considerable potential for the exploitation of science workers - the scientists, technicians and other labourers who make research possible. While many are involved in scientific labor, only an elite minority reap the benefits. These conditions are characteristic of the prevailing neoliberal science regime that sees scientists as "entrepreneurs" competing in a "marketplace of ideas" (Lave et al. 2010, Mirowski 2011). Like other workers subjected to competition and precarity, university scientists report feeling anxious and having limited freedom to chart their own path (Sigl 2012, Müller and Rijcke 2017, Muller 2017). Outside of universities, science is undertaken in private laboratories and contract research organizations, where very little is known about the labour conditions. In recent years, there have been efforts to resist neoliberal trends in higher education. On university campuses, unions of research assistants and postdoctoral researchers are forming, and the academy's least privileged workers have staged important protests for better conditions and wages (Leonard and Rojer 2017). Some have recently hailed "the return of radical science" in light of the relaunch of the group Science for the People. How do science workers relate to and engage these movements and forms of resistance? How do these efforts compare to past "radical science" efforts? What are the potential avenues today for a "radical science"? We invite papers that explore the conditions of science workers, and forms of resistance related to science work.

Participants:

Radical Science Collectives in Italy in the 1960s and 1990s

Sara Meloni, University of Pennsylvania

Starting from the early 1960s, struggles for health in Northern Italian factories introduced novel alliances between workers and scientists. In the chemical plant of Castellanza (Lombardy) for example, technicians in R&D laboratories joined workers to demand safer working conditions and to create a self-managed and non-hierarchical model for fighting harmful productive processes. In turn, this model inspired critiques that challenged both mainstream and orthodox Marxist views of science and technology as "neutral" endeavors, trespassing the boundaries of the factory and entering public research institutes and laboratories. The occupation of the LIGB (International Laboratory of Genetics and Biophysics) in 1969 was emblematic: protesters contested the individualistic "American model" of doing science and asked for equal salary and participation of researchers and technicians to the activities of the laboratory. This paper explores the characteristics of this specifically Italian model of "radical science," analyzing the ways in which it was rediscovered by movements of students and researchers in the 1990s—most notably the Laser (Laboratorio Autonomo di Scienza Epistemologia e Ricerca) group. Drawing from interviews, archival documents, publications, and e-mail and website archives, this paper compares the assumptions, theoretical approaches, and practical strategies of radical science collectives emerged in Italy during the 1960s and the 1990s. While the very different cultural and political contexts of the two time periods dramatically changed the meanings of both "science" and "radical," this paper investigates to what extent past experiences and concepts can still be relevant and useful in STS for understanding the present of science work.

Tech Coolies: Indians on H-1B *Roli Varma, University of New Mexico*

One of the sources of American competitiveness in the global economy has been the recruitment of skilled manpower generated by developing countries in scientific and technical fields. Foreign scientists and engineers coming directly from India on temporary employment specialty H-1B visas are overwhelmingly present in U.S. technology companies. This paper argues that though in the technology sector, they serve the role of "coolie," a term originally used for indentured Asian manual laborers during British colonialism and the rise of U.S. capitalism. As tech coolies, Indian scientists and engineers in the 21st century are carrying the baggage of globalization to fulfill the expectations of U.S. companies and the needs of the American economy. This paper shows different paths to enter the U.S. in one single H-1B visa program, which leads to significant differences among Indian scientists and engineers.

Whose SharedPlans? Scripts, Collaboration, and Feminist AI Research *Rachel Bergmann, Microsoft Research New England*

This paper examines a network of women in artificial intelligence (AI) research who together expanded the range of methodologies and disciplines usually included in AI in the 1980s and 1990s. In particular, Barbara Grosz and Candace Sidner's concept of SharedPlans offered a way to model conversational context and collaboration in multi-agent AI environments. Drawing on archival work, interviews, conference proceedings, white papers, and departmental reports, I consider the cultural, institutional, and intellectual forces that shaped this network of women and their research. Using a technofeminist framework (Wajcman 2004; Haraway 1990) and borrowing from Michelle Murphy's (2012) concept of protocol feminism, this paper examines their "feminist AI protocol." I outline on one hand an assemblage of techniques, values, methods, and practices that illustrate a protocol rooted in community, interdisciplinarity, and care; these researchers incorporated more collaborative models of AI systems, moving beyond scripts and grounding their approach in the diverse goals and desires of real users. I argue their philosophy of "language as action" mirrors ideas circulating in feminist and critical STS simultaneously. On the other hand, this network of researchers did so from within a particular set of cultural and epistemological parameters of their computer science departments. The research practices of this network offer an opportunity to consider the limits of any

feminist AI protocol without a deeper commitment to feminist epistemologies. There remains an urgent need to reflect on how to build feminist AI technologies that make room for and include many different standpoints.

Session Organizer:
  Yarden Katz, Harvard University
Chair:
  Kelly Holloway, University of Toronto

072. The Politics of Uncertainty; Visualizing, Quantifying, and Fact-Checking Truth Claims in an Era of Polarized Politics
3:00 to 4:40 pm
virPrague: VR 23

In various public-facing media genres (such as journalism, scientific blogs, and fact-checking outlets), knowledge claims are more nuanced, robust, and methodologically sophisticated than they have been at any point in modern history. And yet, across social life, "the truth" seems more of a political weapon than ever. Large technology platforms debate the validity of fact-checking political advertisements, while the progressive left has doubled down on "the truth" as a cudgel to wield against populist authoritarians of all strips. Certainty seems more important and yet further away than ever. Within Science and Technology Studies, the analysis of how facts are constructed and made robust has been one of the dominant areas of scholarship since the invention of the field. In communication and media studies, research increasingly looks at how journalists visualize and mediate public facts. This panel proposal draws inspiration from the recent disciplinary intersection between these two fields to ask the question: how is uncertainty constructed, both in science and in journalism? How is "a lack of exactitude" made robust and visualized for a public audience? Is uncertainty always politically debilitating? Does it lend itself to being manipulated and exploited by populist politicians? The panel will draw on a range of STS and STS adjacent disciplines in order to understand the politics of the construction of uncertainty in the present moment.

Participants:
  "… a message that becomes apparent immediately" – When Uncertainty Is Opposed To Becoming Evident *Rahel Estermann, University of Lucerne*

During the past few years, visualizing uncertainty popped up as a desirable feature of data journalistic practice. It was debated in conferences1, discussed in practitioners' blog posts2, and advocated for in podcasts3. Nevertheless, during my ethnographic research in two data journalism teams, most of the visually constructed 'facts' did not indicate any uncertainty specification. A noteworthy exception are forecasts: The question of how to visualize uncertainty in election4 or hurricane forecasts5 are two highly debated issues. Identifying the reasons why journalists illustrate uncertainty only in forecasts sheds light on how uncertainty relates to fact-checking and truth claims. The way that the professional journalistic culture values certainty (Anderson 2018) or even claims to reveal the truth about the world (Ettema and Glasser 1985) has already been discussed in Journalism Studies. In my contribution to the panel, I argue that the epistemological implications of visualization itself are conducive to the omission of any indication of uncertainty in data journalism. STS identified processes for visualizations becoming evident, like data selection and aesthetic transformation (Amann and Knorr-Cetina 1988) or narrowing down interpretive flexibility (Burri and Dumit 2008) – processes that inform contemporary visualization practice (Hullman 2020) and reso-nate in so-called 'Style Guides' which shape visualization practices in newsrooms.6 Footnotes: 1 e.g. at NICAR 2017: https://www.ire.org/events-and-training/event/2702/3054/ (20.02.2020) 2 e.g. by Nathan Yau: https://flowingdata.com/2018/01/08/visualizing-the-uncertainty-in-data/ (20.02.2020) 3 see datastori.es https://datastori.es/134-visualizing-uncertainty-with-jessica-hullman-and-matthew-kay/ (20.02.2020) 4 https://www.vis4.net/blog/2016/11/jittery-gauges-election-forecast/ (20.02.2020) 5 http://www.thefunctionalart.com/2019/09/explaining-visualizations-in-new-york.html (20.02.2020) 6 So calls the NZZ Visuals Style Guide for the following design principles: determined, accentuated, precise, and authentic – see https://nzzdev.github.io/Storytelling-Styleguide/#/principles (20.02.2020) Literature: Amann, Klaus; Knorr-Cetina, Karin

(1988): The Fixation of (Visual) Evidence. In: Human Studies 11 (2/3), pp. 133–169. Anderson, C.W. (2018): Apostles of Certainty. Data Journalism and the Politics of Doubt. New York: Oxford University Press. Burri, Regula Valérie; Dumit, Joseph (2008): Social Studies of Scientific Imaging and Visualization. In: Edward J. Hackett, Olga Amsterdamska, Michael Lynch and Judy Wajcman (eds.): The Handbook of Science and Technology Studies. Third Edition. Cambridge, London: MIT Press, pp. 297–317. Ettema, James S.; Glasser, Theodore L. (1985): On the epistemology of investigative journalism. In: Communication 8, pp. 183–206. Hullman, Jessica (2020): Why Authors Don't Visualize Uncertainty. In: IEEE Transactions on Visualization and Computer Graphics 26 (1), pp. 130–139.

What kind of a test is a fact-check? *Noortje Marres, University of Warwick, UK; Liliana Bounegru, King's College London; Jonathan Gray, King's College London*

What kind of a test is a fact check? Is it a form of retro-active verification, securing "chains of reference", or does it perform prospective articulation work, qualifying and amplifying mere statements as problematic claims? Or, should the fact-check not really be seen as a test at all, but rather, as a surface materialisation of wider evaluative infrastructures in-the-making? In this paper, we address our question from two different angles: internal and external to fact-checking. First, we review specific instances of fact-checking and their effects on online public discourse. We ask: What did the check test? What transformations, if any, of the statement in question occurred? Did the check give rise to further checks and tests? Second, we reflect on the rise to prominence of fact-checking as a form of intervention in public discourse. Does fact-checking operate as a test of political, organisational contexts, putting relations between actors (audiences, journalists, politicians, experts, platforms, activists) to the test? Our aim, then, is to evaluate from the standpoint of the social studies of testing (Pinch, 1993; Marres and Stark, 2020) whether and how fact-checking is generative of new relations, capacities, and environments.

Video (F)Acts: Audiovisuality and Public Truth *sidar bayram, Koç University Sociology Department*

The proliferation of audiovisual technologies and modes of knowledge had profoundly affected and re-configured the visual space of politics hitherto organized around the forensic gaze of states. The increased ability of non-governmental or human rights organizations and activists to monitor and document the illegal activities of the states and corporations led to the emergence of counter-forensic practices. This paper examines how video as technology and practice, became an organizing force for counter-forensic practices and dissident articulations of public truth in Turkey from the 1990s onwards. Combining fieldwork with textual and visual archival material, I interrogate how video has operated as an investigative tool, as a documentary and evidentiary technology, and as an information relay for establishing and presenting facts. Focusing on human rights politics in Turkey, I will address the contemporary debates about post-truth, verification, facticity and truth claims from a media materialist, historical and postcolonial perspective. Relying on the growing interest of STS in visual objects and research tools, I delineate the cultural techniques, technological infrastructures, and everyday strategies accompanying the production, circulation, and presentation of video records that cut across aesthetics, political, technical, and legal domains. Besides underlining the transdisciplinary character of contemporary verification practices that blur the established distinctions of object/subject, socio-political /techno-aesthetic or human/non-human, this paper also emphasizes how audiovisual techniques and technologies are crucial for establishing and defending truth claims in the struggle against the (un)reality regimes of authoritarian governments.

Focusing on repair: Multiple truths, multiple journalisms *Candis Callison, Unversity of British Columbia; Mary Lynn Young, University of British Columbia*

What would a multi voice history of the present tell us about the role that journalism organizations can and should play in the repair (Jackson, 2014), reform and transformation of the field of journalism? How do they address issues of uncertainty and truth given prior harms and persistent critiques related to race, indigeneity, gender, and intersectional concerns? Instead of moving quickly to a defense of a modern journalism in crisis, these questions open up a conversation that includes multiple perspectives in order to understand what needs repair and reform, and acknowledges that in many global contexts, journalism also wrestles with a long complicity with state narratives and settler colonialism. Assumptions that narrowly assume funding and technology are the main challenges for journalism points miss the big picture. How journalism and journalists emerge alongside newer social institutions that are performing the historic roles of journalism (yet not always by that name) is essential and likely will be a work in progress for quite some time. The paper draws on Callison and Young, 2020 to examine how multiple journalisms are experimenting with what journalism could and should do today, specifically related to the shifting grounds of audiences who have, if social media metrics are any indication, shifted to their own curation of sources and information. How journalists shift from being lone wolves with Clark Kent-like ideals to more relational identities able to integrate situated knowledges (Haraway, 1988) and multiple truths is a process that is both already happening and not a certainty.

"What's Your Source?" Lay People's Arguments And Expertise In Reaction To Vaccination (Mis)information On Facebook *Manon Berriche, médialab Sciences Po*

With the rise of digital platforms, the way information is produced and diffused has profoundly changed. If this reconfiguration of the public space contributes to the propagation of misinformation, little research has approached this issue at a finer level of granularity by examining how lay people actually react to inaccurate content on social media and the extent to which they deploy argumentation and verification strategies to express doubts or criticisms. To tackle these questions, this research proposes to assess the role that Facebook plays in shaping controversies about vaccination by studying the argumentative interactions they spark off at two levels of observation. From a corpus of 700 publications, composed both of vaccination-related information flagged as false by fact-checkers and their respective corrections, a social network analysis first highlighted the prominence of Facebook pages disseminating misinformation over the ones discrediting it, and more importantly the extreme polarization between them. In a second step, however, automatic textual analysis, on all the comments generated by each publication, combined with in-depth qualitative analysis, revealed a diversity of viewpoints among both types of Facebook pages. In fact, anti-vaxxers like pro-vaxxers deployed arguments or quoted multiple sources either to criticize or to support vaccination-related claims—whether they were accurate or not. This nuances the idea of a direct impact of misinformation on the public but suggests that lay people's expertise could be at doubled-edged in the digital age. Overall, this research underlines the importance of increasing the level of granularity of STS research studying the responsibility of social media in the issue of misinformation by combining social network methods with reception studies.

Session Organizer:
Christopher Anderson
Chair:
Christopher Anderson

073. Materiality, Knowledges, Inequalities: Multiplicity and Sovereignty in a Post-colonial World
3:00 to 4:40 pm
virPrague: VR 24

The concept of multiplicity has gained traction in STS over the last decade. This has allowed for analyses of contingent relations rather than discrete objects. It has also brought topological inquiries of knowledge-making practices and infrastructures to the fore. The repeated emphasis on complexities beyond plurality has focused our analytical attention on multi-directional processes of relating, such as co-existence, ambivalence, but also rejection and failure. However, regulatory and knowledge practices are bound to institutions and infrastructures, i.e. they are materially grounded, highly contested and unequally distributed. Recognizing that inequalities are not only spatially inscribed on a global scale, but also temporally

layered through past injustice and lasting legacies of colonialism and imperialism, this panel asks how we can conceptualize the tensions between multiplicity and sovereignty as they emerge in recent debates around scientific specimens and technological infrastructures. Instead of dissolving the tension, we seek to take it as a starting point for a critical analysis of global knowledge economies. We are interested in papers that trace the historical and spatial circulation and political traction of epistemic and material objects - from colonial human remains to blood, tissue and DNA-samples; from global waste to ethnographic collections. What is at stake and how can we move from here?

Participants:

Colonial Body Archives: Epistemic Violence and Multiple Relations *Christine Hanke, University of Bayreuth*

Large numbers of human remains from colonial collections are still located in European archives today. In the last decade first projects of provenance research have been conducted and, in a few cases, human remains have been restituted. Against this background, my paper discusses epistemic practices around human remains with respect to their colonial legacies. I will follow circulations of practices in colonial anthropology as experimental field for quantitative methods and scientific innovation at the end of the 19th century, in forensic police methods and in a "trial of bones" approach in human rights discourse in the 20th century as well as in contemporary methods used to determine the provenance of human remains. Drawing on media theory, STS and postcolonial studies, I focus on the medial transformations of epistemic objects and their multiple modes of existence: from the materiality and liveliness of human bodies to human remains archived in European collections, from measurements to data evaluations and visualizations, from tables, diagrams and index cards to anthropometric, forensic and archaeological collections, from databases to scientific publications, from provenance studies to digital scanning and restitution practices. My presentation aims at a fundamental reflection of the multiplicity of relations between colonial sciences and current statistical/mechanical objectivity in an era of digital anthropometry.

The face as folded object: race and the problems with 'progress' in forensic DNA phenotyping *Roos Hopman, Amsterdam Institute for Social Science Research, University of Amsterdam*

Forensic DNA phenotyping (FDP) encompasses a set of technologies aimed at predicting phenotypic characteristics from DNA in order to help identify unknown suspects. Advocates of FDP present it as the future of forensics, the ultimate goal of these techniques being the production of complete, individualized facial composites based on DNA. With the promise of individuality and the advancement of technology comes the assumption that modern methods are steadily moving away from racial science. Yet in seeking to quantify physical differences, FDP practitioners build upon particular nineteenth and twentieth century scientific practices that measured and categorized human variation in terms of race. In this paper I attend to this temporal tension. I complicate the linear temporal approach to scientific progress by studying three research practices instrumental to contemporary labs where research on the genetics behind facial traits is being conducted. Building on the notion of the folded object as developed by Amade M'charek, I demonstrate how histories resonate in these futuristic technologies. Drawing on ethnographic fieldwork conducted in various genetic laboratories I show how nineteenth century statistical averaging techniques, as well as physical anthropological measuring and data-collection practices are folded into the ordering of measurements of skin color data taken with a spectrophotometer, the analysis of facial shape based on computational landmarks, and the collection of iris photographs. Attending to the historicity of FDP produced facial renderings, I bring into focus how race comes about in these practices as a consequence of temporal folds.

Exploring the Scientific and Policy Questions of the French Anthropological Mission on West African Pharmacopoeia *Natewinde Sawadogo, University of Ouaga II*

Of the French colonial heritage, African pharmacopoeia is at the same time one of the latest policy and scientific interests of imperial France in West Africa, and ironically the area where discontinuity after the end colonial domination is the most patent. How one can explain the politics of ignorance and political disengagement of France on African traditional medicine while the issue gained paramount relevance in African emancipatory strategy, then opened to foreign development cooperation, since the 1940s? This paper argues that understanding the scientific and policy questions of French anthropological mission on West African pharmacopoeia after the Second World War can shed light on the contemporary inequality in access to medicines in postcolonial francophone West Africa. In what direction this will to know was expressed in the anthropological mission? To what technology of power that knowledge set to respond? What political stakes were in play? How these processes interact which research and policy of postcolonial states on the same issues? It is the argument of this paper that the findings of this research will contribute to understanding some unresolved questions around the dynamic and impact of policies and research for the development of African traditional medicine launched by francophone African countries since the end of the first half of the 20th century.

Locating Controversy in Established Technoscience: Debating National DNA Databases in South Africa *Noah Tamarkin, Cornell University*

This paper explores how debates about South Africa's investment in national DNA databases animate and consolidate disparate ideas of postcolonial citizenship and belonging. It traces two key moments. The first moment is in 2013 when a proposed law that would create a national criminal DNA database was not yet assured of success. The second moment is in 2019 when a proposed amendment to the now established law would expand the national DNA database from one limited to those accused and convicted of crimes to one that would encompass all South African citizens. Through my discussion of both moments of DNA database debate, I will explore where activists, advocates, and critics locate controversy. I'm especially interested in instances where technoscience itself comes to stand for the non-controversial, how such a stance is justified, and to what end. I argue that new applications of well-established technologies create openings to use the language of technoscientific controversy (and especially the lack thereof) to depoliticize the link between science and the state. The task remains, then, to call attention to not only how new technoscience may be controversial, but to how relatively old and established technoscience can and should continue to be debated in light of ever-emerging political and legal contexts and the histories that haunt them.

'Cholets' as Relational Multiplicity: Hyper-buildings and Decolonizing Aesthetics *Marco Paladines, Technical University Berlin*

A new architectural style in the fast-growing, commerce devoted, and mainly Aymara populated city of El Alto in Bolivia has emerged. These buildings are called 'Cholets', and after being rejected by Bolivian non-indigenous citizens as 'ugly', they got worldwide attention from for their ornamented and colorful façades and interiors, drawing inspiration from Andean textiles and the ancient Tiwanaku ruins. Critics argue that this is the first expression of indigenous architecture after the Spanish conquest, countering the colonial past through decolonizing aesthetics. Based on a 7-month photo-ethnographic research, I ask: can 'Cholets' be regarded not as mere (physical) objects, but as a meshwork of fluid relations involving heterogeneous agents, temporalities, materials, meanings, actions, and forms? Are these 'hyper-buildings' epistemic devices of aesthetic decolonization with layered temporalities, distributed presence on the global infrastructure, and a vast relational multiplicity? The co-existence of 'indigenous' elements and organizational forms with 'modern' materials and urban logics do not result into a harmonious, homogeneous mixture, but rather, remains in constant, yet creative, tension. Moreover, the presence and significance of 'Cholets' is ambiguous. On the one hand they claim recognition for both, the Aymara identity (neglected throughout the colonial history), and the capacity of Aymara/Mestizo families to situate

themselves in wealthier social positions without being stigmatized and without copying the aesthetics of the traditional (white) elites. On the other hand, the reproduction of typical modern problematics around construction and housing: financial and territorial speculation, indifference towards sustainability, private or familiar (not social) facing of the housing problem.

Session Organizers:
Uli Beisel, University of Bayreuth
Katharina Schramm

Chair:
Uli Beisel, University of Bayreuth

074. Making Time - follow-up discussion
4:40 to 6:00 pm
virPrague: VR 01

Session Organizer:
Kasper Hedegaard Schiølin, Harvard STS Program, Harvard Kennedy School

Chair:
Kasper Hedegaard Schiølin, Harvard STS Program, Harvard Kennedy School

075. 6S Open Meeting
4:40 to 6:00 pm
virPrague: VR 02
6S Open Meeting is a student led meeting.

Session Organizers:
Stephen Zehr, Univ. Southern Indiana
Katie Ulrich, Rice University

Chair:
Aadita Chaudhury, York University

076. Fleck Book Prize
4:40 to 6:00 pm
virPrague: VR 03
The Fleck Prize committee of the Society for Social Studies of Science is awarded to Noémi Tousignant for her book "Edges of Exposure: Toxicology and the Problem of Capacity in Postcolonial Senegal" (Duke University Press 2018). Offering an historical and relational account of the science of toxicology in Senegal, Edges of Exposure asks why and how the situation has arisen in which public science is not able to offer protection, creating instead a situation that Tousignant calls "unprotection". Exploring successive waves of science struggles and policies after colonialism, Tousignant traces a recent history of science in Senegal, in the hopeful post-colonial moment and hopes of overcoming economic/regulatory dependence, followed by the 'abandonment' of public science in Africa by the state, and more recently, the problem of selective investment by global philanthropy in the neoliberal era.

Session Organizers:
Adia Benton
Uli Beisel, University of Bayreuth
Noemi Tousignant, University College London

Chair:
Lesley J F Green, University of Cape Town

077. How social are the seeds?
4:40 to 6:00 pm
virPrague: VR 04
Hello, to everyone interested in this title! I want to talk to you about a short experience I lived when studying the homegardens (shagras) in the south of Colombia with an indigenous group and to know your opinions and experiences related to it. Thanks for joining!-Erika Wagner-Medina

Session Organizer:
OSCAR A. FORERO, AGROSAVIA; SOAS-UK

Chair:
Erika Vanessa Wagner-Medina, AGROSAVIA, Colombia

078. How researchers are using Emerald Open Research to make their findings more easily accessible and discoverable
4:40 to 6:00 pm
virPrague: VR 05

Sallie Gregson, Publisher at Emerald Publishing, will discuss the benefits of Open Research and publishing with Emerald Open Research. Dr. Matthew S. Hanchard (University of Glasgow) and Bridgette Wessels (University of Glasgow) will also discuss their experiences of publishing on Emerald Open Research. There will be an opportunity to ask questions to all the speakers.

Session Organizers:
Sallie Gregson, Emerald Publishing
Alison Hope, Emerald Publishing Group
Priya Dharni, Emerald Publishing

Chairs:
Sallie Gregson, Emerald Publishing
Matthew S Hanchard, University of Glasgow
Bridgette Wessels, University of Glasgow

079. Social Scientists In Outer Space (organised by the SSOS Network)
4:40 to 6:00 pm
virPrague: VR 10
Calling all social scientists with an interest in outer space! Join members from the Social Studies of Outer Space (SSOS) Network for some fun-filled space-related activities. The event will provide you with an opportunity to meet fellow earthlings working on outer space topics and to learn more about (and join in with!) the research activities of the SSOS Network. Come along with us as we take the EASST/4S conference from cyberspace to outer space!

Session Organizers:
A.R.E. Taylor, University of Cambridge
Michael Clormann, Munich Center for Technology in Society, Technical University of Munich
James Lawrence Merron, University of Basel
Nina Klimburg Witjes, Vienna University
Richard Tutton, University of York
Denis Sivkov, Russian academy of national economy and public administration

Chair:
Matjaz Vidmar, The University of Edinburgh

080. SUBPLENARY: Lessons from Big Data in the Covid-19 pandemic: Significance and Agency of STS in contemporary datafication
6:00 to 7:40 pm
virPrague: VR 00
Given the massive social, political, legal and ethical challenges that have come to fore because of ruthless data brokerage companies, political propaganda agents, ever growing surveillance measures, and countless data leaks and security breaches, data sciences have started to reflect on the norms and values of their doings. In recent years, niches and events have emerged in the computer sciences, especially in the fields of social analytics, Human-Machine-Interfaces machine learning, or social computing, which facilitate regular exchange on the socio-technical challenges in developing IT "for social good". Some of them are even sponsored by corporate actors in this domain. There, many aspects are discussed like new techniques to formalize (statistical) fairness against the many dimensions of bias, to better consider the real contexts of AI systems, to create new research programs on the "social effects of machine learning". Many of the activities are strongly informed by STS contributions and all sorts of critical technology studies, or STS researchers are even directly included in the rethinking/reframing process. However, the current pandemic seems to have exacerbated existing problems. While we see a lot of efforts to establish rapid datafied/digital responses – e.g. improve data sharing for collective learning and mutual aid or built mobile contract tracing apps, this tech solutionism is often too blind to many of the issues raised earlier, such as the widening of the data divides in the Global South, and the normalisation of surveillance. Where is STS, when it comes to the digital governance of such a crisis? What can we learn from history? What is the situation beyond the reflexive niches? What formats of intervention do we have in store to create and manage responsible datafication?

Session Organizer:
Tereza Stockelova, Institute of Sociology of the Czech Academy of Sciences

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Chair:

Katja Mayer, Vienna University

Discussants:

Alex Hanna, Google

Stefania Milan, University of Amsterdam, The Netherlands

Christian Sandvig, University of Michigan

081. Old Academies and Emerging Worlds: Feminist Encounters

6:00 to 7:40 pm

virPrague: VR 01

Participants:

Gendered practices in multidisciplinary research and innovation: The case of health technology *Marja Vehviläinen, Tampere University*

This paper analyses gendered practices in multidisciplinary research and innovation that emerge inside academia, within the old disciples and in new centres, namely health technology. Health technology field aims to research and produce innovations to cure health problems, replace elements of the body and improve the quality of lives, and often it further commercializes innovations. Researchers with a number of backgrounds from life sciences and medicine to engineering and business studies and social sciences, and specialized multidisciplinary degree programmes, come to work in health technology. The data of the paper consists of open-ended career interviews with women PhDs (N=29) who work within the broad umbrella of health technology in Finland, conducted within the Nordwit Centre of Excellence (https://nordwit.com). The analysis starts from the accounted experiences of the interviewees and maps out gendered orders of work in multidisciplinary health technology. The interviewees explain how they as researchers, and their research and innovation work, have become multidisciplinary. They have trained themselves and worked in research groups inside old disciplines and in multidisciplinary centres, moved from one faculty to another, and in some cases to private companies. The multidisciplinary research and innovation work is located, on the one hand, within the gendered hierarchies of the old academia, and on the other hand, within the interplay of the gendered work traditions of female dominated, male dominated and mixed gender research fields as these meet in the new centres and projects. The latter crashes with the former and also provides spaces for agency. Furthermore, there is a shared feminized aim of doing research and innovation that is helpful for others, human and non-human.

A Better World For Who? Giving Young People Agency To Shape Emerging Worlds *Hannah Cowan, King's College London; Charlotte Kühlbrandt, King's College London*

The academy has long held authority over what emerging worlds should look like. The knowledge and technologies produced by researchers shape the world through flows into government policy, pharmaceutical companies, or tech start-ups. Indeed, King's College London, where this study is situated, has a strategic vision for 2050 to "make the world a better place" through the complex of industry, government, and the academy. As STS scholars embedded in one of the UK's oldest medical schools, we have decided to take seriously young climate activists' claims that they "are" the future, and that we should be working with them to shape emerging worlds. More specifically, we are using arts-based methods to engage often underprivileged young people in London with creating their own utopias and dystopias at the intersection of health, technology, and society. Through ethnographic observation and interviews we are first comparing the "better worlds" of young people and those emerging from the academy, before bringing them into conversation through inviting academics into community centres, and young people into lecture halls. This paper examines the many challenges of building social and material connections between the old, macho, world of medical schools, and young people from communities who are often wary of academic power structures. It has after all, been the traditional work of women to listen, care for, and engage with children. We therefore argue that it is only through developing more feminist methods in STS that we can challenge ideas about who has agency to shape emerging

worlds.

Conceiving an Epistemology of Egalitarianism Through Martin's 'The Egg and the Sperm' *Adam Peri, University of Chicago*

Emily Martin has been duly recognized for her important contributions to feminist STS and to gender studies more broadly. Her 2019 Bernal Prize acknowledgement specifically emphasizes the critical role that her paper 'The Egg and the Sperm' has played in surfacing "deeply entrenched" gender biases within laboratory research. Martin's paper depicts how linguistic stereotypes of male dominance are ascribed to human reproductive processes, and in turn skew scientific understandings of biological evidence and experimental results. In my own paper and accompanying presentation, I argue that although we should continue reading The Egg and the Sperm for its crucial influence on feminist STS, doing so limits the potential scope of its contribution. The inherence of male dominant stereotypes and their ensuing path dependency in biology are analogous to the biased racial and cultural accounts that now plague algorithmic systems, political debates over climate change, and other salient issues in the field. In the first half of the talk, I address The Egg and the Sperm's potential application to these broader issues within STS. This frames Martin's work as a larger statement on an 'epistemology of egalitarianism' and draws connections to her most recent scholarship. Following this overview of my own paper, I perform excerpts from The Egg and the Sperm alongside ethnographic accounts of algorithmic programming and Big Data analytics, thus demonstrating this more expansive application. I conclude by discussing why thinking through such an epistemology of egalitarianism can advance STS research, teaching, and public engagement.

Session Organizer:

Marja Vehviläinen, Tampere University

Chair:

Gabriele Griffin, Uppsala University

082. Artificial Africa: Seeing urban algorithms through infrastructure, labour, justice and aesthetics

6:00 to 7:40 pm

virPrague: VR 02

Artificial intelligence, machine learning and data science are taking off in African cities, and with it, a new incarnation of development policy and practice is emerging. Following knowledge for development and ICT4D, AI4D targets transport, health and finance in anticipation of transforming African societies. The resultant problems with AI typical of debate in the Global North are also anticipated to impact African societies: displacement of labour, data protection and privacy, bias in algorithms and so on. We aim to move away from the idea that doing technoscience in African cities generates artificial social realities that are dislodged and disassociated from more authentic experience. In challenging the assumed universalism of AI, we invite paper proposals exploring four critical dimensions: infrastructure, justice, labour and aesthetics. What kinds of materialities support algorithmic-life in Africa, and how do tensions in the extension of critical infrastructure become points of creativity and vulnerability? What counts as the everyday work of data science and to what extent does it subvert the distinction between informal and formal labour that has long characterised studies of work in African cities? Does data science make possible a regenerative, ground-up form of justice in which un-alienated value circulates? What are the aesthetics of artificial intelligence in African cities and how are technoscientific futures infused with socio-political imaginaries? How do art and fiction provide alternative future-scapes? We hope to open up scope for critical interventions that rethink the relationship between knowledge, technoscience and society in Africa.

Participants:

Health data systems in Zambia - mistranslations moving from rural to urban? *Jennifer A. Liu, University of Waterloo*

This project studies the implications of the implementation of the DHIS2 health data system in Zambia and tracks how data travels from rural regions up to the urban center. A critical literature has emerged at the intersection of STS and anthropology that challenges knowledge production, technologies of enumeration, and data collection in global health projects. This study examines how data is collected, worked, and reported as it moves from

rural health facilities to district health offices, then to provincial and national health institutions. Based on ethnographic observation and semi-structured interviews with representatives from each of these levels, we examine the difficulties faced when local data must fit into top-down models. Specifically, local health data in 2019 is entered into the DHIS2 with denominators created at the national level based on 2010 census numbers projected out. Local head counts may contradict official numbers and the DHIS2 cannot report, for example, vaccination coverage of 130%. And health facility catchment areas are not stable as much of the population in the Zambezi flood plain - where we work – migrate seasonally. Health data centralized in Lusaka, the capital city, may go through multiple translations and we examine the production of such data as well as the epistemic, social, ethical and political stakes of such modes of data collection in global health projects more broadly.

(Post)colonial AI Technologies at the Digital Gateway to Africa

Andrea Pollio, Future Urban Legacy Lab - Polytechnic of Turin

Writing about the Dutch East India company in 1776, Adam Smith explained that Cape Town was an obligatory passage on the route between the metropolitan and the colonial world. For this reason, he explained, the city enjoyed a privileged economic position: an inexhaustible surplus market based on the circuits of European mercantilism. Some 350 years later, the circuits of digital capitalism in Africa still traverse the city, which is, according to most recent data, the largest hub for venture capital invested in AI technologies on the continent. As local politicians like saying, Cape Town is the digital gateway to the rest of Africa. This paper explores what traditional STS described as 'centres of calculation'. While the concept originally applied to scientific labs, some urban scholars have suggested that cities too can be thought of as locations where knowledge is accumulated and truths are made. If Cape Town, as this paper suggests, is a centre of calculation for AI investment in the whole Africa, what are the cycles of knowledge, ideas, people, money and affects that coalesce in the city? How are AI possibilities centralized and ordered in Cape Town to script their economies for the rest of the continent? In addressing these questions, this work draws on ethnographic material to capture some of the colonial and postcolonial geographies of AI in Africa.

The Globalization of AI and The Practice Turn in Africa *Yousif Hassan*

AI development has captured the imagination of AI researchers and publics in Africa as a leapfrogging opportunity to prosperity and progress. Conferences such as Data Science Africa and Deep Learning Indaba have shown a growing AI community in Africa. The African Institute for Mathematical Sciences (AIMS) has launched the African Master in Machine Intelligence (AMMI) program to foster AI research and talent in Africa. Furthermore, there's an emerging ecosystem of regional innovation centers across Africa such as AfriLabs suggesting what Pfotenhauer & Jasanoff (2017) define as the practice-turn in innovation policy. However, many African researchers point out the lack of "African Context" in AI development. There's no specific definition of the "African Context", however, one understanding is the lack of African data to inform AI research. Underpinned by decolonial understanding of technoscience (Ali, 2014; Anderson, 2002; Collins & Bilge, 2016; Fanon, 2005; Smith, 2012) and the political economy of technoscience (Birch, 2017; Birch & Tyfield, 2013; Tyfield et al., 2017), this paper aims at answering these questions: how should African researchers and policy makers approach AI development? What are the assumptions about innovation in Africa that are influencing the development of AI? To what sociotechnical imaginaries these assumptions are articulated? Methodologically, we combine case study with content analysis to study the AMMI program and AfriLabs. We use the concept of "sociotechnical imaginaries" to understand the visions of AI technology and how African future(s) in terms of sustainable development and social justice are co-produced with science, technology and innovation (Jasanoff, 2004).

The Division of Biometric Work. For a regressive anthropology of technology from the Senegalese electoral administration.

Cecilia Passanti, Université Paris Descartes (Ceped)

My researches on digital electoral and biometric technologies in Africa (Senegal and Kenya) – technologies used for electoral purposes as vote, register voters, transmit, publish results - brought me to search for new ways to analyse and conceptualize macro digital national systems. The national system that it is investigated here is the Senegalese National Identity System based on biometrics. It is embodied in a large network of machines and humans which purpose is to deliver biometric voter cards to citizens. In this paper I propose two things: a way to analyse these kinds of digital national system for identification - that I call Regressive Anthropology; and a way to investigate the work behind these systems that highlight the human, political, transnational work behind their construction. I look at this work behind the ID systems using the concept of Division of Biometric Work to pay attention on how local companies (Senegalese in this case) and foreign one (Malaysian/French) share and assign different tasks one to the other and how they do justify this division of tasks. In the first part, I present the research object (the national ID system) through Regressive Anthropology that means that I decompose the system in its parts to present and understand it. Regressive anthropology looks like reverss engineering and reproduce the way in which the system have been thought and organized by practitioners. How do they imagine and implement a national digital system for identification? Different companies intervene in the production of different components that are then combined in a movement of composition/decomposition that is made by System Architect and System Integrators. These processes, and here we enter the second part, can be analysed through the lents of the Division of (biometric) Work. Looking at the division of biometric work highlight power relation between local and foreign companies and the contemporary negotiation of the economic value of these systems (what does produce value in biometrics production? How much a State should pay for it? Should it be done locally or internationally?). Concluding I'll show through engineers words how they negotiate nowadays the economic and scientific value of the tasks they accomplish as well as the value of the parts and the whole of the technological system.

BRT systems in African cities and sustainable urban mobility

Deborah Ogochukwu Ejim-Eze, Foundation for Sustainability Science in Africa/ Obafemi Awolowo University, Ile-Ife; Emmanuel Ejim-Eze, Institute of Engineering, technology and innovation Management

Public transport could be used to address mass mobility and accessibility in urban areas with diversity of socio-economic groups. Bus rapid transit (BRT) in developing cites is often found in urban areas with a high level of income disparity, poor spatial land use arrangement and informality. Now serves as a tool for poverty alleviation addressing accessibility of people to socio-services and other economic activities. BRT diffused from Latin America to other parts of the globe. BRT standard exist to define the system, design, evaluate and bench mark best practices of operation, However BRT has failed especially in the global south with different strands existing in few Africa cities. This study reviewed the literature and collected secondary data on BRT systems and governance in some African cities. A purposive sampling was used to choose the cities in countries where BRT has being in operation. Some measures of The BRT standard were also used for comparison knowing the status of the BRT in African cities. Findings show that issues of institution, urban planning& design, political leadership &interest, management of competing modes, Funding and financial incentives (subsidies), e.t.c were critical to the development of BRT in African cities. The authors made some policy recommendation for further development of the BRT system in African cities. This includes the recommendation to use BRT development and upgrade as a tool for institutional and governance reforms to drive sustainable development in African cities rather than an occasion for financial gains, consolidate political structures and score political points

Session Organizers:

Matthew Harsh, California Polytechnic State University
Ravtosh Bal, Duke University

Chair:

Kerry Holden, Queen Mary, University of London

083. Maintenance and its knowledges I
6:00 to 7:40 pm
virPrague: VR 03

In recent years, a series of maintenance studies have uncovered a world of sociotechnical practices that had remained unexplored by traditional STS such as research around innovation, breakdowns or disasters. Mostly repetitive and unheroic, these practices are dedicated to making things last rather than creating novelty or simply putting damaged objects 'back in order'. In these approaches, maintenance has been described in terms of an ethics of care, in which material entanglements, thoughtful improvisations and embodied adjustments are essential features. This panel aims at complementing these investigations by focusing on the different forms of knowledge—e.g. theories, standards, 'best practices', oral stories, tacit skills—, that emerge for, around, and as maintenance. These knowledges are plural and sometimes antagonistic in how they shape the means and rules to take care of objects, and how they define the 'whatness' of the things that are maintained. We would like to explore and analyze their relationships, and understand the conditions of their articulation, separation, or confrontation. Beyond a generic use of the notion of 'knowledge', submissions are invited to pay particular attention to the specific forms of knowledge that emerge at various empirical settings. Furthermore, if different forms of knowledge may work as resources or constraints during interventions, maintenance situations can also be investigated as sites and moments of knowledge generation. We expect that documenting and understanding the dynamics of these processes will be central to some of the proposals.

Participants:

Getting to know and learning to care for microalgae in an experimental wastewater treatment system *Mandy de Wilde, University of Amsterdam, The Netherlands; Fenna Smits, University of Amsterdam*

The burgeoning field of maintenance and repair studies foregrounds material fragility: if devices, machines or other instruments are not cared for, they are bound to decay and fall apart or stop functioning. The hands-on work of monitoring and mending matter is operationalised as maintenance. In this paper we explore the work involved in maintaining a technology in which fragile materials co-exist with fragile microorganisms. Our case study is of a decentralised wastewater treatment prototype developed by researchers to retrieve nutrients and purge harmful chemicals from domestic waste water. It includes bacteria in a septic tank and then diverse kinds of microalgae. The system was experimentally put to use in a Dutch ecovillage in order to explore under which living conditions the microalgae would want to feed off – and thereby clean – the waste water. The transition from the lab to village required ongoing adaptations of the researchers and the villagers as they sought to respond to the microalgae. This care work formed the object of our ethnographic fieldwork. Gathering knowledge was crucial to the research project. For one, there were questions to answer about how to achieve the "optimal growth" of the microalgae; and then, two, the system had to be in continuous operation so that "reliable data" about its functioning could be gathered. Here, we will tell how these two modes of sensorial as well as instrumental knowledge gathering were a part of, and intertwined with other parts of, the overall care for the technological system and its constitutive microalgae.

Maintaining an Aboriginal Honeybee Population in Ukraine's Transcarpathian Region *Tanya Richardson, Wilfrid Laurier University; Emilia Keil, Prokopovych Institute of Beekeeping, Academy of Agrarian Sciences of Ukraine; Alla Kizman, Prokopovych Institute of Beekeeping, Academy of Agrarian Sciences of Ukraine; Stepan Kerek, Prokopovych Institute of Beekeeping, Academy of Agrarian Sciences of Ukraine; Viktor Papp, Prokopovych Institute of Beekeeping, Academy of Agrarian Sciences of Ukraine; Ivan Mertsyn, Prokopovych Institute of Beekeeping, Academy of Agrarian Sciences of Ukraine*

This paper analyzes the theories, standards, and skills that researchers of the Prokopovych Beekeeping Institute use in maintaining (zberezhennia) a population of Carpathian honeybees in Ukraine's Transcarpathia Region. These honeybees became the focus of scientific research and breeding in the 1960s because of concerns that a productive, aboriginal bee population was disappearing. Since 1991, the Institute has continued (with ever-shrinking resources) to operate a research and breeding program that seeks to balance conservation with improvement for commercial beekeeping. Their population-based approach, however, has recently been challenged by an association that advocates a German-developed line-based approach to breed more productive bees. Drawing on two months of ethnographic research in 2018-19, this paper highlights the knowledge and skills of two of its authors, women who for decades have prepared samples, measured bees' wings, and calculated indices enabling researchers to evaluate colonies against the existing standard. We aim to make visible the role their work plays in the translations that make Carpathian bees knowable as a population, and their unique ability to evaluate the various new computer programs proposed to determine who mates with whom. It also considers what ethnographic studies of species conservation – which often adopt an analytic of care – might gain from paying attention to maintenance work, a move analagous to the ways in which STS-scholars of maintenance practices have attended to "the care of things." This proposal arises out of the challenges of translating the Ukrainian "zberezhennia" which is not quite "care," "maintenance," or "conservation" but merges elements of all three.

"My store is a laboratory" *Nicolas Nova, Geneva School of Art and Design*

Based on a two-year ethnographic study of smartphone repair shops in Switzerland, our paper aims at describing the different forms of knowledge that emerge in this context. Methods to deal with smartphone problems and bugs generally raise questions about the skills and know-how that are used by these convenience stores and how they develop them over time. This question appears interesting since the manufacturers of these technical objects do not necessarily provide information for independent third parties, and the existence of multiple models, as well as the unstable nature of smartphones make them difficult to repair. Holding particular kinds of knowledge, repairers use a wide range of information, knowledge and methods in their daily work, from reverse-engineering to bug testing, including the identification of components or programs on which to work, not to mention the soft-skills of listening and advice to be provided, as can be seen from the portraits. In this paper, we will show the diversity and the many roles of documents produced by smartphone repairers in their daily job. More specifically, we will highlight how online information system, notebooks, posters, flyers, videos shot with smartphones, and paper binders are deployed in activities related to maintenance, care and repair, and eventually, how these shops can be described as a discreet laboratory, where original epistemologies flourish, through spontaneous assemblage of materiality.

Maintenance in Time: Managing Time in Repair and Maintenance Work *Alex Reiss Sorokin, Massachusetts Institute of Technology*

Repair and maintenance scholars have showed that maintaining physical infrastructures over time requires work. This paper argues that maintaining physical infrastructure necessitates the management of time as well as work. Maintaining physical infrastructure requires both reactive, present oriented, and proactive, future oriented, work. Reactive and proactive maintenance are often at odds with each other: investing resources and labor in inspecting and servicing physical system comes at the expense of responding quickly to breakdowns and malfunctions and vice versa. To relieve some of this inherent tension, large scale organizations often categorize and divide maintenance work into three categories: reactive, corrective, and preventive maintenance. Reactive maintenance is described as the most immediate response, while preventive maintenance is described as a scheduled activity, to be taken some time in the future. Corrective maintenance is set in an intermediate time, not immediate present and not far future. This paper builds on an ethnographic study of repair and maintenance workers in a large research university to show how workers manage time through categorization, boundary work, and the allocation of tasks. I

show how past, present, and future are translated into types of maintenance work and describe the boundary work that is needed to support this division of labor and time. Finally, I show that forms of knowledge that are internal to maintenance work such as the facilities management literature depicts maintenance as a heterogenous and changing field – a field that is shaped by time.

Software as an Object of Shared Maintenance Knowledge *Mace Ojala, IT University of Copenhagen; Marisa Leavitt Cohn, IT University Copenhagen*

As on one hand an unready artefact to construct and develop, and on the other hand an existing, deeply entangled material fact in an unready, or *broken world* (Jackson, 2016), what does it take to maintain computer software? Software maintenance typically involves intervening in source code, the concrete material of software. Similarly to developing new functionality in response to new requirements, and repairing by fixing bugs, maintenance and re-alignment demand more effort in (re)constructing knowledge what actually even exists and how it fits together than writing any new code. A key element of this continuous *codework* (Cohn 2019; Mackenzie 2006) is the production, reproduction and *pre-production* of the conditions of maintenance in yet unknown futures. How is such sufficient, necessary and always situated knowledge achieved, governed and distributed? Based on participant observation and listening in at software maintainer meetups, complemented with artefact studies and discourse analysis online, we describe how communities maintainers recruit, select and onboard new contributors, negotiate, stabilize and problematize the terms of maintenance labour, and delegate work onto socio-technical (and recursively often software-supported) knowledge infrastructure to effectively maintain a given software over the relatively *longue durée* typically ignored in analysis of software and of codework. We believe our work on the knowledge practices and objects involved in the precarious, negotiated, delegated, unpredictable, policed, underprioritized, sometimes valorized and often unsolicited maintenance labour contributes to maintenance studies (Denis and Pontille 2019; Denis, Mongili and Pontille 2015) more generally. # References Cohn, M. (2019). Keeping Software Present: Software as a Timely Object for Digital STS. In J. Vertesi & D. Ribes (Eds.), DigitalSTS: A Field Guide for Science & Technology Studies (pp. 423–446). Princeton University Press. https://pure.itu.dk/portal/en/publications/keeping-software-present-software-as-a-timely-object-for-digital-sts(26734431-5cf8-4d93-9cac-7b211cf1d101).html Denis, J., Mongili, A., & Pontille, D. (2016). Maintenance & Repair in Science and Technology Studies. TECNOSCIENZA: Italian Journal of Science & Technology Studies, 6(2), 5-16–16. Denis, J., & Pontille, D. (2019). Why do maintenance and repair matter? In Janet Vertesi & D. Ribes (Eds.), DigitalSTS: A Field Guide for Science & Technology Studies. Princeton University Press. https://hal-mines-paristech.archives-ouvertes.fr/hal-02172939 Jackson, S. J. (2014). Rethinking Repair. In T. Gillespie, P. J. Boczkowski, & K. A. Foot (Eds.), Media Technologies (pp. 221–240). The MIT Press. https://doi.org/10.7551/mitpress/9780262525374.003.0011 Mackenzie, A. (2006). Cutting Code. Software and Sociality. Peter Lang. https://www.peterlang.com/view/title/58468

Session Organizers:
Jérôme Denis, CSI - MINES ParisTech
Fernando Dominguez, UC San Diego
David Pontille, CNRS
Chair:
David Pontille, CNRS

084. Cosmogrammatics. Nature(s) in planetary designs
6:00 to 7:40 pm
virPrague: VR 05

Since the 1960s, the 'environmental age' has churned out ecologies in pursuit either of technologically controlling "nature" or of loosening the modernist grip on that which is supposed to be untamed. However, one is rarely to be had without the other: even the most romantic attempts at returning to nature tend to involve sociotechnical imaginaries and are typically bound to the will to and practices of design. At a time where the

Earth and the living environment are conceived to be in an irreversible state of crisis, all attempts at grasping the essence of, rescuing, reclaiming, reinstating or repairing the world's natural (dis)order have become infrastructural and involve unapologetically technical concepts such as biodiversity, equilibrium and sustainability. In fact, it seems increasingly impossible to think nature independent of its enclosing and regulating architectures and technologies. This panel is conceived to assemble an image of nature and the natural based on contemporary planetary designs. Countering the "prevailing scholarly trend of materialist critique" (Hu 2017), it emphasizes the imaginary aspects of those designs instead of their physical manifestations and aims at investigating how nature and the natural have been defined through what we conceive as contemporary 'cosmogrammatics' - technical manuals, architectural plans and diagrams, logistical patents, policy documents, post-anthropocentric exhibitions, speculative (design) fictions etc.

Participants:

En Terre: Global Material Imaginaries of Sustainable Design and Earthen Architecture in Senegal *Megan Wiessner, New York University*

In response to the ecological costs of the built environment, architects have turned to a variety of new and old material technologies, including construction using earth. Like bamboo and foliage, rammed earth and adobe brick have entered the international design community's unproblematized material-symbolic repertoire of "sustainability." This paper discusses discrepancies among different imaginaries surrounding earth construction by looking at two buildings in Senegal designed by Western architects: the Thread cultural center designed by Toshiko Mori Architect and the Tambacounda hospital extension project designed by Manuel Herz. Drawing on observational fieldwork and interviews in Senegal as well as on an analysis of the reception of these buildings in the popular architectural press, I argue that the latter's imaginary around earth draws from specific cultural histories, ontologies of nature, and revalorizations of vernacular practices; earth is presumed to offer a charismatic solution to the problems of concrete as well as a universal template for local sourcing. This perspective pays very little attention to the affective significance of earth, cement, and concrete in contexts of rural poverty and urban aspiration. I argue that a focus on materiality can erase the fact that neither aesthetic conventions nor normative concerns for sustainability are universal, and can draw attention away from the wider circuits of energy, labor, and desire in which design must operate. Though these projects indeed highlight new horizons for architecture, they also raise questions about the material effects of material imaginaries and about whose material mediations are celebrated in the international design community.

Mobility as Speculative Technics of Survivable Architectures *Fadi Shayya, The University of Manchester*

This paper aims at investigating how military imaginaries of survivable mobility inform the abstraction of landscapes and the design of vehicular technologies. It addresses the technical and the environmental by drawing on Science and Technology Studies (Latour, Akrich, Callon, Law) and the philosophy of technology of Gilbert Simondon, offering a critique of militarization upon tracing its extended sociotechnical networks. The inquiry follows the design of MRAP-type vehicles employed during the U.S. military's protracted occupation of Iraq and Afghanistan for concerns of survivability. Through an STS- and ANT-inspired methodology, we trace how architectural and land relations are inscribed in the processes of engineering and testing these vehicles contingent on breakdown against Afghanistan's rugged landscape, what the military translates as irregular topography, primitive road geometry, boggy materials, and agricultural forms. The paper advances an architectural conception of the MRAP as an enclosed atmospheric capsule that privileges the survival of specific bodies. This capsule, we argue, translates terrain through technics of survivability and enrolls active bodies in protective envelopes across networks of simulation and training, which we can read through an "architectural" (after Yaneva, 2010) lens across the ground as "technical lands" (after Galison, 2017). We trace breakdown stories of rollover, drowning, and bodily traumas as documented in utility patents (shock-absorbing underbelly, blast attenuation

seats) military publications (user handbook, medical report, testing standards and procedures), and commercial brochures (driver assist, electronic stability). The paper seeks to expand on notions of land, site, terrain, and the architectural in STS and transdisciplinary studies of space.

Speculating at the nation-state scale *Michaela Büsse, FHNW HGK*

With its independence from Malaysia in 1965, Singapore kicked off a nation development process initiated and facilitated by the master plan – a zoning plan projecting Singapore's territorial development 50 years into the future. The master plan schemes the vision of rebuilding the nation of fishermen into the biggest economy in South East Asia. Subsequently brought to action by the Urban Redevelopment Authority, a set of practices was implemented that orchestrates bodies, infrastructure and environment along Singapore's strategy for economic growth. In my presentation I will focus on land reclamation as the material practice underscoring Singapore's vision and, at the same time, being emblematic of its understanding of nature as resource. I will touch upon key 'cosmogrammatics' such as the master plan and its executive counterpart – the concept plan, which further details Singapore's vision into urban development. Furthermore, I will introduce the Foreshores Act as the legal enforcement of the spatial planning, allowing Singapore to turn sand from anywhere into state-owned territory. While Singapore's relationship to 'nature' is exploitative per se, the accelerating economisation of sand puts the development project at risk. With sand becoming 'scarce' and the environmental effects of extraction and reclamation leading to international tensions, sand today is becoming contested ground and a matter of national security. The practices designed to support Singapore's nation building endeavour reveal a strategic relationship with nature oscillating between exploitation and protection, opportunity and thread, long-term vision and short-term measures. Master plan and concept plan are both synthesis and catalyst of these developments.

"We Only Have One Landfill Left": The Planetary Imaginary of Semakau Landfill *May Ee Wong*

This presentation takes Semakau Landfill in the Southeast-Asian city-state of Singapore as a case study of nature, as constructed by state policy initiatives and engineering techniques. Described as "the world's first and only offshore landfill," Semakau Landfill is an island created by filling incinerated ash into a bund connecting two offshore islands into 350 hectares of sea space. Today, the landfill is promoted as a public space of ecological leisure and the site of various farming activities – a model site of 'turning trash into treasure.' While the landfill serves as the national solution to the imminent exhaustion of existing landfill sites for Singapore, I argue that it is the performative site of a planetary imaginary that is articulated through the engineering aspects of its material construction and through Singaporean environmental policy, especially as one component of larger policy action plans such as the 'Sustainable Singapore Blueprint 2015' and 'Towards Zero-Waste Masterplan 2019.' In my presentation, I analyze how Semakau, as the "first man-made offshore landfill, created out of sea space," is positioned in these policy plans as the site that requires 'saving' through the implementation of Zero-Waste/Circular Economy measures before its landfill space runs out by the projected date of 2035. Examining how the logics of 'One Earth' become tethered to and translated through an offshore island landfill, I demonstrate how the engineering procedures and the policy construction of Semakau Landfill reflect imaginary aspects of planetary terraforming, and exhibit the temporal dynamics of Near-Future speculative fiction.

Session Organizers:

Johannes Bruder, FHNW Academy of Art and Design
Gökçe Günel, Rice University
Selena Savic

Chair:

Johannes Bruder, FHNW Academy of Art and Design

085. Proliferation and dispersal of (in)security actors and materialities (Proliferation, dispersal and (in)security #1)

6:00 to 7:40 pm
virPrague: VR 06
Participants:

Distributed Sovereignty: "War Clouds" & The Digital Military-Industrial Complex *Lauren E Bridges, Annenberg School of Communication, University of Pennsylvania*

Ethics around the military application of Artificial Intelligence (AI) are currently unsettled causing increased tensions between tech workers building commercial applications that can be used in warfare, tech companies vying for lucrative military contracts, and the defense department looking to secure talent and tech services to maintain United States military strength. This paper analyses the discourse around one of the most contentious U.S. military contracts, the Joint Enterprise Defense Initiative (JEDI), a $10 billion computing infrastructure contract that stipulates a single-vendor awardee in a winner-takes-all competition. The analysis reveals the deepening entanglement between public and private institutions in the development of technologies used in warfare elevating digital infrastructure to a national security issue. Through the rhetorical securitization of the cloud, the JEDI contract becomes an articulation of "infrastructural power" defined Khalili (2018) as an assemblage of "practices, discourses, physical fixtures, laws and procedures" with the ultimate aim of (re)producing capitalist relations. This infrastructural power highlights the proliferation of technologies that are built for commercial purposes and then applied in warfare. Given the vast implications of militarizing AI and commercial technologies on civic and human rights, especially as they are applied to autonomous lethal weapons, this paper raises questions of the dispersal of accountability of who is responsible when the system fails and the ethical implications of outsourcing military coding to tech employees whose labor has become so abstracted, they are unaware if and when they are coding for death. This is something I call, distributed sovereignty.

Imagining Europe at the intersection of innovation and insecurity *Dagmar Rychnovska, IHS Vienna; Christian Haddad, Austrian Institute for International Affairs - oiip; Nina Klimburg Witjes, Vienna University*

Today, the future is often imagined as insecure, imbued with multiple and polymorphous threats. Against these imaginations of novel and future threats, "innovation" is seen as overarching remedy for the various challenges deemed to threaten Europe and its place in a shifting global order. Drawing on STS and critical security studies, this paper investigates how innovation and (in)security are co-productive of each other in the ways European futures are envisioned, negotiated and enacted. We propose that new imaginaries of global (in)security are forged at the intersection of innovation and security policy in Europe. Based on coproductionist research perspectives, the paper scrutinises how Europe as a Security Union is envisioned and enacted through innovation and how, in turn, an Innovation Union is envisioned and enacted through security. Focusing on examples from antibiotics research partnerships; space programs; and biodefense infrastructures, the paper maps and analyzes how and where pathways towards desirable futures in/for Europe are imagined, (re)negotiated and pursued. Conceptually, its integrated comparative perspective on topical research areas promises to generate new insights into the formation of European imaginaries of desirable techno-political orders, values and identities. The paper argues that such interdisciplinary approach focusing on the coproduction of security-innovations is much needed, academically and politically, for a critical understanding of the current transformations of European democracies in changing global landscapes of power, technology and identity.

The Aesthetic Proliferation of Security *Jonathan Austin; Anna Leander, Graduate Institute of International and Devleopemnt Studies, Geneva*

How are the materialities of security praxis aesthetically proliferated? We argue that the aesthetic ethos of the 'Californian Ideology' has begun to proliferate within security politics and that this anesthetization of (in)security is among the most prominent reasons that its politics goes unquestioned. Aesthetics is referred to here in a broad sense as all that is made 'sensible' to

bodies. Over the last decade, security practitioners have prioritized the aesthetic design of security in ways that – indeed – pay minute concern to how security is affectively, emotionally, and cognitively 'felt' by publics. However, these aesthetic transformations have received only minimal attention across STS and CSS, limiting our understanding of the ways in which the aesthetic protocols of security are intrinsic to the performativity of its infrastructures. Our discussion extends beyond the obvious semiotic representation of security (through advertising, speech acts, etc.) and towards the ways security artifacts have particular aesthetic forms designed-in to their material infrastructures directly. We conceptualize these processes through the architect Keller Easterling's notion of active form, which demonstrates how objects that gain social and political power do so through an underlying aesthetic grammar that allows for particular objects to gain a kind of contagious and proliferating power. To support our discussion, we draw on an analysis of the 'Google Design Lab' and the ways in which it employs aesthetic tools, including critical aesthetic theory, in order to translate its material infrastructures of surveillance into socially palatable, ergonomically functional, and affectively desirable active forms.

Proliferation and dispersal of sensors as infrastructures of in/security *Nina Klimburg Witjes, Vienna University*

This paper attempts to theorize the messy and complicated spatio-temporal distribution of sensors as infrastructures of (in)security. Sensors are omnipresent and increasingly important elements in measuring, constituting and controlling contemporary societies. Built into (smart) cities, communication devices, drones, satellites and cars and deployed for surveillance, risk detection, biometric classification and crime prediction, sensors have become our oftentimes mundane companions. In the field of security, sensors are framed as a means to reduce uncertainty and enable predictive action against perceived, known, and unknown threats. Sensors – as infrastructural actors – thus also produce, standardize, and enact a certain notion of security as they transform diffuse ideas of a dangerous and threatening world into an experienceable and graspable entity, producing probabilities and possibilities alike. Yet, an important question is: How can we make sensing infrastructures visible and to what end? Contributing to work at the intersection of STS and CSS on the materiality and ontology of (security) infrastructures, I employ the notions of dispersal and proliferation to understand sensors and their infrastructures as technopolitical mediators of security relationships.

Criticalities Of Dispersed Data Sources In Birding And Predictive Policing *Ann Rudinow Saetnan, NTNU; Rocco Bellanova, UVA*

For surveillance purposes, dispersed data sources have become critical in two senses of the word. They are increasingly seen as decisive for effective surveillance and security efforts, and yet they are also objects of critique. In this paper, we compare two rapidly proliferating forms of surveillance based on dispersed data sources – environmental surveillance through citizen science birding, and predictive policing. We have studied the birding case through participatory observation (using a citizen science birding app, and following queries and debates in an app user facebook group), while the predictive policing case has been studied indirectly via the literature. By juxtaposing these two cases, some shared and varied traits are highlighted that can illustrate key critical aspects of assembling surveillance data from dispersed sources. We also see shared and varied practices for handling these critical traits. In both cases, critical analysis shows that how the data are generated and handled has consequences for (in-)security outcomes.

Session Organizers:
Annalisa Pelizza, University of Bologna and University of Twente
Claudia Aradau, King's College London
Chair:
Annalisa Pelizza, University of Bologna and University of Twente

086. FLIPPED | Digital Experiments in the Making I: Epistemological And Ethical Considerations

6:00 to 7:40 pm
virPrague: VR 07

When designing and re-inventing digital infrastructures and reflecting their role, epistemological as well as ethical considerations frame the experiments conducted. What are the digital modes of knowledge production in STS? What kind of agencies do code, platforms and tools have within this settings? How can we reflect the emerging sociotechnical research infrastructures within our methodological and analytic perspectives? The session focusses on epistemological and ethical considerations regarding digital STS. Therefore, the main scope is to reflect on the trading zones emerging, to draw connections between digital infrastructures and researchers as well as between code and materiality. Ethical considerations on digital experiments and the related data as well as the power relations embedded within play a central role in analysing the changing scope of STS research. This is a flipped session, where we focus on discussion. All presentations are available at the STS Infrastructures platform: https://stsinfrastructures.org/content/open-panel-easst4s-2020-digital-experiments-making/essay

Participants:

Life In The Trading Zone Of Digital STS *Torben Elgaard Jensen, Aalborg University Copenhagen; Anders Kristian Munk, Aalborg University*

The last two decades have seen digital STS engaging with a range of computational techniques for data harvesting, analysis and visualization. Inevitably, this has created new patterns of collaboration between STS and adjacent fields, as well as new types of projects that attempt to combine digital methods with established analytical approaches in STS. Drawing on Galison's analysis of trading zones in Physics – a tool-heavy discipline par excellence – this paper examines the types of pragmatic exchanges and pidgin languages that have developed at the Techno-Anthropology Lab in Copenhagen since it was established five years ago. Finally, the paper discusses whether Galison's key argument that the disunity of the field (of physics) is the source of its strength, has a bearing on the current pattern of concurrent tool and theory developments in Digital STS.

Code Ethnography And The Materiality Of Power In Digital Communication Infrastructures *Fernanda R. Rosa, Annenberg School for Communication, University of Pennsylvania*

The aim of this paper is to introduce code ethnography, a method to examine code as a sociotechnical artifact, in consideration of its inherent social, political and economic implications. It aims to help social science scholars capture critical aspects of digital communication infrastructures that are not only inaccessible to outsiders and researchers with a non-technical background, but may also be hidden from insiders and specialists who have different interests in the code. The paper discusses the paths to do code ethnography, considering the immersion in the scholarly field where the code is placed, interviewing, collecting code, and collaborating with code technical specialists to answer the questions that the research poses. To exemplify the kinds of results that code ethnography can bring, the paper focuses on its application on the study of Border Gateway Protocol (BGP). BGP is the language that internet network routers use to interconnect among themselves and send and receive data packets and routes over the internet. Following the tenet of symmetry in actor network theory (Callon, 1984; Callon & Latour, 1981) along with the necessity to "learn from the South and with the South" (Santos, 1995, p. 508), BGP data was collected at two of the largest physical facilities where internet networks interconnect, known as internet exchange points (IXPs): IX.br São Paulo in Brazil and DE-CIX Frankfurt in Germany. In comparing data collected at two of the largest IXPs in the world, the study highlights differences that lead to disparities of power concentration in internet infrastructure between the global North and global South heretofore overlooked in internet studies. The study also advances STS methods in dialogue with internet governance and decolonial scholarship and contribute to further understand the materiality of data centers, where the code was collected.

Transforming Code Into Voice: Toward A Material Semiotic Critical Code Studies Of Weizenbaum's ELIZA Program

Jamie Steele, Rensselaer Polytechnic Institute
This paper takes up an exploration of the use of critical code studies in STS. I argue that STS methods call for a different use of critical code studies from the ways in which it has been primarily used in the digital humanities and literary code studies (Marino, 2014). Instead, I propose weaving together critical code studies (Marino, 2020) with material semiotics (Law, 2019; Akrich & Latour, 1992) to treat code as not only a narrative but as an epistemic object of analysis. I argue that interrogating the code itself as a semiotic text entangled with the material artifact (e.g., "the computer") allows STS to more thoroughly understand the assemblages of symbolic and relational power of the digital/technological artifact as a whole. In order to support and illustrate my argument, I take up Weizenbaum's ELIZA program (1966). Weizenbaum regularly shared stories of his team members' development of intimate relationships with the program – one they helped build and under which they held no illusion of its human-ness. I will use the methodological juxtaposition I have proposed above to attempt to understand the ways which the material device of the computer mediated the relationship of the user to the "mind" of the machine (Turkle, 1984), thus showing how the analysis is made stronger by considering the relationship of the user to both the device AND the code, and how this code becomes a semiotic voice of its own. References: Marino, Mark C. "Field report for critical code studies, 2014." Computational Culture 4 (2014). Marino, Mark C. Critical Code Studies. MIT Press, 2020. Law, John. "Actor network theory and material semiotics." Social theory (2009): 141. Law, John. "Material semiotics." URL: www. heterogeneities. net/publications/Law2019Material Semiotics. pdf (2019). Akrich, Madeleine, and Bruno Latour. "A summary of a convenient vocabulary for the semiotics of human and nonhuman assemblies." (1992). Weizenbaum, Joseph. "ELIZA—a computer program for the study of natural language communication between man and machine." Communications of the ACM 9, no. 1 (1966): 36-45. Turkle, Sherry. The Second Self: Computers and the Human Spirit. Simon and Schuster, New York, 1984.

Session Organizers:
Lina Franken, University of Hamburg
Kim Fortun, University of California Irvine
Mike Fortun, University of California, Irvine
Gertraud Koch, University of Hamburg
Chair:
Gertraud Koch, University of Hamburg

087. FLIPPED | Sustainable Biofuels?: Redesigning Nature, Nation, and Growth
6:00 to 7:40 pm
virPrague: VR 08

*You can access all presentations on the STS Infrastructures Platform (https://stsinfrastructures.org/content/easst4s-2020-panel-sustainable-biofuels) Biofuels, perceived as a "renewable energy resource" that can propel our societies towards sustainable futures, is a contested issue. Mainstream critiques of biofuels question the sustainability of biofuel production systems by taking its impacts on the environment and economy into consideration. As such, national and subnational governments, alongside intergovernmental organizations and other related civil and private sector actors, work on "best governance practices" to render biofuels into a "sustainable" source of energy. However, this mainstream lens of governance lacks a significant historical understanding of biofuels and further reduces biofuels into a resource question. This panel draws attention to the materials out of which biofuels are made from a material-semiotic perspective. When we begin thinking about biofuels through the analytical and conceptual tools of STS, new research questions emerge. To this end, we ask: How do technoscientific practices of making biofuels refigure "nature," "nation," and "growth"? The contributions reflect on this question through tracing different materials (e.g., corn, sugarcane, phosphorus, and Marabú) in different geographical regions ranging from Brazil, Canada, Mauritius, Cuba, and the United States. They challenge the consideration of biofuels as merely "local sources of energy" by unpacking the multiple colonial, present, and future international relations around biofuels while troubling simplistic binaries such "native/invasive" species. The multispecies and transnational approach adopted in this panel not only

contributes to a critical understanding of biofuels but also works on a subject that has yet to be deeply explored in the field of STS.
Participants:

Redesigning Growth: Sugarcane Biotechnology and Post-Petroleum Futures in São Paulo, Brazil *Katie Ulrich, Rice University*
In São Paulo, Brazil, sugarcane-based energy and materials, such as biofuels and bio-plastics, have become an appealing strategy in sustainability efforts. Sugarcane scientists who research such biotechnologies thus work to transform a plant with a centuries-long history of plantation violence and land dispossession into the basis of an environmentally sound future. This paper examines one way these scientists work toward this transformation: in their words, by "redesigning growth" in sugarcane varieties to give the cane higher productivity and in turn require less cultivation area. The concept of growth, particularly unlimited growth, has been situated by scholars within capitalist, petroculture, and liberal frameworks. This paper seeks to bring these literatures on growth into conversation with scientific and industrial technical practices around modifying the sugarcane plant's growth process, asking what social conceptions about growth are required for the latter. Based on ethnographic research with molecular biologists and sugarcane industry actors, this paper analyzes how sugarcane growth is understood in terms of the physical location and form of sugar within the plant itself—for example, sugar in the leaves versus the stalk. It argues that by redesigning growth through the manipulation of the place and form of sugar within the plant, scientists also work to modify the place and form of sugar within social imaginaries. Ultimately, this paper suggests that redesigning sugarcane growth might be redesigning growth in other ways as well, by nuancing certain social understandings of growth in relation to petro-capitalist liberal progress.

Cultivating Energy, Fuelling Empire: The Making of Biofuels in a Colonized Present *Jessica Caporusso, York University*
As part of a broader trend towards producing novel energy sources in an increasingly carbon-constrained world, small island developing states such as the Republic of Mauritius are turning to the development of biofuels—energy derived from biological plant matter or biomass—as a solution to anxieties over energy scarcity. In Mauritius, popular sources of biofuel feedstock include sugarcane and its discards as well as Arundo Donax, a so-called invasive species-turned-energy crop. At face value, these approaches towards reimagining energy regimes seem to circumvent extractive petrocultures in order to fuel a nascent 'green' energy transition. This paper contends that despite attempts to propagate sustainable energy futures, biofuels refigure 'nature' and 'empire' anew. They instead demonstrate the ways imperial legacies shore up possible energy futures by invoking deep-rooted colonial knowledge of plantation sugar production in Mauritius to cultivate energy crops. Relying on sugarcane and Arundo Donax as vegetal guides, this paper traces the ways that technoscientific knowledge regarding plantation crops and so-called 'energy plants' not only props up visions of sustainable futures, but further sediments colonial-era agronomy as the foundation on which they are built. It confronts, for example, how plant science in colonial Mauritius—a formalized knowledge steeped in legacies of plantation violence—intersects with contemporary reimaginings of biomass, chemical engineering, and innovation to transform colonized plants into viable biofuel feedstock ripe for manipulation. This paper therefore considers how technoscientific practices extrude sustainable energy imaginaries through a pressurized climate of labour exploitation and resource extraction.

From Invasive Species to Biofuel of the Future: Marabú's Transformation into Cuba's New Hope *Lauren Nareau, UNC Chapel Hill*
This paper examines how Cuba is (re)negotiating its relationship to the environment—and its past—through the commodification of an invasive and thorny plant called Marabú. Rising out of the ruined soils of the past and into the present, Marabú stands as a ghostly reminder of what is left over from colonial sugar production. While the 1990s and 2000s were dominated by state-led eradication programs deploying prison labor to remove this

latest scourge, Marabú's fate has recently taken a remarkable turn. Transformed from invasive weed to sustainable biofuel, Marabú is quickly becoming a burgeoning international commodity—a prospect the Cuban government is pursuing in earnest as it seeks an alternative to oil fuel and reentry into the global market. Marabú has consequently become a symbol of a Cuba in transition—at once evoking the country's colonial sugar past and heralding a possibly 'post-socialist' future. Marabú's resurrection complicates simplistic definitions of the native/invasive binary and may offer new ways of understanding the ways species move between and beyond these loaded distinctions. Challenging historical, scientific, and cultural definitions of what it means to be 'native,' the case of Marabú puts forward a thorny, but pertinent question for living in the Anthropocene: will embracing invasive species help create livable futures for both humans and non? Furthermore, what are the environmental and ethical implications of utilizing invasive species as new forms of plant-based biofuels and the unfree labor used to extract these energies? As the work of Cubans transforming Marabú to new ends makes clear, negotiating the social and environmental demands of the present day may require an innovative rethinking of our relationship with the things and species among us—and perhaps too with the past, no matter how troubling.

Fuelling Bodies: Phosphorus, Agriculture, and Energetic Relations *Cameron Butler, York University*

Industrial agriculture requires intensive applications of phosphate fertilizers to maintain soil phosphorus levels. To produce the fertilizers, phosphate rock is mined, processed, shipped, and applied to farmland, where crop plants take up and convert it into organic forms that humans can consume. Within human bodies, phosphorus is responsible for cellular energy as adenosine triphosphate (ATP). Scientific and policy discussions on phosphorus increasingly focus on concerns of depleting global phosphate reserves and eutrophication from phosphate-heavy runoff. I argue that these scientific approaches, which treat phosphorus as matter, create discursive "patches" (taking cues from Anna Tsing) whereby the scientific translations of one form of phosphorus to another obfuscate global relational webs. When different forms of phosphorus are separated between biology, chemistry, or geology, the connections phosphorus makes across substances, bodies, and spaces are lost, and by consequence it becomes harder to respond to these local and global issues. In this paper, I suggest that conceptualizing the movements of phosphorus as an energetic relationship brings these multispecies, transnational webs to the forefront. I trace the energetic phosphorus networks formed between the bodies of migrant farm workers, soil microbes, crop plants, and consumers in the British Columbia Fraser Valley, in order to reveal how the predominately white settler consumers atomically embody global systems of mineral extraction, transnational labour exploitation, settler-colonial land practices, and inequitable food systems. By framing phosphorus as a kind of biological fuel, I highlight how its movements map webs of uneven metabolic transfers across multiple spatiotemporal scales.

Fueling the Failure: Biofuels, Forests, and the Environmental State *andrew douglas schuldt, University Of British Columbia*

Fueling the Failure: Biofuels, Forests, and the Environmental State The acceleration of the global climate emergency is pushing states to mitigate or resolve the crisis. In 2007, the United States introduced a piece of legislation called the Renewable Fuel Standard 2 (RFS2) seeking to incentivize the commercialization of cellulosic biofuels technologies, or what are often called second generation biofuels (2GB). 2GB promise to significantly mitigate greenhouse gas emissions from transportation because they are produced from fibrous, inedible crops and crop wastes, as compared to first generation biofuels that are produced from food crops like corn and sugarcane. Fifteen plants were built between then and 2015; all but one failed or appear to be failing. Of these failed projects, six used wood from forests in the Southern United States. This paper examines how, why, and to what ends the RFS2 failed. I focus on understanding the afterlives of these failed plants and the consequences for the state and forests. The paper speaks to emerging academic debates around market (non-)performativity and the "green" expert knowledge used to justify the potential of 2GB.

Session Organizers:
Duygu Kasdogan, İzmir Katip Çelebi University
Jessica Caporusso, York University
Katie Ulrich, Rice University
andrew douglas schuldt, University Of British Columbia
Chair:
Duygu Kasdogan, İzmir Katip Çelebi University
Discussants:
Nicole Labruto, Johns Hopkins University
Andrew S. Mathews, UC Santa Cruz

088. Classic STS Papers: Session 2
6:00 to 7:40 pm
virPrague: VR 09
Participants:

Designing with Latour. Using Bruno Latour's ''Where Are the Missing Masses? The Sociology of a Few Mundane Artifacts'' as a design tutorial. *Alvise Mattozzi, Free University of Bolzano; tiziana piccioni, Università IULM*

Too often, the methodological import of Actor-Network Theory (ANT) has been reduced to the principle of generalized symmetry and to the rule of "follow the actor" or, worse, it has been completely neglected or overlooked. For instance, in relation to one of ANT's alleged main object of study, namely artifacts, ANT has been credited to be able to inspire "politically and philosophically intriguing debates about the relation between humans and the non-humans" but in "ways that divert attention away from more ordinary questions about what these cyborg/hybrid entities are actually doing" (Shove, Pantzar and Watson 2012, p. 10) or, it has been considered "a new meta-theory" and not a methodology (Henare, Holbraad and Wastell 2007, p. 7). We deem, instead, that ANT, has tried to develop a descriptive methodology enabling detailed descriptions and comparisons of actor-networks - and especially of artifacts and the networks, to which they take part. The contributions by Madeleine Akrich and Bruno Latour present in Shaping Technology / Building Society (1992) clearly go in such direction, providing a method to de-scribe technical objects (Akrich 1992), and a bouquet of terms, categories and models (Latour 1992; Akrich and Latour 1992), which allows to do that in detail. In order to test, reconsider and hopefully appreciate, the relevance of such descriptive methodology, we intend to reenact Bruno Latour's ''Where Are the Missing Masses?" by design, i.e. through the de-scriptions the students of the Course in Design of the Free University of Bozen-Bolzano elaborated using Latour's tools, while designing their artifacts.

Resisting The Cyborg: The Case of Wearable Computers *Ana Viseu, Universidade Europeia*

In 1984, Haraway published one of STS' seminal papers, The Cyborg Manifesto. Arguing that "we are all cyborgs now", Haraway makes an argument for the cyborg as a hybrid entity. In the 35 years since, Haraway's cyborg has travelled wide in STS and has come to influence a departing premise of numerous STS studies, namely that the world is co-constructed and that science and society are mutually shaped. Drawing from an ethnography of the deployment of wearable computers at a large telecommunications company, in this paper I return to Haraway's and STS' premises to argue that with the rise of cybernetics, big data and algorithmic systems, we must pay attention to difference between humans and nonhumans as a site of resistance and intervention.

Seamlessness – Postcolonial Folding of Thomas Hughes's Seamless Web *Alexandra Hofmaenner, University of Basel*

The notion of the seamless web of technology and society was offered by the historian of science Thomas Hughes in an endeavour to 'change our way of thinking about technological and scientific change' (Hughes, 1986:291). His seminal paper 'The Seamless Web: Technology, Science, Etcetera, Etcetera' (1986) proposes this notion to transcend the hard categories

surrounding science and technology, such as politics, economics, society and culture. It provided the background for Hughes's theory of technological change and was widely applied in subsequent STS traditions such as the sociology of technology, SCOT, ANT and LTS. The paper considers the current value for STS of Hughes's notion of the seamless web. It offers a fresh analysis of Thomas Edison, in whose notebooks Hughes first encountered the seamless web: Edison 'so thoroughly mixed matters commonly labelled "economic", "technical" and "scientific" that his thoughts composed a seamless web' (Hughes, 1986: 285). Particular attention is given to Edison's plan to establish a global empire of rights and privileges, and its bearing on the design and the success of his electric light and electric power station technology. The paper introduces a set of new concepts to develop further Hughes' model of technological change. The term 'Seamlessness' is suggested as an analytical tool for designating a set of unstated assumptions that have influenced the course and development of the field of STS. The paper aims to illustrate how classical STS concepts can be folded (Deleuze, 1992) into new analytical tools for contemporary empirical analysis and community building in STS.

Session Organizers:

Nicole C Nelson, University of Wisconsin Madison
Sergio Sismondo, Queen's University

Chair:

Sergio Sismondo, Queen's University

089. Strategies for Knowledge Coproduction in the Agrifood Sector - session 1

6:00 to 7:40 pm
virPrague: VR 10

During the last decade of the 20th century STS of agri-food sector interrogated the wisdom of focusing in technological solutions as the way to solve the problem of unsustainable agri-food systems. The STS critique has shown that the most promissory technologies have felt short of expectations, whilst allowing research institution to capture financial resources that could have been used more effectively, particularly in developing countries. Following such critique, public and private research institutions began reforms aimed to facilitate knowledge coproduction and co-innovation. Have such political reforms, and changes in institutional changes made any difference in terms of developing territorial innovation systems (TIS) that incorporate local knowledge and agency of territorial actors? Presentations of this session would critically examine political reforms and/or changes of institutional settings with aim to advice policy reform and implementation to better enable co-innovation process in the sector.

Participants:

Agroecological innovation: co-producing nature, society and socioenvironmental technologies *Les Levidow, Open University*

The Green Revolution has exemplified the techno-diffusionist modernisation model, provoking opposition from a food sovereignty agenda, increasingly linked with agroecology. Peasants' and civil society groups have jointly pursued this alternative, which has gained state support measures, especially in Latin America. Yet such measures often perpetuate the diffusionist model. To overcome those limitations, practitioners have devised agroecological innovation strategies, which can be analysed through STS co-production theory. Its literature has generally focused on how contentious technoscientific innovations are co-produced with specific forms of nature and society. Here the theory instead helps to analyse agroecological alternatives. In our two Brazilian case studies, practitioners have sought to strengthen common practices around a future vision of socioenvironmental justice through agroforestry. In both cases, an alternative future has been constructed through three instruments of co-production (making identities, institutions and discourses) at the nexus of social and natural order. Agroecological innovation has devised these distinctive elements: knowledge-exchange between farmers and experts rather than technology transfer from them; socio-environmental technologies rather than technology packages from external experts; agro-biodiversity complementing ethno-cultural diversity, rather than resource extraction merely providing input-

substitutes for agrochemicals; solidarity economy building more equal participation across social groups, ages, genders, etc.; short food-supply chains building consumer support for agroforestry methods and for horizontal work organisation, rather than competitive markets; collective capacities for self-management (or shared management) of those efforts, rather than dependence on professional managers. The above elements have been co-produced for a distinctive socionatural order. Yet practitioners face challenges in expanding their distinctive forms while protecting them from the dominant model.

Are governmental strategies regarding seed provision adequate to advance resilience of agri-food systems in Colombia? *Erika Vanessa Wagner-Medina, AGROSAVIA, Colombia; Adriana Marcela Santacruz Castro, Agrosavia; Claudia Patricia Rendón Ocampo, Agrosavia*

Germplasm conservation and reproduction is vital to enable sustainable agricultural systems. Nevertheless technocratic regimes tend to consider seed availability simply as another input rather that integral to resilient agroecosystems. Social values, systems of exchange and cultural reproduction are all part of this complex system that enables germplasm availability. The capacities and capabilities to respond to social and environmental stresses, adapting and transforming to enable suitable and sovereign food systems depend only partially of technical capabilities. Without the will to preserve germplasm diversity and procure its reproduction in sustainable ways, there is no guarantee that seeds commercialization would follow germplasm conservation targets, neither of advising socio-ecological resilience. In this paper a critique is developed in relation to lack of governmental strategies in Colombia aimed to bridge the gap between licensed business to commercialise seeds, and uncertified individuals, organizations and communities that continue to exchange and trade seeds regardless of rules and regulations. We argue that being the use of certified seeds less than 10% in Colombia, new strategies that would allow incorporation of local knowledge and agency are needed. In this way, agriculturalists, organizations and communities can become (or continue their role of) custodians of the Country's germplasm and, with government help, organise exchange and trading of seeds that would contribute to resilient agri-food systems.

Has Agro-food Research focus in supplying technology changed following government instructions to develop Territorial Innovation Systems? *OSCAR A. FORERO, AGROSAVIA; SOAS-UK*

STS research has revealed how the most promissory technologies for the Agri-food sector have contributed very little to the achievement of sustainability aims, nor have they made significant advances in making agri-food systems more resilient (Dixon 2007, Steffen et al. 2015 , Schipanski et.al. 2016;; FAO 2017). With this is mind, the government of Colombia reformed the National Science and Technology System (SNIA law 1876 of 2017). A core development of the renewed law is the request to develop territorial innovation systems (TIS), as articulation spaces to operate at different territorial scales. Government institutions, territorial actors, private sector and research institutions supposed to participate in these spaces to define development paths and to prioritise innovation needs to be search and research for. Agrosavia, the largest research institution of the Agrofood sector in the country, (funded by public money) developed a methodology to enable TIS. Currently, Agrosavia is piloting such methodology. In this presentation (paper) it will be critically discussed if systematization of these experiences, can offer an insight on whether status quo approach continues, with its focus in supplying technology. Or, if, on the contrary, a more holistic approach towards defining paths of innovation is effectively considering sustainability aims and the increase of food systems at variant territorial scales.

Session Organizer:

OSCAR A. FORERO, AGROSAVIA; SOAS-UK

Chair:

OSCAR A. FORERO, AGROSAVIA; SOAS-UK

Discussant:

Erika Vanessa Wagner-Medina, AGROSAVIA, Colombia

090. Alchemical Transformations 2: On Matters of Substance and Change
6:00 to 7:40 pm
virPrague: VR 11

This panel explores transformation through the lens of alchemy. We conceptualize alchemy capaciously, emphasizing acts of transubstantiation in which matter undergoes physical and discursive change, thereby acquiring new value, vitality, or meaning. Medieval alchemists sought to transform base into noble metals through proto-scientific practices. Catholic Christians convert bread into the body of Christ though ceremonial consecration. Alchemical transformations abound. Fermentation and prescribed fire, DIY drug labs and biotech benches, compost teas and artisan cheese: everywhere are transitions of raw to cooked (Lévi-Strauss), profane to sacred, waste to worth, and rot to regeneration—not necessarily in that order, not necessarily for the good. Alchemical change occurs at the levels of substance and symbol. It is mediated by rituals, regulations, institutional regimes, and technical apparatuses. Of interest are black boxes and boundary objects—occult or opaque technologies of transformation and the mutable materials that traverse them. Alchemical transformation invites examination of matters at once ontological, political, epistemological, and ethical. These papers explore alchemical transformations, material and metaphoric, that are attentive to matters of concern as well as care (Latour, Puig de la Bellacasa). What is modern alchemy, and how might alchemical transformations inform our understanding of (alter) scientific practices, bio-capitalism, ecologies of production, intra-action, and social change? We strive to bring decolonial and feminist science studies into dialogue with "alternative" sciences to better understand processes of transformation and the agency of STS (its subjects and objects) in a time of accelerating change and emerging worlds.

Participants:

Devil's Dust: The Alchemy of Rags *Hanna Rose Shell, University of Colorado Boulder*

"We might almost moralise on the metempsychosis of wool, the transfer of soul from one coat to another. Nothing, so long as it has substantial existence, is really and permanently useless." So begins an 1861article titled "Devil's Dust" in the popular British Chambers's Magazine. This paper reveals hidden worlds of textile intrigue by looking at this thing called "devil's dust." In it, I undertake an alchemical approach to understanding the technologies and cultures of transformation surrounding secondhand textiles. Focusing on the specific technological process and product called "shoddy," shredded up old clothes, respun and born again, I investigate old clothes and tacit knowledge as together providing a magic cauldron of sorts. Their collection, sorting, shredding, and so-called "resurrection" converge. Notions of (real or imaged) processes of decay and alchemical transformation are brought to the fore in accounts drawn from court cases to poems. This shoddy material, I argue, becomes "lively" as it serves as a "textile skin" that exists both as and beyond its material ingredients. This account of the alchemy of rags takes into account larger issues from international supply-chains to multiethnic politics. The paper argues for an alchemical approach to studying textiles, as a "technology as worn," with Polanyi's notion of "tacit knowledge," Kristeva's "abjection" providing some critical theoretical terms, and with a conclusion in dialogue with recent conversations in "new materialism," e.g. Bennett, Ingold.

Great Transmutations? Habitat, Care, and Operations Futures in San Pedro Bay *Christina Dunbar-Hester, University of Southern California*

In only a century, "useless tidal flats" in San Pedro Bay were transmuted to form the Ports of Long Beach and Los Angeles (USA), the busiest container ports on the west coast of North America. Through documentary and field research, this paper empirically examines present-day proposals to once again transform the Bay's ecosystem. A 2019 US Army Corps of Engineers report scored potential scenarios for habitat restoration in the Long Beach portion of the bay. However, the Corps' analysis began from the premise that maritime operations, military operations, and oil industry operations—which are significant, as the Port's biggest import is oil, and it contains extraction and refining operations—would remain unaffected by ecosystem restoration. This premise was unpopular with many community members and city officials. The Port presents a site for thinking alchemically: its location, in the LA River mouth, would be a "biodiversity hotspot" but for the shipping, oil, and US military presence that have sprung up in the delta and now constitute it. Throughout geologic time, oil existed as a "natural" substance in this locale, but has rapidly been transformed through extraction and refinement to build worlds of urbanization and empire. Though the 2019 ecosystem proposal is modest in scope, it offers tantalizing opportunities to excavate future transmutation. This paper presents an analysis informed by feminist and indigenous STS (Haraway 2016; Todd 2017). It argues that the lives of nonhuman entities that constitute petroleum can be conceptualized as "weaponized fossil kin" (Todd 2017), with implications for thinking through webs of relations including oil, lively systems (Cowen 2014), species such as kelp, terns, and mussels, and (non-universalized) humans themselves. It considers the transmutations that might guide the production of a more just (if also modest and compromised) ecotechnological future (Hughes 2005).

Tracing Flows and Alchemical Transformations of "Phlogiston" in Contemporary Fire/Combustion Narratives *Aadita Chaudhury, York University*

According to the now-defunct phlogiston theory, all flammable matter contains a substance called phlogiston, which is released during combustion. In alchemy, phlogiston was also associated with vitalism and the innate life force in matter and in beings. While the oxygen theory of combustion has now replaced phlogiston theory, phlogiston's metaphoric traces have remained in popular discourses around fire, combustion and their relationships to colonialism and racial capitalism, even contemporarily. I argue that phlogiston still informs the trajectory in narratives surrounding fire, colonialism, gender and race that undergirds certain logics of valuation associated with empire and capitalist expansion – through which certain lives and material-discursive projects are valued over others. By considering recent examples, such as the fires in Notre Dame and Grenfell Tower, and the ongoing struggles of Indigenous peoples worldwide against fossil fuel extraction in their territories, this paper discusses how "phlogiston" is metaphorically invoked when we are asked to pay attention to combustive processes present in the public consciousness. What can the dispossession, disruption and the siphoning of the flows of "phlogiston" in certain spatio-temporal contexts tell us about current modes of extraction and valuation? I argue, that phlogiston, as a discursive model for understanding fire and combustion, can show us how matter and discourse get transformed alongside changing forms of colonialism, and racial capitalism. Through this model, we can trace the dynamism of our current worlds to understand how colonial-capitalist logics divert flows of lively/fiery matter, and for whose benefits.

From wasted energy to waste-to-energy *Matt Barlow, The University of Adelaide*

In this paper, I explore waste-to-energy (WTE) infrastructure as a continuation of colonial and capitalist logics of energy as a thermodynamic process "putting the world to work" (Daggett 2019). I do so as WTE is experiencing somewhat of a renaissance in an attempt to address a worldwide 'waste crisis'. In India, where I conducted 10 months of ethnographic fieldwork throughout 2018 and 2019, WTE has now been included in the solid waste management rules (2016) as a means of solving two problems - an abundance of solid waste and a growing demand for renewable energy. Pitched as a renewable energy source, the recent rhetoric around WTE naturalizes the production, consumption, and disposal of plastics, obscuring the externalities of plastics production (Behrsin 2019). It also turns a colonial process of capital accumulation into a form of green technology. During my fieldwork in Kochi, the industrial and commercial capital of Kerala, I engaged with environmental activists and politicians negotiating the transformation of a landfill site into a WTE facility through a transnational public-private partnership (PPP). Situating developments such as these alongside a deeper history of energy as a thermodynamic process with colonial roots in shipbuilding and other imperial projects, highlights what the

transformation of waste-to-energy often hides, that waste has always been a necessary part of the process of colonization and capital accumulation.

Session Organizer:

Heather Paxson, Massachusetts Institute of Technology (MIT)

Chair:

Bradley Jones, Washington University in St. Louis

091. Grassroots Innovation: Hacking, Making, Hobby, Entrepreneurship 2

6:00 to 7:40 pm
virPrague: VR 12

A hallmark of our emerging world is that the general public obtains not only access to modern technologies but also the knowledge, means, and incentives to generate new products and applications from them. While self-made inventors populated history, do-it-yourself and technological explorations outside big companies, government, and academia nonetheless become a social movement with conspicuous collectives, information channels, and media coverage. Today, hackers work on open-source, free-access software and firmware for fun and profit. Makerspaces spread everywhere for the cause of sharing manufacturing, participatory design, recycling and reuse, nurturing start-ups, or community building. Made-in-garage is a common myth in high-tech. "Mass innovation" or "STEM for everyone" is promoted by the states around the globe. In this panel, we welcome various approaches and perspectives to make sense of this phenomenon of grassroots innovation. We ask: What are its connections to the longstanding traditions of technical hobbies? Which organizational and managerial platforms do grassroots innovators introduce that influence the development of new technologies? What is the nature of the tension between non-profit and commercial, between amateur and professional, in these activities? How do the hackers' and makers' political actions intertwine with their technical innovation? While hacking and making are seemingly global, what are their major differences in different countries and regions, especially between the affluent North and poor South? How does grassroots innovation reconfigure the current technological landscape? What are the roles of the state and capital in shaping grassroots innovation, and how is such shaping grappled from below?

Participants:

The "Life Cycle" of Pioneer Communities: The Emergence and the Decline the Quantified Self and Maker Movements *Andreas Hepp, University of Bremen*

As Fred Turner has shown, we cannot understand the development of the personal computer without also considering the Whole Earth Network, an 'extraordinary in-fluential group of San Francisco Bay area journalists and entrepreneurs' (Turner 2006: 3). In the following, I would like to call such groups or networks 'pioneer communities' (Hepp 2020: 30). There are several reasons for this: They typically refer to themselves as (social) 'movements' with whom they share a desire to change society, but on closer inspection they are not social movements in the strictest sense of the term as they are too apolitical. They are more like 'intermedi-aries' (Bourdieu 2010: 151) who present themselves as 'movement'. Pioneer communities tend to have a certain "life cycle": By offering a particular thematic frame they arise out of the context of many different other figurations; in the case of the Quantified Self and Maker movements the DIY and Open Source movements and New Age and Self Awareness groups. Based on an intensive media ethnography in Germany, UK and the US, I want to reconstruct this "life cycle" by the example of the Quantified Self and Maker move-ments. My thesis is that the existence of such "life cycles" is a fundamental charac-teristic of pioneer communities: being pioneering means to be fragile, because you are only a pioneer for a certain amount of time. But this fragility does not necessari-ly represent a restriction, it is, perhaps, the secret to the "success" of the rapid spread of pioneer communities.

Carving a Space for China's Computer Amateurs: CFido as a Chinese Cyberspace before the Internet *Chen-Pang Yeang, University of Toronto; Wen-Ching Sung, University of Toronto; Zhixiang Cheng, University of Toronto*

The Fidonet was a network connecting computers running Bulletin Board Systems (BBS). Invented in the U.S. around 1983-84, it enabled communications via telephone dialups with a modem. Affordable equipment and no requirement for dedicated infrastructure made the Fidonet popular in North America and Western Europe by the mid-1980s. First introduced to Beijing in 1991, the Fidonet quickly evolved into a nationwide network known as the CFido (Chinese Fidonet). This was China's major cyberspace for computer enthusiasts before the Internet's general availability. At its peak, the CFido hosted tens of thousands of members, who provided tips for hardware and software tinkering, shared information about new digital products, posted stories, commented on sports, and chit-chatted. In multiple senses, the CFido resembled the Western geek groups, for its community's stress of the "spirit of amateurs," non-profit identity, the ideal of share, and technical prowess in their rules, discourses, and actions. Yet, some of the network's most active participants were highly entrepreneurial computer programmers who founded or were going to found China's leading information-technology companies, including Kingsoft, Xiaomi, Tencent, and NetEase. And at least one computer firm was involved in enacting and maintaining a primary CFido hub. This contrast raises issues about the connections between the amateur and commercial. In this paper, we examine the operations of the CFido during its pinnacle in 1991-97, and will use the case to address questions about the relationships between technical hobby, sense of community, commercial undertakings, and business ambition in post-Deng China.

Extra-Institutional Science: A Closer Look at Community Laboratories *Anna Verena Eireiner, University of Cambridge*

DIY biology is one of the most recent offshoots of hacker subculture. DIY biologists set up their laboratories in garages, kitchens or community spaces. They experiment with gene editing technologies like CRISPR, grow glow-in-the-dark plants and engineer colourful fungi. Several factors motivated the formation of the DIY biology movement, including the rigidity and bureaucracy of academic systems, the affordability and availability of current biotechnological equipment and novel research funding avenues such as crowd and seed funding. While DIY biologists loosely share a hacker ethos, they do not operate under the supervision and safety guidelines of established institutions, thus giving rise to heated controversy. The movement is often framed as citizen science, as proponents advocate that DIY biology provides valuable opportunities for citizen engagement and education in biotechnology beyond an academic setting. However, DIY biologists are not the 'laypeople' or 'amateurs' that are commonly associated with citizen science and DIY subculture. DIY laboratories are typically set up and populated by individuals with degrees in the natural sciences, i.e. the same group of people one finds in institutional laboratories and would thus consider 'biotechnology experts' (Grushkin et al., 2013). Thus, this paper holds that DIY biology is in fact not a laypeople movement but expert-science in an extra-institutional setting or 'extra-institutional science'. Drawing on existing literature, I reframe the movement as extra-institutional science and consider how DIY biology community laboratories challenges predominant modes of scientific inquiry by crafting subversive research infrastructures. I show how this extra-institutional science movement juxtaposes the controversial domain of biotechnology with a Silicon Valley ethos of innovation. In doing so, the DIY biology laboratory foregrounds sharing, openness, individual agency, freedom of scientific inquiry, open-ended and playful experimentation, and world-improvement.

Session Organizer:

Chen-Pang Yeang, University of Toronto

Chair:

Chen-Pang Yeang, University of Toronto

092. Political Data of the Digital Anthropocene: (Justice, Diplomacy and Negotiation)

6:00 to 7:40 pm
virPrague: VR 13

This session engages with the politics of the Digital Anthropocene. Each of the five papers grapples with, in some sense, the ways in which environmental data are mediated through various forms of digital practice (modelling, exchange, and diplomacy). These papers address some of the

core political concerns arising through the intersection of the digital and the environmental, namely, what forms of rights, ownership, and(in)justice are at stake in the production and distribution of environmental data.

Participants:

Approaching the Digital Anthropocene: Ethnographic Encounters & Conceptual Openings *James Maguire, IT University Copenhagen; Astrid Andersen, Aalborg University; Rachel Douglas Jones, IT University Copenhagen*

It is becoming increasingly more difficult to address digital questions without considering how they overlap and intersect with environmental concerns. We make the digital from the natural world, crafting metals and plastics into sleek handheld forms, while powering our data through vast quantities of energy consumption. We observe and make our understandings of environments through digital devices, spreadsheet accounting and carbon calculations. We have brought epochal shifts into being through rhetoric, disciplines, and geological measures. The Anthropocene is a digitally mediated and produced time. Yet the 'we' of these statements is an unevenly distributed set of actors, and the politics of producing (knowledge of) the Digital Anthropocene are pressing. From planetary observation and oceanic measurement to marine tailings, the appropriation of precious metals and labours of pollution, anthropogenic knowledge is deeply woven in with computation, tools, media and devices. It is also constituted through histories of colonialism, political economy, and ways of being in and knowing the world. This presentation will attempt to frame our panel; approaching the digital anthropocene. Firstly, it will briefly outline the generation of the idea as a research platform. Secondly, it will discuss two ethnographic research projects that we feel resonate with this thinking. The first project is a study of the arrival of large technology corporation's data centers to Denmark, while the second analyses how digital and datafied technologies are becoming more prominent in water and wastewater systems in both Denmark and Greenland.

Energy-Data-Scapes. How to transform energy with data. *Laura Kocksch, Ruhr University Bochum*

While it is increasingly more difficult to address digital questions without considering how they intersect with material-environmental transformations, it is also increasingly difficult to address questions of environmental change without interacting with digital data. Data is needed to monitor and act upon environmental transformations (Bowker 2008, Edwards 2013). Drawing on ethnographic material from a German energy company, the talk explores the relation of data and energy scapes by tracing the ways in which data is utilized to steer and contest the renewable energy transformation ("Energiewende") largely enabled by energy-intense infrastructures, i.e., cloud. Energy landscapes are reorganized from centralized, large-scale power plants (nuclear or coal) to de-centralized, small-scale renewable energy technologies (wind, water, biogas). With increased political investment in renewable energy, the number of renewable energy plants is increasing while the existing power grid is built for stable, reliable, continuous and unidirectional flows of energy from centralized plants. The transformation of energy sources requires a transformation of grids. To manage the transformation of energy grids, companies rely heavily on heterogeneous data. The transformation of grids comes along a transformation of the data infrastructure, e.g., towards cloud technologies which themselves demand much energy. During the talk, I will explore the relation of energy and data and provide ethnographic material to corroborate the need to situate the "Digital Anthropocene" in corporate practices. By juxtaposing the company's "eco-modernist" approach to the Anthropocene, I exemplify the 'patchiness' of the Anthropocene by pointing to the local and ethnographically visible consequences of energy-data-scapes (Tsing et al. 2019).

Scales of Reason: Data Sharing and Climate Change in the Caribbean *Sarah Vaughn, University of California, Berkeley*

Tracing the liberal imaginaries and logistical challenges of data diplomacy, this paper asks: How does data sharing emerge as an affective and desired component of transnational climate change research? I situate this question in an ethnographic analysis of the Caribbean Institute for Meteorology & Hydrology (CIMH) headquartered in Barbados. Modelers and meteorological experts from across the Anglophone Caribbean and Cuba are affiliated with the CIMH. Much of their work involves "downscaling" global climate models to reflect experiences of vulnerability across the region.(1) Arguing that the atmosphere is radically scalable, they scale-down global climate models to support various climate adaptation projects. The practice of downscaling influences many key decisions about business models, political governance, and technology transfer. The goal of the CIMH is to source data from participating Caribbean countries to increase the accuracy of their models and in turn, the quality of climate adaptation. The CIMH, thus, engages in data diplomacy because it is a regional institution that leverages data toward making nation-states accountable to one another as they combat climate change. Beyond a claim to expertise, the CIMH's practices of downscaling enact contested spaces of data diplomacy in the Anthropocene or the idea that nation-states reconsider the value of data sharing as a public good through their struggles to combat climate change. (1)Downscaling is a procedure that involves taking information that is at large scales to make descriptions at smaller scales.

Rising Ocean Waves: Actual, Digital, North, South *Stefan Helmreich, Massachusetts Institute of Technology (MIT)*

The distribution of world-wide wind wave heights is transforming. According to a 2019 paper in Science, ocean-warming induced wind speed increases in the Earth's southernmost oceans have led to amplifications there in wave height of some 30 centimeters since 1985, for the largest 10 percent of waves — significant because the Southern Ocean is source for many swell patterns worldwide. How is this material effect of anthropogenic climate change, bound up with intensified storms and sea-level rise, tracked? Answer: in large part through digital modeling — a data-management practice powered by energy consumption that contributes to very dynamics models seek to capture. This paper looks at growing ocean waves as substantiations and avatars of Anthropocene seas and at their differential appearance in oceans of the Global South. More, it examines how actual waves are known through their digital and database doubles, which themselves manifest in political ecologies of computer simulation cross-hatched by North-South inequality. The paper therefore joins scholarship on Anthropocene oceans — on what Steve Mentz has called the Thalassocene — with work on social theory from the South, looking at this intersection through the lens of digital and simulation economies.

Does the Common Heritage Principle make any difference? The case of marine biodiversity in the digital age *Alice Vadrot, University of Vienna, Department of Political Science; Arne Langlet, MARIPOLDATA / University of Vienna; Ina Tessnow von Wysocki, MARIPOLDATA / University of Vienna*

In the digital age, governing the access to and use of natural resources requires an update of previously agreed-on regulations. A case in point is the collection of, access to and sharing of benefits from marine genetic resources (MGRs) in areas beyond national jurisdiction (ABNJ), which is currently negotiated as part of a new legally binding instrument for the conservation and sustainable use of marine biodiversity beyond national jurisdiction (BBNJ). One discussed option is to apply the common heritage of humankind principle (CHP), which follows the idea that areas and resources that do not fall under the jurisdiction of any state belong to and benefit all humans, including present and future generations. The research presented in this paper draws on ethnographic research conducted during negotiations with the aim to analyse struggles between governments related to specific terminologies and concepts such as the CHP. The negotiations provide a good case to study how governments deal with questions of ownership of environmental and digital data in light of the diverging interests of private and public actors. Considering globally unequal capacities to access and use MGRs, questions of fairness in the distribution of material and knowledge resources that are needed to access the

economic services of environmental genetic data arise. This paper connects the political debates to historic and ongoing struggles over ownership of natural and digital resources and demonstrates that multiple ethical layers need to be considered in relation to environmental data in the digital age.

Session Organizers:

James Maguire, IT University Copenhagen

Astrid Andersen, Aalborg University

Rachel Douglas Jones, IT University Copenhagen

Chair:

Astrid Andersen, Aalborg University

Discussant:

Jennifer Gabrys, University of Cambridge

093. Crafting Critical Methodologies in Computing: Theories, Practices and Future Directions (A)

6:00 to 7:40 pm

virPrague: VR 14

Participants:

Queer Maximalism HyperBody *Jiadong Qiang, Goldsmiths, University of London*

In this paper I present the practice based research project "Queer Maximalism Hyperbody (2019)". Based on the VR spaces of "Hyper-religious Body, Hyper-sexual Body and Hyper-Gastronomical Body", the research argues for the redefinition of queering practices and Maximalist methods to form an inventive methodology of spatial autoethnography for queer feminist techno-scientific, artistic, architectural and computing practices. I show how through engaging with specific sites (such as Whitby, UK, Darnassus in World of Warcraft and West Bromwich, UK, Los Santos, Miami in Grand Theft Auto and Beijing, China, Sarah Kerrigan in StarCraft and Chongqing, China, Andromeda Shun in Saint Seiya) and situations of fandom communities a spatial autoethnography for queer feminist teschnoscience emerges that makes it possible to engage with the body as both multiple and moddable.This spatial autoethnography reuses the creative practices from ACGN (Anime, Comic, Game and Novel), fandom communities and digital ethnography in VR space in game engine. Visually and acoustically, this new entanglement redefines multiple HyperBodies and how they emerge from the intra-actions of physical and virtual spaces. This new spatial autoethnography redefines and remixes the methods of modding and shipping referred to ACGN and various fandom communities to generate multiple material-discursive apparatuses intra-acting of human and non-human Hyperbodies. In the paper I discuss this inventive methodology drawing on Barad's material-discourse to develop what I call "queer Maximalism" for the inquiry into VR spaces and game engines.

Critically Systemic Design and the Myths of Computing

Christoph Becker, University of Toronto

Agre's call was met by critical methods crossing Human Computer Interaction and STS. This paper presents a complimentary approach grounded in Critical Systems Thinking and positioned within engineering. The 'critical turn' in Systems Thinking (https://doi.org/10.1007/978-0-585-34651-9_1) emerged concurrently with feminist STS. It starts from the recognition that the systems idea of 'holistic' understanding, understood critically, must begin with examining the inevitable selectivity of discursive claims. The approach of writers like Werner Ulrich to examine the systemic sources of motivation, control, expertise and legitimation shows remarkable parallels with central STS work such as Haraway and Feenberg. CST aimed for reflection, emancipation, and pluralism, and drew from STS (Law, Winner) and feminist and postcolonial literature. It remained committed to intervention and practice, however, and exerted profound influence in social work (Midgley's "Systemic Intervention"), management (Jackson's "Critical Systems Practice"), and sustainable development (e.g. Reynolds' use of Critical Systems Heuristics). The pervasive nature of computing in today's societies forces the convergence of these arguments. This paper's author works to change computing 'from within' to overcome its predominant myths: by confronting the normative, rationalistic frameworks of requirements engineering with Critical Systems Heuristics (http://dx.doi.org/10.1109/MS.2019.2944784); by bridging STS, HCI and Software Engineering to examine human values in computing (http://dx.doi.org/10.4230/DagRep.9.7.40); and by reinvigorating the debate about power and responsibility in computing (https://pdc2020cpsr.wordpress.com/). This paper draws from the author's empirical research to present the resulting critically systemic design methodology to the STS community with examples to foster discussion and feedback and to identify synergies with current and emerging STS approaches.

Examining How The Structure of Programming Languages Shapes Computer Scientists' Worldviews *Elizabeth Patitsas, McGill University*

It is an open question of how to widely teach computer science in a way which produces technologists who are critically mindful of sociopolitical and ethical issues --- rather than the status quo of "I'm just a programmer". One insight from queer STS comes from Breslin's 2018 ethnography of CS undergraduates, wherein she documents how students "render technical". Students are taught to take real-world issues and abstract them into purely technical problems. With time, CS students become so accustomed to rendering their classroom problems technical that they begin to see the whole world this way. In this paper I analyse common introductory CS textbooks for how they render technical. There are numerous approaches to teaching introductory CS, and programming language paradigm plays a large role in shaping the curriculum. The choice of language and language paradigm is frequently debated and contested within CS curricula. In my preliminary analysis, I found that the object-oriented programming paradigm is more deeply associated with rendering technical than competing paradigms. I examine how a programming language is structured affects how computing is in turn taught, and how choosing between existing languages and designing new languages can play a role in queering and cripping computer science.

Using memory, materiality and affect to reconfigure practices of computing *Doris Allhutter, Austrian Academy of Sciences*

Based on my ethnographic study on computing practices in the field of 'fairness in machine learning' I will present a deconstructive design method that aims at reconfiguring concepts and methods applied in this field. Biases in machine learning illustrate how deep computational methods and artefacts are infrastructurally entrenched in power relations. At the same time methods of debiasing take part in conceptualizing what fairness and discrimination mean and how they can be defined in mathematical terms. They make choices on which social categories to include in systems and how to configure them. Generally speaking, the field study shows how mundane practices of computing activate implicit values, norms and ideologies that feed on epistemic claims of computer science as well as everyday discourse. In two deconstruction workshops with computer scientists from this field, using a collective method of deconstruction called 'mind scripting' generated insights for this community into the (often implicit) assumptions they mobilize as part of their epistemic practices. Considering mind scripting's theoretical origins in ideology critique (Allhutter 2012), this talk shows how concepts of queer-feminist studies of affect and 'new materialism' contribute to understanding the grip that even computational concepts that they disapprove of may have on critical communities of computing. In a wider perspective, this gives us important insights into subjects' affective entanglements in capitalist society-technology relations. I suggest, that opening up this discussion with critical communities of computing provides way to overcome some of the epistemic challenges and shortcomings they may face. Doris Allhutter. 2012. Mind Scripting. In Science, Technology & Human Values 37(6).

Session Organizers:

Loren Britton, University of Kassel

Claude Draude, University of Kassel, Germany

Goda Klumbyte, University of Kassel

Chair:

Juliane Jarke, University of Bremen

094. Making science in public: 1
6:00 to 7:40 pm
virPrague: VR 15
Participants:

Analysis of Public Engagement with Science on Social Media for a Small Environmental Research Center *Justin Paul Peters, Indiana University; Noriko Hara, Indiana University*

Recently, scientists have been increasingly using social media to disseminate their research findings to both the general public and their colleagues (Collins, et al., 2016). The public can now participate in framing scientific discoveries and opinions by discussing science on popular interactive websites like reddit (Hara, et al., 2019) and Facebook (Marsh, 2016). Similarly, research centers are gradually taking responsibilities of communicating science to the general public. For example, Kahle, et al. (2016) analyzed public engagement with different types of social media using controlled content on social media platforms owned by the European Organization for Nuclear Research ("CERN"). Smaller research institutions with limited resources need to consider effective strategies for reaching out to the general public about their research findings, and due to its popularity and ease of use, social media is a means to facilitate this process. We collected data from two social media platforms (Twitter and Facebook) that were generated by a small environmental research center located within a U.S. research-intensive university, and measured the level of user engagement based on the number of retweets, likes, favorites, and comments. Content posted to both platforms were almost identical, yet engagement with the content varied between the two platforms. The study's findings will inform the literature of public engagement with science in online environments. The implications of the study will include the application of the technological affordance framework for online public engagement with science, as well as strategies for social media use by small science research institutions. References: Collins K, Shiffman D, Rock J (2016) How Are Scientists Using Social Media in the Workplace? PLoS ONE 11(10): e0162680. doi:10.1371/journal.pone.0162680 Crowston, K., Mitchell, E.M., & Østerlund, C. (2018). Coordinating advanced crowd work: Extending citizen science. Hawai'i International Conference on System Sciences. doi:10.24251/HICSS.2018.212   Hara, N., & Abbazio, J. M., Perkins, K. (2019). Emerging form of science communication: Ask Me Anything (AMA) session on Reddit. PLoS ONE. https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0216789 Kahle K, Sharon AJ, Baram-Tsabari A. Footprints of fascination: digital traces of public engagement with particle physics on CERN's social media platforms. PLOS ONE. 2016; 11(5):e0156409. https://doi.org/10.1371/journal.pone.0156409 Marsh, O. (2016). "People seem to really enjoy the mix of humour and intelligence": science humour in online settings. Journal of Science Communication, 15(2)C03. https://jcom.sissa.it/sites/default/files/documents/JCOM_1502_2016_C03.pdf

Social Media Affordances for Climate Science communication: A Case Study of Mainstream Scientist-produced Climate Blogs *Georgios Zoukas, National and Kapodistrian University of Athens*

Since its introduction in ecological psychology, and especially after its implementation in the discipline of design studies, the concept of affordances has been employed in various areas of research, including, among others, the fields of science and technology studies, communication studies, and (new) media studies. This article utilizes the same concept to explore the usage of blogs for the communication of climate science. It focuses on a certain category of climate blogs, those produced by mainstream scientists, following a qualitative multiple-case study research method, based on in-depth interviewing of the blogs' users. The initial idea put forward is that the utilization of the blogs as a science communication medium is associated with some new qualities provided by the blog technology, best illustrated through the affordances lens. The article describes the mainstream-scientist produced climate blogs as an expert-oriented and authoritative climate science communication niche which appeals to the interested public. It argues that the way the affordances of the blogs are interpreted and appropriated by the scientist-bloggers and the readers renders the specific type of climate blogging a distinct and legitimate science communication practice. Accordingly, the contribution of the article to the field of science and technology studies is twofold: First, it relies on empirical data to describe blogs as a relatively new medium of science communication, adding particularly to the science communication literature, and second, by doing so, it further develops the notion of affordances, suggesting that certain affordances acquire meaning within the specific sociocultural contexts where they are adopted.

Data Deluge: Negotiating Data-Driven Imaginaries of Sea-Level Rise on YouTube *Simon David Hirsbrunner, Freie Universität Berlin*

A growing body of literature considers YouTube as increasingly popular and dominant platform to negotiate issues related to environmental change (Allgaier 2019; Uldam 2013; Shapiro and Park 2018). Building on these findings, the suggested contribution characterizes public engagement around visual scenarios of climate change impacts on YouTube, focusing on animated mappings of future sea-level rise in particular. It will be shown how data-driven visualizations act as boundary objects (Star and Griesemer 1989), enabling sense-making, debate and negotiation of uncertain futures with climate change. In so doing, the contribution aims at characterizing current reconfigurations of social (dis-)trust (Lewis and Weigert 1985; Garfinkel 2010) in techno-scientific expertise. How can user debates and media practices on YouTube inform long-standing debates about the representation of scientific uncertainty, the public understanding of risks, and the localization of climate change impacts? Preliminary results suggest that the making of situated knowledges on climate futures involves tactics such as irony, sarcasm, connecting to matters of daily concern, and positioning within global politics. In particular, the study serves at discussing ways to investigate new reconfigurations of science in public within the reflexive perspective of STS, while exploring synergies with a critical data science. This involves an ethnographic interrogation of material, making use of instruments such as the YouTube Data Tools (Rieder 2015), Gephi, and RStudio.

Session Organizers:
Sarah Davies, University of Vienna
Noriko Hara, Indiana University
Chair:
Noriko Hara, Indiana University

095. Negotiating knowledge of harm through affects, embodiment and trust 1
6:00 to 7:40 pm
virPrague: VR 16
SESSION 1: Negotiate Pain During Childbirth as Resistance to Harm: An Analysis of Competing Institutionalized Models of Knowledge Production in Maternity Care Organization in France and in Canada, *Maud Arnal Arnal, EHESS, Cermes3/IRIS Producing Expertise on Birth: analyzing the emotional context of the ignorance- knowledge nexus., *Anna Durnova, Institute of Sociological Studies/ Faculty of Social Sciences; *Eva Hejzlarova, Institute of Sociological Studies   Quantifying Patients' Affect: Decision Regret Scales and the Biomedicalization of Medical Harm, *Jacob Moses, Harvard University
Participants:

Quantifying Patients' Affect: Decision Regret Scales and the Biomedicalization of Medical Harm *Jacob Moses, Harvard University*

Divisions between the emotional and the epistemic blur when affect becomes rendered as data for biomedical knowledge production. This paper examines the development of systems in the late 20th- and early 21st-century to measure "decisional regret" as a means for assessing medical outcomes. As a retrospective judgment, regret can track how prospective decisions about therapeutic interventions map onto post-intervention patient experience. Patient regret is understood by medical researchers to be an affect that is indicative of a

problem—diagnostic of something to be prevented or to signal the presence of a mistake (McQueen 2017). Patient regret, in its biomedicalized form, is thus conceived as a proxy for iatrogenesis, the production of medical harm. This takes on a particular force in the contexts in which patient self-determination is highly valued, such as autonomy-focused biomedical ethics. The presentation uses the example of cancer screening for prostate cancer to situate technologies for measuring patient regret within the broader STS literature of quantification to argue that the measure of the affect of regret is particularly valued in conditions of clinical and moral uncertainty.

Negotiate Pain During Childbirth as Resistance to Harm: An Analysis of Competing Institutionalized Models of Knowledge Production in Maternity Care Organization in France and in Canada *Maud Arnal, EHESS, Cermes3/IRIS*

The recent mobilizations against obstetric violence as a daily routine of care as well as the #metoo campaign have triggered a new wave of articulations of and conflict over gender power asymmetries. We explore the gender power asymmetries in maternity care through the process by which embodied medical and technological practices become accepted, contested or routinized. Used appropriately, such practices can be life-saving procedures. Routinely used, they are accused of harming the experience of childbirth by transforming it from a "physiological" process and family life event into a routine medical process with potential complications. Using a sociological comparative research focusing on the restructuration in health care work and its organization in addition to public health policies in France and Canada, we analyze the development of an embodiment process of re-naturalization of childbirth pain as a way of resisting harm (Ahmed, 2004). Based on the analysis of written sources including government, professional and associative reports, as well as, seventy-five semi-directed interviews and non-participant observations with health professionals, pregnant women and women in labor, we argue that the analysis of the management of labor pain highlights how the situated negotiations of knowledge opposing the "natural" to the "artificial" are reshaped by the actor's emotions in order to build a shared "trust" knowledge between women, health professionals and public health policies. These processes open new spaces of negotiation of health and harm, but also call into question the growth of the externalization and privatization of public health resulting in intersectional inequalities.

Producing Expertise on Birth: analyzing the emotional context of the ignorance- knowledge nexus. *Anna Durnova, Institute of Sociological Studies/ Faculty of Social Sciences; Eva Hejzlarova, Faculty of Social Sciences, Charles University, Prague, Czech Republic*

We analyzed the expert debate on midwife assisted planned home birth in Czechia through media debate on the issue, the official statements of actors involved, as well as their strategy papers and professional code of conducts. Both supporters and deniers of home births see their proposition as science-based and so we were interested how focusing on the way science is combined with other values and contexts they propose can tell us something about the production of expertise. In particular, we argue that the debate among experts raise interesting questions about how expertise relates to emotional experiences and individual (affective) assessments of situation. There are in general two views on the choice over where to give birth. The first view is that this choice should be managed by obstetricians, having support in professional codes of conduct supported by science as well as a long-term quality and reputation of obstetrics in the country. The second view is that birth is a personal, emotion-loaded practice where bodily and emotional integrity of women should be the primary goal and the core of expertise. This view is advanced by midwives, homebirth activists grouped in various nonprofits as well as by some legal advisory. Our analysis shows interplays of science and ignorance on both sides of the debate, which are related to emotional contexts of the debate. On the basis of this analysis, we suggest furthering the concept of expertise as a dynamic area where fact-based

information interacts with emotional context of these facts.

Session Organizers:
Anna Durnova, Institute of Sociological Studies/ Faculty of Social Sciences
Venla Oikkonen, Tampere University
Chair:
Venla Oikkonen, Tampere University

096. FLIPPED Acknowledging Residues: the (un-)making of an environmental concern - II
6:00 to 7:40 pm
virPrague: VR 17

Residues are reduced and transformed remnants of formerly present materials, events, or actions. Frequently associated with chemicals, pesticides, and waste, they are also the result of discard and excess, sticky – yet unruly – bordering both the visible and the invisible. A consequence of past and present material legacies, they pervade and persist in environments, humans, and non-humans alike, carrying with them potentially hazardous or toxic afterlives. Yet, residues do not always emerge as environmental concerns – nor as bodily, political, or material ones. Rather, they are often a (non)-concern, sometimes evading recognition and response, despite their ubiquitous presence. This open panel invites contributors to critically engage with the question of when, how, and to whom residues become a concern. It asks under what circumstances particular forms of residue might rise to levels of acknowledgement and political engagement – thereby constituting a call for action – while other forms of residues are silenced, muted, or overlooked. Attending to the practices, politics, histories, and technologies that go into the making of residues as concerns, it wishes to remain attentive to the (potentially) hazardous materialisations of residues and their ecological and embodied outcomes. This means acknowledging past legacies as well as lasting effects and generated inequalities. This allows for a careful engagement with potential threats embedded within these issues as with political possibilities that might arise from such recognition.

Participants:

The social conditions for visibility. Pesticide residues and occupational health in California and France *Jean-Noël Jouzel, Center for the study of organizations*

Over the past three decades, a large body of epidemiological data has shown that occupational exposure to pesticides is a significant risk factor for a number of chronic diseases, including Parkinson's disease and blood and prostate cancers. These data mainly concern the agricultural workforce directly exposed to pesticides during mixing, loading and spraying operations. The effect of indirect exposure to pesticide residues in the field on the health of workers performing picking, thinning or pruning tasks is much less known. In this contribution, I propose to highlight the social conditions that have to be met so that the health problems induced by the exposure of agricultural workers to pesticide residues become publicly visible, based on a comparative analysis between California and France. Although they are comparable in terms of agricultural use of pesticides, the political fate of occupational health issues related to pesticide residues has been very different in these two regions. In California, this issue has emerged as a public health problem as early as the 1960s, whereas in France it has remained almost invisible until today. This contrast offers room to study the different institutional and activist uses that can be made of the scientific data on the effects of diffuse environmental contamination induced by the massive use of pesticides. To do this, I rely on qualitative data collected both through interviews and various archives.

Scientific and sensory engagements with residue: ethnographic explorations of concern-making in Dar es Salaam *Signe Mikkelsen, University of Oslo*

In recognising the complex interconnectedness between (chemical) environments and bodies, engaging with the notion of residue offers ways to conceptualise the persistent, unruly, and (in)visible characteristics of organic pollutants. Based on urban ethnographic research in Dar es Salaam, this paper investigates how and in what ways variously positioned actors – ranging from scientists working in a food chemistry lab to urban (organic) farmers – come to acknowledge residues as a concern. It

examines aspects of the scientific and sensory engagements with these concerns, while also remaining attentive to their unequal distributions, contested, and sometimes non-concerned, nature. Situated against a backdrop of more generalised concerns with chronic illness, such as cancers, it focuses on practices and processes related to evaluations of food, bodies, and soils. Here the ingestion of vegetables and fruits is understood as the critical moment that enables chemical residues, particularly pesticides, to enter bodies where they deposit, accumulate and bring about (chronic) illness. This underlines the heightened sense of vulnerabilities that accompany living in toxic times that was also present in a small but growing urban organic movement in the city, here understood as a response to past and current use of synthetic chemicals in food production. Similar attunements took place in working with food lab scientists. Although they continually navigated politics and their (limited) capacities for making chemical residues scientifically legible, they are at the same time concerned citizens. Though distinct groups, both engage in forms of knowledge- and concern production that problematize chemical legacies and contemporary practices.

The good, bad and ugly carbon: Everyday encounters with carbon *Jenny Rinkinen, University of Helsinki; Galina Kallio, University of Helsinki*

Understanding how carbon is stored and released has become a central focus for climate policies, which increasingly work towards harnessing the terrestrial biosphere, including soil and forests, to act as carbon sinks. These aims are slowly being translated into new guidelines and best practices for regenerative agriculture and forestry, but with the risk of producing a reductionist view of carbon as a calculable market transaction. Drawing from ethnographic work on agricultural farming and small-scale forestry, we illustrate how carbon is embedded in different materialities of varied production and consumption practices. In doing so, we move beyond the use–symbolism, pragmatism-non-pragmatism, calculative-essentialism dualisms of material relations to acknowledging multiple, complex object relations consisting of various chemical, physical, geological and biological processes and their constitutive roles in social practices. We conclude with methodological, political and theoretical implications to the study of climate policy and practice integration.

Residue Evil: Wrecks and Underwater Munitions as Matter of Concern and Care *Sven Bergmann, German Maritime Museum*

Wars have an deep time ecological impact in that they introduce large numbers of materials and substances in the environment, including abandoned military equipment or unexploded ordnance. The seas still contain a large number of wrecks that sunk during naval battles or were sunk after the war. Can these military wrecks be described as residue? Depending on the perspective, they are negotiated either as seamen's graves or as potential obstacles to shipping traffic or to the establishment of blue growth economies, such as offshore wind parks. Mostly invisible, they are partly recorded on nautical charts or in the databases of the maritime authorities, and are also part of the local knowledge of fishermen. For a long time, only the potential explosive danger of underwater munition was considered. Thanks to improved detection methods for TNT components, the environmental hazard of underwater munitions is becoming increasingly important. Since marine species use shells of munition as a surface or habitat, there is the possibility of accumulation and circulation of potentially toxic substances in the food chain. Drawing on cooperative research in the EU Interreg project "North Sea Wrecks", I will look into the question of how these military legacies become a matter of concern – and how to care for these objects. In order to discuss the specifics of locating and researching contaminated military sites and producing knowledge about warfare residues, a comparison with other anthropogenic materials introduced into the sea, such as plastics, might be helpful.

Session Organizer:
Signe Mikkelsen, University of Oslo
Chair:
Franziska Klaas

Discussant:
Susanne Bauer, University of Oslo

097. Economics/Economy, Governance and STS III
6:00 to 7:40 pm
virPrague: VR 18
Participants:

Seeing the economy as a whole. How the state represents the economy with numbers *Quentin Dufour, CNRS - I3 - CSI*

The National Accounts model is a numerical representation of the economy as a whole. As the state's basic knowledge of the economy since the 1930s, National Accounts have been used for many political purposes, such as forecasting future growth, setting state budgets, managing macroeconomic equilibrium, or even disciplining public deficits at the European level. Drawing on STS approaches and the sociology of quantification, this communication examines the practical work by which an administration produces a global modelization of the economy, on which the state relies to govern. In other words, how does the state stabilize numbers that speak about the economy as a whole? My analysis is based on my PhD thesis work on the construction of National Accounts in France. I carried out a nine-month ethnographic survey within the French administration in charge of quantifying the national economy, that is, the National Accounts Department, within the French statistical institute (Insee). I combined interviews, observations and the study of documents. In this communication, I propose to describe some of the work steps that lead to quantified accounting tables, and that allows the government to see the economy as a whole. I show that the global representation of the economy is the result of an interpretative work called "arbitration", where the figures collected by the administrative workers are questioned, evaluated, and sometimes modified. The quantified representation of the economy as a whole acquires its coherence from this arbitration work.

Spectacles of/for assetization *Tanja Schneider, University of St Gallen*

One prominent form of organising innovation in technoscientific capitalism is through provisioning platforms for exchange and networking such as industry conferences or trade fairs. In this paper I explore the role these events play in the making of a new industry (Leivestad and Nyqvist, 2017) drawing on my ethnographic research into the emerging FoodTech sector – a growing sector populated by entrepreneurs and investors that state to share the goal to disrupt the food industry. Conceptually, I approach conferences as spectacles (Rethel, 2018). Drawing on ethnographic fieldwork, interviews as well as media analysis of live streamed or video recorded foodtech conferences, I argue that these events open up visions of alternative food futures (cf. Schneider, 2018) that are presented as investment opportunities. I examine the rationales and aims for staging and narrating food futures in particular ways. I also emphasise the role that setting (e.g., the stage etc.) and set-up, frequently organized as a spectacle, play in promoting entrepreneurs' visions, and reflect how the spectacular set-up is connected to capitalization and assetization (cf. Muniesa et al. 2017, Birch and Muniesa, in press). In other words, I show how food is turned into an asset and argue that spectacularisation is a central process for doing so. Ultimately, my research shows how conferences and similar events are spectacles of/for assetization. I contribute to current STS research on markets, values and assetization by putting the spotlight on industry conferences as spaces of spectacularisation central to assetization and the making of new industries or industry sectors.

The Fashion Cleanup: Analysis of Policy Mechanisms for Moving towards Socially and Ecologically Sustainable Textile Model *Pratyusha Kiran, Virginia Polytechnic Institute and State University; Panita Chatikavanij, Science and Technology in Society, Virginia Tech*

UN Environment Program (2018) reported that the fashion industry is responsible for 20% of the global wastewater and 10% of the global carbon emissions, identifying it as one of the key sectors for attaining the SDGs. World Bank (2016) predicted

the textile industry to unleash the job potential of South Asian countries, provide much-needed support to female workers and boost the economic development of these countries. It is evident that this will play a vital role in addressing the environmental and social aspects of climate change. As India is one of the largest exporters of textiles in the world, this study will use the case study of "Project SU.RE (Sustainable Resolution)" a policy adopted by the Govt. of India to attain a fashion industry that contributes towards a clean environment. The study will ask questions on which parties included or excluded, and what is the discourse around the "policy vs. politics" in the textile industry? Climate adaptation literature in STS alludes that it is vital for policymakers to consider scientific knowledge in a social context, and include actors other than state-nation in order to attain sustainability (Hadjilambrinos, 1999). This presentation will, therefore, delve deeper into how this policy interacts with the capacity building of women and labor in this sector, how this policy supports the social dynamics of the textile labor community, and how it creates an innovative environment. I will analyze this policy by using the official project and media reports.

Unruly Users: Cycling Governance in Context *Bernhard Wieser, TU Graz*

After a sharp decline occurred during the 1960s, the modal split of individuals cycling rebounded in many European cities. From the 1970s onwards, many urban residents rediscovered the bicycle as a means of transport. In this paper, I conceptualize this turnaround of cycling as a sociotechnical change. In a wider historical context, I examine the role of users in this transformation. More specifically, I scrutinize the interplay between bicycle users and cycling governance. To this end, I discuss three prominent STS approaches – that can be taken to conceptualize the role of users in sociotechnical change – and note their weaknesses and strengths. These approaches are Social Construction of Technology (SCOT), Framing Production (FP) and Multi-level Perspective (MLP). In my analysis, I demonstrate that each of the presented approaches does not provide an appropriate way to conceptualize users under the specific circumstances that occurred during the cycling turnaround in Graz in the 1970s and 1980s. Against this backdrop, I argue that analysing sociotechnical change using existing analytical frameworks is not wrong, but blind. To overcome this shortcoming, researchers need to allow for more openness in the research design. By applying a qualitative approach, researchers can gain a better appreciation of the contingency of the unruly relationship between users and cycling governance.

Governance from Within. The Role of Scientific Societies in Defining Ethical Standards in the Field of Reproductive Medicine *Michaela Scheriau, Research Platform Responsible Research and Innovation in Academic Practice, University of Vienna*

What role do scientific associations see for themselves when it comes to defining what counts as ethically acceptable research and practice? In my field work, I am specifically studying the (primarily written) work of ethics committees of two scientific societies in the field of (assisted) reproductive medicine, one situated in the U.S., the other in Europe. I focus on the most visible productions of two committees, i.e. on the literary forms of bioethics governance, including ethical opinion papers, guidelines, and recommendations. Thus, my interest is based on the premise that bioethics, particularly how it is argumentatively practiced by such institutional actors, functions as "tacit modes of governance" (Felt, 2017) by trying to shape debates and perspectives in terms of research, clinical practice, and its regulation. In my talk, I will present a document analysis of one of my case-studies based on the ethics committee of the European Society of Human Reproduction and Embryology. I focus on the argumentative practices that frame, confine, and justify particular ethical perspectives and reasonings towards reproductive issues and technologies. Particular interest will be devoted to observing the efforts to develop ethical opinion statements which try to combine principle-based (including human rights) and evidence-based arguments. The aim is to show

how they, as a knowledge community, try to define from within the very meaning of "bioethically acceptable". I will reflect how such documents might function as an effort of self-regulation, or as a way to justify ethical practices from within the (bio)medical profession.

Session Organizer:
Bernhard Wieser, TU Graz
Chair:
Bernhard Wieser, TU Graz

098. Universities, Universalities, Globalities I
6:00 to 7:40 pm
virPrague: VR 19
Participants:

Hidden or Potential (HoP) Colleges in Larger Institutions *Steve Elliott, Arizona State University; Kimberly A. Scott, Arizona State University*

Institutions of higher education and research often aim to identify, build, and foster groups of researchers from across organizational units, especially to work on interdisciplinary research programs. This aim can be forestalled due to several factors, including increasing complexities in institutions' bureaucratic structures, sizes of researcher populations, and physical or geographical distributions. This paper does several things to address those obstacles. First, we propose a conceptual framework for talking about inchoate groups. Modifying the concept of invisible colleges, we propose the concept of Hidden or Potential (HoP) Colleges, which are roughly groups of researchers who share institutional affiliation and a common research interest, but who communicate or collaborate little, if at all. As such, these groups have untapped potentials to contribute to cross-unit research programs. Second, we outline an inexpensive method by which to identify these researchers and visualize them in organizational networks and in (weak) social networks. These networks enable users to quickly and visually identify potential collaborators. Finally, we illustrate the framework and the methods by focusing on Arizona State University, which provides a typical case of a large and increasingly complex institution. We show how to use inexpensively collected data to identify a HoP College of researchers who can be fostered into a stronger research community focused on equity and inclusion. The conceptual framework and general methods can be exported to identify HoP colleges at other institutions and focused on other research topics.

Knowledge Production and Epistemic Privilege In Transnational Social Science Research Collaboration *Rachel Fishberg, Roskilde University*

Since the launch of European "Framework Programmes' in 1984, The EU has systematically moved towards fuelling a competitive knowledge economy and establishing a European Research Area (ERA) (Heilbron 2014; Heilbron et al. 2018). For many individual scholars, the most explicit materialisation of these goals comes in the form of large-scale transnational EU-funded research collaboration. However, for those who participate in such collaboration, the motives for doing so, as well as the processes of collaboration itself, can differ greatly in terms of academic positioning and epistemological privilege (Fricker 2007). This paper brings Bourdieu's (1992) concept of relational symbolic power into dialogue with feminist studies of science and knowledge production (Haraway 1988; Smith 2005). I will highlight a portion of my research, which explores how scholars navigate the social spaces associated with EU-funded transnational and interdisciplinary social science research collaboration. These social spaces e.g. national, institutional, and disciplinary spaces, can be considered entangled arenas into which scholars bring various kinds of relational symbolic power, embodied and exerted in ways of knowing and doing, that affect the production, dissemination, and acceptance of social science knowledge. Utilising methods informed by theories of practice, while emphasizing the voices and experiences of marginalized scholars, I will discuss how scholars move through these EU project collaborations relationally and differently. Further, I will consider how this kind of continual positioning of self can work

to shape the knowledge produced within and resulting from these transnational collaborative projects.

Socio-Cultural Context In STEM Education Research: Who And What Matters? *Tanja Tajmel, Concordia University (Montreal, CANADA); Gita Ghiasi, Université de Montréal*

The integration of socio-cultural context in STEM education is considered important from different perspectives: it would situate science and technology within society, it would enable students to identify themselves as being impacted by scientific and technological development, and it would potentially raise the interest in STEM among students who are not attracted by decontextualized science and technology education. This would immediately contribute to diversity in the STEM fields. In the present contribution, we raise the question: Does STEM education research reflect the importance of socio-cultural context? To answer this question, we investigated research papers published in the recent decade in different journals for STEM education research to identify socio-cultural topics in science education research. Our research builds on a previous study of the representation of socio-cultural topics in conference proceedings of the German Society for Chemistry and Physics Didactics (GDCP), which demonstrated a lack of socio-cultural topics and a focus on competencies and standards (Tajmel 2017). Here, we employ gender analysis of authorship as well as content analysis of keywords, titles, and abstracts, which we use as indicators for socio-cultural discourses. We aim to identify the gender (im)balance among the authors of research papers on socio-cultural topics and the presentation of socio-cultural topics in STEM education research. Based on the outcomes, we draw conclusions on the subject-specific culture of STEM education research, and we will discuss the politics and values of STEM education research as well as questions of belonging and othering in the field of STEM.

STS and Engineering Education: A History of the Undergraduate Thesis at the University of Virginia *Bryn Seabrook, University of Virginia*

The University of Virginia opened its doors on March 7th, 1825. From the first day of classes, engineering education was an integral part of the curriculum. Initially, students could enroll in engineering courses as part of a traditional arts degree. In 1904, William M. Thornton was named Dean of Engineering, and one of his first actions as Dean was to require a graduating thesis. Thornton believed that it was imperative to bring liberal arts instruction within the school of engineering itself, a tradition that continues to the present day. The Science, Technology, and Society (STS) Program at the University of Virginia offers experiences and content related to engineering and its social context. The purpose of this study is to assess the history and value of the fourth year STS engineering program at the University of Virginia. During their fourth year, engineering students are required to take two courses associated with the undergraduate thesis. STS 4500, STS & Engineering Practice, offers a broad overview of concepts in the field of STS and requires that students compose a thesis prospectus, a document that articulates an approach to resolving a sociotechnical problem related to their engineering field. STS 4600, The Engineer, Ethics, & Professional Responsibility, focuses on case studies of engineering ethics, technological leadership, and adaptive problem solving. In addition to examining the social role of the engineer in modern society, students complete their undergraduate thesis portfolio, a full examination of the technical and social dimensions of a relevant engineering problem. The history of the thesis program at the University of Virginia is unique. Understanding its evolution offers insight into the shifting landscape of American engineering and its stakeholders: graduates, employers, and faculty. Furthermore, the UVA undergraduate experience is a valuable experiment in melding liberal arts training and expertise with the engineering curriculum.

University Campus Living Labs – From Ivory Tower To Sandbox *Sophie Nyborg, Technical University of Denmark - DTU; Cian O'Donovan, University College London; Mathieu Baudrin, CSI-Ecole Des Mines De Paris; Bozena Ryszawska, Wroclaw University of Economics; Gianluigi*

Viscusi, Imperial College Business School; Heidi Gautschi, EPFL; Makoto Takahashi, Technical University Munich; Meiken Hansen, Technical University of Denmark; Maja Horst, Technical University of Denmark - DTU

The function and missions of modern universities have been debated for a long time. Traditionally, universities have focused on conducting teaching and basic research, but notably in the last two decades, they have taken on a third 'entrepreneurial mission' to commercialize intellectual property and support the economic performance of the university, thus also engaging in new modes of knowledge production and partnerships (Gibbons et al, 1994, Etzkowitz & Leydesdorff, 2000). Lately, scholars are arguing that universities are also embracing a fourth mission of 'co-creating for sustainability' (Trencher et al, 2014) by leading university-society-industry partnerships to transform society. Moreover, they are increasingly embracing living labs as innovation instruments by developing living lab activities on their own university campuses (Evans et al 2015, Verhoef& Bossert, 2019), not only to co-create for sustainability, but also to support student entrepreneurship and innovation, and to conduct applied research. By drawing on data from seven universities across Europe, that in various ways lend their campuses to 'real life experimentation', this paper aims to take stock of the university campus living labs (UCLL) phenomenon. More specifically, we want to investigate, what the integration of living lab type of activities on university campuses and/or in university strategies mean for knowledge production and the way the universities function. In addition, we want to understand which benefits and challenges the specific university campus setting offers to the deployment of the living lab as an innovation instrument as compared to other urban settings.

Session Organizer:
Rachel Fishberg, Roskilde University
Chair:
Rachel Fishberg, Roskilde University

099. Experimental Practices and Practical Experiments in an Uncertain World II
6:00 to 7:40 pm
virPrague: VR 20
Participants:
Knowing-How Things Are Made Public Through Body Copy. Insights for Co-curation, Co-Design, & STS Collaboration *Amanda Windle, Independent, plus 4S Council Member and Backchannels Editor*

The catalogue "Making Things Public" (Latour and Weibel, 2005) contains what might be considered as "classic STS" papers. They are classic in the sense that they are the first essays by renowned scholars in STS collaborating with practitioners beyond STS. However, text contains more than the hubris and imperial notions of who did what first, it is a record of who from various disciplines came together to collaborate through making. The beautifully designed catalogue displays a network of relations through its index, bibliography, biographies, exhibits and papers. Links can be made from Peter Weibel to Bruno Latour to Peter Sloterdijk to Gesa von Der Haegen. I focus on the latter two and their consecutive papers (2005, 944–58). My approach to these texts is to illuminate on co-creation by inventive methods, so as to uncover absences in naming practices and the collective organising of groups (Lury and Wakeford, 2012). I focus on a moment of forensic re-enactment: to investigate the reproduction of "body copy". Body copy is a way designers and journalists refer to words on the page often at the moment when the text is being visually prepared. I will show how naming as an exclusion has also through other forms of social media become more readily a practice of exclusion through an enactment of borders. My angle on professional obscurity and absences in bibliography and citation practices is to ponder on the naming practices of when written scholars co-create with designers at the body copy phase of making STS.

Listening as a Mechanism for Social Justice *J Britt Holbrook, New Jersey Institute of Technology; Elliot Douglas, University of Florida*

When Socrates encounters Euthyphro near the Porch of the King Archon, he is surprised to learn that the latter is there to accuse his own father of murder. Euthyphro must have access to divine wisdom, Socrates claims, in order to know that prosecuting his own father is the right thing to do. Euthyphro answers that he is indeed an expert in piety and knows what he must do. Socrates engages Euthyphro in conversation in an effort to have him stop and think – to question his own expertise. Socrates, of course, fails; Euthyphro does not stop. Today's engineers are trained to believe – and act as if – they are experts in finding solutions. Such a mindset can lead to injustice when engineering experts devise 'solutions' to social problems without listening to others, especially those most affected by those 'solutions'. This presentation discusses the theoretical underpinnings of an attempt to introduce ethnographic listening as a mechanism for social justice into two Engineering Ethics courses. In particular, we discuss 1) why we have adopted listening as a mechanism for social justice and 2) how we are assessing our attempts to instill in students the confidence to question their expertise.

Nano-Cities: Creating Infrastructures Across Scales In Nanoscience *Benjamin Philip Blackwell, The University of Manchester*

Scientific knowledge production relies on extensive global networks but simultaneously is highly rooted in specific localities and urban environments (Dierig et al, 2003). After the isolation of the nanomaterial graphene in 2004 at the University of Manchester, scientists across the globe have become interested in the material due to its astounding properties. In addition, scientists from an increasing number of disciplines, and actors from industry, have become interested in potential applications of the material. Graphene research and development is conducted at different scales for each of these actors – from the fundamental scale of Condensed Matter Physics, to the industrial scale of businesses producing thousands of graphene products every day. This paper will follow the production of a knowledge infrastructure (Edwards, 2010) in Manchester, branded Graphene City which looks to entangle a range of actors across practice boundaries and both geographic and research scales. Following an Actor-Network-Theory inspired methodology (Latour, 2007) the Graphene City can be seen to be composed of both social and technical components – including buildings, equipment, lab spaces, researchers, protocols and organisations – with the aim of creating, circulating and scaling-up knowledge and technologies. Drawing on scientometric mapping of publications on graphene, semi-structured interviews and participant observation, this paper will contribute to understandings of the nature of urban ecologies which entangle and work across multiple scales, and the role of the sociotechnical infrastructures which form and stabilise them. This work will enable us to see how actors understand, inhabit, utilise and construct the various scales that they interact with. References Dierig, S., Lachmund, J., & Mendelsohn, A. (2003). Introduction: Toward an Urban History of Science. In S. Dierig, J. Lackmund, & J. A. Mendelsohn (Eds.), Science and the City (18th ed., pp. 1–19). Osiris. Edwards, P. N. (2010). A Vast Machine. Cambridge, Massachusetts; London, England: MIT Press. Latour, B. (2007). Reassembling the Social: An Introduction to Actor-Network-Theory (New Ed edi). Oxford; New York: Oxford University Press, USA.

Session Organizer:
J Britt Holbrook, New Jersey Institute of Technology
Chair:
J Britt Holbrook, New Jersey Institute of Technology

100. Fakes and Legitimacy Reordering
6:00 to 7:40 pm
virPrague: VR 21

"Fakes" come in multiple forms and shapes. With the new career of the "fake news", and the "crisis of objectivity", the discussions on truth, validity, legitimacy became a new impulse and developed a new, transdisciplinary profile: philosophy, social sciences, economics, but also science and technology studies, approach this topic at different levels and with different results. The session draws on this multiple approaches to the question of fakes, and yet tries to go beyond a simple recollection of paradigmatic approaches and argumentative constructions. Far more, the contributions aim at a comparative perspective on different modes of valuation, which are implied in producing fakes across different realms of the social life. The session includes contributions which look at practices of classification and categorization, but also at typical ways of thinking about normative representation of actors dealing with phenomena of ascribing and assessing worth to things, people, or institutions. How are fakes produced within the new imaginative regimes at work in our societies? Which are their consequences? And which strategies do the policy actors deploy during this acute period of legitimacy reordering? These are a few questions the session intends to answer.

Participants:

Inauthenticity And Natural History *Reese Fulgenzi, The University Of Chicago*

The phenomenon of 'fake fossils' is well-known to academic researchers and amateur collectors alike. Fake fossils encompass a variety of forms, ranging from carved fantasies to casts of authentic specimens, composed and amalgamated parts, and misrepresented legitimate specimens. Fake fossils, then, are not a singular category but have a spectrum of legitimacy. There are several problems at play with the question of fake fossils: the legality of authentic fossils that are privately owned and sold, inspiring the production of inauthentic specimens; the degree of repair necessitated to characterize a fossil as 'fake'; the uses and value of inauthentic fossils; and misrepresentation of authentic fossils. Productive centers of fake fossil manufacture often face problems of legality and economic justice. It is customary and often necessary to repair fossils, and the boundary of acceptable artistic license can be unclear. On the other hand, casts of authentic specimens displayed in museums and comparative resin holotypes are 'fake' or 'not-authentic' fossils, but capture the form of the original without risking damage to the specimen. Similarly, misidentified and misrepresented authentic fossils are not the specimens they are purported to be - and are 'fake' - despite their intrinsic legitimacy. This paper explores various ways of imagining fossil authenticity, as well as the uses of 'inauthentic' fossils, and proposes a spectrum of authenticity as a way to understand the category of 'fake' in paleontology.

Thinking With Imposters *Else Vogel, Department of Thematic Studies - Technology and Social Change, Linköping University; David Moats, Linköping University, Tema-T (Tema Technology and Social Change); Stephen Woolgar; Claes-Fredrik Helgesson, Centre for Integrated Research on Culture and Society (CIRCUS)*

Thinking With Imposters Else Vogel, David Moats, Steve Woolgar and CF Helgesson Imposters, like fakes, stir a wide range of societal responses ranging from intrigue to suspicion, from outrage to horror. Suspicions about imposture impact people's lives and social interactions. Imposters are trouble. What insights can these troublesome figures provide into the social relations and cultural forms in the communities and social settings in which they emerge? This paper reports a project (and forthcoming edited collection1) which deploys key STS sensibilities to propose 'thinking with imposters' as a fruitful new analytic in the social sciences and humanities. The dynamics involved in impostering practices, even the mere suspicion of them, have featured in myriad different efforts to theorise about social order. However, impostering has generally been treated as an aberration from the normal social world which reveals its underlying order. We argue that instead of taking the imposter as a methodological probe for revealing social order, imposters and impostering should be understood as part of the ongoing generation of both order and disorder. We propose an analytic stance which brings the disordering done by the imposter to centre stage, so as to highlight the ways in which these dynamics are constitutive of social relations. The argument is illustrated with examples including spying; academic hoaxes and identity fraud. 1. Steve Woolgar, Else Vogel, David Moats and CF Helgesson (eds) The Imposter as Social Theory (Bristol University Press, forthcoming).

The Social Infrastructure of Misinformation That is Radicalizing the Right in Brazil *David Nemer, University of Virginia*

During the 2018 Brazilian general election, WhatsApp became a

potent tool for the spread of misinformation, especially for supporters of the far-right candidate Bolsonaro. I began monitoring pro-Bolsonaro WhatsApp groups in March 2018- at the outset of the election, the social media app eventually helped Bolsonaro win and become the president of Brazil. I found that misinformation spread in typical fashion, through a structure of groups that resembled a pyramid. Now, over a year into Bolsonaro's presidency, WhatsApp is still serving as a largely hidden platform for the radicalization of right-wing Brazilians, even as Bolsonaro's once-united base has splintered into separate, and often competing, factions. In this talk, I uncover hidden spaces of populism and misinformation on WhatsApp and detail the categories of hatred and human infrastructure that is radicalizing the right in Brazil.

Communication or Idealization? Attempts to Go Beyond the Deficit Model in Institutions Popularizing Science *Katarzyna - Tamborska, Institute of Sociology, Nicolaus Copernicus University, Toruń, Poland*

This paper investigates institutions popularizing science from the perspective of the world-system theory. Science centers and museums that build on interactive exhibitions have been popularized with great success in the core countries and transferred to the periphery and the semi-periphery countries as a popular form of family entertainment that can be used for science and society dialogue. The idea of wide science communication is however hindered by some pitfalls of the deficit model. Even though visitors of an interactive exhibition are encouraged to test scientific facts on special equipment, experiments are usually conducted according to closed scenarios. Complex problems are reduced to particular cases and visitor's experience is predictable. Moreover, due to limited flexibility of an interactive exhibition, it rarely presents current scientific controversies. Science seems to be there incontestably positive. Therefore, visitors are supposed to refine their knowledge, rather than engage in the dialogue about current research. In the literature, we can find some examples of initiatives that would help to involve museum's visitors in deliberative processes (like arrangements enabling watching real laboratory life and inducing questions), but it seems to be only specific for the core countries. Based on the qualitative research conducted in 2018-2020 (in-depth interviews and structured observations), we can describe activities of an institution popularizing science in a semi-peripheral country. The idea of interactive science museums has been well adopted, but the distinctive conviction that semi-periphery needs an acceleration of innovative development does not allow spreading critical perspective on the research practices and technical progress.

Science and Rumor of Virus: the Politics of Information Legitimacy of Coronavirus in China *Alex Jiahong Lu, University of Michigan; Yuchen Chen, University of Michigan; Youngrim Kim, University of Michigan*

On February 2nd, 2020, The World Health Organization (WHO) coined the term "infodemics" which speaks to the communicable and infectious nature of information, especially mis-/dis-information in times of public health crisis. This paper investigates the spread of scientific knowledge and rumors of coronavirus during its outbreak in China in early 2020. In particular, we look at three cases, respectively concerning the knowledge production and dissemination of what the virus is, where its origin is, and how it transmits. We collect and consolidate an archive of scientific publications, news articles, government press releases, and online social media posts regarding these cases. Through a discourse analysis on these materials, we map out key actors, information, institutions, and platforms involved in the processes of knowledge production. Grounded in the theoretical framework of the "politics of knowledge," we seek to explore the politics involved in 1) the generation and dissemination of coronavirus-related information and 2) the contested and unstable boundary between scientific knowledge and false information. We argue that China's coronavirus outbreak demonstrates a case when the line between science and rumor, authoritative and false information about the virus becomes unstable and highly contingent. We extend the current STS discussion on "biomediatization" and investigates the state's critical role in determining the spokesperson of the virus, the legitimacy of knowledge about the virus, and the construction of the boundary between science and rumors (Briggs and Hallin, 2016; Latour, 1983). Works Cited: Briggs, C. L. and Hallin, D. C. (2016). Making health public: How news coverage is remaking media, medicine, and contemporary life. New York, NY: Routledge. Latour, B. (1983). Give Me a Laboratory and I Will Raise the World. In C. K. Knorr and M. Mulkay (Eds.) Science Observed: Perspectives on the Social Study of Science (pp. 141-170). London, UK: Sage.

Session Organizer:

Cristina Popescu, EHESS - Centre d'Etude des Mouvements Sociaux

Chair:

Cristina Popescu, EHESS - Centre d'Etude des Mouvements Sociaux

Discussant:

Stefan Nicolae, University of Trier

101. Online Campaigns and Digital Personhood in the Age of Datafication
6:00 to 7:40 pm
virPrague: VR 22

This panel examines how influencers construct their identities on digital platforms. By posting selfies, memes, vlogs, emojis, and textual messages on Twitter, Instagram, Facebook, and YouTube, influencers create complex online personas. For instance, diaspora activists, gamers, lifestyle vloggers, gender activists, leaders of religious communities, minority representatives, and political populists engage in large-scale campaigns on platforms to grow their following. Such campaign strategies are increasingly based on comprehensive expertise in platform metrics and exploit data analytics. Drawing on recent STS scholarship on technologies of the self, new materialist approaches, and intersectionality theory, this panel reassesses the rise of datafication in contemporary society. In the wake of the Facebook-Cambridge Analytica data scandal, access to the APIs of popular platforms has been increasingly restricted for academic researchers, requiring new research methodologies. The overall aim of the panel is to bring together STS scholars who explore the multiple entanglements of influencers with big data in their everyday lives. The panel thus invites papers assessing the datafication of online activities through the lenses of data ethnography or data analytics solutions, such as social network analysis and natural language processing (text analytics, sentiment analysis, topic modeling). Contributions to this panel could address the following questions: What strategies do influencers pursue for platform campaigns? How is agency distributed in the platform worlds of influencers? What understandings of algorithmic mediation do influencers cultivate? What epistemological practices do influencers develop to understand platform metrics?

Participants:

#SendNudes: The Rise of E-Girls *Alice Fox, Science and Technology in Society, Virginia Tech; Sophie Fox, Ohio Northern University*

Within 2019, Electronic Girls (E-Girls) have moved from various nooks and crannies within gaming culture to center stage on TikTok, troubling the waters for Instagram baddies. This paper will seek to provide a lobster-trap in regards to identifying and capturing E-Girl culture. Using this information, we will begin a dialogue on the various methods for analyzing how E-Girl influencers perform agency online by disparaging gender stereotypes and utilizing sexism—commodifying misconceptions of femininity. The digital sphere surfaces new possibilities for agency expression than IRL alone. The methodologies to-be-explored and assessed will hail from a variety of disciplines including, but not limited to, philosophy, digital communications, business, and English. More specifically, we will be examining the promises and perils of conducting ethical, social media, SWOT/PEST, and rhetorical analyses to examine how E-Girl influencers turn profit through digital persona creation. Furthermore, this paper will seek to challenge dominant research methodologies within Science, Technology, and Society, namely ethnographic and sociological inquiry, by utilizing hidden methodologies to provide novel insights on E-Girl influencers and digital culture more generally.

Making Human Patient Simulation Count: Practices of Algorithm Tuning and Tinkering with Performance Data *Ivana Guarrasi Guarrasi, University of California, San Diego*

This talk centers on the practices of scientifically reducing complex embodied, and affective human behavior to biomedical and psychometric scales in the context of the medical licensure exam. Using actual patients in high stakes assessment is untenable because authentic patient conditions cannot be standardized for reliable testing across medical students. Healthcare educators use the term "standardized patient" (SP) to refer to a person trained to simulate a medical problem in a standardized examination of clinical skills, operating as a testing tool. But using humans as standardized test items in performance-based patient simulations is still challenging from both test development and test administration standpoints that work to reduce parameters that contribute to variation and contingency. Adopting an ethnographic approach and drawing on STS literature on practices of standardization to bear upon the field of simulation in medical education, my examination traces the multiple continuities of reduction as it inevitably occurs in lifelike patient simulation, where in order to sustain its legitimacy, test administrators have employed methods derived from psychometrics. Closely attending to practices of "tinkering" with the requirements placed upon them, my analysis reveals how test developers, test administrators, and standardized patients coordinate to apply the received standards to their practice. The attempts of individuals at all levels of institutional hierarchy to rigorously follow standards formally articulated in the assessment rubrics and mission statements mobilize a number of personal micro-adjustments, intersubjective negotiations, and algorithmic tuning to support achieving the practical goal of producing a functional and measurable exam.

Zhaawanong - The Southern Direction of the Anishinaabe Medicine Wheel: An approach to develop a Indigenous digital software bundle by/for/with Indigenous peoples in Tkaronto, Canada. *ALEJANDRO MAYORAL BANOS, York University / Indigenous Friends Association*

In the context of marginalized communities, the software industry has historically excluded them since its early conception stages as a consequence of despising non-Western forms of knowledge, and the overfocus on monetization and profitability. Thereby, the software applications commonly do not reflect the needs of the people in those contexts, the software does not consider the local worldviews, and the communal values are not considered part of the software architecture. In the end, the majority of computer programs are not being controlled by local communities, despite the members are engaged in different forms of digital technologies. Therefore, in order to aspire to decolonize digital spaces, the analysis of software creation practices opens the space to begin deploying, reconceiving and appropriating computing spaces. Throughout four years of development, the implementation of the Indigenous Friends Platform in the context of urban Indigenous youth at York University in Tkaronto triggered several inquiries around Indigeneity and digital spaces (i.e. thinking through doing and doing through thinking). The pedagogical approach of creating a digital platform based on the principles of the four directions of the Anishinaabe Medicine Wheel offers a new form of decolonial computing based on the principles of infrastructure, software design, embodiment and data. This paper focuses on the Zhaawanong or Southern direction of this methodology. Through the experience of developing the platform and analyzing other experiences in Turtle Island, several insights about the required principles for an Indigenous digital software bundle were concluded.

Session Organizer:
Rajesh Sharma, University of Tartu
Chair:
Christian Ritter, Tallinn University

102. Discursive Traps in Global Health: Neglect, Poverty, and Emergence: neglected diseases
6:00 to 7:40 pm
virPrague: VR 23

Problem framing is not a neutral, apolitical or a historical process involving the identification of issues that are obviously or unequivocally problematic. As João Nunes writes, "[p]roblems emerge as significant not just because they are 'there,' but also because they reinforce assumptions about what is important" (2016, 545). Framing some diseases as neglected health issues orders reality in a way that reinforces beliefs about the relative importance of some problematic aspects while excluding certain areas from the scope of concern. By considering the processes of framing and problem definition, we ask what becomes visible and invisible by including a disease in the World Health Organization (WHO)'s portfolio of "neglected tropical diseases."

Participants:

In the Search for a Magic Bullet: Biased Interests in Drug Development for Leishmaniasis *Mady Malheiros Barbeitas, Sociology - CERMES 3/ Unité Inserm 988 - Ecole des Hautes Etudes en Sciences Sociales - Paris)*

Most of existing drugs developed to treat neglected tropical diseases are obsolete, ineffective, toxic, or ill-adapted for use in the field. These deficiencies are not linked to scientific or technical limitations. They are the result of a political economic model of medical innovation and the way it is organized and financed globally. Since multinational pharmaceutical industry took on the main role in this model, drug development and priority setting became profit-oriented. Consequently, less profitable diseases such as leishmaniases, which still cause a high burden in low-middle income countries, were left unresolved. To stimulate neglected diseases R&D, public-private partnerships were proposed as a solution that would lure pharmaceutical companies into the game. However, many examples of "partnerships" or, what I would rather call temporary alignment of public and private interests, turned out to be problematic. They revealed a sharp dichotomy between public and private sectors in establishing long-term contracts. One particular case is the first oral drug developed to treat leishmaniases in the 1990s, miltefosine. Following the trajectory of this drug, I challenged some of the buzzwords currently used in global health narratives, in particular the word 'neglected'. By claiming that neglected diseases don't bring return on investment, pharmaceutical companies benefit from financial and regulators incentives such as the PRV or others to extract profit from old molecules.

Pacified Accounts of Science: The Neglect of War in Colombian leishmaniasis' Problem Framing *Lina Beatriz Pinto Garcia, York University*

Painless skin sores are the only physical manifestation of leishmaniasis. These lesions appear when a sandfly, infected with Leishmania parasites, encounters a human source of blood and bites. Since the Colombian war has mainly taken place within the jungles where sandflies thrive, the disease has been especially harsh to combatants of the armed conflict. The war and its associated dynamics have also played a crucial role in conditioning the production of scientific knowledge on leishmaniasis in the country. Although war is an unavoidable, persistent, and central element of scientific practice in the everyday world of leishmaniasis research, the narratives scientists create about the disease and the work they do have been for the most part "sanitized." Otherwise put, the armed conflict, with all its dynamics, actors, and violence, has been filtered out to produce pacified accounts of science. By considering the processes of framing and problem definition, I argue that the global health discourse on neglected diseases has taken over the definition of the problem posed by leishmaniasis in Colombia. As a result, the absence of satisfactory drugs to treat leishmaniasis has become the most salient aspect of the issue. Consequently, scientists are mainly dedicated to addressing leishmaniasis by adopting an approach in which pharmaceuticals are conceived as central to the solution. The war is not legible under this logic. Without fully considering the armed conflict in which the biosocial phenomenon of leishmaniasis occurs, biomedical research has been neglecting the major determinant of the disease in the Colombian context.

Leishmaniases of the New World from a historical and global perspective *Jaime L. Benchimol, Fundação Oswaldo Cruz*
This paper article addresses theories and practices concerning the

New World leishmaniases during the twentieth century within a framework that includes ideas about these diseases in the Old World. The first autochthonous cases of cutaneous and mucocutaneous leishmaniasis in the Americas were described in 1909, but visceral leishmaniasis only erupted as a public health problem in the region in 1934. Today Brazil is the country with the most cases of American tegumentary leishmaniasis, and alongside India has the highest incidence of visceral leishmaniasis. Knowledge production and efforts to control these diseases have mobilized health professionals, scientists, government agencies and institutions, international agencies, and rural and urban populations at regional, national, and global levels. My research addresses some of these groupings, the exchange and cooperation networks they established, and uncertainties and controversial aspects debated in different historical settings when notable changes were made in the approach to the New World leishmaniases

From the Vector, Straight to the Heart: Reframing Chagas Disease in Mexico *Mariela Sanchez-Belmont Montiel, The University of Manchester*

The grouping and labelling of Neglected Tropical Diseases was an advocacy effort to highlight their prevalence and promote control strategies. Chagas, a parasitic vector-borne disease, is considered one of these "neglected" diseases despite its high prevalence in the Americas. In Mexico, at least 1 million people suffer from it, but the government still labels it a "left-behind" disease (enfermedad rezagada). However, because Chagas chronic patients can develop heart problems, it has caught the attention of the medical community, especially cardiologists, and some pharmaceutical companies that found a profitable new niche. It was in these contexts –cardiology and the private sector– that I most commonly heard Chagas being referred to in Mexico as an "emerging" disease. Based on 14 months of ethnographic fieldwork in Mexico, I analyse the interplay of the categories "neglect" and "emergence" by juxtaposing Chagas –a "neglected" disease in Global Health and Mexican public health– and Chagasic Cardiomyopathy –a lucrative field for the private sector. I argue that the focus on the "Chagasic heart" can have contrasting consequences, from life-saving treatments to erasing patients suffering from Chagas-related failures of other organs (like the oesophagus or even the brain). It also argues that this heart-centred "emergence" could lead to a reframing of Chagas as a heart disease, obscuring the structural inequalities and socio-economic conditions that facilitate vector transmission in Mexico, and ultimately de-politicising Chagas. The paper thus engages with the political, economic and social consequences of "neglect" and "emergence" from the perspective of the social and biomedical fields.

Making Maladies Mundane: Noncommunicable Diseases and the Social Determinants of Knowledge *Jonathan David Shaffer, Boston University*

Why are non-communicable diseases (NCDs) near the bottom of the list in terms of global health funding and political priority when together they account for the most death and suffering globally, particularly amongst the world's poorest populations? I will seek an answer to this puzzle by analyzing the work and impact of two model public health programs, one which succeeded in making legible the problem of NCDs as understood and experienced by citizens in the Global North in Finland and one which is challenging that understanding, based on the experiences of the poor in the Global South in Sierra Leone. The North Karelia Project, launched in eastern Finland in the early 1970s, generated science and practice that was taken up by the World Health Organization (WHO) and has dominated global NCD public health discourse, rendering understandings of alternative causes and potential interventions invisible. The integrated NCD clinic at Koidu Government Hospital is the first clinical program to treat ongoing chronic illnesses—an issue that is frequently assumed to be too expensive for poor governments to address—in post-conflict and post-Ebola Sierra Leone, which hosts one of the weakest health systems in the world but which is part of a broader movement to challenge the dominant WHO NCD policy. Drawing on theories from medical sociology, science and technology studies, and global and transnational

sociology, I use this comparison to explore how and why some understandings of NCDs prevail and why others fail. I compare the two cases along the lines of material setting, discourse, and science-making practices. Differences in epistemic practices reveal how power and politics are enacted and reproduced through public health science.

Session Organizer:

Mady Malheiros Barbeitas, Sociology - CERMES 3/ Unité Inserm 988 - Ecole des Hautes Etudes en Sciences Sociales - Paris)

Chair:

Mady Malheiros Barbeitas, Sociology - CERMES 3/ Unité Inserm 988 - Ecole des Hautes Etudes en Sciences Sociales - Paris)

103. The Ontological Politics of the Anthropocene II

6:00 to 7:40 pm
virPrague: VR 24
Participants:

Ontological politics in the colombian high mountains: the conflict around conservation and the Anthropocene *Camilo Castillo, Department of Thematic Studies - Technology and Social Change, Linköping University*

To mitigate the impact of climate change, the Colombian government decided recently to protect certain ecosystems under the umbrella of the ecosystem services approach, creating cartographies that demarcate the limits of areas to be conserved. One of these ecosystems are those known as páramos, located in the Andean high mountains that according to the Environmental Ministry "guarantee the offer of environmental goods and services that are essential for humans and sustainable development of the country". The páramos demarcation project carried on by the Colombian Humboldt Institute and commissioned by the Colombian Ministry of Environment produced a version of the páramo that made it amenable to be demarcated within the "ecosystem services framework". This demarcation produced exclusions, specially of local communities inhabiting páramos for generations such as the campesinos from Sumapaz region in Colombia, who have lived in the páramos since the mid-20th century escaping from political violence and whose livelihood and forms of life depend on living in the high mountains. As part of an ethnographic work with campesinos, I plan to describe how conservation policies and ontological politics meet in the Anthropocene. With this paper I want to contribute to discussions on STS and the Anthropocene interested in how ontology and multiplicity can be a source to push the boundaries of modern politics (De la Cadena & Blaser, 2018) and the coloniality of reality (Burman, 2017), in order to envision alternatives and ways of living in the new climatic regime of the Anthropocene (Latour, 2017), especially from those who have managed to resist and survive in postcolonial localities. Burman, A. (2017). The political ontology of climate change: moral meteorology, climate justice, and the coloniality of reality in the Bolivian Andes. Journal of Political Ecology, 24(1), 921. De la Cadena, M., & Blaser, M. (2018). A world of many worlds. Durham & London: Duke University Press. Latour, B. (2017). Facing Gaia: eight lectures on the new climatic regime. Cambridge: Polity.

On the Technoecologies of Commoning *Dagmar Lorenz-Meyer, Charles University In Prague*

Against the backdrop of climate crisis and the enclosures of advanced capitalism we see experiments in commons-based energy production that emphasise equity, collective control and material participation – albeit less in post-socialist societies like the Czech Republic where the rollout of smart technologies has been scaled back and people are said to reject energy cooperatives. This presentation examines the potentials of commons-based energy production in the Czech Republic through a technoecological lens (Lorenz-Meyer 2019) that focuses on the co-constitution of the ecological and the technological in the specific articulations and disarticulation of solar energy. Drawing on fieldwork and interviews with energy professionals, solar householders and activists and analysis of

4S virPrague 2020

changing energy policies, the paper asks: what solar socialities are in the making, and what practices, affects and regulations are fuelling or inhibiting technologies of commoning? Who and what remains dis/articulated in these socialities, and how might exclusion be part of the very mechanisms that promote alternative energies? What modes of solarity (Barney and Szeman 2018), or possible solar-powered energy futures and conditions of socio-environmental justice get undone in such practices and how could they articulate otherwise?

Temporalizing the Issue *Emil Flatø, University of Oslo*

Within the larger effort in science and technology studies to conceive of politics as a struggle revolving around things, the "issue" has gained prominence as a practical tool – responding to the complex analytical needs arising from what Marres calls the "socio-ontological sensibility" in the field. In this paper, I will illustrate how spatial analytics permeates the language of thing-politics and "issues", which stands in contrast to a patchy understanding of how "issues" have contingent, temporal existences. The tendency to appropriate John Dewey's mechanistic conception of the lives of issues proves a point in case for the pitfalls of neglecting temporality. As an alternative, I will consider the emergence of the climate issue as a matter of priority in the particular intellectual environment at M.I.T. in 1969-72, where young branches of expertise – management, socio-technical engineering, cybernetics – became influential at the nexus of science, politics and public spheres. While these circles were directly involved in the construction of climate as a global object of concern and inquiry, they were at least as momentous in shaping how the particular form of futurity implied by climate change would be addressed as a question for knowledge. The exercise generates novel perspectives on the temporal features of the issue itself, the unfolding of issues in time, and the changing historical meaning of issue-oriented technopolitics. But most importantly, it raises questions about the research agendas that arise from analyzing thing-politics more as a strictly spatial than a spatiotemporal process.

Session Organizer:

António Carvalho, Centre for Social Studies - University of Coimbra

Chair:

Dagmar Lorenz-Meyer, Charles University In Prague

104. Iteration, Speculation, Transportation, Instrumentation: The Logics of Time on the Periphery
8:00 to 9:40 pm
virPrague: VR 01

This panel explores how logics of time emerge on the periphery, in conversation with technological and scientific projects deployed there. Peripheries are commonly understood as places with nonstandard forms of time, such as Vannini's "island time," which refuses the fast pace of the metropole, Watts's "Orkney time," grounded in the felt reality of a long historical time, and the ways in which colonial locales are framed as being "behind" the time of the center. In this panel we examine how modes of being in time are experienced, framed, and constructed when technological and scientific projects imagined as unmarked and globally relevant come into contact with the forms of temporal logic that make sense in the places marked as peripheral.

Participants:

The Affective Demands of Design Participation *Paul Dourish, University Of Calilfornia Irvine*

Many design methods, especially in the domains of information technology and user experience, depend on iteration and repetition to foster collaboration with stakeholder groups. But what does iteration demand of those groups? Under what conditions do iterative engagements arise, and with what stakes? Building on experiences with Aboriginal Australian communities, and drawing on feminist and decolonial thinking, this paper examines the nature of iteration for design practice and how it frames encounters between design and use, with a focus on the affective dimension of engagement in iterative design processes. In particular, it explores the power relations at work in the very idea of iteration as a methodological approach, and argues for recontextualising the ways we imagine that academic research might intervene in the settings we come to study.

Speculation and the Design of Development *Phoebe Sengers, Cornell University*

This paper examines the role of speculation in the design of technologically infused development projects on the global periphery. We analyze two historical cases of marginalized island states, Jamaica and the Canadian province of Newfoundland and Labrador, that tried to use design to create imagined futures as arrived, developed economies. We argue these projects are caught up between two modes of speculation: the goal-driven speculation of finance and sociotechnical imaginaries, and the critical orientation of speculative fiction and design. Like speculation in finance and technoscience, these visions aimed to create a coherent vision of a future societal situation that could motivate and underwrite action in the present to establish that future. These fictional visions were intended to provide a sense of certainty in what was inherently an uncertain situation: the challenge of creating economic prosperity for small postcolonial states that were painfully aware of being 'behind' on the world stage. In doing so, like speculative fiction and design, these states aimed to establish an alternative story to the status quo by creating visions of 'developing' states as established economic powers. Speculation from the periphery, we will argue, necessarily tacks between these two orientations, leading to 4 key tensions in speculation on the periphery: (1) fantasy and pragmatic goals become deeply yoked; (2) the center's reality becomes the periphery's fiction; (3) speculation about the past and the future become intertwined; and (4) asserting the center's status quo becomes a revolutionary act.

Time From Away: Infrastructure and the Clash of Temporal Logics in Rural Newfoundland and Labrador *Donny Persaud, Cornell University*

This paper explores the interplay between infrastructure, time, and place by examining the problems of ferry infrastructure in the rural communities of Fogo Island and Change Islands, Newfoundland and Labrador, Canada. We argue that ferry infrastructure shapes and is shaped by competing temporal logics, socially shared assumptions about how to organize action in time (Mazmanian et al., 2015), which are bound to particular places - in this case, Fogo and Change Islands and the more urban centers and mainlands to which the ferry connects, both literally and organizationally. We describe how the historical and physical geography of the area shape the temporal strategies the ferry is engaged in, and how the introduction of the ferry infrastructure and its ongoing breakdowns and reworkings reshape the nature of place and time on the islands. In doing so, we argue that the ferry is caught up between two different temporal logics - a mainland logic oriented around scheduling, planning and seamless logistics, and a temporal logic more suited to island life in the rural North oriented around responsiveness and opportunism. This conflict is deeply political, with dominant (urban/mainland) temporal logics producing a "deficit" or "peripheral" framework when they encounter rural places, introducing hidden costs on Islanders in the form of work required to try to live in relation to temporal logics originating from other places. Ultimately, we gesture to broader questions concerning what is lost as temporal logics which come from away attempt to supersede and assimilate those of other places.

Scaling for Salmon *Sarah Catherine Inman, University of Washington*

Arctic coastal regions, which are remote, vulnerable to climate change, and ecologically diverse, are sites at the periphery of contemporary culture. Yet, because these sites are often first to experience climate change impacts, they are considered excellent sites for ecological research. Studies of environmental change are sometimes obscured by the present timescape (Puig de la Bellacasa, 2015) while at other times are constrained by the tension between phenomenal and institutional time (Jackson et al., 2011). In other words, ecological phenomena occur at geologic timescales, which are not commensurate with the lifespan of a scientist, the short cycles of funding, or the instruments used to understand long-term change. This concern with long-term perspectives (Burton and Jackson, 2012) illustrates how phenomena might be hidden in the past and "reside in the invisible present" (Magnuson 1990). Drawing from

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ethnographic fieldwork among ecologists collecting and documenting heterogeneous data on Wild Alaskan salmon, this research analyzes the scientific practices of data production as a means of investigating how scientists scale for time. In a technical sense, time follows Mazmanian et al.'s (2015) dominant temporal logic in that it is managed, individualized, and modular. However, in scientific practice, time is relational, tracked in the background and yet relational to the change being studied. Through ethnographic field studies, this research highlights the ways in which ecologists instrument their field sites to understand temporal scale, and the ways in which dominant temporal logics sometimes shape and sometimes break with scientific practice.

Session Organizer:

Phoebe Sengers, Cornell University

Chair:

Phoebe Sengers, Cornell University

105. Universals' Locales

8:00 to 9:40 pm
virPrague: VR 02

In theory, the ideas and methods of modern theoretical and mathematical sciences are born universal, ungoverned by researchers' locales and unconstrained by geopolitical borders. In practice, material and political constraints, linguistic and national barriers, and the manifold idiosyncrasies of individual research settings have historically divided theoretical and mathematical scholars more than their putatively placeless quarry has united them. This contrast between universal ideals and local practices has been one of the most durable and important features of the theoretical and mathematical sciences across their history, and one of the most persistent challenges for their history and sociology. We now live in a period of global science that dates to the mid-twentieth century, when dramatic changes in the scale of research, travel, collaboration, publication, and disciplinary organization fundamentally transformed who could participate in debates and research programs about abstract theories, where and how they could do so, what mathematical and other theoretical frameworks they could use, and what they could do with them. This open panel combines historical and sociological studies as well as theoretical and methodological examinations that interrogate how producers of theoretical and mathematical science lay claim to universal knowledges between local and global contexts, and what this means for the social, institutional, infrastructural, and political conditions and implications for such endeavors.

Participants:

A Paraconsistent History: Mathematical Logic in a Paradoxical World *Rodrigo Ochigame, Massachusetts Institute of Technology*

Conventional histories of modern logic often offer internalist accounts of progressive mathematical formalization centered in Western Europe and North America. Yet, in different cultural contexts, the universalistic claims of mathematical logic were not accepted easily or uniformly. From Eastern Europe to Latin America, scholars produced alternative formalisms of logic that abandoned the "classical" commitments to absolute consistency and to the binary opposition of truth and falsity. Such formalisms have become known as "non-classical logics." An important kind of non-classical logic is "paraconsistent logic," which permits reasoning from contradictory premises. Historical accounts often credit the Brazilian mathematician Newton C. A. da Costa for its invention. My paper recounts the emergence of paraconsistent logic through a different approach. Rather than tell the story of da Costa as an individual inventor, I emphasize the role of precursors who produced the intellectual preconditions for his work. Moreover, I am interested in how ideas of non-Aristotelian and non-classical logic traveled from the late Russian Empire and interwar Poland to Latin America under military rule, reconfiguring the dominant assumptions of mainstream logicians. Finally, I wish to avoid internalist and anachronistic tendencies in the history of logic. Too often, histories of logic explain the development of logical formalisms by taken-for-granted criteria of internal correctness, and apply terms anachronistically as if logical ideas transcend space and time. Instead, my analysis seeks to demonstrate that even mathematical logic is culturally situated and historically contingent, open to distinct alternatives.

Soviet Mathematicians, the Academy of Sciences, and the Longue Duree in Soviet Computing *Barbara Walker, University of Nevada, Reno*

This paper argues that the Soviet effort to integrate pure research, technological advancement, and graduate education through the massive restructuring of the Academy of Sciences in the late 1920s and early 1930s, intended to establish the best possible technological foundation for the planned economy under the conditions of a scarcity of expertise, had an unintended impact on the history of Soviet computing forty years later. This was because the integration empowered mathematicians in the Academy to direct the development of Soviet computing following WW II with unexpected results. Though Academy mathematicians argued that the economy should be placed on computing technology, and that they would create the skills and the computers necessary to accomplish that goal, the Academy failed to develop the small office computers that the government eventually believed to be necessary for the massive development of COMECON, in favor of supercomputers to be programmed by mathematically-trained researcher-programmers. The demand for office computers was met outside of the Academy by reverse-engineering the IBM 360 instead, with ambiguous results. This argument offers nuance to a generally accepted argument that Soviet computer development "failed" in the Cold War due to bureaucratic competition or incompetence, laying an emphasis instead on an attempted alignment of professional skills and interests that played out counter-intuitively in the longue duree. This paper is relevant to the overall topic of the conference because it considers the difficulties of planning ahead in the longue duree world of expert knowledge formation, implementation, and transmission. With regard to Michael Barany's panel theme of "Universal's Locales: Locating theoretical sciences in global modernity," this paper contributes insight into what can happen when theoretical scientists such as mathematicians gain exceptional institutional and administrative control over technological development.

Bibliographic Globalization in the History and Historiography of Modern Mathematics *Michael J Barany, University of Edinburgh*

The problem of comprehensive and timely mathematical bibliography was at the forefront of mathematicians' international discussions at the turn of the twentieth century. By mid-century, two dominant enterprises provided the connective infrastructure that would hold together the mathematical literature for the remainder of the century and set the terms for new bibliographic undertakings up to the present: the Europe-based Zentralblatt für Mathematik und ihre Grenzgebiete and the America-based Mathematical Reviews. These abstracting journals and the large mathematical and publishing networks that contributed to them together created a meaningfully global mathematical literature, changing in the process how mathematicians organized their research communities and their ideas alike. Creating a coherent literature included developing systems of classification—initially ad hoc and variable tables of contents and cumulative indices—that eventually became the formal, hierarchical Mathematics Subject Classification shared between the Zentralblatt and Mathematical Reviews. Editors and reviewers collaborated to articulate, enforce, and adapt a view of the whole of mathematics that responded both piecemeal and macroscopically to a discipline whose personal, geographical, and intellectual scales expanded dramatically in the latter half of the twentieth century. A view of mathematical globalization that emphasizes the distributed labour and effects of producing an integrated bibliographic infrastructure has consequences both for historical understandings of modern mathematics and for historiographical approaches to accounting for research and institutions in mathematicians' global era. These include hypotheses relating mathematical research infrastructures to organizational forms, career patterns, conceptual structures, and philosophical structuralism connected with modern formations in the discipline.

Session Organizer:

Michael J Barany, University of Edinburgh

Chair:

Michael J Barany, University of Edinburgh

106. Maintenance and its knowledges II
8:00 to 9:40 pm
virPrague: VR 03

In recent years, a series of maintenance studies have uncovered a world of sociotechnical practices that had remained unexplored by traditional STS such as research around innovation, breakdowns or disasters. Mostly repetitive and unheroic, these practices are dedicated to making things last rather than creating novelty or simply putting damaged objects 'back in order'. In these approaches, maintenance has been described in terms of an ethics of care, in which material entanglements, thoughtful improvisations and embodied adjustments are essential features. This panel aims at complementing these investigations by focusing on the different forms of knowledge—e.g. theories, standards, 'best practices', oral stories, tacit skills—, that emerge for, around, and as maintenance. These knowledges are plural and sometimes antagonistic in how they shape the means and rules to take care of objects, and how they define the 'whatness' of the things that are maintained. We would like to explore and analyze their relationships, and understand the conditions of their articulation, separation, or confrontation. Beyond a generic use of the notion of 'knowledge', submissions are invited to pay particular attention to the specific forms of knowledge that emerge at various empirical settings. Furthermore, if different forms of knowledge may work as resources or constraints during interventions, maintenance situations can also be investigated as sites and moments of knowledge generation. We expect that documenting and understanding the dynamics of these processes will be central to some of the proposals.

Participants:

Roads' Clinical Medicine: Hints at a Semiotic Paradigm in Infrastructure Maintenance *Roman Solé-Pomies, Center for the Sociology of Innovation - Mines ParisTech*

Investigating knowledge production in infrastructure maintenance, this paper intends to contribute to Mol's (1999) agenda regarding "ontological politics". Based on fieldwork in several French local public institutions as well as private companies, it discusses the role of specific forms of attention involved in the management of public roads. Technicians in this field recurrently use a clinical lexicon: roads have "pathologies", they need "diagnoses", "preventive" and "curative" works. I argue this analogy deserves to be taken seriously as it hints at a "semiotic paradigm" in the terms of Ginzburg (1979). An ethnographic study in different local public bodies does suggest that reading symptoms in roads is the basis for knowledge of both infrastructures' state and the conditions of their decay. These forms of knowledge, in turn, play a crucial role in organizing maintenance, as they are used to choose appropriate treatments, prioritize and plan budgets, and impute responsibilities in a complex network of actors (engineers, public workers, local representatives, private companies, various users). Furthermore, this clinical medicine is used by technicians and lobbyists to make maintenance matter in official agendas. Maintenance studies have challenged top-down approaches that consider norms and standards as the main drivers of material ordering processes, especially by outlining the role of mundane, improvisatory care practices on which the implementation of standards relies and depends. The case of road maintenance in French local public bodies somehow allows to take one step further: through producing specific forms of technical knowledge, maintenance also intervenes in the shaping of standards itself.

When to Care. Predictive Maintenance and the Expertise of Maintenance Workers in Public Transport *Tobias Röhl, University of Siegen*

The expertise of maintenance workers in the field of public transport is challenged by recent technological developments: »predictive maintenance« promises to initiate maintenance work at the right time to minimize risk of failure, eliminate unnecessary maintenance and thus improve productivity while reducing cost. However, professional expertise is drawn into question as traditional routines and informal knowledge in deciding when to initiate maintenance work becomes less central as prognostic tools take over. Alongside this potential deskilling, a contradiction emerges: the ability to improvise is increasingly important given that the predictive systems currently in use are often unreliable prototypes and breakdowns are common. Three forms of knowledge are consequently at odds: prognostic forecasting and modeling, implicit routine knowledge, and improvisational wisdom. Using ethnographic data on maintenance work in the field of public transport, I will show how railway technicians deal with this plurality of different forms of knowledge and how they find ways to reclaim their professional expertise in face of predictive algorithms.

Illicit energy economies and the care of things *Carlos Cuevas-Garcia, Technical University of Munich*

This paper examines the controversial practices of inspection and maintenance of infrastructures involved in the growing but underexplored illicit energy economies. Activities such as electricity and oil theft reveal the existence of overlapping but conflicting uses of infrastructure and maintenance activities. In the case of oil theft, for example, the same pipelines that serve the official fuel distribution network are simultaneously the source of income of highly articulated but illegitimate groups of actors. While official agents are in charge of detecting and fixing human and non-human made leaks, extra-official agents' tasks involve installing taps carefully, keeping them hidden, and protecting them from competing criminal organizations. At times, however, those in charge of official maintenance are the same who keep the clandestine assemblages up and running. Yet, these conflicting practices pose risks for the environment and for those facing energy poverty in their daily lives. Looking at the case of oil theft in Mexico and of an explosion that occurred in January 2019, this paper traces the intersecting practices of inspection and maintenance of legal and illegal networks of energy distribution, it examines techniques and technologies involved in oil theft and its mitigation, and addresses the questions: what forms of care exist and cease to exist in the context of the illicit energy economy? What knowledges are relevant? And when, despite its importance, is the care of things not enough?

Knowledge, Knowledgeability, and Acknowledgement in HVAC Maintenance *Alain Bovet, Institute of Geography and Sustainability; Moritz F Fürst, Université de Lausanne; Tristan Loloum, Université de Lausanne*

The maintenance of heating, ventilation, and air-conditioning (HVAC) infrastructure has become increasingly complex with the introduction of more sustainable energy sources, the integration of digital technologies, and organizational rearrangements that come with market liberalization and legal requirements (Ariztia et al. 2019). The continued upkeep of these infrastructures requires the successful coordination of many distinct forms of knowledge involved in different HVAC maintenance professions (e.g. heating/cooling technicians, operating engineers, installers, automation specialists, facility managers, etc.), and their articulation within the local specificities of service interventions (Wade et al. 2016). Finding and building such arrangements with a variety of actors results in multiple encounters where maintenance knowledge is at stake. Beyond the mere plurality of 'skills' or 'know-how', the paper addresses a selection of empirical cases that show how knowledgeability and acknowledgment are oriented to by HVAC professionals when they configure their daily maintenance work and its objects. Each encounter with a partner is an occasion to both display his/her own and check the other's knowledgeability. This valuation process cannot be separated from acknowledgment issues: knowledge at work in HVAC maintenance gets diversely perceived and recognized, not only by the various professionals but also by lay partners (users, owners, customers), and according to a plurality of criteria (practical, financial, legal, environmental). Based on ethnographic inquiry (video-ethnography, shadowing, participant observation) with maintenance technicians from private HVAC companies and district heating networks, as well as semi-structured interviews with experts, trainers, managers, and engineers in Switzerland, this research reveals how the energy transition recasts the meanings and values attached to HVAC maintenance. References Ariztia Tomas, Fonseca Francisca, Bernasconi Oriana (2019), Heating ecologies: Resituating

stocking and maintenance in domestic heating, Energy Research and Social Science 47, 128-136. Wade Faye, Hitchings Russell, Shipworth Michelle (2016), Understanding the missing middlemen of domestic heating. Installers as a community of professional practice in the United Kingdom, Energy Research and Social Science 19, 39–47.

Good Care, Bad Economy? The Role Of Economic Practices In Maintaining Suitable Care Processes *Barbara Grimpe, University of Klagenfurt*

STS care ethics features a broad range of criticism of economic matters such as, the supposed ruling of capitalism, 'productionism' (Puig de la Bellacasa 2015) or a market-like 'logic of choice' (Mol 2008). These and other economic logics or ideologies would hamper 'good' care. In many situations and contexts of care such scepticism of economic matters is certainly appropriate. However, what I find to be underdeveloped in STS care ethics is a perspective on the ways in which economic practices may also be supportive of care, or even at the heart of care. A slight shift in analytical focus and terminology from the normatively charged term 'care' to the related but more prosaic notions and processes of 'maintenance' or 'infrastructuring', is a first step in opening up STS care ethics to a somewhat more benevolent view of the economy and of economic knowledge. In a second step, the social studies of finance, a neighbouring field to STS, and business ethics offer conceptual and empirical food for thought when it comes to 'rehabilitating' economic matters for STS care ethics. For this purpose, I will present a practice approach to economic knowledge which is useful in identifying various ways in which economic concerns and matters of care may very well go hand in hand. I will support my argument with a few examples.

Session Organizers:
Jérôme Denis, CSI - MINES ParisTech
Fernando Dominguez, UC San Diego
David Pontille, CNRS

Chair:
Jérôme Denis, CSI - MINES ParisTech

107. Future Histories of Data and Databases
8:00 to 9:40 pm
virPrague: VR 04

The histories of computing technologies have long been the domain of a dedicated coterie of historians, but historical methods and sources are now of increasing interest to practitioners in CS fields such as human-computer interaction (HCI) and computer-supported cooperative work/social computing (CSCW), part of a more general reorientation of computer scientists towards the broader "sociotechnical" implications of computing and digital technologies. This panel highlights how the interdisciplinary encounter between history and computer science provide an opportunity for expertise and perspectives to circulate between these fields. The work of the scholars involved highlights both STS/historically-oriented research where design and society is an object of study (designs of systems, platforms of work, techno-surveillance, etc), and design/HCI-oriented research in which historical analysis and/or artifacts play a significant role. Presenters on this panel address the past, present, and future of data and databases through a number of themes, including (1) the design of platforms and their implications; (2) contemporary research data becoming historical record; (3) historiographical implications of technoscience and society; (4) what the concept of 'data' might signify in the future; (5) what histories of data and databases have been/are being effaced, particularly around minority and underrepresented groups in computing, culture, and society; (6) how digital materialities are mobilized for technocapitalist and/or technopolitical means.

Participants:

Seizure Aesthetics: Temporal Regimes and Medical Technology in Epilepsy Diagnosis *Megh Marathe, University of Michigan, Ann Arbor*

Epilepsy is a neurological condition defined by time; it is characterized by a lifelong tendency for recurrent, unpredictable, and unprovoked seizures, during which people lose control over parts of body-mind function. Diagnosing seizures involves using electroencephalograms to represent and classify brain waves in relation to clock time. Drawing upon ethnographic fieldwork in a North American teaching hospital, this paper shows that as neurologists learn to diagnose seizures, they internalize clock time norms for normal and abnormal brain waves. The paper demonstrates how these temporal norms work to assign a set of aesthetics to brain waves: patterns that conform to clock-time norms are beautiful, whereas hard-to-classify patterns are ugly. These aesthetic judgments follow diagnostically complex patients in future hospital visits, who become known, for instance, as "the patient with the ugly EEG." The paper critiques this ascription of labels to patients and situates the role of the electroencephalogram's clock time in this predicament. It concludes with a speculative design project that reorients the relationship between temporality and embodiment by using the heartbeat as a situated and co-produced alternative to the standardized and invariant clock. Ultimately, the paper argues that the aesthetics of medical technology are fundamental to clinical care, thereby opening up new directions for research at the intersection of human-computer interaction and disability studies.

Historiographies of Computing History: A Meta-Review *Charles Luke Alan Stark*

Historiography, or the study of the writing of history, is essential to historical research for its focus on understanding the specific conditions under which different historical narratives are formulated, and on explicating how the social, political, and ideological priors of both our past and our present influence the production of historical knowledge. This paper will present a review of the extant historiographic work on computing history, both to provide a meta-review of the field, and to highlight how historiographic perspectives themselves have shifted over the relatively short history of computing technologies. Historiographies of computing have been produced by, among others, Kenneth May in the early 1980s, Michael Shawn Mahoney in the 1990s, Thomas Misa in the 2000s, and Liesbeth de Mol and Maarten Bullynck in 2018. The foci of these reviews of the history of computing mirror those of the epochs in which they were written, moving from internalist and technical histories through to a greater emphasis on social, cultural, and ideological contexts for computing technologies. The emphases within computing historiography also point to the development of computing and computer science as fields of expertise, and the ways in which, as Mar Hicks (2017) and Charlton McIlwain have shown, these fields elided the contributions of women and people of color—not only in their own histories and in historical writing, but in historiography as well. The paper will draw from this historiographic meta-review to offer insights for researching and teaching the long history of computing's social impacts today.

Now We Know Then: IoT, the Present, and the Future Perfect *John Seberger, Indiana University, Bloomington*

What is ubiquitous data collection doing to the concept of the present tense? In order to foster focused consideration of this question, this paper further explores the concept of the preservative present. Grounded in Bowker's concept of the Age of Potential Memory—"an epoch in which narrative remembering is typically a post hoc reconstruction from an ordered, classified set of facts that have been scattered over multiple physical data collections" (Bowker, 2005, p. 30)—the preservative present refers to a subtly historicized, archival, and evidence-based present tense wherein experience is displaced by the drive towards the construction of a data-driven future perfect. Such displacement inverts the embodied relation to the present tense—experience—in favor of a 'will have had' construction: we act as users such that we will have had collected data about action. Following explication of a series of examples drawn from popular media, I conclude with a provocation: I contend that we are reaching a point wherein the ubiquitous collection and storage of data—drawn from all corners of life through such 'hopeful monsters' (Law, 1991) as the Internet of Things (IoT)—is constructing a new form of presentism, which serves to reify the objectival operationalization of the experiential human as a 'user.' Bibliography Bowker, G. C. (2005). Memory practices in the sciences. Cambridge, MA: MIT Press. Law, J. (1991). A sociology of monsters: Essays on power, technology and domination (Vol. 171). London: Routledge.

Session Organizers:
Oscar Lemus, Indiana University, Bloomington
John Seberger, Indiana University, Bloomington
Chair:
Charles Luke Alan Stark

108. 'Another Science [Education] is Possible': Science Education in the Anthropocene
8:00 to 9:40 pm
virPrague: VR 05

It is becoming more and more obvious that the disastrous effects of our current geological epoch, the Anthropocene, are indeed the new normal, not some impending future yet to come. It is also more and more obvious that science education, the way it is institutionalized in various norms of school science, government policy, classroom practice, educational research, and public/private research laboratories is ill-equipped and ill-conceived to deal with the most pressing social and ecological challenges of our time. In this session, we share contributions from our transdisciplinary project, Science Education in the Anthropocene (Wallace, Bazzul, Higgins, & Tolbert, eds., expected publication date, late 2020), in which we have assembled works from diverse practitioner and theoretical backgrounds that provoke rethinking and remaking our shared world(s) as "another science [education] is possible" (Stengers, 2018). Contributors from all corners of science education entwine experimental thoughts and practice about collective survival on a damaged planet (Bazzul & Tolbert, 2019), in detailed, risky, provocative, and quirky ways, such as living with forms of ecological devastation as unruly kin; how are communities and collectives are reconfiguring in response to rapid change; creative (re-)tellings of place-based and traditional stories; how is collectively living a spiritual matter?; critical media interventions which disrupt the produced and received meanings of natural-cultural relations; writing speculative (non)fiction which invites consideration of the futures to-come; and others.

Participants:

Let's root for each other and grow: 'Class Journeys' Acknowledging the Interconnectedness (with)in Science Education *Rachel Askew, Vanderbilt University*

In January 2019 six 'students' and one 'instructor' came together for the first of 16 class meetings to explore science education in elementary schools. As an attempt to push against the State apparatus, (Deleuze and Guattari, 1988) we created the course together. What began as an assortment of waves and circles eventually rooted and bloomed in an exploration of our becomings as science teachers. At the end of the semester, we chose to represent our class journeys timeline (Adriansen, 2012) as a flower – with each of us connected as the roots and our experiences interwoven in the flower. Using rhizoanalysis, this paper will explore and question the interconnectedness of materials, humans, and experiences as they relate to conceptions of 'growth' in the Anthropocene.

Creating magical research: Writing for a felt reality in a more-than-human world *Nicole Bowers, Arizona State University*

As we work in the ruins of a world that has produced those ruins (Sauvé, 2017; Tsing, 2015), this time oft-referred to as the Anthropocene, science educators and researchers have been called to break with post-positivism, dualisms, and reductionism to settle on new onto-epistemological grounds (Bazzul, & Kayumova, 2016; Haraway, 2016; Lather & St. Pierre, 2013). One promising proposition lies in ontologies of process and epistemologies that expand to encompass affect with new combinations of knowing/experiencing/researching that honor the more-than-human world we need to navigate (Manning, 2013; Muraca, 2011). In this paper, I introduce artful writing as inquiry in science education and explain the elements of magical realism that may contribute to works that reverberate with the-more-than-human world of the Anthropocene (Faris, 2004; Richardson & St. Pierre, 2005). Riding the conceptual currents of the anarchive (Manning, 2018) and non-representational methodologies (MacLure, 2013; Vannini, 2015), I seek lively text in writing about sustainability and the environment and novel, playful ways of writing "research" of the same. I reach towards magical realism to experiment with infusing writing practices with elements that exceed static, informational text so often seen in normative science education articles. I propose to

play with writing of research through infusion of magical realism, engaging myself and readers in a tapestry of text that hopes to create "the real—the limit events that resist representation—as an immediate, felt reality" (Arva, 2008, p. 60).

Decolonizing Healing within the Anthropocene *Miranda Field, University of Regina*

The field of psychology is embarking on a process to interrupt the historical colonial cycle of harm and begin to work with and alongside Indigenous communities to understand the healing journey. From an Indigenous lens, healing incorporates more than the physical recovery. Physical, emotional, mental, and spiritual healing exists through learning which occurs along the healing journey. This healing journey has no definite beginning or end, and as we begin to move away from pathologizing healing to a strength-based healing process, the focus shifts to relationships; relationships with self, community, more-than-human, and the land. This chapter proposes that to decolonize western healing processes, as a field, we must acknowledge the coexistence of learning during the healing journey. Building healing capacity through learning elucidates the understanding of the past, the needs of the present, and lays foundations for the future to work towards restoring integrity and prompting balanced care.

Anthropocene, Nature and a More-than-Human World *Colin Hennessy Elliott*

In this presentation, we explore the Anthropocene by examining the vital vibrant connections between life and matter (Whatmore, 2006) as we acknowledge in a more-than-human world (Whatmore, 2006, Greenhough, 2010) the increasingly accepted agency of the material world and other living things to impact humans in ways that are unpredictable. Examples which come to mind which we will explore in this chapter include ozone depletion, greenhouse gases, fracking, urban wild things (Hinchcliff et al., 2005) and bed bugs (Giraud et al., 2019). These examples help us to examine the challenges associated with developing educational experiences for students in which matter and humans are entangled. Our approach examines how the work of scholars such as those cited and Indigenous scholars (e.g. Bang & Marin, 2015) who have long argued against a nature-culture dichotomy provide some approaches for educators to help them break down or desettle "nature-culture relations." If we want to move beyond the last chapter in the textbook where human impact is typically presented, then educators need to accept that understanding does not come from standing apart but from engaging with the material in the world. Karen Barad (2007) noted that the material world and humans work through practice to construct phenomena and we argue that this onto-epistemological stance represents a key starting point for learning and for understanding how the Anthropocene informs how we approach the teaching and learning of science education.

Session Organizer:
Sara Tolbert, Te Whare Wananga o Waitaha University of Canterbury
Chair:
Sara Tolbert, Te Whare Wananga o Waitaha University of Canterbury

109. Proliferation and dispersal at the border (Proliferation, dispersal and (in)security #2)
8:00 to 9:40 pm
virPrague: VR 06
Participants:

Making up data: from migrant traces to border inscriptions *Claudia Aradau, King's College London; Sarah Perret, King's College London*

European borders have become intense sites of digital data extraction. This data comes in many different forms, it is dispersed across different spaces and times. In this paper, we propose an analysis of 'making up data', building on Ian Hacking's analysis of 'making up people'. To this purpose, we develop a conceptual distinction between digital 'traces' and 'inscriptions.' While digital traces are increasingly extracted

from the bodies of migrants through fingerprinting, screening, facial recognition, or interviews, these disperse traces need to be combined and recombined to produce border inscriptions. In advancing an understanding of how data is made for the purposes of border governance, the paper proposes to contribute to a dialogue between critical security studies, border studies, and science and technology studies. Empirically, we analyse the 'practical tools' and software that the European Asylum Support Office (EASO) has developed in the implementation of the Dublin III Regulation and the Common European Asylum System, as well as through additional interviews with EASO staff. Firstly, while many scholars point to the shift towards datafication and digital traces in border governance, we shed light on the proliferation and dispersal of different forms of traces – biometrics, documents, population registers, stamps, interviews – in the production of border inscriptions. Secondly, we show how inscription devices enact (dis)connections and hierarchise traces according to an epistemology of credibility. Finally, border inscriptions enact migrants as insecure subjects who cannot refuse data extraction.

Identification as Translation: Shiftings, Spokespersons and Interessement Devices at the Securitized Border *Annalisa Pelizza, University of Bologna and University of Twente*

By triangulating migration studies, security scholarship and technology studies concerned with security and identification, this paper pursues a translational approach to the securitization of migration. It argues that sociotechnical processes of identification at the border can be conceived of as translations into legible identities of individuals who are unknown to authorities. The paper's overarching goal is to contribute to the materiality debate across Critical Security Studies (CSS) and Science and Technology Studies (STS) by answering the call to conduct empirical explorations of security, and by revisiting the potential of the sociology of translation to account for the identification of border crossers. The paper mobilizes early concepts from the sociology of translation to ethnographically analyse the identification encounter at the Hellenic external European border. Three sets of implications for migration studies and the CSS-STS debate on the materiality of securitization are discussed. First, a translational approach has the potentiality to replace a representational understanding of identity with a performative apprehension of identification. Second, adopting a translational approach brings to acknowledge that the encounter between border crossers and security authorities is mediated by multiple, heterogeneous actors. While this argument has been moved also by some recent migration and security studies, the translational framework helps to open technological black boxes and reveal the key role of material qualities, affordances and limitations of artefacts. Third, a translational approach to the securitization of migration can help advance the field of 'alterity processing' by appreciating the de facto re-arrangements of institutional orders elicited by techno-political requirements to align with global security regimes.

EU border (in)security between infrastructural experimentation and collective imagination *Paul Trauttmansdorff, Department of Science and Technology Studies; Ulrike Felt, University of Vienna, Department of Science and Technology Studies*

A central and formative ingredient in the EU's governance of mobility and migration is the continuous construction of a transnational digital infrastructure to assure border security. Although border and critical security studies have increasingly centered on the multiple aspects of techno-materiality and infrastructural devices of border control, less has been said about the myriad ways in which infrastructures encode and transmit collective visions and futures of European (in)security. In this paper, we study the co-production of techno-scientific borders and social order by exploring how the emerging shared sociotechnical imaginary of (in)security is entangled with the emerging IT infrastructure of the EU border regime. To this end, the paper investigates the role of the European agency for the development and management of large-scale IT systems in the EU border regime (eu-LISA). Drawing on ethnographic observations and interview material, we analyze the ways in which experimental interventions through digital technology in the "Schengen laboratory" are performed. More specifically, the paper focuses on eu-LISA's practices of collective imagination and related experimentation which feeds into the construction and stabilization of specific imaginary of EU border (in)security, and supports its proliferation and dispersal. We argue that the agency, as an increasingly prominent institutional actor in the border regime, operates as a mediator through which contested ideas and visions of digital borders and (in)security can gain traction, acquire power, and proliferate across scales and throughout heterogeneous stets of actors.

Predictive Bordering: Frontex's Drones As Actors Of Time Above The Mediterranean *Anika Redmann, Europa-Universität Viadrina*

In recent years, the European Border and Coast Guard Agency Frontex has been intensifying its use of Remotely Piloted Aircraft Systems (RPAS), aka drones. In fact, semi-automatic RPAS are becoming the crown jewel in the risk analysis apparatus stretching around and beyond the EUropean borders. In my paper, I investigate these developments as a special form of governmentality combining data archives, migratory pattern-based predictions, and the dispersal of responsibility on human and non-human actors. In doing so, I combine research on patterns and predictions in e.g. predictive police work with research on the European border regimes to uncover continuities of Frontex's use of risk analysis in the proliferation of the EUropean Border. I then examine the consequences of a border regime practice focused on risk assessment and its culmination in the distributed agency of semi-autonomous flight systems with special reference to the dimension of time. How do partially algorithmically controlled drones as actors in the Mediterranean border region change the temporal landscape of the border regime? Basing on empirical work with Frontex, my paper sheds light on the integration of partially algorithmically controlled drones into the agency's vision and practices of a Mediterranean colonized future. By doing so, the paper contributes to the understanding of big data identities, algorithmic actors and the temporal and spatial proliferation of borders.

Session Organizers:

Annalisa Pelizza, University of Bologna and University of Twente

Claudia Aradau, King's College London

Chair:

Matthias Leese, ETH Zurich

Discussant:

Lucy Suchman, Lancaster University, UK

110. FLIPPED | Digital Experiments in the Making II: Collaborative Creation Of Infrastructures For STS Research

8:00 to 9:40 pm

virPrague: VR 07

STS researchers use digital infrastructures and technologies on a regular basis. But what is behind that? What infrastructures are out there that are developed for STS research? How does the accompanying design and development influence the ways we "do STS"? What role do collaborative approaches play within that? This session examines digital infrastructures that are developed as instruments for STS research. It outlines the possibilities and limits of research in digital settings and platforms and the ways these are conceptualized with collaborative creations: participatory design and other ways to engage the focus groups in conceptualizing the modules and data tools used, to intervene in the planning processes. This is a flipped session, where we focus on discussion. All presentations are available at the STS Infrastructures platform: https://stsinfrastructures.org/content/open-panel-easst4s-2020-digital-experiments-making/essay

Participants:

Platforms For Experimental Collaborative Ethnography And STS *Kim Fortun, University of California Irvine; Mike Fortun, University of California, Irvine; Tim Schuetz, UC Irvine; James Adams, University of California, Irvine; Lindsay Poirier, University of California Davis; Alison Kenner, Drexel University; Angela Okune, University of*

California - Irvine; Aalok Khandekar, Indian Institute of Technology Hyderabad

This presentation will share the history, purpose and projects of the Platform for Experimental, Collaborative Ethnography (PECE, pronounced "peace"), open source software designed with STS perspective. While originally designed to provide digital workspace for the Asthma Files (a cluster of projects to understand the cultural dimensions of environmental health), PECE is now available to other research groups as a Drupal distro on GitHub (freely installable anywhere). The PECE Design Group now supports multiple instances of PECE (DisasterSTS Network, STS Infrastructures and for the Center for Ethnography, among others), using side-by-side development to orient further technical development. Each instance of PECE is a triptych, providing space for archiving, collaborative analysis and publication. PECE allows for creative research data management, new forms of peer review, and new forms of scholarly communication. PECE's design is both theoretically inflected and ethnographically grounded: platform design has been oriented by "design logics'' drawn from critical theories of language, sociality and politics. PECE is also a research project in itself: an exploration of the kinds of knowledge infrastructure needed in STS and kindred fields.

Curating A Digital Platform, Researching The Knowledge Infrastructures Of Public Health *Susanne Bauer, University of Oslo; Christine Holmberg, Brandenburg Medical School Theodor Fontane*

This paper will present a digital platform experiment at the intersection of STS and public health. Originally based on a project that focused on epidemiological risk scores as knowledge translation devices in public health, the platform addresses the formation of "life by the algorithm" more broadly. It foregrounds empirical research materials – thereby re-examining and opening them up for different orderings. Developing the platform, we pursued a curatorial mode of "following the algorithm" and investigating the lynchpins of digitalization in health research and everyday life. In particular, we focused on the ways in which data routines mobilize population infrastructures in everyday practices. The open platform was inspired by the research project but then followed the empirical materials into new spaces together with other professionals. This required us to engage differently with design aspects and "story telling", foregrounding specific parts and moments within our materials. We will address some of the curatorial challenges in the encounters with programmers, designers and advisors as well as in the need for maintenance and caretaking beyond publication in order to keep alive such experimental forms.

Inhabiting The Algorithm. The Making Of A Smartphone App To Explore How People Became Habituated To Algorithmic Profiling And Recommendation Systems *Matías Valderrama, Pontificia Universidad Católica de Chile; Martin Tironi; Celia Lury, University of Warwick; Scott Wark, University of Warwick; Andre Simon, Pontificia Universidad Católica de Chile; Denis Parra, Pontificia Universidad Católica de Chile*

This paper presents some findings of the interdisciplinary project 'Algorithmic Identities.' This project was devised to study how people feel, react and thematise the extraction of digital data and algorithmic inferences about their personhoods. Considering the proprietary, opaque and inscrutable algorithmic systems of major online services and social media platforms, we adopted a critical making approach to doing research: we made an app that emulates profiling and recommendation systems. "Big Sister", as we called it, takes data from social media accounts or user-written text to generates a user profile of personality traits and consumer preferences as well as music recommendations based on this profile. Through this app the user can experience how is predicted and play with the algorithmic inferences, but also the Big Sister app acts as an instrument for research, allowing us to explore and elicit participants' experiences of the app and their relationship to algorithmic profiling and recommendation systems in general. Through an open call, we invited participants in Chile and the United Kingdom to use Big Sister and to be interviewed about their experience. Using the fresh qualitative method known as "trace interviews", we examine how people understand, inhabit and shape algorithms through habitual use and in turn are shaped by these algorithms in their everyday life. And at the same time, the development of Big Sister and the question of how to maintain engaged the user provoked technical, epistemological, legal and ethical issues, forcing us to re-thought some of our own methodological assumptions and goals.

Doing Data Together: Intervening In Urban Planning With Digital Methods *Anders Koed Madsen, Aalborg University*

One year ago researchers from TANTLab and employees from GEHL architects decided on pursuing an experiment together. Driven by a shared interest in bringing social issues into the technical paradigm of 'the smart city' we set ourselves the task of making the diversity of Copenhagen's social infrastructure legible through digital traces from Facebook. One result of the experiment was this interactive website: www.whentheusersbreakthebubble.netlify.com Based on interviews and video-footage from the experimental process, this paper critically discusses how the experiment intervenes in the existing 'professional vision' (Goodwin, 1994) of the architects. With inspiration from the pragmatism of Pierce (1878) and Dewey (2018) – as well as Don Ihde's (2000) notion of 'epistemology engines' -the paper will argue that choices about operationalizations and interaction with datascapes are empirical moments that stimulates specific explications of normativities and assumptions on part of all parties engaged. This will be exemplified by diving into two tensions that emerged between the existing professional vision of the architects and the affordances of digital methods during the experimentation. The first concerns the commitment of architects to a physical conceptualization of space whereas the other concerns the professional commitment to demographic categorizations of social groups. Since digital traces are vague on both parameters, the concrete data experiments forced reflection on the importance of these commitments and the extent to which it is desirable that new modes of datafying the city bring with them new urban ontologies. The paper discusses the experiment with reference to the STS-native method of 'participatory data design' (Elgaard et al., 2017). References: Dewey, J. (2018). Logic-The theory of inquiry. Read Books Ltd. Elgaard, T. et al. (2017). "Participatorisk data design: En ressource for capacity building". I H. K. Krogstrup (red.), Fremtidens offentlige organisering: udvikling gennem samskabelse og capacity building København: Hans Reitzels Forlag. Goodwin, C. (1994). Professional vision. American anthropologist, 96(3), 606-633. Ihde, D. (2000). Epistemology engines. Nature, 406(6791), 21. Pierce, C. S. (1878). How to make our ideas clear (selected excerpts). The age of analysis: 20th century philosophers, 143-153.

Session Organizers:
Lina Franken, University of Hamburg
Kim Fortun, University of California Irvine
Mike Fortun, University of California, Irvine
Gertraud Koch, University of Hamburg
Chair:
Lina Franken, University of Hamburg

111. Health and Care Imaginaries
8:00 to 9:40 pm
virPrague: VR 08
Participants:

Boxed-In & Beside: (Un)Situating Indigenous & Biomedical Health Infrastructures in Wall Mapu/La Araucanía, Chile *Randall C Burson, Department of Anthropology, The University of Pennsylvania*

Within long-standing conflicts between the Chilean State and Mapuche Nation, indigenous activists in the 1990's attained legal recognition of indigenous peoples' rights to culturally-competent health care. To fulfill this promise, the Chilean government created a network of "intercultural" health services by building additional clinic spaces; reallocating existing space; and hiring/contracting Mapuche healers, intercultural health

facilitators, and support staff. However, what therapeutic subjectivities have these infrastructures produced and allowed? Recent ethnographic focus on infrastructure, especially its role in State-making in Latin America, has largely overlooked the physical infrastructure of clinical spaces and health systems. This paper addresses this gap by considering how the spatial relationships and infrastructural capacities of intercultural health impact caregiving. I draw on interviews and participant observation with Mapuche healers, intercultural health facilitators, and administrators as well as emblematic examples of health infrastructure. This paper focuses on two infrastructural relationships: the "Box," a small office within a biomedical clinic, and the "Module," a separate structure built beside a larger and otherwise contiguous hospital/clinic. These relationships place indigenous medicine within or in the shadow of biomedicine, generating not only spatial limitations but also unequal power dynamics between these knowledge systems that change healing practices. Furthermore, I argue these infrastructural inequalities are produced not by decay/ruination (Velho and Ureta 2019), but precisely through the effective materialization of neoliberal and colonial logics that disrupt Mapuche healing. Nevertheless, considering paradoxes (Howe et al. 2016) within patchy infrastructures, I highlight already-existing configurations of intercultural health as alternative ways to claim space for care.

Crisis-in-the-Making or Crisis-Making? Tales from a Regionalization of Elderly Care in the Netherlands *Iris Wallenburg, institute for Health Policy and Management; Jitse Schuurmans, Erasmus University Rotterdam; Dara Ivanova, Erasmus School of Health Policy and Management; Roland Bal, Erasmus University Rotterdam*

In STS literature, places are usually depicted as emerging entities; as locations, spots or geographical areas that are imbued with meaning and affect, generated through shared histories, symbols and storytelling (e.g. Tom Gieryn's 'truth spots', 2018). In our research, we study caring regions that are purposefully pieced together to speculate on a future of collaborative elderly care provision, aiming to find an answer to the increasing problem of a greying population and healthcare personnel shortage, particularly in rural areas. We examine how 'crisis' is put forward as a 'tactful script' to create urgency and foster experiments in regional collaboration – also seeking to give shape to a region as a place of care. We draw on an ongoing action-oriented research project in the Netherlands (2018-21), covering 14 administrative regions in which local actors (i.e. healthcare providers, health insurers, municipalities, policy makers) seek to –and struggle with –developing regional collaboration. We reveal how the crisis script destabilizes the old script of institution-led and physician-centred elderly care; yet the script is also highly ambiguous as it lacks clear answers (i.e. 'what actually makes up a region?', 'how should sustainable inter-organizational are be organized?') as well as policy strategies to constituting a caring region. Furthermore, we reflect on our own (and surprising) role as 'crisis maker' and facilitator of regional transformation; how are action-researchers inscribed in the crisis script, and with what consequences for the unfolding of a speculative future of regional elderly care?

"Go to Chigonela!": Locating 'good care' at a Tanzanian maternity waiting home *Megan Cogburn, University of Florida*

Where care should be provided for pregnant women and mothers has been a prominent policy concern in Tanzania over the last century. In recent years, homebirths have been banned and mandatory hospital referrals implemented for many pregnancies. Prenatal care consists of nurses instructing women to go to the hospital maternity waiting home, known locally as Chigonela, before expected delivery dates. Based on eight-months of ethnographic research conducted in one maternity waiting home in rural Tanzania, this presentation explores what practices and understandings count as care, when, why and to whom? I show that place and temporality —a woman's early arrival at the hospital—influence much of what counts in the making of 'good care' today. However, as women are left to care for themselves once at the maternity waiting home, these same axes of care

(time and space) are called into question. The material realities of crowded beds, clogged toilets, and petty theft pose challenges to daily life at Chigonela, leaving many of its residents to wonder where care is located. The maternity waiting home thus becomes a site shaped by and shaping competing modes of good care and governance. It is a space that seeks to fashion rural, pregnant women into neoliberal, self-caring subjects, at the same time it assumes they cannot care for themselves and are in need of state intervention. The maternity waiting home emerges as a space to rethink traditional forms of governance, (re)imagining the bodies of poor, rural pregnant women, and how best to care.

Implementation Over Time(s) and Across Context(s): Early Identification of Frailty in Alberta, Canada *Meaghan Brierley, Alberta Health Services; Sara Mallinson, Alberta Health Services; Stephanie Hastings, Alberta Health Services; Rima Tarraf, Alberta Health Services*

Introduction: Expanded supports for older people at the early stages of frailty in the primary care context are part of ongoing efforts to shift to people-centred health systems. In 2016, The Canadian Frailty Network (CFN) funded a cross-Canada study aimed at helping primary care providers identify older people at risk of becoming frail. The tools implemented encourage patient engagement and shared-decision making, and the matching of community dwelling older Canadians to targeted community supports. This presentation focuses on Alberta, one of three regions of this cross-Canadian study. Methods: Researchers worked in two phases. The first phase comprised pre-implementation focus groups (n=15) and interviews (n=8) to afford an understanding of present care practices, build implementation plans, and develop relationships with health care practitioners. The second phase included a three-hour training session, update meetings, and ongoing informal interactions and support for those implementing the program tools. The research team agreed on broad themes during analysis of focus groups, interviews, and field notes, including post-implementation discussions (NVivo 12). Results & Contribution: Implementation processes that began with engaging primary care physicians found greater support with nursing staff and an expanded focus on community initiatives (e.g., community organizations, and municipal governments). For this context and time, strengthening people-centred health systems begins with caring research practice at the boundaries of both acute care and community. This presentation discusses the experience of researchers during shifting interpretations of what care includes, and where care is situated: who or what is responsible for creating connections for older Canadians?

Tying Regions To Places *Jitse Schuurmans, Erasmus University Rotterdam*

Regions are being (re)discovered as places for care. Recent theoretical approaches, that found their origin in social geography, conceptualize (health)care regions as assemblages of heterogenous 'actants' such as, organizations, policies, resources and people, that are linked into a provisional 'territorial formation' (Latour, 2005; Lorne et al. 2018). While such conceptualizations astutely recognize the instability and fluidity of regional interorganizational collaborations and the diversity of institutional actants that cooperate in provisional alliances, its fits uneasy with an understanding of healthcare places as geographically placed, as sites imbued with meaning and enmeshed with the lived experiences of human actors. (Healthcare) regions in this relation approach seem to be abstract formations, ever changing, spatially unbounded, that 'lodge' into certain places (Allen & Cochrane, 2007). However, how these regional assemblages are entwined with places remains unclear. This paper aims to elucidate this relation by introducing the metaphor of '(un)tying', which pinpoints to the processes through which geographical places, materialities, human actors and ontologies of care emerge as complex, messy and entwined. It draws on insights gathered through ethnographic research on regional initiatives in elderly care in the Netherlands. In these initiatives, healthcare providers experiment with novel work arrangements and a closer collaboration with peers in a certain geographical area. We argue that regionalization is far from the neat process of strengthened and intensified collaboration that

policy makers depict it to be. Instead, it is a process of tying and unyting relations, work practices, polices, people, organizations and resources into a messy whole.

Session Organizer:
Roland Bal, Erasmus University Rotterdam
Chair:
Roland Bal, Erasmus University Rotterdam
Discussant:
Martyn Pickersgill, University of Edinburgh

112. Classic STS Papers: Session 3
8:00 to 9:40 pm
virPrague: VR 09
Participants:

"Nonorganic Life" as Classic Paper: Manuel Delanda and STS *Alexander Jenseth, Rensselaer Polytechnic Institute - STS*

Manuel Delanda has been an active and influential self-taught scholar for 20+ years, working across fields to elaborate his perspectives relating to materiality, complexity, and scientific knowledge, among others, arguably culminating with his explanation of "Assemblage Theory". Though his work has often dealt directly with the Sciences—with a particular focus on the fields of complexity theory and so-called "far-from-equilibrium thermodynamics,"—and given his reputation as a philosopher of Science, Delanda is rarely discussed in the same breath as STS or Science Studies. The reasons for this are plentiful and worthy of elaboration; in light of the opportunity afforded by the panel, this paper aims to take a reading of a classic work by Delanda, "Nonorganic Life," and utilize an engagement with it to further speculate on Delanda's relationship with STS, ultimately suggesting his diverse and expansive catalogue as potentially integral to the "Classic STS" canon, if only as an "outsider" perspective/approach.

Susan Leigh Star's Allergy to Onions (subject to panel conventions) *Aryn Martin, York University*

I propose to revisit Susan Leigh Star's influential piece "Power, Technology and the Phenomenology of Conventions: On Being Allergic to Onions" (1990). Along with Haraway's Situated Knowledges, Star's article was groundbreaking insofar as it foregrounded feminist approaches to power, and located feminist concerns, unapologetically, in the heart of then-emergent network models in STS. Star's brilliant use of an utterly mundane site of exclusion – her allergy to onions and encounters at McDonalds – hints at the routine dispossession and attendant suffering of more momentous categories of experience, of castaways and monsters. While ANT's enrollments stabilize networks of humans and non-humans, Star draws our attention to non-users, those constitutively excluded, for whom the network/standard and its world-making effects are never stable, but a source of chaos and disorder. Star's piece was both corrective and invitation, opening a vista not just to winners in sociotechnical systems, but the multiple marginalities enacted through these systems that are so often (perhaps unlike McDonalds) obligatory passage points even for non-users. Star's rich piece has sections ripe for performative engagement on a topic that never stops being relevant to STS and broader social and political landscapes.

The Durkheim Test: Reenacting Susan Leigh Star's "Structure of Ill-Structured Solutions" *Sebastian Gießmann, University of Siegen, Germany*

"The structure of ill-structured solutions" (TSOISS) is a somewhat hidden classic. It might be regarded as the 'other', digital and diagrammatic boundary objects paper. Within my contribution I want to get back both to the computer science aspects that addressed its original audience at a May 1988 workshop at Lake Arrowhead, California, and the ethnography of the MIT AI Lab it is based on. Written at the end of the last summer of connectionism and Distributed Artificial Intelligence, Leigh Star's paper should be read anew as a primer for STS and Media Studies research into machine learning. While the text was bold in twisting Herbert Simon's "Structure of Ill Structured Problems", it was also visionary in proposing a 'Durkheim Test' for sociotechnical systems. TSOISS primarily turned this into an

argument against the mythology of the Turing Test in computer science. Surprisingly, the Durkheim Test is rather a pointer here, proposing to deal with "real time design, acceptance, use and modification of a system by a community". Could we extend Leigh Star's social theory proposal, or even re-appreciate her longstanding work on boundary objects as a more extensive Durkheim test it itself? How could it be pursued, pragmatically – how to test machine learning, after all? –, methodologically and epistemologically? When we attempt to redraw the boundary object diagrams of TSOISS for the 2020s, how are they going to look like?

Tyranny and the Temporalities of Comparative Inquiry *Matt Spencer*

I would like to take this opportunity to return to Marilyn Strathern's paper 'The Tyranny of Transparency' (2000). Strathern has been a significant interlocutor for STS, albeit with a tendency to keep a certain distance, referring, for example, to an anthropological inclination to be 'diverted by kinship' (1996: 521) in her own analyses of science and technology. But as, in the 1990s, her project of comparative enquiry took her into the worlds of biotechnology, intellectual property, and audit, she created a number of obligatory reference points for our field. In this contribution, I would like to use a revisiting of 'The Tyranny of Transparency' to reflect on the broader salience of Strathern's work for scholarship in STS. The paper gives us a particularly explicit account of her analytical method and its awkwardness of fit with the norms of research evaluation ascendant at that time, within an ordering of analysis that serves in its own right as an instance of her characteristic form of narrative. There is, I will argue, an enduring value in examining Strathern's technique of comparative enquiry, and the challenges it poses for thinking about theory, method, and empirical data, as they refract in fresh ways through the evolution of our field.

Session Organizers:
Nicole C Nelson, University of Wisconsin Madison
Sergio Sismondo, Queen's University
Chair:
Nicole C Nelson, University of Wisconsin Madison

113. Means And Ends Of STS (Part I): STS As Theory And Practice
8:00 to 9:40 pm
virPrague: VR 10
This is the first session in a set of three examining the role and contribution of STS in a post-truth context. The papers in this session focus on how the role and/or contribution of STS can be theorised.
Participants:

Against Modernist Illusions: Why We Need More Democratic and Constructivist Alternatives to Debunking Contentious Contents *Jaron Harambam, Institute for Media Studies - KU Leuven*

Post-truth alarmism centers around the presence and popularity of various forms of contentious contents (conspiracy theories, fake-news, disinformation) in the public sphere. The question of how we, academic scholars, should deal with this is far from straightforward and proves a divisive element. Various societal and academic actors argue that contentious contents should be debunked and countered by the hard facts provided by established epistemic institutions. But are we the appropriate actors to correct people's beliefs and is that even the right and most productive to do? Drawing on years of ethnographic research experiences with various conspiracy cultures, I argue and explain in this paper why debunking contentious contents is not possible (can scholars actually know the real truth?), not professional (is taking sides in truth wars what we should do?) and not productive (providing more "correct" information won't work as knowledge acceptance is not just a cognitive/epistemic issue). Instead of reinstalling the modernist legitimation narrative of science, I argue in this paper for an epistemologically stronger and sociologically more effective alternative. Building from research and experiments with epistemic democracy in STS, I propose to have "deliberative citizen knowledge platforms", instead of elite experts groups alone, asses the quality of

information in the public domain. STS-scholars are well-equipped to facilitate these processes of showing and discussing the robustness and manipulation of information. Such societally more representative bodies should enjoy greater legitimacy and epistemic diversity to better deal with contentious contents and the broader societal conflicts over truth and knowledge they represent.

"Fake News" In the Classroom: Critical Pedagogy As An Antidote To Post-Truth In Higher Education *Shan Mohammed; Jessica Bytautas, University of Toronto; Quinn Grundy, Lawrence S. Bloomberg Faculty of Nursing, University of Toronto*

Higher education is increasingly subject to the politically polarizing effects of post-truth discourse. In the post-truth era, scientific data and analyses have become destabilized in favor of misinformation and the privileging of emotionality as the basis of knowledge. The traditional authority of the academy as a site of scientific and technological expertise has been challenged by the uptake of social media as a legitimate knowledge source and the populist rhetoric of "fake news". These trends are especially potent for educators who employ critical pedagogy to encourage students to dialogically think about dominant and often destructive social discourses and relations of power/knowledge. The classroom as a site of open mindedness and intellectual curiosity is replaced by a climate of divisiveness and concerns about "leftist professors." Despite these growing tensions, the effects of this discourse on teaching and learning have been undertheorized. Through a conceptual review of the pedagogical literature, we explore the question: "What are the origins, definitions, and impacts of post-truth in higher education?" Our results suggest that post-truth is constituted by the rise of neoliberalism, individualism, and commercialism in higher education and by the erosion of the university as a place of critical praxis. Critical pedagogy offers a viable avenue for political action that resists, interrupts, and counteracts the threats of post-truth to responsible scientific and intellectual inquiry. However, critical pedagogy risks falling into the post-truth "epistemological trap" by engaging learners in moralism and by failing to engage in rigorous self-reflection about the political effects of a critical approach.

A moment of post-truth for STS *Johan Soderberg*

Many STS scholars have expressed alarm that the public's reaction to post-truth will bring back scientism. Behind the revival of scientism, something even more fearsome lurks, namely the return of ideology critique. Post-truth signals the return of ideology critique-approaches to STS. One pillar of this approach is the notion of "false class consciousness". In this presentation, I will argue that the STS community needs to restore this concept in a reworked form, in order to stay up-to-date with the changing, post-truth times.

Session Organizer:
Rob Evans, Cardiff University

Chair:
Kjetil Rommetveit, University of Bergen, Norway

114. Alchemical Transformations 3: On Matters of Substance and Change
8:00 to 9:40 pm
virPrague: VR 11

This panel explores transformation through the lens of alchemy. We conceptualize alchemy capaciously, emphasizing acts of transubstantiation in which matter undergoes physical and discursive change, thereby acquiring new value, vitality, or meaning. Medieval alchemists sought to transform base into noble metals through proto-scientific practices. Catholic Christians convert bread into the body of Christ though ceremonial consecration. Alchemical transformations abound. Fermentation and prescribed fire, DIY drug labs and biotech benches, compost teas and artisan cheese: everywhere are transitions of raw to cooked (Lévi-Strauss), profane to sacred, waste to worth, and rot to regeneration—not necessarily in that order, not necessarily for the good. Alchemical change occurs at the levels of substance and symbol. It is mediated by rituals, regulations, institutional regimes, and technical apparatuses. Of interest are black boxes and boundary objects—occult or opaque technologies of transformation and the mutable materials that

traverse them. Alchemical transformation invites examination of matters at once ontological, political, epistemological, and ethical. These papers explore alchemical transformations, material and metaphoric, that are attentive to matters of concern as well as care (Latour, Puig de la Bellacasa). What is modern alchemy, and how might alchemical transformations inform our understanding of (alter) scientific practices, bio-capitalism, ecologies of production, intra-action, and social change? We strive to bring decolonial and feminist science studies into dialogue with "alternative" sciences to better understand processes of transformation and the agency of STS (its subjects and objects) in a time of accelerating change and emerging worlds.

Participants:

The shapes of fog: Transforming atmospheric phenomena into water and theory machines *Chakad Ojani, University of Manchester*

In recent years, fog has emerged as a material possibility among NGOs, conservationists, and various civil society associations in Lima and along the South American Pacific coast more broadly. By setting up fog catchers that trap and transform water droplets suspended in the air, fog becomes folded into small-scale water provision systems and infrastructures of reforestation. In these initiatives, experimenters set out to gain firmer and more lasting grips on the atmosphere, so as to effect more continuous transformations of fog into water by obstructing the atmosphere's capacity to hold water droplets apart and floating. This involves experimental practices and field studies intended to substantiate viability and detect locations with highest potential for transforming fog into less ephemeral forms. Along the process and through the techniques, materials, and technical apparatuses deployed to render fog substantial, fog emerges in a number of different shapes: as parts, relations, and volumes of water, to name but a few. In this paper I discuss these various shapes in relation to the different and sometimes contradictory forms that fog and other atmospheric phenomena take through alchemical transformations in the social sciences and humanities, whereby atmospheric phenomena become theory machines with which to theorise and think about other things. An account of fog capture and material transformation along the Peruvian coast helps showing how atmospheric thinking depends on the material assemblages and emerging technopolitical worlds within which materials are intra-actively enacted and thought with.

Kodak Arcana: Alchemical Capitalism and the Material Transformation of Social Bonds *Ali Feser, University of Chicago*

As alchemical texts began to circulate as printed books in the fifteen century, its techniques were increasingly concealed through allegories of reproduction, death, purity, and transcendence. Thus, as a field of practice, alchemy came to be characterized as the metaphysical, spiritual counterpoint to the emergent discipline of chemistry. To the contrary, this paper begins with the claim that alchemy was foundational to the ideologies and sensuous labor practices that became experimental and industrial chemistry (Bensaude-Vincent and Stengers,1996). Drawing on forty months of ethnographic research on the Eastman-Kodak Company, I argue that chemistry inherits from alchemy the premise that practitioners can transform the bonds of social life through the expert manipulation of the physical bonds of matter. I trace the reoccurrence of alchemical imagery, idioms, and ideologies in the writings of Kodak photoscientists and throughout the visual culture of Kodak film in order to demonstrate how the psychospiritual transformations signature to early modern alchemy were reanimated in the twentieth century utopian project of transforming the world through industrial chemistry. By the 1940s, this wish was potentiated by the fact that oil appeared to be replacing coal as the "prima materia" of industrial chemistry; oil, as Kodak scientists discussed in their writings, can be transformed into nearly any other substance. Finally, this paper figures alchemy itself as a philosophy of reproduction, material specificity, and embodied knowledge, and it posits an allegoric continuity across alchemical processes of transmutation and chemocapitalist logics of substitution.

Queer Alchemy and the Modern Mikveh Movement *Cara Rock-Singer, University of Wisconsin-Madison*

The Modern Mikveh Movement (MMM), a collection of North

American Jewish feminist projects, is reclaiming what many have considered an irredeemably misogynistic form of bodily disciplining: post-menstrual immersion in the Jewish ritual bath. While mikveh is traditionally used to regulate female sexuality within heterosexual marriage, feminists are distancing mikveh from discourses of purity and repurposing it as a technology for marking and facilitating transitions. The metaphor of birth is central to these projects, since Jewish textual traditions depict mikveh as rebirth from the womb of God. Extending Michelle Murphy's work on the radical women's health movement, this paper examines the MMM as "critical, experimental engagement" with American Judaism, technoscience, and spirituality. In particular, it will focus on how queer activists are challenging the normativity of cis-bodies, heterosexual marriages, and Jewish exceptionalism and questioning reproductive futurism and gender essentialism within the MMM. Its central figure is the Toronto-based performance artist Orev Katz, whose 2016/8 installation "MKV" recast mikveh through the metaphor of alchemy. Katz guided participants in daylong experiences that involved collecting water from rivers polluted by Kodak and mixing a personalized cocktail of tears, ejaculate, or injectable hormones in fermentation pots crafted by a trans Jewish artist. This paper will examine how the experimental engagement with the metaphor of alchemy resists the dominance of disenchanting, Enlightenment teleologies which undergird state biopolitics and capitalisms that do violence to vulnerable bodies. In so doing, it poses alchemy as a way to rethink contemporary relationships between religion and science.

"Emeryville is Weird:" Cosmopolitics of Urban Renewal in San Francisco Bay Area's Biotech Corridor *Annie Hammang, Arizona State University*

When I tell people I work in Emeryville the near universal response from those that know it is, "Emeryville is weird," without further comment. Emeryville is a square mile city in the San Francisco Bay Area that has undergone significant economic renewal in recent decades, and its inarticulate weirdness is a social fact. Beneath a manicured cityscape, dotted with homeless encampments, is a checkered past: toxic waste of old paint factories, the west coast arm of a gambling and speakeasy ring, and what was the world's largest shellmound sacred indigenous burial site, now paved over by a shopping mall. It is difficult to talk about Emeryville's weirdness without resorting to social constructivist explanations. The social sciences find themselves at an impasse: how to move beyond the flattening of undifferentiated moral relativism, without retreating to the old positivism of human universals (Latour 1986; Barad 2006). This talk asks if alchemy, and its notions of simultaneous work inside and outside the self (Yates 2001), is a concept that can help understand: what does it mean that venture biotech thrives in spaces with uncomfortable affect? It draws from ethnographic work in the city, largely within start-up biotech companies, directed toward salvational, environmental ends. To dismantle notions of placeless science and technology, it considers Emeryville as a hyper constructed no-space, in which specific histories are relegated out of site, but not out of affect; which includes vectors of neoliberalism, deindustrialization, gentrification, settler colonialism but cannot be reduced to any one of them.

Chasing The Philosopher's Stone: In Search Of Healing Practices After Austerity *Kieran Cutting, Open Lab, Newcastle University*

The introduction of austerity policies in the United Kingdom was part of a wider withdrawal and reconfiguration of the role of the state. In the context of youth support services, this reconfiguration was not just a reduction in overall levels of funding, but resulted in a sector-wide shift towards "a common measurement framework". In order to continue receiving funding (and therefore continue existing), organizations which support young people have moved towards "justification practices", focusing their organizational effort on satisfying these performative and discursive aspects rather than understanding how best to support young people. Spurred on by this evaluation-centric culture, justification practices act as an obligatory point of passage that suppress the formation of boundary objects -

tightening the hegemony of neoliberalism and preventing young people from finding new ways of imagining new futures and healing collectively. In this paper, I suggest viewing these profoundly negative changes alchemically can show us how it still possible to thrive after destruction and violence - how decay can be generative. Justification practices represent the "blackening" stage in the search for the philosopher's stone, a moment of destruction in which all matter becomes homogenous. Reflecting on my ethnographic and participatory design work with care-experienced young people and charities, I highlight movements beyond this homogeneity by detailing practices which could embody the subsequent "whitening" (speculation and futuring), "yellowing" (connection and empathy) and "reddening" (collective healing) stages. They enable the formation of boundary objects, an integration of vulnerability and trauma, and articulate a strong collective subjectivity.

Session Organizer:
Bradley Jones, Washington University in St. Louis
Chair:
Bradley Jones, Washington University in St. Louis
Discussant:
Heather Paxson, Massachusetts Institute of Technology (MIT)

115. Disrupting Biomedicine: The Politics and Practice of Open Source and Biohacked Drugs and Devices
8:00 to 9:40 pm
virPrague: VR 12

Frustrated with the existing landscape of drug and medical device development—including its high costs, top-down research and development processes, and proprietary, non-interoperable systems—grassroots efforts have emerged that counter dominant structures and practices in the production and use of biomedical knowledge. Biohackers, DIY biologists, medical device modifiers, and open source pharmaceutical and medical hardware initiatives are examples of such burgeoning critiques and reactions. Rather than submit their bodies to clinically defined models of patienthood and government-regulated commercial products, these individuals strive to reshape biomedical science and technology to address systemic failures, or to fit their wills. These projects—such as developing open source estrogen, insulin, epi-pens, prosthetics, and automated insulin delivery systems—aim to disrupt the hierarchical structure of traditional healthcare systems and challenge the role of professionalized, credentialed experts in determining medical care. This panel seeks to explore open source, DIY, and hacking practices—past and present—across diverse health conditions and diseases, therapeutics, regulatory spaces, and healthcare systems. We invite contributions exploring these practices' modes of resistance, as well as their opportunities, barriers, and limitations. Papers might examine, for example, how such projects build on or depart from more traditional patient advocacy and medical social movements; the different forms of risks, conceptions of empowerment, and promissory claims entailed; critical forms of knowledge production; or the shifting socio-technical landscape enabling these developments (e.g., smartphones, 3D-printing, predictive algorithms, open software, novel hardware tools). This session examines these questions in the context of research, advocacy, and treatment of diabetes.

Participants:

Hybridity and Fluidity of Crowd Organising in Biomedicine *Simeon Vidolov, University College Dublin; Emma Stendahl, University College Dublin; Susi Geiger, University College Dublin*

Peer production and open innovation such as open-source software movement bring together individuals with diverse motivations who self-organize contributions in modular and granular manner (Benkler 2006). Although such forms of open collaborative innovation share many similarities with crowd-enabled activist/ advocate networks, they are also considered different. On one hand, they are both different from the conventional bureaucratic organizing, and have disruptive influence on established societal and market structures; on the other hand, they diverge in their structural and ideological scaffolding (Bennett & Segerberg 2012). In particular, open innovation networks are usually gatherings around a functional or clear common goal with stratified leadership and strong coherence, whereas crowd-enabled advocate networks are

performed through 'connective' action that loosely 'stitches together' individuals holding diverse concerns. This paper will examine the inter-linkages between such forms of crowd organising in the diabetes space. More specifically, we explore the #WeAreNotWaiting network, established by patients and parents of children with Type-1 diabetes (T1D) seeking to contribute to the technological advancement in the T1D healthcare. The founding core were tech savvy individuals, sharing a 'hacker' ethos, who gradually adopted roles of DIY (open source) and Commercial entrepreneurs. In the recent years, the #WeAreNotWaiting expanded into a large-scale hashtag network, attracting a broader patient advocacy public. By drawing upon ethnographic, longitudinal data comprised of observations, interviews and twitter data, we offer nuanced insights into the dialectical tensions and practices of the open innovation and patient advocacy crowds, and the ways they have come to co-constitute the #WeAreNotWaiting network over time.

Hacking Diabetes: Patient Activism, Open Source Medicine, and DIY Insulin Pumps *Colleen Lanier-Christensen, Harvard University*

The US Food and Drug Administration (FDA) has called for greater patient involvement in healthcare research, development, and regulation. Thousands of people with type 1 diabetes (PWT1D) and parents of PWT1D have taken this a step further, actively challenging traditional models of device development and clinician-patient relationships. Rallying around the hashtag "#WeAreNotWaiting", this community of amateur coders has built "closed-loop" automated insulin delivery systems using open source code, custom-built smart phone apps, Bluetooth communication devices, continuous glucose monitors, and old out-of-warranty insulin pumps. While skeptical regulators and clinicians warn of the risks of modifying life-sustaining technologies, proponents emphasize the risks of the status-quo— of technologies that do not meet their needs. By reverse-engineering and hacking medical devices and software, this community has created more flexible and customizable medical devices, resulting in improved clinical outcomes and quality of life. Further, through their engagement with the FDA, activists have paved the regulatory pathway for commercial automated insulin delivery systems now available in the US, and DIY users' data will serve as the basis for the FDA's safety review of a new commercial version of a DIY system. Based on historical and ethnographic research, including my own experience as a PWT1D using a DIY system, I explore the changing diabetes care landscape, commercial and regulatory responses, and the risks and rewards of DIY medical technology. This talk demonstrates how diabetes device hacking challenges the commercial, medical, and regulatory status quo in ways that both build on and depart from traditional patient activism.

"Trickiness All Around": Open Insulin and the Thickets of the Biocapital Landscape *Andrew Ian Murray, University of California, Santa Cruz*

The Open Insulin Project is a volunteer-led, community lab-based effort to develop a production protocol for affordable insulin. Drawing on precedents in the world of open-source software, the Project represents an intriguing form of resistance to biocapitalism and the commodification of healthcare. However, as the Project has grown and progressed, the differences between open-source software and open-source biomedicine have asserted themselves. Drawing on over two years of fieldwork with the Open Insulin Project, this paper describes how the prospect of biohacking medicine presents unique challenges that frustrate members and alter the Project's course. The obstacles the to the Project's overall aims of providing affordable insulin are material, legal, and regulatory. Cutting across all of these domains are a lack of labor power and financial resources. Faced with these challenges, there is a threat that the Project will actually reproduce key features of biocapital—a focus on "techno-legal" dimensions (Parthasarathy 2017) at the expense of broader politics, the proliferation of promissory and speculative rhetoric, and the restriction of open communication and democratic decision-making—and thereby limit their capacity to advocate for broader systemic change.

Politically Engaged Research Within DIY/Biohacked Medicine

Efforts: Opportunities and Challenges from the Open Insulin Project *Nicole Foti, University of California, San Francisco*

New forms of resistance, made possible through biotechnological advances, are increasingly emerging to counter harms fueled by biomedicalization and corporatized biomedicine (Clarke et al., 2003). This paper explores the role of STS scholars in enacting, building upon, and promoting modes of resistance as situated knowledge producers in DIY/biohacked medicine efforts. Drawing on Juris and Khasnabish's (2013) collection "Insurgent Encounters: Transnational Activism, Ethnography, and the Political," this paper examines opportunities and challenges for politically engaged social science research within groups working to challenge the status quo in biomedicine. Drawing on 18 months of participatory ethnography with the Open Insulin Project, I examine opportunities such as the role of researchers as "weavers" or "knitters" (Maribel Casas-Cortés et al., 2013) of knowledge among a crowded field of knowledge producers. Challenges include unforeseen tensions in the field, such as factions arising within groups and navigating sides, and problems arising from conjoining academic and activist scholarship. Occupying a hybrid role – activist insider and academic – offers a sense of bridging the two worlds but also operates as a position "haunted by the figure of the snitch" (Juris and Khasnabish, 2013: 33), i.e. being inside the movement and circulating knowledge to the very institutions it seeks to challenge. This paper reflects on how engaging in politically committed research within DIY/biohacked medicine efforts offers potential to move beyond documentation and analysis of resistance initiatives and toward deeper collaboration and solidarity.

Innovative Bodies: An Ethnography Of Medical Device Hacking In Contemporary India *Anisha Chadha, New York University*

In globally connected high-tech sites, doctors, biomedical engineers, and designers are collectively forming start-ups to create new medical devices. They are developing a range of products, analog, digital, and hybrid. The Silicon Valley industry claims this growing "medtech" niche is determining the future of healthcare. Yet little attention has been given to the way this future is imagined and produced when it stems from the Global South. Over 15 months of ethnographic fieldwork in Bangalore, Delhi, Bombay, Chennai and the Bay Area, I traced the earliest stages of emergent medical device prototyping, before formal clinical trials. This paper will reflect on this research to demonstrate how and why medtech entrepreneurs self-identify as "frugal innovators," rejecting imported medical devices in favor of making their own, low-cost material technologies within and for India. In a startup ecosystem largely funded by the current right-wing administration's investment in indigenous biotech, these—overwhelmingly elite, male—innovators claim that they alone know how to properly hack health issues pertaining to Indian bodies and infrastructures. By participating in and observing the stages of production of such indigenous "low tech," this paper will investigate the co-production of prototypes and test subjects throughout the invention process. Given the increasing rates of metabolic disease in the South Asian subcontinent over recent decades (Solomon 2016), it will examine the creation of a specific diabetes diagnostic device to argue how novel forms of biocapital rooted in the Global South shed light on larger political-economic histories of Indian citizen science and biohacking.

Session Organizers:
Colleen Lanier-Christensen, Harvard University
Nicole Foti, University of California, San Francisco
Chair:
Nicole Foti, University of California, San Francisco
Discussant:
Hélène Mialet, York University STS

116. Ways of Knowing the Digital Anthropocene (Sensing and Seeing)
8:00 to 9:40 pm
virPrague: VR 13
This session engages with ways of sensing and seeing the Digital

Anthropocene. The papers examine how various digital technologies mediate environmental issues, from air quality in Copenhagen to militarized archaeological landscapes in Afghanistan. With a focus on knowing through sensing and seeing, some of the papers analyze the practices through which putatively digital and natural environments enfold and produce one another, while others take a more conceptual approach to thinking through these overlaps and interfaces.

Participants:

Engaging Environmental Data Justice to Conduct Civically Valid Air Monitoring with Oil&Gas Fenceline Communities
Lourdes Annette Vera, Northeastern University

This paper engages an environmental data justice (EDJ) framework to reflect on community-scholar-activist partnerships in building data infrastructures for participatory air monitoring near oil and gas facilities in rural Texas. EDJ recognizes the embodiment and materiality of environmental data while considering its role in perpetuating and/or challenging the matrix of domination- interlocking forms of oppression like racism, heteropatriarchy, and colonialism- that are perpetuated by conventional scientific practices (Vera et al. 2019). In Texas, residents challenge the ability of government and industry data to reflect their daily exposures to volatile organic compounds, air pollutants commonly produced by oil and gas operations that cause neurological, respiratory, immunological, liver, and kidney damage (Villa et al. 2017). While scientifically valid standards and protocols used by regulatory agencies and industry to measure VOCs are widely accepted, scientific validation rarely incorporates community perspectives. This imbalance leads me to conceptualize "civic validation," which does not oppose but instead complements scientific validation by incorporating community-generated data like results from citizen science monitoring, odor logs, stories, and photographs into scientific research and regulatory oversight. I develop the concept of civic validation as a component of EDJ, addressing residents' three key concerns: 1) Inappropriate siting of a state air monitor; 2) The lack of regulatory attention that limits residents' access to air monitor data and lengthens the time state agents take to respond to concerns; and 3) The absence of health-based regulations limiting allowed distances between homes and industrial facilities in Texas.

Making Sense of Urban Air *Rasmus Tyge Haarløv, IT University Copenhagen*

This paper explores how the introduction of Google's 'Project Air View', which measures polluting particles in Copenhagen, has an impact on definitions and perceptions of 'air quality'. Air pollution has long been known to have adverse health effects, and measuring it more accurately can contribute to public welfare by optimising both urban planning and citizen behaviour. However, what is seen as air 'quality' to different people is in practice located between objective measures, and subjective bodily experiences facilitated through the senses in everyday life. The aim of the paper is to generate findings that can both theoretically address debates in the qualitative social sciences about how people perceive of and react to data and numbers in relation to how experience is technologically mediated, and practically to aid our research partners in the Copenhagen Solutions Lab get the most out of the data generated by the Project Air View. Insights into both expert and citizen definitions of 'air quality' will enable Copenhagen Municipality to align the concerns of different stakeholders with political agendas related to the design of urban space. This includes how to prioritise the location of kindergartens, schools, industry or infrastructure in light of how people act upon air pollution data. Understanding how air quality definitions and data are interpreted under different circumstances will among other things improve the grounds for decision-making.

Sensing Landscape as a Media Object: A Case Study in Kandahar, Afghanistan *Saadia Mirza, The University Of Chicago*

To make a map is to give order to the world—to give it a "reasonableness which it doesn't necessarily possess", as William Boyd notes in his novel on wartime authority, An Ice-Cream War. By making the world appear rational and reasoned, maps describe more than the biophysical constitution of territory,

revealing instead an obsession with exactness and measurement; opening up a biography of disciplined sensing, observation, and knowledge. Long represented as an imaginative object, landscape represents the many aesthetic parameters of human consciousness. From the realistic to the surreal, landscape is as evocative as it is political. But in the age of a computational planet, what does it mean to sense a landscape as a digital media object? This paper opens up a view into the surreal aesthetics of a politically fraught space—representing landscape as a digital and virtual reality sensed by virtual means, and corded a language that aligns human perception to more-than-human technologies of sensing. Following a series of landscape visualizations created with remotely sensed data by the author under training and conversation with archaeologists, the research reflects on remote sensing processes for understanding the historical significance of militarized archaeological landscapes in Afghanistan; highlighting a geopolitical context. It scratches the surface of remotely-sensed data to reveal a peculiar ontology--a dataset that is not an image, but is certainly image-like. This liminality renders the notion of landscape more elusive than ever before. What it does leave us with are only the material traces of the ambient—the pixel, the point-cloud, pulses of light, scan lines, resolutions and densities. These mediated perceptions go on to serve as concrete evidence as well form scientifically-informed speculations about sites that are physically inaccessible to fieldwork. Array-based remote sensing has been on the rise since the late 20th century, influencing knowledge cultures across a wide spectrum--from geology, military planning, archaeology to landscape architecture, humanitarian activism, and artistic practices. This wide spectrum of uses is enabled partly by the declassification of datasets as well as the proliferation of sensing technologies, enabling myriad visual interpretations of a single landscape. The digital and virtual landscape is a computable surface that opens up imaginations of territory, topography, terrain and topology with a nuanced concept of materiality; one that is in stark relief to tangibility and physicality. The entanglement of aesthetics and objective knowledge mark this foray into remotely discovering Southern Afghanistan, through a landscape of data where the analyst digs like an archaeologist, but into virtual soils, revealing the politics and aesthetics of remote sensing. Note: This article is based on an ongoing research by the author component that is part of their scholarly research as well as a media arts practice involving a three-channel video installation with a VR component. The research is a product of conversations and hands-on training with archaeologists at the Center for Ancient Middle-Eastern Landscapes (CAMEL) at the University of Chicago.

Session Organizers:
James Maguire, IT University Copenhagen
Astrid Andersen, Aalborg University
Rachel Douglas Jones, IT University Copenhagen

Chair:
James Maguire, IT University Copenhagen

Discussant:
Jennifer Gabrys, University of Cambridge

117. Crafting Critical Methodologies in Computing: Theories, Practices and Future Directions (B)
8:00 to 9:40 pm
virPrague: VR 14

Participants:

Questioning practices of computing design, through the dialogue with testimonial textile crafting in Colombia *Tania Pérez-Bustos, National University of Colombia; Laura Cortés-Rico, Universidad Militar Nueva Granada*

In our presentation, we want to give a situated answer to the question: How can interactions between (feminist, postcolonial) STS and computing establish new methodological considerations? For this, we take the case of a research project that propitiated exploratory and material encounters between technology designers, anthropologists, and four memory sewing circles in Colombia, around the question of how digital textiles could "amplify" embodied and careful meanings of

reconciliation. These encounters allowed us to reconceive how to design technology, specifically through an inquiry process that pivoted around the making and the material dialogue between digital and textile crafts. We focus on two examples that contribute to unfolding this idea of reconceiving computing design. First, the crafting of a digital archive of testimonial textiles inspired by the materiality of a series of patchworks made by each textile collective, to document conflict and reconciliation events and processes. Second, the shaping of a testimonial digital textile composed by a set of embroidered speakers that make audible the stories of women around their textile practices. The technological design process, in both examples, has the practice of fieldworking together as central. It means that it occurred in these women territories, and also in our houses and laboratories, where we crafted software codes, databases, printed circuits, embroidered inductances, among others. We carefully witnessed and listened to those (human and non-human) who participated in this design process, which questioned us about the ways and temporalities of doing technology, particularly concerning the continuity of violence and the fragile possibilities of peace that persist in Colombia.

Software Art Practice in Aesthetic Programming *Winnie Soon, Aarhus University*

This presentation addresses the role of software art in programming practice and pedagogy. By introducing the forthcoming book "Aesthetic Programming: A Handbook of Software Studies" with a focus on power relations that are under-acknowledged, such as inequalities related to class, gender, and race, we draw upon examples from artistic (and critical design) practices as part of our argument that programming is not simply a practical tool that produces an artwork but is a critical-aesthetic object in its own right. The incorporation of software artworks explore the material conditions of software and operations of computational processes as practical and theoretical examples in the book, demonstrating some of the ideas in practice and offer unexpected epistemic insights to reflect deeply on the pervasiveness of computational culture and its social and cultural effects. Aesthetic Programming in this sense is considered as a practice to build things but also with the need, as we argue, to produce "reflexive work of critique". This comes close to Philip Agre's notion of "critical technical practice" with the drawing together of two different perspectives: formal technical logic and discursive cultural meaning. In other words, this necessitates practical understanding and knowledge of programming to underpin critical understanding of techno-cultural systems. This paper will shed light on ways to introduce technical materials in humanistic education, including STS, beyond just STEM curriculum, and how might we embrace both the technical aspect and formal qualities of code as well as imaginaries of code in scholarly works.

Reenchanting the Fetish: Critical Rituals of Human-Machine Interaction *Ceyda Yolgormez, Concordia University*

This paper seeks to integrate theories of social creativity with observations on rituals of human-machine interaction. The contemporary imaginaries around the human-machine relations are condemned to an either/or logic. Either the machines become subservient to human needs or become harbingers of corporate capitalism. Moreover, there is an ongoing fetishization of AI that feeds from the cycles of hype; and the critics continuously call for disenchanting the 'magic' of AI (Elish & boyd, 2017). This paper seeks to destabilize the aforementioned binary framework of domination while salvaging a socially creative conception of fetish. The empirical basis for this argument comes from a research-creation project "The Machine Menagerie", an interactive installation comprising a collection of small autonomous robots living together in a transparent enclosure. Ranging in shape and sophistication, these artificial creatures have no "function". They spend their time entangled in a mesh of interactions with each other and the environment. They are embodiments of certain human ideas about life and consciousness, and as such they embody the fetish rather than resist it. The presentation will rely on findings from participant observation that show relations that facilitate a co-investigation of being-togetherness, and an attitude of 'learning to be affected' (Latour, 2004) within such fetishized interaction orders. Coming

from sociological and anthropological literature, the paper criticizes the colonial conception of fetish in Western epistemologies, and rather seeks to locate social creativity within the purview of fetishizing rituals (Graeber, 2005), and raise methodological questions that would benefit critical examinations of ethical relations with machines.

Session Organizers:
Loren Britton, University of Kassel
Goda Klumbyte, University of Kassel
Juliane Jarke, University of Bremen
Chair:
Claude Draude, University of Kassel, Germany

118. Whose Dream House?
8:00 to 9:40 pm
virPrague: VR 15
The home has long been figured as a site of tension between the outside world and its most intimate interior. Historically, smart homes are associated not only with a more leisurely future, but nostalgia for a comfortable middle-class existence and gendered division of labor (Schwartz Cowan 1985). Smart appliances perform the duties of a housewife, optimized according to the owner's wishes. But they also rely on specific protocols and physical systems to work their magic. People must perform manual and digital housekeeping within the smart home, or what Lynn Spigel (2005) calls "posthuman domesticity." Despite the maintenance work they require (Strengers and Nicholls 2018), smart homes have a ghostly aura. Alexa's creepy laugh is the virtual housewife gone rogue. Moving beyond the built environment, families using smart tech track one another as they enter and leave the domicile. The domestication of smart technologies theoretically gives consumers control over their environment and family. The flip side of the security supposedly afforded by the smart home is the system's hackability, which subjects the home's inhabitants, including children, to surveillance (Barassi 2017) while fostering domestic abuse, as the smart home is often designed and controlled by men (Bowles 2018). This panel traces the gendered impacts of technological labor as the home becomes imbricated with new forms of surveillance, security, and spookiness. Following STS explorations of automation and gender— from dishwashers to Siri— papers may consider the history of domesticated technology from the 1950s forward and/or the sociological impacts of current smart technology usage.

Participants:

The Electric Nursery *Hannah Zeavin, UC Berkeley*

Growing out of feminist science studies literature on reproductive technologies and Ruth Cowan and Arlie Hochschild's work on domestic labor, this project investigates the ways in which technologized parenting is interrelated with moral and psychiatric concepts of parental fitness, presence, and absence across the 20th century and into our present. I will discuss two key moments of medicalization and technologized parenting: Shaken Baby Syndrome and Nanny Cam, and Sudden Infant Death Syndrome (SIDS) and electronic infant monitoring. This paper opens with a consideration of Crane Boy, a child whose mother was unable to afford child care and thus rigged up a crib where the boy watched a construction site daily; unable to form words at a developmentally appropriate age, doctors discerned that he was indeed "speaking"—just the sounds of cranes. The paper proceeds to look at the evolution of the augmented crib and electric Nursery—inventions meant to ease the burden of parenting by furnishing the home with a fully nurturing environment. From Skinner's box and window crib to Dr. Harvey Karp's "Snoo" bassinet—one that puts your baby to sleep, but also set parents back thousands of dollars—to machines that alert parents to possible problems with a baby's breathing, inventors and pediatricians have patented devices to sooth, protect, and nurture baby. But these devices often increase parental anxiety with false signals indicating a baby has low oxygen, say, while being marketed to do the very opposite.

Smart Home Hauntings *Tamara Kneese, University of San Francisco*

Do smart objects have afterlives? Or, rather, what happens when the Internet of Things breaks down? Drawing on femininst STS analyses of the smart home and gendered automation (Schwartz Cowan 1983, Spigel 2001, Spigel 2005, Bardzell 2018, Gregg 2018 , Phan 2018, Strengers and Nicholls 2018), this paper

considers the affective and material consequences of connected living spaces. Through ethnographic field work at the Transhuman House in Provo, Utah, a smart home designed to appeal to those invested in posthuman futures, and qualitative interviews with people maintaining the tricked-out dwellings of the dead, I show how smart homes tap into both afterlife imaginaries and fantasies about social reproduction. Smart objects may live on, even if the patterns, habits, and links they are connected to disappear. For those left behind to care for once smart objects, the internal logics, and passwords, may be unclear. Meanwhile, the smart home relies on the devices, servers, and terms of service of companies like Amazon, Apple, and Google. The inherited smart home is dependent on both corporate infrastructures and human relationships. Intergenerational conflict and general awkwardness arise, I argue, when the dead haunt the living through the Internet of Things.

Siri's gendered labour *Thao Phan, Deakin Univeristy*

If you ask Apple's digital assistant Siri its gender, it insists on being genderless. It might say "I was not assigned a gender," "Animals and french nouns have genders. I do not" or "I am just…Siri." Siri is programmed with more than half a dozen responses to the question of gender, all designed to reject or deny its presence. But despite Apple's attempts to distance their assistant from claiming a gender identity, there is a tension between Siri's self-declared "genderless-ness" and its figuration through certain markers of femininity. This presentation examines the tension between Apple's formal position on Siri and gender and its otherwise obvious feminised figuration. In contrast to dominant feminist critiques of digital assistants, I argue that devices such as Siri are problematic not in the ways in which they gender but in the ways in which they de-gender. Bringing together literature from feminist media studies, marxist feminism, and feministSTS, I contend that Siri is predominantly figured as an assistant to accompany the twenty-first century hyper-employed post-Fordist worker. This assistant automates feminised labour but in so doing separates it from the historic context of working women. Apple's consistent claims to create, invent and revolutionise mobile technology too easily extends into claims to create and invent reproductive labour itself. Such a conflation of terms amounts not only to an erasure of the feminised dimensions of contemporary waged labour but an erasure to historic dimensions of reproductive labour altogether.

The Entreprenurialization of Domesticity: Home Automation in Co-Living Spaces *Cansu Güner, Munich Center for Technology in Society (MCTS)*

This work compares two home automation systems: the Weekly Task Planner (WTP) and the Hidden Camera that was designed and used by residents of co-living spaces respectively in Munich, and in the Bay Area. In Munich, the WTP is designed to help residents to keep track of domestic tasks such as cleaning by automatically assigning them to people each week. If residents fail to fulfill their tasks within a given time, the person's photo together with the unfinished tasks is shown on a screen at the entrance of the co-living space. Furthermore, some money is withdrawn from their account as a fee which is then shared among the ones that accomplish their task successfully. In the Bay Area, one of the organisers of the co-living space installs a hidden camera in the kitchen, not for accustomed reasons such as safety and security purposes (Heumann 2016), but in order to surveil and shame the irresponsible residents who fail to fulfill their chores. Drawing on feminist STS, this work locates how new domestic technologies shape residents' practices in shared living arrangements and how femininities and masculinities are performed around it. I argue that co-living as a techno-social project is subjected to not only the industrialisation of the home (Schwartz-Cowan 1976) but also entreprenurialization of domesticity in which the domestic activities become dominated by entrepreneurial ambitions. Empirically, I based my research on a comparative ethnographic study in Munich and in the Bay Area. Situational analysis, in-depth interviews, and ethnography are employed as main methods.

Session Organizers:
Tamara Kneese, University of San Francisco
Hannah Zeavin, UC Berkeley

Chair:
Hannah Zeavin, UC Berkeley

119. (Afro)Future Texts: Black Critical Frameworks for Emerging Worlds
8:00 to 9:40 pm
virPrague: VR 16

Recognizing that the distinction between fiction and non-fiction is often strategic, this panel seeks to reinvigorate questions concerning the politics of knowledge by invoking African and African-American diasporic voices with "other stories to tell about culture, technology and things to come" or Afrofuturism as it has been broadly defined (Dery 1993:738). In coupling artistic expression with scholarly inquiry to create new aesthetic renderings of the future, the Afrofuturist project serves to destabilize the normative matrix of binaries around blackness as oppositional to technology and futurity. While traditionally associated with the African-American context, this panel moves to center blackness across diasporic divides as a way of transcending histories of oppression while still recognizing their impact. We reflect on the question of "what tools are valued by whom, and to what ends" (Nelson 2002:8) by employing playwriting, film, song, narrative, the body, and even genetic information as theoretical tools for examining meaning-making and black cultural production. Papers explore themes of knowledge production, biopolitics, race, sovereignty, citizenship, reproduction, anti-blackness, diaspora, agency, epistemology, pedagogy, black empire, affect, and future making. Together, we propose black critical thought and creativity as an important lens through which we might predict emerging worlds.

Participants:

Anthropology and Theatre: Forecasting for Black Lives? *Ugo Felicia Edu, University of California Los Angeles (UCLA)*

A scene of an in-process play about black women, elicits an audience response concerned with female whiteness. A play to be written, foreshadowing a dark future for Black and Muslim women, is anticipated by the present. Drawing on some of my experiences utilizing playwriting to grapple with the historical legacies entangling blackness and the development of the sciences, medicine, and health that emerged through ethnographic fieldwork, I think about the role theater can play in predicting what is to come and making space for that exploration and galvanization for change and improved black lives. Can it help us make futures that invite, nurture, and sustain blackness, black reproduction, black bodies, black technologies, black life? Can it help us create or use technological advancements towards the promotion, celebration, and sustenance of black life?

Afterlives of Deportation: The Eritrean Self and Technologies of Black Empire *Sabine Mohamed, Institute of Anthropology at Heidelberg University*

"When I speak to you in your language, what happens to mine? Does my language continue to speak, but in silence?" asks Abdelkebir Khatibi in Love in Two Languages(1983). What is spoken and unspoken in deportation? What is spoken in silence? This paper engages the vexed relationship between Eritreans and the Ethiopian afro-futuristic imaginary of black empire in urban Ethiopia. In doing so, this paper explores the technologies and specters of the 1998 mass deportation of people identified as of Eritrean origin, from the Ethiopian capital, Addis Ababa. The deported became known by the name amiche, an eponym of the Italian bus company associated with deporting them. Eritrea itself, however, continues to be translated within an epic love affair and of eternal return, part of a new imperial imaginary—an imaginary that is thoroughly infrastructural and technologically orientated. Thus, the mass deportation has come to inhabit a spectral temporal space within - what I propose as - black empire and the Ethiopian psychic archive. The fact that these deported people returned in the 2000s en mass to Addis Ababa, now as either undocumented migrants or refugees defies the project of a promised cosmopolitan city—a city in which these Eritreans (post-independence, post-war) are now constituted as both desired and undesired infrastructural bodies. In analyzing a short film and song about love, I juxtapose the depicted embodiments of young women/flowers as Eritrea/Asmara in (afro-)fiction with amiche, gesturing to the technologies of deportation and identification in an emergent black empire.

Affect without Borders?: Global and Local Campaigns against

Maternal Mortality *Adeola Oni-Orisan, UC San Francisco*

"Safe motherhood" campaigns, the stories that are told to garner support, build racialized and gendered imaginaries that overdetermine the international response. This paper explores how these campaigns contribute to a cycle of aid without permeating the structural roots of the problem. Spanning across space and time from black women's health in Ondo, Nigeria to black women's health in San Francisco, I compare affective responses in these two settings. How has recent outrage about the maternal mortality disparities in U.S. taken a different turn than that of late 1980s over global maternal mortality rates? What are the stories that might contribute to a different type of future making in regards to interventions promoting maternal health?

Session Organizer:
Adeola Oni-Orisan, UC San Francisco

Chair:
Adeola Oni-Orisan, UC San Francisco

Discussants:
Victoria M. Massie
Holly Okonkwo, Purdue University

120. Locating & timing governing in STS and Universities I: Exploring university cultures and systems
8:00 to 9:40 pm
virPrague: VR 17

For generations universities have been institutions of higher education and research. Now they are expected to contribute to local and global economies by commercializing research and spurring innovation, while addressing grand social challenges like climate mitigation and social disparities. They also must engage successfully in mass higher education and outreach with a variety of publics. This means that universities now occupy a strategic place in re/shaping society by circulating research and knowledge through teaching and professional expertise. Meanwhile universities have become subject to increased auditing practices and austerity policies, locally and globally. Universities turn to experts in branding and commodification for strategies in defining and representing their work as successful. STS provides resources for understanding such dis/continuities in the making and circulation of knowledge while the study of universities in dynamic ecologies is vital to addressing unexamined assumptions in STS about the relationship between research, teaching, and society, as well as the governance of that relationship.

Participants:

Between autonomy and dependency- exploring how university managements conceptualize researchers' behaviour and motivations *Lisa-Maria Ferent*

The role and governance of universities is shifting (see NPM), turning universities into more strategic actors, who are under pressure to fulfil goals and legitimize their behaviour – often along performance indicators that measure research output and quality. Traditionally, defining quality and establishing thematic research priorities was mostly in the realm of disciplinary communities. These developments suggest a shift in the relation and possible conflict of interests between universities and their researchers – how do university managements balance their strategic aims alongside values such as academic freedom of their researchers? As university systems differ widely across countries, questions about university governance have to be looked at in their situatedness. Taking Austria as a case, this paper explores the shifting relationship between universities and researchers by analysing qualitative interviews with members of the university management, including rectors and deans, of four Austrian universities with distinct profiles (comprehensive, technical, business, local). This paper starts by asking how university managers conceptualize researchers' behaviour and motivations. Being attentive to the different roles and identities the interviewees inhabit (e.g. manager, former researcher, employer, colleague,…), a next step of the analysis looks at how university managers conceptualize themselves in relation to researchers. These questions are discussed in two moments: the recruitment of prospective researchers, and the management of existing researchers. The analysis will thus, among others, explore the perceived chances and challenges of appointing professors, as well as in how far researchers' behaviour is seen as

being (in)dependent of universities attempts to govern it.

Academic citizenship, the management of excellence, and the neo-liberal universities *Knut H Sørensen, NTNU Norwegian University of Science and Technology*

The concept of academic citizenship has been linked to academic service work. In this paper, I argue that the concept should be broadened to include a wide set of qualities needed to navigate the everyday life of university faculty. Today, faculty face a diverse set of challenges related to prominent features of the neo-liberal universities. This includes the increasing use of quantitative measures of academic quality of both teaching and research, the pressure to compete to succeed with funding and publications, the growing requirements of a greedy university about commercialization and outreach, and the emphasis on 'excellence' as a characteristic academics need to be awarded to be permanently employed. In addition, university faculty face claims about decreasing trust in science – even a crisis of science. This means that there is an increasing need to address questions regarding what is good research and what is good teaching. The paper discusses this by discussing how to situate and reflect about academic work, how to develop skills to navigate the demands articulated in the context of neo-liberal universities, and how to engage with society in a broad as well as in more specific senses. These qualities are claimed to form the basis of academic citizenship.

"I hate this place!" Algorithmic Governance of University Students, Faculty, and Staff *Sharon Traweek, UCLA*

Many colleagues say our university's digital management platforms are transparent, efficient, and help us stay organized. Now the university owns our syllabi, using our data to design new course management processes, turning pedagogy into required routines. A seminar student said "I hate this place!" Others agreed, saying they felt manipulated by administrative platforms that praised them while erasing needed resources. Staff members are crying every week over the in/actions required by the new software systems, while many enjoy gaming the new systems. My university has raised $5.5b in donations in five years; each year it also receives $1b in research funding. The state pays less than 10% of the budget. What is being counted is what matters to the university; what is being excluded matters to me.   Students, faculty, and staff come to me, saying I heard about your questions; listen to my story. An engaged ethnographer, I have listened, observed, asked questions, taken notes, and gathered ephemera for decades, asking: + Why and how do many strive to become what the platforms want us to be, learning to score highly in the evaluation games surrounding us? + How do management platforms undermine equity, inclusion, and diversity? + Why are so few interested in the epistemic assumptions, exclusions, and goals built into those platforms? + Who designs, sells, and buys them? Why? + What are the strategies for resisting this neoliberal algorithmic governance? STS helps us answer these queries and universities help us to reconfigure STS ideas about knowledge making.

Quantum Postdocs: Precarious Employment, Fragmented Careers and Marketized Mathematics in the Neoliberal University *Milena Kremakova, Martin-Luther-University Halle-Wittenberg, Germany*

Work and careers in science are framed by profound transformations as the contemporary university moves away from a Humboldtian "knowledge community" towards neoliberal "academic capitalism". As universities becomes more like firms, jobs in higher education and research become precarious. Governments increasingly favour applied sciences at the expense of theoretical fields. Academic work and careers are increasingly international, but also pervaded by global inequalities. The organisation and temporality of teaching and research become fast-paced, bureaucratic and metrics-dependent. The number of academic fields and publications proliferate. The "technocratic" time of the university clashes with the "thinking time" requires to do good science. While academia, science careers and knowledge labour have attracted the attention of scholars in STS and social anthropology, mathematics has largely evaded scrutiny. Aiming to fill some of this gap, the paper discusses the effects of marketisation, acceleration and internationalisation on career

trajectories, personal lives and research directions of contemporary mathematicians drawing on an ethnographic study of work, labour and careers in the mathematical sciences in the UK and Germany. It argues that not only careers and working lives of individual men and women mathematicians, but also knowledge production, are shaped by these trends which influence which mathematical problems get tackled, how teaching is organized, how collaborations are structured, and how universities are run. I call today's typical PhD-graduate the "Schrödinger postdoc" or the "quantum postdoc": an aspiring scientist whose career is a patchwork of short-term, insecure postdoctoral positions, across institutions and countries, without employment security, and lacking the freedom to develop an ambitious research programme.

Timing and Governance of International Mobility among Scientists. A cultural analysis of university politics, structural incentives and individual knowledge transfer.
Helena Pettersson, Umeå University; Katarzyna Wolanik Boström, Umeå University; Magnus Öhlander, Stockholm University

Internationalization among researchers has been discussed at government and university policy level in Sweden for several years. The idea of knowledge transfer and learning processes through international mobility and hiring foreign researchers to Sweden is an outspoken strategy to provide fast, knowledge productive and innovative change for the Swedish university culture. An STS-analysis of the complexity at governance level to the direct work-life practices, and an ethnological cultural analysis is useful to understand the complexity of the structural governance level and the individual research practices. The aim with this paper is to problematize both the structural incentives expressed by university governance as well as national steering in relation to individual practices. We analyze the advantages and difficulties of different forms of international practices, both physical mobility (i.e. short- and long-term stays, conferences, project meetings) and mediated (e.g. networking, writing projects) among researchers in plant science, medicine and the humanities. What do they experience and learn from international stays and co-operations? What types of knowledge and skills are recognized and valued in daily work life, e.g. upon return from a post-doc or conferences? How is this process affected by disciplinary traditions, academic position, gender, age, class- and ethnic background? What are the departmental guidelines and campus support structures, and what counts as "international"? Our main data will be 90 interviews with scholars at the Swedish universities from the Faculty of Science, Medicine and Arts & Humanities, analyzed through theoretical concepts of thought collective, thought style, symbolic capital and knowledge.

Session Organizers:
Knut H Sørensen, NTNU Norwegian University of Science and Technology
Sharon Traweek, UCLA
Chair:
Sandra Harding, Graduate Department of Education, UCLA

121. AI, cognition, posthumanism
8:00 to 9:40 pm
virPrague: VR 18
Participants:

Beyond Heaven And Hell: Configuring Ethical AI *Xaroula Kerasidou, Lancaster University*

Ethical AI - in all its benevolent incarnations (Ethical AI, Trustworthy AI, AI for Good, AI for Humanity, etc.) - is part of a mythology that dominates in sectors across Europe and beyond, such as healthcare, policing, security. These are meant to be technologies which do not look, think or act like humans but which, unlike humans, won't get bored or tired of performing narrow, well-defined tasks. Technologies which will "benefit humanity", "free people up to focus on the more human aspects of any job", but only "if we get this right"! Feminist STS have given us the tools to interrogate the recurring myths of Heaven and Hell that accompany digital technologies such as AI, while urging us to pay close attention to their performative powers in

(un)making particular worlds and realities. Yet, as I will argue, the stories of super-intelligent machines and "pink-eyed Terminators" are not the only ones that warrant attention and demystification. In this paper, I will sketch out what I see as an instrumental move away from apocalyptic scenarios of Terminator-style AIs towards figurations of instrumental, efficiency-driven technologies and argue that this, too, is a key part of the new mythology that now surrounds AI. Examining, unpacking and denaturalising the figure of ethical AI as it takes shape in policy debates and documents, I seek to unsettle the well-worn, naturalised tropes which the promises of this "fourth revolution" rely upon, in an effort to open up the possibilities for things to be configured differently.

Cognitive technologies as scaffolding for scientific knowledge
Melina Gastelum, UNAM

This paper has the aim of studying the integration of sociocultural and cognitive (particularly from a 4E perspective) elements in the conformation of epistemic practices. With this, we want to understand how cognitive technologies account for the embodied and intertwined environments and practices, having as a paradigmatic example scientific knowledge. Furthermore, within this approach, we want to give and account of cultural diversity within scientific practices through the specific sensory habits that each practice entails. Moreover, we will explain how 4E cognitive studies convey a series of elements that impact in how knowledge is constituted in the sociocultural and natural environments, particularly thinking about how STS can adopt some of these categories into its theoretical frameworks. In short, we want to explore how cognitive technologies are scaffoldings for the development of scientific knowledge and for cultural innovations. Understanding science and technology as a practice helps to promote an epistemology that does not hang over the gnoseological processes of science and technology, but instead brings into play other categories that help other types of reflections, such as science and technology in the face of cultural diversity.

Constructing Faces: A Dialogue between ANT and AI *Levi Checketts, Santa Clara University*

ANT contends that one should not explain the causes of science or technology as much as adequately describe them. One must describe the interests of the actors and their influence on each other in a network rather than refer social movement to Marxian social forces. This seemed adequate for years to explain why artificial intelligence researchers were unable to achieve their goals; while they often promised imminent success, their critics, such as Hubert Dreyfus, often argued (explicitly or implicitly) that the actors enrolled were either insufficiently aligned or improperly enrolled to achieve general AI. With major advances in machine learning and algorithmic programming, a bigger question must be asked: can human cognitive experience be adequately recreated through a sufficiently sophisticated algorithm without losing anything meaningful? To address this, consider the question of facial recognition. The phenomenon of human facial mis/recognition runs the gamut from racial biases to face blindness to moral epiphanies and more. Algorithms can and do replicate some of this, including both an ability to retrieve accurate information about a person based on facial structures and even racial biases, but are far from having the full breadth of human experience of seeing a person face-to-face. But facial recognition software is, in practice, reifying the experience of seeing a face as a direct and programmable algorithmic process, excluding other possibilities. By creating passable algorithms to simulate human cognitive abilities, AI works to shore up philosophical positions on various cognitive states in a way that "constructs" them as social facts.

Humanist Technology Understanding And The Promises Of Posthumanism *Peter Danholt, Aarhus University*

Today, it seems that a general awareness and concern about the consequences of digitalisation and data on our daily lives, is widely acknowledged. So central points from STS, namely that technology has agential and political qualities and unforeseen consequences, seems to have become mainstream. As an example of this, in Denmark a new course in public school has been proposed, that focuses on technology understanding. The new

course entitled "Teknologiforståelse" is based upon fields neighbouring to STS, such as Design thinking, computational thinking and participatory design. In this paper, I will present and analyse the different conceptions of technology, design and human agency proposed in the written descriptions of course and relate them to posthumanist STS. A crucial point, I wish to make, is that the description to a large degree promote and articulate a social determinist understanding of technology. In the different learning practices and objectives described in the course, technology is mainly depicted as an object, we as human beings can unpack, de-scribe, scrutinise and re-design in order to allegedly master and take control of it and the digital. Admittedly, these ambitions are difficult to disagree with, but they also nonetheless continue a primarily humanist and instrumentalist understanding of technology. Thereby, missing other types of being and thinking with technology, that are perhaps more adequate and in then end more promising.

The Concepts of Biological Evolution in Artificial Intelligence Literature: Intelligent Design or Darwinian Theory? *Shiang-Yao Liu, National Taiwan Normal University; Ying-Kai Liao, National Taiwan Normal University; Chen-Yung Lin, National Taiwan Normal University*

Natural selection is the central idea of Darwin's theory of biological evolution, comprising the concepts of variation in population, inherited traits, struggle for survival, and geographic distribution. The theory of intelligent design in line with "the scientific method" claims that natural objects contain complex and specified information that is the product of an intelligent cause. Its analogies between genes and carriers of information, living organism and machine, have been disputed by philosophers of science. The pioneer of artificial intelligent (AI), Alan Turing in his 1950 seminal paper "Computing Machinery and Intelligence" used the terms hereditary material, mutation, and natural selection to describe machine learning, and the idea of evolution and survival of the fittest. In the field of AI, researchers working on evolutionary computation or genetic algorithm consider natural selection as a simple mechanistic logic that could be well exemplified by computer program and claim to follow biological genetic and evolutionary ideas. This study seeks to analyze the concepts of evolution presented in those AI related journal articles. A systematic review of literature was conducted by selecting papers from SCOPUS database using keywords "artificial intelligent AND evolution AND natural selection". Based on the defined selection criteria, database search resulted 55 journal articles mostly categorized in the subject areas of computer science and synthetic biology. Content analysis results showed that AI researchers adopt the model rooted in artificial life system and complexity science represents a misconception of Darwin's theory of evolution and an analogy between living organisms and man-made machines.

Session Organizer:
Levi Checketts, Santa Clara University
Chair:
Levi Checketts, Santa Clara University

122. Universities, Universalities, Globalities II
8:00 to 9:40 pm
virPrague: VR 19
Participants:

Engaged Scientists: Academic Climate Advocacy and Activism in 2020 *Maxwell Boykoff, University of Colorado Boulder*

In this presentation I explain and explore various flavours of climate advocacy and activism among academic researchers. I ponder whether academic climate advocacy should be celebrated or derided. I explore conditions where some in academic communities facilitate various forms of engagement relating to their research while others respond to pressure from one's scientific peer communities to not over-extend their outreach beyond their own specialized research. I conduct a literature review and draw on previously conducted survey methods to draw together a set of cogent considerations regarding academic climate advocacy in the 21st century. I argue that there are three clear advocacy approaches where distinctions between them are

important: Type 0 advocacy = those who choose to stay away from any semblance of advocacy Type I advocacy = advocacy for (scientific) evidence Type II advocacy = advocacy for policy outcomes This categorisation of Type 0, Type I and Type II advocacy should not be interpreted as a binary or blunt interpretations of varied stakes and conditions. Rather, these 'types' represent three distinct nodes across a spectrum of chosen engagements. This categorisation also does not then suggest that academic researchers will slot into one node or the other. Instead, there is dynamism in these flavours of engagement across issues and over time, along with a range from low- to high-stakes situations, all possibly experienced by the same academic researcher. Moreover, this is not just about frequency of advocacy but efficacy. I tether this to research from my 2019 book 'Creative (Climate) Communications'.

The Citizen Science's Democratic Turn : a sociological analysis of a 'participatory science programme' and its transformations *Aymeric Luneau, INRAE, LISIS; Elise Demeulenaere, Centre Alexandre-Koyré; Romain Julliard, CESCO - MNHN; Stéphanie Duvail, PALOC - IRD; Frédérique Chlous, MNHN*

The issue which my paper deals with concerns the impact of STS arguments on the 'democratic turn' of Citizen Science (CS). CS refers to the 'participatory science programme' which emerged in 1990 from Cornell Lab of Orhnithology's projects involving 'laypeople' in ecological monitoring. Today, CS gathers a large epistemic community represented by the American, Australian and European CS associations. The CS community defines 'participatory science' as means to produce scientific knowledge, increase participants' science literacy and democratise sciences (Strasser et al. 2018). While the first promises have been at the core of CS programme since the beginning, I will show that the democratisation of science has become a promise over the past decade. My analysis relies on two sets of data: (1) network data on interactions which occurred from 1990 to 2019 between CS community and other epistemic communities advocating for participatory approaches in research such as the 'Participatory Action-Research' community ; (2) a body of 1278 texts published during the same period in order to analyse changes in discourse of CS community. The 'democratic turn' of CS has consisted in valuing 'indigenous and local knowledge' (ILK) or promoting community-driven research as well as scientist-driven projects. I make the hypothesis that it is related to the opening up of the CS community to arguments coming from STS communities, which are working as 'auxiliary hypotheses' (Lakatos 1970), protecting CS from criticisms about its inability to perform its educative and epistemic promises. The CS's democratic turn will then illustrate how STS are a pillar of CS and other 'participatory research models'.

What Do We Talk About When We Talk About Citizen Science? *Michael Strähle, Wissenschaftsladen Wien - Science Shop Vienna; Christine Urban, Wissenschaftsladen Wien - Science Shop Vienna*

The authors will present preliminary findings of the Horizon 2020 project CS-Track that aims at a deeper understanding of citizen science projects around the globe: of how they are conducted, their societal, economic, educational and scientific effects, participation patterns, incentives and disincentives, barriers and enablers for laypersons and scientists participating in such projects, their motivations for and their expectations in conducting citizen science, an overview of good practice in citizen science, and of what are the limits of such projects. There is already a body of knowledge on several of these issues, however, mostly limited to research on specific projects, programmes and initiatives. An overview of the aforementioned issues across a broader range of projects is still missing. CS-Track aims at narrowing this considerable knowledge gap by conducting research on a broad range of projects that are or have been conducted in the European Union and Associated Countries, on the regional, national or international level, funded by the European Commission, national or regional research funders or unfunded at all. Together with their project partners and based on a thorough literature review and dozens of expert interviews, the authors developed a framework for identifying, describing,

categorizing and investigating citizen science projects. The project also enters new territory of interdisciplinary research by triangulating qualitative and quantitative research methods of the social sciences and the humanities – document analysis, qualitative interviews and surveys – with methods of computer and information sciences - data-driven analytics of web-based content.

Session Organizer:
Ludwig Weh, Freie Universität Berlin
Chair:
Ludwig Weh, Freie Universität Berlin

123. Experimental Practices and Practical Experiments in Uncertain world V

8:00 to 9:40 pm
virPrague: VR 20
Participants:

Technologies of Huachicol: Informal/Illegal Knowledges in Crime Networks Articulation of the Triángulo Rojo
Edmundo Meza Rodríguez, UNIVERSIDAD IBEROAMERICANA PUEBLA

The main purpose of this paper is to understand the development and application of informal technological knowledges for criminal purposes in the area known as Triángulo Rojo (Puebla, Mexico). In just a few years, levels of crime and violence increased dramatically in this zone, mainly because of hydrocarbon fuel (huachicol) theft from the pipelines that cross the region. This phenomenon is related to a series of State reforms (2013-2014) to privatize the energy sector, justified by the idea of modernization and development. However, the immediate result was a critical abandonment of government control and surveillance of the processes of production and distribution of fuels, allowing individuals and families (mostly from semi rural contexts) to become involved in the these robberies, most of them had no experience in criminal activities. Their rationale is that Mexican authorities have been corrupt in the administration of fuels. Originally, fuels were constitutionally property of the Mexican people, but after privatization and modernization policies people in the region felt that only foreign companies would benefit. In this context, peoples of the region have developed practices, strategies and improvised knowledges to benefit from something they believe is theirs - huachicol. Through an ethnographic research I develop the concept "huachicol technologies" to understand how practices and relations articulated violent networks of organized crime, revealing a particular kind of "alternative" performativity of STS. The pipelines were finally shut down, however, huachicol technologies were adapted to other forms of criminal activity, overwhelming the State by an unprecedented wave of violence.

The Value Of Being Invisible - Hotel Housekeeping And It`s Valuation *Ville Savolainen, Tampere University*

As has been noted in STS studies over the recent years, there is an abundance of maintenance work that is overlooked in conventional narratives regarding our society. This paper explores one instance of this kind of labor, cleaning work, specifically the work of hotel housekeepers. It is based on ethnographic fieldwork carried out in two 4-star hotels in Helsinki, Finland. Central to my discussion is the pragmatist view on value as something that has to be made through various interactions. Housekeeping work has a crucially important role in the value-accumulation of hotels. When a guest lives in a hotel room, they establish a relation to it by dirtying it. Even though dirty hotel rooms contain a lot of valuable objects, such as a television and beds, the rooms cannot be sold to new guests before the mess of the previous guest has to be rendered invisible. Thus, studying housekeeping work is a prime example of the fragility of objects and how they require constant care to fulfill their intended role. The fragility of objects is also the source of value for cleaning companies. To accumulate profit from the housekeeping work itself, they have created a variety of valuation practices. The rigid pricing scheme often contradicts the messy reality of caring for the building, which is constantly re-negotiated in relation to e.g. different materialities, surface

colors or messy guests. I will explore how housekeepers and their supervisors work around and within these contradictions by utilizing intimate knowledge about the work and the unique relationalities of the buildings they care for.

Is researching biodiversity worthwhile? conserving and extracting value of life: the case of Colombia *Alberto Aparicio, Instituto de Investigación de Recursos Biológicos Alexander von Humboldt*

Countries in the Global North have established government strategies and policies to strengthen their bioeconomy, the fostering of sustainability biotechnology-based industries. In Colombia, biodiversity has been considered as a source of wealth, essential for the successful transformation of its bioeconomy. Biodiversity research incorporates questions about the role of science in Colombian society, tensions between Western science and traditional knowledge, and models of economic development. Scholarship in STS has addressed the relationship between biotechnology and capitalism, and the valuation of the biological, or the processes through which life itself is constituted as an object of capital accumulation. In this presentation I address how biodiversity in Colombia is imagined as a source of value and driver of its bioeconomy, and how various actors think about how value is created, captured and circulated. It is based on a historical analysis of the shift from conservation to 'usage' of biodiversity in environmental and innovation policies since the 1990s, and the study of two international cooperation initiatives–through interviews and participant observation–that associate biodiversity conservation with sustainability and economic growth. I argue that special attention has been given to biodiversity due to its framing as national identity and pride, neglecting political economy issues surrounding the commercialization and privatization of life forms and derived technologies. Promises and imaginaries of value– from–biodiversity have served as excuses for the lack of consolidation of sociotechnical networks and infrastructures of creation and appropriation of value, but serve as a point of reflection about Colombia's historical legacy and future.

Session Organizer:
Ville Savolainen, Tampere University
Chair:
Ville Savolainen, Tampere University

124. Re-animating the Sociocultural Life of Computer Graphics

8:00 to 9:40 pm
virPrague: VR 22

Computer graphics has a long, multivalent, yet under-critiqued history of influencing technoscientific development, from its role in the rise of scientific computing to its use in creating the visions that fuel our sociotechnical imaginaries. This panel addresses this gap and contributes to scholarship that extends STS's interest in the social and cultural lives of technological artifacts (Jasanoff 1996, Pickering 1997, Lenoir 2000, Subramaniam 2014, Braun 2014). More specifically, this panel considers the nebulous two-way loops that run between (visual-)cultural production of technology and technological production of visual cultures. The four panelists—Joel McKim with his sociotechnical analysis of operational architectural renderings, Daniel Cardoso Llach with his media-archaeological examination of Computer-Aided Design systems, Akshita Sivakumar with her ethnographic interrogation of the 'work' of making simulations functional, and finally Ranjodh Singh Dhaliwal with his institutional history of computer-graphical infrastructures— all together investigate these very feedback loops by thinking about the objects and practices involved in computer graphics' mediation of scientific knowledge and cultural experience. Scholars on this panel combine methods and concerns from STS, history of science, design studies, media studies, communication, and animation studies to decrypt some of the mysticism involved in our graphical heyday. Together, they examine the cultures birthing computational graphics and these graphical technologies' sociocultural impacts. In doing so, they explore how computational epistemologies not only get inherited, but also morph into new instantiations when these objects come in contact with the commitments of various fields and worldviews which acquire and subsequently reproduce them.

Participants:

New Operations: Digital Images in Architectural Design *Joel*

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McKim, Birkbeck, University of London

This paper will consider how new visualization technologies are changing the ways in which architects and designers work with images. In architectural practice images have always occupied multiple roles, functioning at times as essential design tools (diagrams, blueprints, CAD drawings) and at other moments as representations (illustrations, sketches and renderings). Recent developments in digital technologies from BIM systems (Building Information Systems), to real-time rendering software (such as Lumion), to the use of machine learning automation, the distinction between the operational images of design and the representational images of communication is becoming increasingly indeterminate. This paper will consider the implications of this convergence and the multiple ways in which digital images have become for designers not just tools of abstraction or visualization, but also material available for direct manipulation. The analysis of this shifting design context will draw from two important thinkers of the image, the Czech media philosopher Vilém Flusser and the German philosopher of technology Sybille Krämer. Flusser's prescient discussions of technical images provide a foundation for considering the role of the digital image as an apparatus of both calculation and projection. While Krämer's theory of diagrammatics offers one of the most systematic considerations of the use of images within mathematics, science and design as cultural techniques and tools of thought. Both Krämer and Flusser present a theory of the image as a means of "doing" rather than "depicting," one which provides an important framework for considering the new kinds of operational images produced by contemporary digital design technologies.

Reconstruction, Emulation, Speculation: Methodological Provocations into the Socio-Technical History of Computer-Aided Design *Daniel Cardoso Llach, Carnegie Mellon University*

Computer-aided design (CAD) systems are artifacts of cultural and technical significance which shape the intellectual labor and professional identities of many architects, engineers, and other designers. Extending prior work on their cultural history, this paper discusses ongoing efforts towards an enriched understanding of their socio-technical and material underpinnings. The paper focuses on an ongoing research project — 'Experimental Archaeology of CAD' — which approaches these technologies as historical artifacts through an expanded methodological repertoire including software reconstruction, emulation, and speculation. Through these, the project seeks to offer new handles on these system's visual, sensual, and gestural aspects, whose histories have been mostly told through their symbolic and textual registers. In the context of this panel, the paper will offer these as methodological provocations into the history of computer graphics — and more specifically into the regimes of visual and material production that they have elicited since their emergence in the post-war years. In addition, as instruments of sociotechnical inquiry into software systems with important potentials for STS scholarship, interdisciplinary pedagogy, preservation, and critical engagements with technology across fields. Specifically, it will argue that by combining historical research and creative prototyping these methods can bring us closer to distant ways of seeing, touching, drawing, and designing — while raising new questions about the manifold ways software intertwines with present-day cultural practices.

Unaccounted Work of Computational Simulation: A Case of Diffuse Objects *Akshita Sivakumar, University of California at San Diego*

How are computational simulations put to work? How might we study and account for what lies in excess of simulations? Why should this excess be accounted for? This presentation responds to these questions through ethnomethodological work in the community of Blender3D, the largest and fastest growing free and open source (F/OSS) 3D graphics pipeline. Rather than considering simulations as entirely technical, I take as a starting point that various computational artifacts are social and cultural achievements (Sismondo, 1999; Hulme, 2013; Hastrup & Skrydstrup, 2013; Dourish, 2016; Finn, 2016; Seaver, 2017).

Tending to these social processes aims to decenter the myth of simulations as standalone technical objects and their inherited computational commonsenses. I choose particle-based simulations as a heuristic to track simulations' excess. Particle-based simulations of diffuse objects are implemented in areas as wide ranging as air pollution and animation. Taking a material-semiotic approach (Law, 2004) for my analysis I conclude that the particle-based simulations function in ways that belie two common tropes in Blender3D and similar platforms: That the goal of the software is to (merely) produce 'real-enough' effects and that the approaches for this goal must privilege 'efficiency' and 'flexibility.' Instead, I demonstrate how 'anticipation' and 'calibration' emerge as just a few of many kinds of crucial and messy attunement work that goes unaccounted. I conclude that if we ignore these lapses in accounting in sites which are meant to uphold flexibility and artistry, we risk reproducing these absences of knowledge-production when we scale up and across other domains.

Render This!: On Computational Architectures and Graphical Processing *Ranjodh Singh Dhaliwal, University of California Davis*

This paper outlines a two-fold inquiry into cultures of computational graphics, first detailing the speculatively architectural imaginaries that animate the history of Computer Generated Imagery (CGI) and then their technical logics that consequently come to undergird contemporary graphico-computational infrastructures. Drawing upon and extending the work done by scholars such as Tim Lenoir, Donna Haraway, Jacob Gaboury, and Daniel Cardoso Llach, this paper mines the institutional and technical histories of development of CGI and Graphics Processing Units (GPUs, aka graphic cards). So, on the one hand I show how science-fictional spaces like Star Trek's holodeck seeped into computer graphics research at the pioneering University of Utah CS department in the 1980s, arguing that plans to make such speculative structures suture a longer history of architectural thinking in computer science. And on the other, I use technical and historical evidence to demonstrate the specificities that set aforementioned graphical technologies apart in contemporary infrastructure. More specifically, I ask how and why did the GPUs, which were initially developed for playing video games and rendering 3D films, came to be used less for gaming and more for mining bitcoins, sifting through big data, and running neural network systems? Answering these questions together leads me to identify a material-semiotic 'logic of the graphic' that makes today's graphic cards useful for such a wildly diverse set of non-graphical purposes. This cultural-technique can be understood as bringing together economic, technological, and cultural valences into a configuration that holds considerable agency in contemporary computational cultures.

Session Organizers:
Ranjodh Singh Dhaliwal, University of California Davis
Akshita Sivakumar, University of California at San Diego
Chairs:
Ranjodh Singh Dhaliwal, University of California Davis
Akshita Sivakumar, University of California at San Diego

125. Discursive Traps in Global Health: Neglect, Poverty, and Emergence: emergent diseases
8:00 to 9:40 pm
virPrague: VR 23
In global health discourses, vector-borne diseases are typically portrayed as neglected problems that affect people in impoverished settings. Since they inhabit the margins of the economy, so continues the argument, they do not constitute a priority for states nor an attractive market for pharmaceutical companies. To stimulate neglected diseases R&D, public-private partnerships were proposed in the 1990s as a solution that would lure pharmaceutical companies into the game. Also, in 2007, the FDA established the priority review voucher program to promote the development of drugs for diseases considered neglected. Yet, these strategies have been criticized for leaving unchallenged a pharmaceutical development model that is profit-oriented and for obscuring severe differentials of power and influence between the public and the private sectors. In a similar vein, since the 1990s, some of these diseases have also

been categorized as 'emerging' threats, seeking to highlight their potential of becoming epidemics of global proportions. Yet, this term often helps reanimate colonial stories of containment that regarded the tropics as natural hotbeds of diseases that required strict population management to prevent microbes from spilling over the metropolis and its colonial settlements. Thinking critically about 'neglect,' 'poverty,' and 'emergence,' this panel aims to unpack the politics behind these "official stereotypes" in global health narratives. Is this terminology sufficient to account for the problems that vector-borne diseases represent? Is it always useful to delimit the ways in which possible solutions are framed? What do these categories make visible and invisible? What do they enable and constrain?

Participants:

Making Non-Endemicity in the United States *Bernardo Moreno Peniche, UC Berkeley*

In August 2013, a white US woman from Texas tested positive for Chagas disease (CD), a deadly tropical parasite endemic to Latin America. She, however, had never left the United States. CD is not a new story in this country. In the early 20th century, lack of evidence led scientists to suggest that US strains of T. cruzi were not infective to humans. However, in 1943—when a doctor in Texas intentionally inoculated an African American with the parasite—it was accepted that US strains of T. cruzi were able to produce CD. To date, 43 cases of autochthonous human transmission have been reported in the US. Nevertheless, according to the CDC (2017), CD in the US is not "endemic" but "enzootic", which means that transmission only takes place among nonhuman animals. By taking CD in the US as a starting point, in this paper I will explore how endemicity/non-endemicity can be practiced conditions that require delving into sites—homes, laboratories, and clinics—where boundaries are enacted. I will draw on scholarship on bordering practices. Without being necessarily contentious, these practices are neither arguments nor singular artifacts, but political techniques that engage different beings into a material ordering of the world (Law and Mol 2008). Through which practices has non-endemicity become a quality of the US landscape despite CD being prevalent among humans and nonhumans across the territory? How can present political configurations that highlight the US as a non-Hispanic country exceed ideological discourse and become–through disease–a material condition as well?

Care and inequalities in responses to the Zika virus epidemic *Jonatan Sacramento, State University of Campinas - UNICAMP; Maria da Costa, State University of Campinas*

At the beginning of the Zika virus epidemic in Brazil, and especially when the link between Zika and microcephaly was confirmed, the logic of gender roles and care was triggered in claiming and building responses to the epidemic. Response to a time of suffering and struggle, which built a double scenario of the Zika virus epidemic in Brazil: that of its identification and the discovery of its role in fetal microcephaly. In a context of the rise of "sequelados" bodies, children born with microcephaly, and the feminist movement's mobilization to guide abortion on the national public scene, the state response was to offer health and care policies that were limited to caring for children. children already born (but not always achieving their goals), promises of "miraculous" inputs such as the anti-Zika vaccine (which had not been tested until 2019), individual health policies such as protection from contact with the Aedes aegypti mosquito, care for outbreaks and breeding grounds for mosquito larvae, or postponement of pregnancy by women of reproductive age. In this sense, the purpose of this paper is to think, from the care category and its intersection with state practices, how public health policies to combat Zika reproduce a scenario of social inequalities in health and gender in an epidemic context. For that, we used the analysis of the documentation on health policies and interviews with professionals and health managers.

Emergency in Question: Colonialism, Philantropy and Modified Mosquitoes *Claudia Rivera*

In this presentation I will discuss the entanglements between two forms of global health emergency: Chikungunya fever and Zika on the one hand and Dengue and Malaria on the other. In comparing scientific publications, press and campaigns associated with modified mosquitoes in Brazil, Colombia, and in some countries of Sub-Saharan Africa, I explore the connections between colonial logics, philanthropy and capital in the manufacture of genetically modified mosquitoes for the prevention of these diseases from the feminist STS perspective. These techniques are: 1) A. aegypti with Wolbachia bacteria by PECET (Colombia); 2) Genetically modified A. aegypti by Oxitec and World Mosquito Program (Brazil); and 3) Genetically edited Anopheles by Target Malaria (Sub-Saharan Africa). The three cases had a strong boost in recent years due to chikungunya fever and Zika. Considered emerging diseases, they inspired images of terrifying future landscapes of difficult containment by the potential effects of climate change on the spread of mosquitoes throughout the world; the increase in poverty and overcrowding of cities; and water management. After the emergency, however, this initial momentum has been put on hold, and dengue and malaria, which have affected these same areas for centuries, are producing epidemic outbreaks with a deep history. Thus, the idea of emergency reveals its limits to understand, narrate and intervene both the disease, the possible futures and the production of science.

On the Coloniality of Global Public Health *Eugene T Richardson, Harvard Medical School*

The continued inordinate demise from communicable pathogens in the global South is not the result of an intractable problem thwarting our best efforts to prevent and cure disease; we have the means. Rather, as an accomplice to contemporary imperialism, public health manages (as a profession) and maintains (as an academic discipline) global health inequity. It does this through 'bourgeois empiricist' models of disease causation, which serve protected affluence by uncritically reifying inequitable social relations in the modern/colonial matrix of power and making them appear commonsensical. Based on clinical work conducted during the recent Ebola outbreaks in West Africa and the Democratic Republic of the Congo, this paper aims to demonstrate how epidemiologists have had their moral outlooks stunted by the logic of contemporary coloniality, which then delimits how they gather facts. After discussing counterhegemonic ways of interpreting health phenomena, it concludes with ways to delink knowledge production from the colonial matrix of power.

Session Organizer:

Bernardo Moreno Peniche, UC Berkeley

Chair:

Bernardo Moreno Peniche, UC Berkeley

126. The Ontological Politics of the Anthropocene I
8:00 to 9:40 pm
virPrague: VR 24
Participants:

Crafting an ontology for the Anthropocene *António Carvalho, Centre for Social Studies - University of Coimbra*

The Anthropocene event in social theory (Blok, 2019) has fostered a series of conceptual interactions – Capitalocene (Malm and Hornborg 2014, Technocene (Hornborg, 2015), Chthulucene (Haraway, 2015), Wasteocene (Armiero and De Angelis, 2017), Plasticene (Ross) – that, in one way or another, shed light on the insurmountable damage caused by human collectives on the Planet. Meanwhile, we also witness the emergence of a set of heuristic and theoretical ontologies – object-oriented ontology, new materialism, ANT, post-humanism and compostism – that delve on relationality, human/non-human couplings and non-human agency to counteract modern dualisms, understood as the ontological correlates of the Great Acceleration. But what are the politics of these relational, more-than-human and immunological strategies? Not only we should be concerned with the post-political tone of a series of sociotechnical devices to tackle climate change –at the local and global levels- but also with the politics of notions such as Planetary Boundaries, Earth System and self-regulation. In order to do so, this presentation will engage in a dialogue with literature stemming from cognitive science and contemplative studies on technologies of the self, attempting to explore the pervasiveness of self-regulation models across disciplines and their consequences for current debates on the Anthropocene.

Restating the political in the climate crisis: political ontology and knowledge politics in uncertain times *Adam John Standring, Örebro University; Rolf Lidskog, Örebro University*

How can we best understand the politics of climate change? Many contemporary scholars argue that the politicization of climate science undermines its epistemic authority, which in turn has contributed to the idea that we live in a 'post-truth' era and gives support to scepticism or even denialism. Here they wish to maintain a strict separation between science and politics. Others argue that climate change is not political enough and that one factor preventing the adoption of the necessary interventions is the failure of climate advocates to realise the radical nature of social and economic change implicated in stopping climate change (Fischer, 2019). This is what Swyngedouw (2010) as termed the 'Non-political politics of climate change', in which techno-managerial eco-consensus combines with the fetishization of a single manifestation of the climate issue to ensure that 'nothing really has to change'. Building on Swyngedouw's distinction and drawing on recent work in political theory and human geography (Beveridge & Koch, 2017; Marchart, 2018; Brown, 2019); we argue that it is both useful and necessary to distinguish between politics as a set of practices and the political as a terrain or horizon of social (and, ultimately, ecological) conflict. In this way, we can begin to question how, where and why certain practices, discourses and institutions serve to either broaden, maintain or narrow the political horizon.

Earth System / World Order: Notes Toward A Question *Stefan Schäfer, Institute for Advanced Sustainability Studies; Cameron Hu*

Carl Schmitt proposed in 1950 that modern subjects found their lives split across a "doubled world": a worldwide system of political sovereignty figured in the territorial nation-state, and a worldwide system of trade spatialized as global "economy." In this paper, we consider how this doubling—an ideological distinction embedded in institutions, logics, and practices of global power—is at once amplified and undone as Euro-American institutions increasingly consolidate "planetary environment" as a third dimension of global-scale geopolitical rule. Our broader project characterizes this contradiction-intensive terrain of planetary-scale reason under the heading "Earth System / World Order." In this paper we ask, how does an ascendent Earth Systems Science (ESS) shape longstanding North Atlantic projects to order the world—how does the conceptual figure of the planetary torque the epistemic and material worlds of sovereignty and economy? What questions does this new terrain of planetary geopolitics raise for inherited genres of social theoretical reason? We tender an account of the shifting shapes and alignments of politics, economy, and planet as they converge in two twenty-first century developments: the massive build-out of oil palm plantations and the speculative governance of geoengineering.

The Nomos of the Anthropocene *Richard Randell, Webster University; Robert Braun, Institut für Höhere Studien Vienna*

Carl Schmitt's The Nomos of the Earth in the International Law of the Jus Publicum Europaeum is a genealogy of the construction of a nomos of the entire earth by the European powers beginning in the sixteenth century. Based on a judicial fiction, the Jus Publicum Europaeum, a hegemonic European legal balance and complex of laws, treaties, customs and traditions, this nomos permitted and justified the great land appropriations of the New World. Founded on a new consciousness of the world, namely of the world as a globe, on Schmitt's account that nomos came to an end with the Treaty of Versailles in 1919, since which time the Earth has lacked a single hegemonic nomos. We argue that a new nomos—a new spatial order—founded on technoscientific power/violence was constructed within the twentieth century: the Nomos of the Anthropocene. Like the old nomos it is based upon a conception of the earth as a globe but perceived from a location no longer situated on the surface of the earth but in space. It is a nomos that echoes Heidegger's image of a planet transformed into a combination of 'produce warehouse' and 'aircraft carrier.' Yet within this Nomos of the Anthropocene a Hegelian dialectic is discernible: in representing the earth absent the political boundaries of the old European nomos, it opens possibilities to resist the space and land appropriations of the planetary commons by those most responsible for the environmental crises of the Anthropocene, but who disavow any responsibility.

What We Talk About When We Talk About The "Anthropocene": White Supremacy, Coloniality, & Environmental Destruction *Jacob Barton, University of California, Berkeley*

There is within the environmental humanities a zone resembling "an utterly naked declivity" (Fanon 1952/2008) where Critical Race Theory (CRT) and Postcolonial Analysis (PCA) should exist. In no area of inquiry is this gap more pronounced than in the ongoing discourse concerning the nomenclature of the "Anthropocene." This paper is an attempt to integrate CRT, PCA, and Earth Systems Science (ESS) in proposing a new term for this geological and social moment of crisis and catastrophe: the Blanco-finescene, combining the vulgar Latin "blancus" for "white(ness)" and the Latin "fines" for "endings". This term is a deliberate derivative of Frantz Fanon's (1952/2008) "Negro-phobogenesis" and McBrien's (2016) "Necrocene," which signal the necrotic nature of capitalism and the violent nexus of white supremacy, coloniality, and resource expoitation. This paper takes the position, as many others have, (Malm and Hornborg 2014, Moore 2016), that the species-level categorization embedded in "Anthropocene" misrepresents our planetary reality. Interventions from a constellation of disciplinary perspectives have critiqued the term's dissembling properties and proposed a range of alternative nomenclature.. Missing from "Anthropocene" discourse, however, is an explicit focus on colonialism and white supremacy, two forces that, I argue, have operated inextricably and on a global scale to shape our geo-social present. Guided by Fanon and other Critical Race and Post-Colonial theorists, this paper argues for a specific and causal linkage between coloniality, white supremacy, and anthropogenic climate/geologic change."Blanco" and "fines" name these destructive socio-spatial apparatuses in ways that current terminology and critical analyses in the environmental humanities do not, linking a Fanonian praxis of decolonization with Earth-level understandings of space.

Session Organizer:
António Carvalho, Centre for Social Studies - University of Coimbra

Chair:
António Carvalho, Centre for Social Studies - University of Coimbra

WEDNESDAY, AUGUST, 19

127. Applied Interdisciplinary Energy and Buildings Research
8:00 to 9:40 am
virPrague: VR 01
Participants:

Catching a black cat in a dark room. Making tenants contributing to sustainable housing *Linda Soneryd S; Elena Bogdanova, University of Gothenburg*

Housing is one of the most contested infrastructures of contemporary societies. We approach the issue of interdisciplinarity by exploring tenants' participation in renovation processes explicitly aiming to accomplish sustainability goals. By close empirical case studies conducted in Gothenburg, Sweden, we show how tenants in these processes are both substantially and procedurally kept in a dark room, as an effect of how "inclusiveness" is organized. We argue that tenants are kept in the dark in two respects. On the one hand organizers often refer to the complexity of transdisciplinary knowledge which is difficult to apprehend by non-professionals. On the other hand, tenants are kept in the dark when it comes to the direct consequences of their choices, namely the increase of the rent, because of a time gap between the choice and the effect. Thus, the tenants cannot make judgements on the basis of all the

relevant knowledges required. Our analysis reveals how this is a result of how the process is organized rather than a quality that should be ascribed to the tenants. This means that the process is formally fulfilling the demand for inclusiveness, however, when full information is finally revealed to tenants, previously cooperative processes not seldom turn into vivid protest.

Messy practices: the design and construction of sustainable buildings *Ruth Woods, Dept. of Interdisciplinary Studies of Culture, NTNU; Judith Thomsen, SINTEF Community*

Buildings stand for 40% of annual energy use and 36% CO2 production. Technical solutions, balanced ventilation, advanced façade and flexible energy supply systems, mean that buildings are increasingly complex to manage and to live in. Complex sustainability implies a need for involving building users during design and development processes. Current prioritisation within EU funding sees technical requirements for the sustainable buildings as moving technologies closer to people's everyday lives, thereby increasing the need for interdisciplinary research. The paper asks if it is possible to re-think interdisciplinarity in building research, focusing on the role of the anthropologist. Because, although it is acknowledged that complexity is a challenge and that new technology alone will not lead to sustainable buildings, engineers dominate building research. During the assignment of roles and responsibilities by engineers, anthropologists are often ascribed the role of "people experts", coming in at the end of the design and development process (Henning 2005). From this position they are offered opportunities to study behavioural change but are excluded from what Ingold (2013) calls "messy practices", during the design and construction of sustainable buildings. When decisions are made about the allocation of space, technologies and functionality. Decisions that have implications for who and what is included or excluded and where power struggles take place between user groups and disciplines (Gieryn 2002). Using examples from zero emission neighbourhoods in the Norwegian context, the paper will show that late inclusion of end-users and anthropologists challenges the potential implied by citizen engagement during design and construction.

Realizing sustainability transitions through the (dis)integration of policy, business, and engineering cycles and time scales for sustainable energy: experiences from eastern Ontario, Canada *Alexandra Mallett, Carleton University; Craig Merrett, Clarkson University*

To achieve the transition to a low-carbon future, the implementation of sustainable energy systems such as wind, solar, and hydroelectricity into our energy mix is an integral component. To do so more effectively requires the close collaboration of policy, business, and engineering experts. Further, research has shown that the general public must be included in any discussion that may alter the built and natural environment in their region. The close collaboration of experts mandates a mutual understanding of the cycles used by each expertise in reaching a decision, as well as the lifespan of the technologies and the time scales that each cycle requires. Despite this acknowledgement about the need for integration of these varying perspectives and cycles, actual projects are often piecemeal, disaggregated, opaque, and dominated by (one set) of experts. In the context of sustainable energy, a policy cycle – or namely the process through which public authorities decide a problem warrants their attention, then they decide to act upon it through policy -- occurs in response to the need to reduce greenhouse gas (GHG) emissions. In democracies, the front end of this cycle, which includes problem definition, policy design and marshalling the resources to implement said policies and programs, tends to mirror that of the electoral cycle, such as up to four years. However, the implemented decision may last for another decade and beyond. The business cycle typically may last one to four years; however, the constructed facility will have an economic life of 20-30 years. The engineering cycle may last one to four years; however, the technology life may exist for 50 years or more, thus beyond the economic life. The differing time scales causes technology to initiate new policy, business, and engineering cycles. The objective of this research is to develop an integrated cycle that may be used collectively, and recognizes

the differences and potential synergies between disciplines. Further, the integrated cycle recognizes the important role that the general public can play in deciding how they feel society should transition to a low-carbon future. The cycle will be illustrated using a case study of solar power implementation in Kingston, Canada over the past 30 years. This case study includes interviews with a number of stakeholders and actors, and analysis of primary documents used to advocate for, design, and install solar farms.

Session Organizer:

Antti Silvast Silvast, Dept. of Interdisciplinary Studies of Culture, NTNU

Chair:

Ruth Woods, Dept. of Interdisciplinary Studies of Culture, NTNU

128. Politicization of Sociotechnical Futures 1: Future Assessment and Governance

8:00 to 9:40 am
virPrague: VR 02

The studies on expectations, imaginaries and visions reveal how sociotechnical futures and the associated promises and fears increasingly influence innovation and transformation processes. In various societal contexts, for example, in research politics, scientific collaborations, parliamentary debates, and social movements these imaginaries serve as visionary resources to legitimate decisions, coordinate practices, steer developments, or to raise awareness for specific problem-solutions. At these sites, futures are politicized and represent or conceal present stakes at dispute. The objects of politicization materialize in a variety of forms (e.g. terms, symbols, metaphors, narratives, artifacts, traditions, organizations). We will discuss how both, the characteristics of the societal context (e.g. power constellations) and the forms (e.g. discursive narratives or prototypes) are conditions for the politicization.

Participants:

Exploring And Shaping The Politicization Of Sociotechnical Futures Differently: Contextual Challenges For TA's Vision Assessment *Andreas Lösch, Karlsruhe Institute of Technology (KIT)/ ITAS*

Vision Assessment is a methodological approach of technology assessment (TA), which aims to provide scientific knowledge in order to orient political and societal interventions in processes of sociotechnical change in real time. The subject of vision assessment are sociotechnical futures, which shape these processes—i.e. by guiding political decisions and actions in research policy and funding. In this sense, futures becoming politicized. Oriented towards STS insights (e.g., on expectation dynamics, sociopolitical imaginaries, strategies of visioneering) research at the Institute for Technology Assessment and Systems Analysis (ITAS) has shown, that the opportunities to examine and intervene in processes, where futures are getting politicized, differ in relation to the context of the specific case-studies. Therefore, the prerequisites and the limits for the politicization of futures are always context-related and, as a consequence, the roles of TA's vision assessment itself as an observer and/or an actor in the politicization processes. My presentation will outline three modes of vision assessment: (1) the prevalent critical observation of the effectiveness of stabilized visions in processes of sociotechnical change, (2) the modulation of the shaping of visions in close interaction with scientists and citizens in research and development, (3) the active promotion of specific visions in the context of societal struggles for the best and most powerful future between diverse local and global groups of actors. Based on the comparison of these three modes, my presentation discusses the challenges for TA's vision assessment concerning interventions in processes, in which sociotechnical futures becoming politicized.

Assessing Scientific-Technological Narratives In Future-Oriented Research And Decision Making *Michael Eggert, Chair of Sociology of Technology and Organization (STO) at RWTH Aachen University, Aachen/Germany; Axel Zweck, RWTH Aachen University – Institute of Sociology*

Decision processes dealing with socio-technical change, e.g. those underlying the governance and funding of research and

development, are naturally subject to a high degree of uncertainty. The further the consequences of decisions extend into the future and the more complex the issues in question are, targeted predictions become more and more unreliable. Future-oriented scientific approaches such as technology assessment or foresight are a means to generate orientational knowledge which helps decision makers to cope with this uncertainty. An important element in this context is the consideration of scientific-technological narratives. Such narratives, understood as the core content of narrations of science and technology, serve to reduce the futures' complexity and to facilitate the contextualization of scientific and socio-technical developments. But unfortunately, narratives are often opaque, sometimes interest-driven, and tend to hide contradictory aspects. Notwithstanding their essential role for predicting and shaping socio-technical developments and them being de facto a decisive element of every future-oriented research, discourse, and decision-making, their contribution has not yet been systematically examined in prospective STS. Against this background, we strive to open up the topic of scientific-technological narratives for systematic analyses within future-oriented research and decision-making. Based on the assessment of the narratives prevalent in the field of artificial photosynthesis, we present a framework to systematically reflect upon narratives in future-oriented research projects. Thus, we hope to contribute to an objectification of the discussions on future science and technology and to gain insights into how scientific-technological narratives shape scientific, political, and societal expectations of future socio-technical perspectives.

General Data Protection Regulation: The Power and Value of Personal Data *Lauren Lee Barrett, University of Colorado Boulder*

In May of 2018, the European Union's new General Data Protection Regulation (GDPR) came into effect. The regulation is touted by the European Commission as the world's toughest privacy policy which "fundamentally reshape[s] the way in which data is handled across every sector, from healthcare to banking and beyond" (European Commission 2017). Drawing on ethnographic fieldwork in Brussels, Belgium this paper examines the GDPR as a kind of "sociotechnical imaginary" through which diverse visions of modernity and the collective good are constituted (Jasanoff and Kim 2010). As a sociotechnical imaginary, the GDPR represents an institutionally stabilized and publicly performed vision of the relationship between society and technology within the EU. While exercising new forms of control over how personal data should be collected, processed, and protected in digital markets, the GDPR simultaneously naturalizes the existence of a market for personal data. I explore how, through the GDPR, the EU positions itself as the legal and political authority capable of policing a new moral data economy in which companies are accountable and transparent and citizens have increased autonomy over their personal data, while simultaneously relying on the construction and success of a responsible data subject– capable of reflecting, demanding, and erasing their own data.

Governmentalities of Sociotechnical Climate Strategies between Copenhagen and Paris *Sean Low, Institute for Advanced Sustainability Studies (IASS); Miranda Boettcher, Institute for Advanced Sustainability Studies*

This paper poses an account of climate governance as a history of the strategies developed to address it, as immature, imperfectly-scaled, and even imagined sociotechnical systems. It joins the sociotechnical account to literatures on governmentality – akin to what STS increasingly terms 'sociotechnical imaginaries' – to inquire after the structural conditioning that eras of climate politics, and succeeding waves of emerging technologies in climate governance, exercise on each other. Here, we focus on a 'Copenhagen' era (2005-2015) centered around the 2009 Copenhagen Accord, which saw the rise or consolidation of options currently at play: second-generation biofuels, shale gas, short-lived climate forcing pollutants (SLCPs), sunlight reflection methods as a kind of 'climate engineering', REDD+, carbon capture and storage (CCS) and increasingly, carbon dioxide removal as novel carbon sinks. We make three

arguments. Firstly, this ecosystem of fledgling sociotechnical strategies reflects and reinforces governmentalities distinct to the post-Kyoto 'Copenhagen' era: e.g. regime fragmentation, 'bridging' and 'time-buying' rationalities, an escalation of 'co-benefits' sought with other governance regimes. Secondly, this ecosystem is neither monolithic nor represents a clean break from pre-Copenhagen governance; distinct lineages link various sociotechnical systems to each other, and to the resilient market governmentalities of the era marked by the negotiation and operationalization of the Kyoto Protocol. Thirdly, we keep an eye on the carbon economy's systemic dominance as a structuring condition, with emerging sociotechnical systems or promises ostensibly presenting new tracks of ambition, but functionally delaying comprehensive decarbonization.

Promises in the political economy of delay: Greenhouse Gas Removal as cultural climate fix *Nils Markusson, Lancaster University; Duncan McLaren, Lancaster University; David Tyfield, Lancaster University; Rebecca Willis, Lancaster University; Bronislaw Szerszynski, Lancaster University; Andrew Jarvis, Lancaster University*

The nature and framing of climate targets in international politics has changed substantially since their early expressions in the 1980s. Here we describe their evolution in five phases from 'climate stabilisation' to specific 'temperature outcomes', co-evolving with climate politics and policy, modelling methods and scenarios, and technological promises (from nuclear power to carbon removal). We argue that this co-evolution has enabled policy prevarication, leaving mitigation poorly delivered, yet the technological promises often remain buried in the models used to inform policy (McLaren and Markusson, under review). We theorise promises of future greenhouse gas removal (GGR) as defensive, promissory spatio-temporal fixes, which risk deterring emissions reduction, as part of a cultural political economy of delay to climate action (Markusson et al. 2017, 2018, Surprise 2018, Carton 2019). GGR promises, as the latest in a series of promises enabling deterrence, take specific forms in modelling and policy making, in the context of a neoliberal political regime. This paper, drawing on the results of a research project on assessment of mitigation deterrence risks of GGRs, aims to extend this argument in two ways. Firstly, by elaborating on the mechanisms and drivers of such deterrence, as part of the cultural political economy of climate action delay. And secondly, by discussing the subjective experience of living with the attraction of such delay. Throughout we will also offer thoughts on the methodological challenges of studying these phenomena, and what can be done in response to the risks of deterrence and delay.

Session Organizers:

Maximilian Roßmann, Karlsruhe Institute of Technology (KIT)/ ITAS

Andreas Lösch, Karlsruhe Institute of Technology (KIT)/ ITAS

Chair:

Paulina Dobroc, Karlsruhe Institute of Technology

129. The Life of Numbers 3: Counts, Consumptions, Patients
8:00 to 9:40 am
virPrague: VR 03

Numbers are afforded life through their entanglements in situated practices. While numbers are often depicted as transcending contexts, this Panel appreciates numbers as relational beings. This orientates us towards exploring how and what numbers become, what they do, and the material effects they make through their implementations, appreciating enumerations as 'evidence-making interventions' (Rhodes & Lancaster, Social Science and Medicine, 2019). This Panel explores numbering practices as forms of anticipation and governance. Enumerations are afforded a power-of-acting through models, projections and targets which shape the present in relation to imagined futures. This is apparent in the field of global health, where mathematical models and numerical targets are shaping agendas, including as nations strive to achieve futures in which diseases might be eliminated. Enumerations are also key to the making of futures in relation to science, technology, environmental management, and climate. Reflecting on how numbers do their work in different policy, science and implementation sites, this Panel asks how the governing work of numbers – especially through models and modes of projection – is made-up in practices, with particular affects, inviting speculative thinking

on the possibilities that enumerations can afford as well as on the futures they might close down. (Please note: this panel runs across 3 sessions).

Participants:

Becoming Countable: U.S. Cancer Policy and the Temporality of Numbers *Deborah Lefkowitz, Center for Health Disparities Research and Department of Anthropology*

Numbers have become indispensable for formulating, guiding, and evaluating U.S. cancer policy. We count new cancer cases and tally deaths to measure successes in the "war on cancer," and compare survivor outcomes across populations to identify disparities. We think of numbers as the quintessential immutable mobiles (Latour, 1987), easy to transport across institutional and political boundaries. The problem with relying on numbers is that actions/events become countable only after they have occurred (e.g., cancer diagnoses). When numbers enter the policy arena they are already disconnected from the mutable processes of care seeking and delivery they purport to encapsulate. Drawing on over 160 interviews with breast cancer survivors and service providers, I traced the processes through which women gained access to cancer care and supportive services in a medically underserved region in Southern California. This study reveals access as emergent, processual—and numerically elusive. Whereas common proxies for access—e.g., distance from provider, insurance status, and service utilization—generate numbers, my analysis demonstrates how these numbers can be misleading. Numbers represent suspended trajectories in time, "cuts" in the network for purposes of analysis (Strathern, 1996). They reference the specific moments when the cuts were made, and therefore account poorly for ongoing processes. Findings from this study raise questions about what "counts" for cancer policy, and how policy might become more responsive to the scientific knowledge that numbers omit, or fail to capture. Research was supported by the U.S. National Cancer Institute of the National Institutes of Health under Award #F31CA192478.

Numbers and eating disordering of (male) bodies. *Piotr Maron, University of New South Wales*

The starting point of this presentation is that the 'maleness' in eating disorders (ED) constitutes an ontological disturbance, an interruption, a thinking otherwise in relation to 'the standard' – female EDs. Specifically, this paper is interested in how numbers accommodate, anticipate, organize and govern this ontological and political disruption. Contemporary numbers are believed to epitomize the need for a quantified and measured expertise (Merry, 2016). Governing practices and policy making heavily rely on enumerated entities (Verran 2010: 2015). I follow Kovacic (2018) who troubled that idea by explicating their situatedness and relational character and Verran (2015; 2010) who argued that numbers are in fact performative and political objects. In other words, numbers do not merely (re)present a problem, do not merely commensurate splits and fractures of ontological disruptions and are not quantified evidence of existence. I argue that numbers take an active part in generating the problem that they are employed to represent and, in fact, produce objects of intervention (Asdal, 2008). Therefore, in my paper, I will discuss numbers and numbering as evidence making practices of maleness and (male) eating disorders. I will be asking questions: what problems do those numbers represent? How they render those 'problems' as problems? (Bacchi and Goodwin, 2016)? How maleness is assembled and in what configurations? Lastly, I will be interested in exploring what kind of bodies and what kind of maleness are this numeric evidence making up in relation to disordered eating.

The making of a leprosy-free world: uncounted effects of enumeration *Glaucia Maricato*

In 2000, the World Health Organization (WHO) announced the global elimination of leprosy as a public health problem (defined by a prevalence rate of less than one case per 10,000 persons). Since the introduction of multidrug therapy (MDT) in the 1980s, the number of cases registered globally has decreased from over 5 million to about 200,000 cases. However, scholars have suggested that such decrease is not due to a drop in transmission rates, but rather to an increase in misdiagnosed cases. The announcement of the global elimination has caused the closing down of active surveillance campaigns as well as a progressive loss of expertise in diagnosis and treatment of leprosy. According to some estimates, since 2000 as many as 4 million cases have been overlooked worldwide. Moreover, although it has been taken for granted that leprosy can be cured after some months, the MDT-regimen does not necessarily lead to the end of the disease -it breaks the transmission chain, but the disease goes beyond the infection (Cruz, 2016; Maricato, 2019). Drawing on literature from STS and based on seven years of ethnographic research in Brazil, this paper aims to reflect on how both the controversial cure of leprosy performed by the MDT and the manner in which statistical data is produced take part in the ontological politics of WHO's leprosy-free world. In other words, this paper delineates how the global epidemiological reality of leprosy is enacted (Mol, 2002; 2008) and what are its effects on peoples' lives and political agendas.

Session Organizers:

Kari Lancaster, University of New South Wales, Sydney

Tim Rhodes, Centre for Social Research in Health, UNSW

Chair:

Tim Rhodes, Centre for Social Research in Health, UNSW

130. Careful engagements 1

8:00 to 9:40 am

virPrague: VR 04

During some time, interventionist research has become an important topic of conversation in STS (Zuiderent-Jerak 2015). This is important in a time where many research grants come with stipulations about partnership with actors outside academia. It appears that nobody offers clear advice on what to do or whom to turn to while engaging as a researcher in practice (Martin 2016). Thus, in this panel, we will discuss dilemmas and ambitions to engage and intervene with STS. Jensen (2007) proposes to 'sort' the various attachments the researcher encounters to different parties in the studied field to be aware of which parties the research strengthens and weakens. This leads to a number of questions. What inequalities do we risk producing especially when there is funding involved? Are there ways to avoid these by engaging with care (Viseu 2015)? What tensions and struggles do we meet while engaging in practice? How does this affect academic work and output? There is not much doubt that considering closer engagement as a scholarly method for producing new STS-insights into our research topics is opposed to using strategic interventions for achieving normative goals defined by managers, professionals and researchers. We foresee that the prospect of engagement will help STS scholars to explore what it means to live in concerned communities. In addition, engaging as a STS researcher in practice undoubtedly evoke Howard Becker's pivotal question "Whose side are we on?" Niels Nickelsen, Aarhus University, School of Education Doris Lydahl, University of Gothenburg

Participants:

Artful Participation: ethics of intervening in a symphony orchestra *Ties van de Werff, Maastricht University / Zuyd University of Applied Sciences*

Facing budget cuts, ageing audiences, and stagnating visits, contemporary symphony orchestras are currently trying to innovate and improve the quality of audience participation. Following public participation projects in domains such as urban planning, public health or environmental management, many symphony orchestras have adopted the discourse of innovation and experimentation to shape new forms of audience participation (Idema 2012; Topgaard 2014; Hamel 2016). In these experiments, lay or amateur audiences engage with artistic matters in ways that challenge traditional expert approaches of creating artistic performances (Lezaun, Marres and Tironi 2017). As a particularly codified and normatively charged practice, the field of classical symphonic music offers an interesting case for understanding the value-laden dynamics of experiments in public participation. In the project Artful Participation – a collaboration between Zuyd University of Applied Sciences, Maastricht University, and the South Netherlands Philharmonic (the Netherlands) – we intervene in the orchestra by designing experiments where audiences are given an artistic voice. Based on our empirical fieldwork, I reflect on the shifting roles and clashing virtues of a (un)successful interventionist in practice. Balancing between provocative containment (Lezaun et al., 2013) and artful contamination (Zuiderent-Jerak, 2015), I show how in the collaborative process, artistic and academic

responsibilities get entangled, and how concerns converge.

Exploring transdisciplinary co-design as an intra-active engagement: Insights for STS scholars *Karly Burch, University of Otago; Katharine Legun, University of Wageningen; Hugh Campbell, University of Otago*

Transdisciplinary collaborative design, or co-design, has become a popular method for technology development, often referring to the bringing together of a broad selection of human participants to collaboratively define a problem and design possible solutions. However, transdisciplinary research projects working to co-design new technologies within and for wild spaces (e.g. outdoor farms) necessarily engage a vast range of both human and more-than-human actors (e.g., engineers, computer scientists, agricultural consultants, indigenous scholars, STS scholars, funders, industry representatives, farm managers, seasonal workers, universities, plants, raindrops), with some recognized and others not recognized as participants within traditional notions of co-design. Based on early insights emerging from the MaaraTech Project—a transdisciplinary research project based in Aotearoa New Zealand working toward co-designing agricultural robots and technologies for use in vineyards and orchards—in this paper we borrow Barad's concept of "intra-action" as a methodological tool to explore the complex relationality involved in co-designing new robotic technologies for use in wild spaces. Through our analysis we explore the possible benefits that come from thinking intra-actively and broadening definitions of who, or what, counts as a "participant" when co-designing technologies in and for the wild. We also identify questions related to care, accountability and agency that arise from taking an intra-active relational approach, and reflect on the specific positionality, responsibilities and agencies of STS scholars as active participants engaging, and possibly intervening, in transdisciplinary co-design processes.

On the Dilemmas of Collaborating with Industries *Tobias Drewlani, Munich Center for Technology in Society, Technical University of Munich*

The 'collaborative turn' (Farias 2016) has recently sparked a lot of attention in STS and there is a variety of approaches and practices available to researchers willing to experiment with such forms. This paper seeks to take up these debates by reporting from the entanglements of social sciences with a specific actor—the industrial corporation. Investigating these entanglements seems to be particularly urgent since policymakers increasingly embrace the idea of the engaged researcher especially in this context. Drawing on my experiences of being an 'integrated social scientist' in an emblematic project dedicated to the exploration of the 'future of work', I would like to ask whether and how the ideas typically associated with participatory engagement in STS can translate into this particular context. I thereby reflect on two different dilemmas of my fieldwork: the first one refers to the identity of social scientists in such engagements. I challenge the idea that it is entirely on us as researchers to make decisions about who we are and whose side we are on. Therefore, I suggest ways of addressing these challenges of positioning in doing fieldwork and ethnographic writing. The second aspect I seek to explore refers to the limits of control over the perception and implications of our own contributions. To address this dilemma, I suggest exploring the 'social lives' of our 'fieldwork devices' (Law and Ruppert 2013), by laying out how they are formatting social relations and how they are used opportunistically by all the actors involved.

Tentative potential of performative experimentation: A case of collective memory-work in an exhibition space *Tine Friis, CBMR and Medical Museion, University of Copenhagen*

Engaging in interventionist research calls for attention towards its possible implications. Depending on the form of intervention, the implications can be difficult to predict, especially if the intervention does not aim at fulfilling goals specified prior to the intervention. This leads to questions about the potentials, tensions and practice of interventionist research, which has an exploratory rather than goal-oriented aim. This paper discusses a case of interventionist research based on a method of collective memory-work and currently unfolding in an exhibition space at a medical museum. The purpose of the intervention is to experiment with how researcher and co-researchers can articulate personal experiences of how their gut and psychological health connect. A growing field of microbiome research investigates this connection and its results are widely discussed in and outside academia. Microbiome research might have implications for the ways we understand our selves and each other, however, these are rarely addressed from a personal everyday life perspective. The current moment in microbiome research calls for talking about a phenomenon we rarely talk about, thus the purpose of experimenting with how to articulate personal experiences of this connection. By discussing methodological considerations and anecdotes from the ongoing fieldwork, this paper addresses some of the tensions that emerged and points to tentative potentials of intervention as performative experimentation. It does so, from the perspective of an STS outsider curious about intervening with STS, its potentials and struggles.

Session Organizers:
Niels Christian Nickelsen, Aarhus University, School of Education
Doris Lydahl, University of Gothenburg
Chair:
Doris Lydahl, University of Gothenburg

131. Genontologies I
8:00 to 9:40 am
virPrague: VR 05
Participants:

How to regulate the use of gene editing technology on human embryos—the Japanese context *Minori Kokado, Kobe Pharmaceutical University, Japan*

In this paper, we will discuss how regulations for new and controversial technologies like human genome editing are created, including the impact that existing policy can have on it, by using Japan as a case study. According to newspaper articles and our own survey, the government has already begun discussions on research into the clinical use of genome editing on human gametes and embryos. In June 2019, the Ministry of Health, Labor and Welfare, in cooperation with the Ministry of Education, Culture, Sports, Science and Technology, jointly set up a specialized committee to consider this issue. A report will be published in the spring of 2020, and it is expected that genome editing research and the clinical use of genome editing on human gametes and embryos will be subject to regulation. However, no bill is expected to be filed yet. Similarly, reproductive medicine is already widely practiced in Japan, despite the fact that there is no legal framework regulating it. It is possible that the same thing may happen with human genome editing, even though the need for regulation is widely recognized. Through a close examination of the government discussions on this topic -- including the Ministry Committee's minutes and its report, as well as academic papers and newspaper articles -- we have attempted to make clarify how regulations on new and controversial technologies are crafted, and how existing policies impact the process.

Politics of (Non)Belonging: Making Differences Between Publics Through Forensic Genetic Technologies *Nina Amelung*

This paper explores how forensic genetic innovations are constructed to serve 'the public' and portrays attempts of enacting them in ways to demonstrate their credibility and utility to specific imaginaries of 'the public', while marginalizing non-belonging publics. In the focus is a contested set of technologies assembled under the umbrella term of forensic DNA phenotyping (FDP). In Germany, FDP is considered for criminal investigation to predict external visible characteristic such as eye, hair, skin colour, biological age, and biogeographic ancestry of an unknown criminal suspect and thereby describes the phenotypical characteristics of population groups fulfilling these criteria. The public controversy accompanying the regulation of the FDP innovation comes in times of increasing xenophobia, racism and rightwing extremism. Critically advancing Jasanoff's concept of 'civic epistemologies', the analysis explores how ways of public knowing serve the demonstration of its techno-scientific utility to

specific publics. By analyzing interviews with stakeholders engaged with these technologies, media articles, legal and policy documents the paper reconstructs the ways of public knowledge making which accompanied the regulation process of these technologies. Multiple publics are imagined when FDP becomes configured as technology of making differences between 'us' and 'them', sorting out specific risky people of different appearances. The analysis reveals particular politics of belonging by imagining specific publics as benefitting from the technologies in the name of security and other publics as potentially being harmed by generalized suspicion. Finally, the paper discusses the conceptual limitations and requirements of 'civic epistemologies' to accommodate the relationship of publics and (non)belonging.

Prenatal Testing in East Asia: Differences in Information Provision and Choice *Hyunsoo Hong, Division of Bioethics, The Institute of Medical Science, The University o*

Prenatal testing is widespread throughout the world and, of course, has different responses in different societies. The Japanese society has been cautious in accepting prenatal testing; non-invasive prenatal testing (NIPT) was introduced as a clinical study in 2013, and further studies were conducted to establish and expand the implementation of a genetic counseling system. There are a number of social issues, such as shortage of specialists, as well as Japanese women's awareness and attitude towards prenatal care. In contrast, in South Korea and Taiwan, prenatal testing is conducted as a routine procedure. Furthermore, NIPT places emphasis on prompt provision of the "new technology" and responds to society according to its widespread use. There has been little discussion about all this. Therefore, consideration for social issues is urgent. This study focuses on Japan, South Korea, and Taiwan, which differ in their response to prenatal testing. Its purposes are to clarify how these variations in the provision of information on prenatal testing in these three countries have made a difference in the choice of individuals. The research method compares the results of questionnaire and interview surveys with stakeholders, medical doctors and the general public. In the form of discussion, I examine prenatal testing in a multifaceted context, such as pregnancy, childbirth and childcare, concerning women and their families, in all three cultures. Through this process, I extract various issues; therefore, this study can contribute to an improved application on prenatal testing.

Session Organizer:
   Minori Kokado, Kobe Pharmaceutical University, Japan
Chair:
   Minori Kokado, Kobe Pharmaceutical University, Japan

132. Matters of Integrity - Studying the Situated Practices of Producing Knowledge 'Well'

8:00 to 9:40 am
virPrague: VR 07

There is a growing concern about the integrity of research in contemporary academia. Fraud cases, rising retractions, and irreproducible studies have put the reliability of researchers and their results into question. The very practices of knowledge production are questioned and discussions on 'fake news' lead to an increasing sense of unease. Science policy measures tend to respond to such unease with a call for scientists to follow 'the' rules for 'proper' scientific conduct and implement new forms of standardization – i.e. code of conducts. This panel complicates a taken-for-granted understanding of integrity and explores instead the situated imaginations and practices of it. We explore the multi-facetted understandings of what it means to do 'good' science, 'responsible' research and how such 'goodness' and responsibilities are distributed. How, when, where, with and for whom are (e)valuations of research practices negotiated in times of a globalized scientific world? What are the costs and who bears them? How do ideas about doing research 'properly' collide with current academic rhythms and requirements? Who cares about research (integrity)? And, what could it possibly mean to care for research? Studying research (integrity) in practice allows us to appreciate the moments and spaces in which research practices become matters of concern and/or care. Such STS inspired reflections on research integrity in practice may invite us to not only see the multiplicity of values and practices, the blurry boundaries between what is regarded as accepted/acceptable practice or transgression, but might also offer alternatives to too quickly standardising regulatory

efforts.
Participants:

The Tone Debate in Psychology *Maarten Derksen, University of Groningen - Theory & History of Psychology*

According to many psychologists, their discipline has been in a state of crisis for almost a decade. A reform movement has emerged that strives to improve the research culture. In this crisis there have been a number of heated controversies, often but not exclusively over the results of replication studies. In these controversies, accusations of bullying, bad faith, a lack of civility and professional courtesy, and other moral flaws are regularly exchanged. A 'tone debate' has developed, recognised as a specific, ongoing discussion in and with the reform movement in psychology. In what is at first sight a marginal 'meta-debate', and is in fact considered as such by some of the psychologists involved, fundamental issues are at stake. What is the place of criticism in science, and how to do criticism? How to be both critical and collegial? Is it possible to separate the science and the scientist? I will argue that the tone debate is not merely about tone and manners: in debating how to debate, psychologists explore knowledge, power, and subjectivity, and the connections between them. I will compare the current attempts at managing dissensus with historical analogues, in particular the social technology of Robert Boyle, analysed by Shapin & Schaffer. New, online social technologies such as Twitter and Facebook have raised anew questions about power and social order (e.g. who belongs to the community and who makes its rules), subjectivity (e.g. what are the virtues of a good scientist), and knowledge (e.g. does science advance though mutual criticism).

Relationships and Social Practices as Matters of Integrity *Florentine Frantz, University of Vienna, Department of Science and Technology Studies*

When concerns about research integrity arise, debates about mitigations often turn their focus to the education of young researchers. Raising awareness about transgressions of good scientific practice and the harm they might cause or consequences they entail, should ensure that the 'next generation' of scientists grows up with sensibilities with regard to integrity issues deeply entrenched into their epistemic and social mind-set. However, most efforts focus on formalizing and standardizing integrity in form of educational initiatives, which neglect the situated character of these issues and boil the problem down to individuals 'not knowing it better'. Actually, we know surprisingly little about the social practices of assessing the own and others' research practices as acceptable/legitimate and how relationships – be they with peers, colleagues, supervisors, mentors or research objects – matter for this. This will be the focus of my presentation. Building on an analysis of six discussion groups with early-career researchers, I will elaborate how they perceive integrity as an issue to be attended to and how they conceptualize their own position/responsibility for doing so as being embedded in the academic cultures they are socialized into. This paper will build on research undertaken in the framework of the project "Borderlands of Good Scientific Practice" funded by the Research Fund of the Austrian National Bank and carried out at the research platform "Responsible Research and Innovation in Academic Practice" at the University of Vienna.

Assembling Research Integrity *Sarah Davies, University of Vienna; Katrine Lindvig, University of Copenhagen*

In recent years research integrity – and, conversely, misconduct – have received increased attention from scientific and policy actors. Many countries have seen dedicated funding streams for research on (mis)conduct, focused training programmes on the topic, and increased media discussion of scientific fraud or questionable practices. In this paper we frame these mobilisations around research integrity as a 'policy object' (Sin 2014) and reflect upon how this object is being assembled within one particular context, that of Denmark. Using material from a qualitative interview study with diverse actors within Danish research, research policy, and research management we outline how Danish policy for research integrity is being imagined and practiced, first describing the diverse actants that are enrolled into the project of 'research integrity', and second discussing

how responsibility is variously attributed to these. Importantly, we find that despite extensive efforts to define and settle research integrity as policy object, it continues to be assembled in diverse ways in different sites and by different actors. Even in a single national context, 'research integrity' remains multiple: the (policy) project of closing it down is always partial and incomplete.

Session Organizers:

Florentine Frantz, University of Vienna, Department of Science and Technology Studies

Sonja Jerak-Zuiderent, Amsterdam University Medical Centers

Chair:

Florentine Frantz, University of Vienna, Department of Science and Technology Studies

133. Doctoral Research, Inventive Inquiry and Making New Spaces within and beyond the Academy - I

8:00 to 9:40 am

virPrague: VR 08

Amid concerns about the "neo-liberal university," we see a surge in studies *about* early-career researchers and the precarity of career trajectories. In turn, more and more special events, like pre-conferences and self-care workshops, promise supportive settings *for* early-career academics. While these developments are important, they do not always consider how scholarship carried out *by* new scholars themselves might be working to re-shape the academy. This panel seeks to foreground the agency of doctoral researchers, as well as their particular constraints, by inviting them to share how their practices resist, subvert and reconfigure the spaces where scholarship comes to matter. We wish to offer a platform for "inventive" and critical doctoral inquiry that generates "alternative ways of combining representation of, and intervention in, social life" (Marres et al. 2018, 18), using e.g. art, design, performance, activism, alternative methodologies and more. We contend that this creative and active relationship with "the social" is reflexive–that inventive research both transforms, and is transformed by, its "objects" of study. Our panel asks: How do emerging researchers "invent the social" within the contemporary university and beyond? And, critically, who bears the costs and/or consequences of such change? We invite doctoral students from all disciplines to present the space-making potentialities of their inventive research, and collectively forge a space of solidarity for early-career scholarship. We welcome all presentation formats to explore how this emerging body of inventive work might contribute to existing knowledge structures and also reconfigure the spaces where scholarly careers are constituted.

Participants:

Solidarity Walks 0.1: Restitution of the Institution - A Working Methodology *Megan Olinger, City University of Hong Kong*

A collective, overlapping, entangled presentation by a group of Hong Kong based PhD researchers. The 2019/2020 academic year in Hong Kong has been fraught with fits and starts. On August 11, 2019 an Emergency Response Unit (ERU) was set up at City University due to escalation of the pro-democracy movement that has been on-going since June 2019. By mid-November, the University had suspended classes and evacuated students from the resident halls. Security measures were taken to control and restrict access to the University's grounds, including use of CCTV cameras and increased ID checks. This was to be the new normal for the start of the second semester. However, by January 25, 2020 the ERU again notified all students that campus was closed for a second time within the academic year, this time due to the novel coronavirus. Since accessing our desks (and for some of us, our homes) has been intermittently impossible, a group of research students have met regularly off campus. Our various research topics filtered through the shared experience, has led us to question the role of the public university. How and for whom is security defined when access is restricted? What is the role of the public university to acknowledge and facilitate dialogue in the face of social unrest and emergency? How is knowledge given space to be produced when students, faculty, staff, and community are sequestered? What Hong Kong is experiencing is not an exception, but an example of what is happening at many public universities all over the world, where instead of cultivating a place of dialogue and valuable critique,

students are held in check by the restraint of the institution.

Solidarity Walks 0.1: Future Situations of Knowledge production *Christine Maria Kaiser, School for Creative Media - City University Hong Kong*

A collective, overlapping, entangled presentation by a group of Hong Kong based PhD researchers. Circumstances, Contexts, Situations, Environments, Surroundings, and so on, are influencing a research process. Since the empirical fieldwork of Karin Knorr-Cetina on laboratory studies, the theoretical writings of Donna Haraway on science and nature, especially her situated knowledge contribution and Adele Clarkes theory-method package of Situational Analysis, the scientific world we live in seems not anymore consisting of one objectivity. More realities popping up, and the question is how to make these truths visible? Due to the current political and health situation in Hong Kong and China, my research is deeply influenced and adjusted according to the current situation. My investigation focus on how artistic and curatorial discourses in the art spaces of Shenzhen are enfolding. According to my PhD schedule, I should be deep into my empirical studies. But I am not. Field Trips to Shenzhen became difficult during the protests in 2019, as through increasing border controls anxiety became tangible for me. Now, 2020, through the novel Coronavirus field trips are impossible: I would need to quarantine myself for two weeks after visiting Shenzhen each time. The current model of my research is led by adaptation to the situation. The significant impact on my research needs to address these impacts actively. Current researchers and colleagues face the same difficulties: a university which is actively fortressing the university with build walls, restriction and proforma surveys. A group of researchers collectively grouped and are facing new ways of knowledge shaping in times of a need for confident student-led crisis management to be able to be part of an honest and open academic system. This paper calls for an openly formulated research process and a rethinking for future spaces of knowledge production.

Solidarity Walks 0.1: The Collective as the Institution of Our Times + "Refugee" Residents *Michael Leung, School of Creative Media; CHEN HUANG, City University of Hong Kong*

A collective, overlapping, entangled presentation by a group of Hong Kong based PhD researchers. 【PART 1】 Recent events in Hong Kong such as the Anti-Extradition Bill movement and the COVID-19 have significantly affected our socio-political and environmental context and everything living. All eight universities in Hong Kong have had to adapt quickly, shifting their control on free speech and security enforcement. In November 2019 during our university's closure, several PhD classmates and I have been discussing the university's malpractices and approach to crisis management. In February 2020 I started a fieldwork in Europe, staying with different collectives who embody an autonomous way of living. This section synthesises the experiences gained both in Europe and locally, to shape new knowledge that may be helpful in the context of Hong Kong and beyond. 【PART 2】 A series of incidents since November 2019 have made the student residence (SR) less livable, denying physical access of residents and increasing control. As a non-local student resident and a PhD researcher, I will construct a timeline of the incidents from the protestors' occupation of SR, the enhancement of security measures, to the COVID-19 epidemic. Evidence showed that SR management manipulated the concept of "safety" in terms of fear instead of confidence and solidarity, which made the emergency policies capricious, and existing splits among student groups were exacerbated. This section will analyze the interplay of physical presence/absence, trust, and sentiments of safety, and discuss the strategies residents have developed in unstable times.

Solidarity Walks 0.1: Altered and Alternate Spaces for Knowledge Production & Nongkrong *Kay Mei Ling Beadman; Riar Rizaldi, City University of Hong Kong*

A collective, overlapping, entangled presentation by a group of Hong Kong based PhD researchers. 【PART 1】 Hong Kong has convulsed under the pro-democracy movement and the pandemic. Their impacts, and the institutional responses to both

crises, have reshaped the spaces in which research is conducted. Site-specific walking projects were postponed, initially because street gatherings became sites of violent dispersal, later for social distancing reasons. Likewise access to campus is disrupted, from doubled travel time, to restrictive security measures. The first semester abruptly ended and campus shut as a reaction to protest and police action. Now the coronavirus brings renewed campus closure and restricted access. As confidence in the institution is undermined, the creation of collective spaces that support research beyond the institution have become vital. 【PART 2】 Due to the political unrest and global pandemic, Hong Kong runs slower than usual. Semesters end earlier, most faculties and students have stayed home since November 2019. In response to these crises, we collectively engage and produce knowledge through the practice of nongkrong (literally 'hanging out' in Indonesian). Crisis prevention is shared over steaming hot pot dinners. Discourse on commons and collective action is discussed alongside chit-chat of political memes. In this 'non-productive time,' face-to-face gathering and WhatsApp group make such collectivism possible. This paper observes how we challenge social restriction and deal with crisis through the practice of nongkrong. Can knowledge production transform into action over dozens of nongkrong?

Solidarity Walks 0.1: Transition, Transgression and now thus fear of viral Transmissions. *Anton Dragan Maslic, City University of Hong Kong*

A collective, overlapping, entangled presentation by a group of Hong Kong based PhD researchers. A first year PhD student's impression of a city in turmoil. An autoethnographic report. After arriving in Hong Kong in August, the relative societal stability deteriorates progressively. Political struggles caused by a government unwilling or unable representing its constituents led to frequent citywide protests often retaliated by brutal police violence, which subsequently radically polarized society. Many citizens felt they were forced into self-censorship and in November 2019 most universities including CityU went under lockdown for contentious reasons. All academic programs or activities were precipitously ceased. In January 2020 the university reopens, but not for long. That same month the spread of COVID19 is causing the university to close its doors again. Its program continues online as a weak substitute. Communication and over-reactions by the university during these two periods show a tendency of fear-mongering, seems panic driven and expose unpreparedness or even incompetence. A continuous ominous cloud of uncertainty hoovers above everyone and strong fair leadership, necessary in these circumstances appears defunct. A collective effort from a group of PhD students to keep on going is questioning the role of institutes and universities. The discussions we have outside the university are indicative of a shared feeling of responsibility. We analyze our personal experiences throughout this period and ascertain possible alternative ideas how institutes and universities could and perhaps should (re)act. These conversations, based on our experiences should lead to a series of recommendations of how institutions could/should respond in difficult circumstances. Opinion of students are essential during calamities and often ignored which arguably challenges integrity of universities. As a first year, off-campus student, I intent to provide insights in experiencing being parachuted in a city in turmoil. This while trying to commence a PhD in an attempt to stay focused, productive and sane.

Session Organizers:
Lisa Lehner, Cornell University
Jade Vu Henry, Goldsmiths, University of London
Chair:
Jade Vu Henry, Goldsmiths, University of London

134. EASTS editorial meeting
8:00 to 9:40 am
virPrague: VR 09
Founded in 2007, East Asian Science, Technology and Society: an International Journal (EASTS) is the first English journal devoted to innovative STS studies that features East Asia. Editors are not only from Asia but all over the world. EASTS usually holds its editorial meeting

during the 4S annual meeting, but this time we welcome all people interested in this journal to join.

Session Organizer:
Hsin-Hsing Chen, Shih-Hsin University Graduate Institute for Social Transformation Studies
Chair:
Wen-Hua Kuo, National Yang-Ming University

135. Aesthetic Interventions: Exploring Emerging Worlds Through Art I – Studying Artists & Epistemic Practices
8:00 to 9:40 am
virPrague: VR 10

This panel explores art interventions into sociomaterial worlds and their implications for STS. It draws on the assumption that the complexity of emerging worlds requires innovative modes of approaching and engaging with these worlds. Building on recent discussions of the potential of art in exploring the nexus of science, technology, and society (Salter, Burri & Dumit 2017, Sormani, Garbone & Gisler 2019), we aim to further this conversation. The visual and aesthetic dimensions of scientific knowledge production have been discussed in STS for a long time. More recently, art in particular has attracted more attention by STS scholars who have addressed connections and boundaries between art and STS, relations between science, art, publics, and democracy, and project collaborations between scientists and artists. In this panel, we explore art in/as STS research. Art may serve as a way to express feelings of unease, confusion and powerlessness while at the same time has the potential to critically reflect sociomaterial developments and challenge power structures. By engaging with such issues, art interventions into emerging worlds are a form of "acting now". In this panel, we aim to discuss in what ways art may open up grounds for realigning and adding to STS practices. We welcome contributions that reflect on the potential of art in exploring emerging sociomaterial worlds. We are interested in both theoretical papers discussing the implications of art in/as STS research, and presentations of art practices / projects / interventions that examine science and technology driven realities of our times.

Participants:

Sci-art/Bio-art: Women in the Lab, Theory Materialized *Merete Lie, NTNU - Norwegian University of Technology and Science, Trondheim*

The point of departure for the paper is a co-authored volume (with Lisa Cartwright and Nora S Vaage) that will study research-based art practices from an interdisciplinary perspective, combining feminist STS and visual culture studies to approach contemporary sci-art as it is practiced by women artists who work in the lab, the clinic, and the field. Our study focuses on the practices of artists who are taking up the technologies and lab procedures of science and engaging practically with the emerging biosciences. It is the options of re-opening science procedures and products that made us turn to sci- and bio-art. Artistic strategies may function as a way of unveiling processes that are increasingly becoming closed or black-boxed by new technologies, for example by such as a PCR machine whereby the process of transforming biological material is pre-programmed and invisibly taking place within the machine. Artists pose questions that seek to unwrap these mysteries by haptic engagement with live matter mediated by the technologies in question. A seeming paradox of the practices in bioart labs is the way working with complex technical equipment and theories of science contrast to the emphasis on haptic experience with the material. The paper will analyse two examples of sci-art as an entanglement of matter and meaning – literally a 'practicing of materialsemiotics'. How do the artists work with the theoretical and microscopic and transform this to artistic strategies? In which ways can these examples of artistic strategies serve to questioning science, explicitly and implicitly?

Sci-Art/Bio-Art: Ethics, Politics and Aesthetics of Care *Nora S. Vaage, Philosophy Department, Maastricht University*

Current research-based art practices are engaging with the living world of non-human creatures to an unprecedented extent. Building on and critically engaging with recent STS scholarship on ethics and politics of care that includes non-human others (Puig de la Bellacasa, 2017), this paper focuses on artistic work that uses and speaks to non-human animals, plants and bacteria.

The paper presents an argument from the book project Sci-Art/Bio-Art: Art in the Lab, the Clinic and the Field, co-authored with Lisa Cartwright and Merete Lie. The book combines feminist STS, philosophy and visual studies perspectives to discuss art practices that engage materially with the living world through technology. Using ethnographic research, interviews, and conceptual analysis, this project explores practices within bioart laboratories, artists' work in medical clinics and artistic fieldwork in living environments. In 2002, the artistic research lab SymbioticA invited a symposium on the "aesthetics of care" to reflect upon arts that bring our relationship with other living beings into focus. Since then, a few artists and theorists have sporadically mobilized the aesthetics of care to describe such approaches. Care is a necessary part of engaging with living things, yet often, this relationship is fraught with power inequalities and (more or less hidden) notions of control and manipulation. I argue that through embodying care for the radically other, artistic work with living creatures can create an unease with existing hierarchies of care by critically pointing to mechanisms of control, and that this is at the core of the aesthetics of care.

The mode of making art: A study on the production of the VR-artwork "Palo Alto" *Mariya Dzhimova, Munich Center for Technology in Society, Technical University of Munich*

In contrast to classical approaches in sociology of art, for instance Bourdieu's theory of the field of cultural production or Becker's works on art worlds, STS research on art examines the artistic production process itself, rather than a logic of the field or particular conventions determining this process. STS research has shown that artistic production is a form of practice that emerges from the process of assembling humans and non-humans and which, as such, cannot be understood as the outcome of specific conventions or a logic. However, by emphasizing that art is a practice like any other activity, STS research on art does not shed much light on the specificity of the artistic practice or, in other words, which specific associations are transforming the quasi-objects into art objects and not into epistemic objects, for instance. Based on ethnographic research done in the studio of the Berlin artists Banz & Bowinkel, this paper tries to understand the specific mode of associations, which unfold through the artistic practice and bring an art entity into being. For this purpose, the paper examines the process of the production of the Virtual Reality artwork called "Palo Alto". By trying to specify the mode of the artistic practice, this paper attempts to contribute to STS research on art. Further, this paper reflects on the differences between its own methods and the artistic approach, and elaborates on the implications resulting from these differences for STS methods.

Session Organizers:
Regula Valérie Burri, HCU - HafenCity University Hamburg
Joseph Dumit, UC Davis
Chair:
Regula Valérie Burri, HCU - HafenCity University Hamburg

136. Health, care, (dis)abilities I
8:00 to 9:40 am
virPrague: VR 11
Participants:

Autoconstructing Care: the Quest for Assisted Living Facilities for Adults with Intellectual Disabilities in South Brazil *Helena Fietz, UFRGS*

In the past few years, the subject of assisted living facilities for people with disabilities has become more common in Brazil where there is a shortage of such services. The issue is often brought up by parents of people with intellectual disabilities, but the theme is still very controversial. A controversy prompted by the idea that no one provides better care than the family which is prevalent in family imaginaries and public policies alike. For the past six years, I have been conducting ethnographic research with families of adults with intellectual disabilities from different socio-economic backgrounds in South Brazil. Despite the many differences regarding class, race, age, and gender, one common concern emerges as mothers-caregivers age: "who will care for

my child once I am no longer able to do so?" In the present communication, I focus on families who, when facing the near-total lack of adequate spaces, have concentrated their efforts in building assisted living facilities where their adult children could live. Drawing on Jannette Pols' (2014) proposal for an Empirical Ethics of Care, I examine what are the "goods" sought and the "bads" to be avoided. Moreover, I argue that their efforts constitute an "autoconstruction" of care and are telling of how infrastructures of care are essential to promote a politics of autonomy. The residential home, thus, becomes more than a place where one lives, it is also a place where disability and care are enacted.

Blood Safety Standards: Values and Technologies in Vital Infrastructures *Aikaterini Vlantoni, National and Kapodistrian University of Athens*

This paper addresses a preeminent public health issue, that of blood safety. Ensuring a safe blood supply is part of national healthcare policy, but is also related to international collaborative efforts. I focus on international/supranational efforts aiming at advancing blood safety and the ways they interrelate with the governance of the blood supply. I examine these efforts, from the mid-1970s, in relation to the bifurcated organization of the blood supply, which becomes apparent in the processes of setting standards and promoting common values. The distinction between the blood and plasma industries is being transcended as human blood flows in both of them. Moreover, I consider developments associated with the global challenge to blood availability and safety, meaning programs targeting low- and middle-income countries. The blood supply is considered a vital infrastructure, which allows me to pay attention to the broader context of its workings and to its local specifics, by exploring the interaction of heterogeneous elements being part of this infrastructure. My research follows policy-making processes and scientific work in the fields of blood banking and transfusion medicine. The analysis of the dynamic character of the blood supply as infrastructure provides the opportunity to contextualize international/supranational policies by making visible the competing logics in sharing common values and by questioning the catholicity of standards and technology-based approaches. In addition, partaking in a broader research project (H2020 InsSciDE), the paper aims at contributing to the critical examination of the conceptualizations and the activities included in the broad field of 'health diplomacy'.

Godzilla vs King Kong. Studying Pro-Science and Alternative Health Discourses Across the Web in Times of Information Chaos *Magdalena Halina Góralska, Koźmiński University in Warsaw*

Taking into account the miscommunication issues of modern media, this paper analysis strategies of science advocates and TCAM advocates from Poland and the US, who use social media to share knowledge about health and nutrition. Inquiring into their practices of resistive knowledge activism from an ethnographic perspective, the paper focuses on differences and similarities in narratives that stretch across the English-speaking and Polish-speaking Internet, and talk about manipulation, mistrust and conspiracy surrounding both mundane and controversial topics – from definitions of healthy eating, to GMOs, vaccinations, and corruption in biomedicine and organic industries. Pro-science activists resist what they refer to as pseudoscientific quackery, while alter- activists mistrust the Big Pharma or Big Food industries, including mainstream science sources, such as governmental research centers or academic institutions. Based on a long term, networked fieldwork (2015-2020) across Polish-speaking and English-speaking Web, the paper hopes to address following questions: Who is the enemy, and why they cannot be trusted? What are the practices of conflict? And what are those of collaboration? How narratives of conspiracy theories in both Polish and American cases are produced and used by the two opposing groups, and why are they ambiguous? By mapping the complexity of "pro-science" and "anti-science" ties within the sphere of network publics, the author argues that the role of STS is to take part in the public debate and navigate it towards focusing on an expert authority crisis that haunts democracy in general, rather than on who is

really lying about what is actually healthy.

HIV Prevention, Seasons of Risks, and the Rise of the Gay Clinic in Thailand *Poyao Huang*

In response to the market expansion of the HIV-prevention medicine—Pre-exposure prophylaxis (PrEP), some Thai private clinics have grafted gay men's consumer culture (e.g., circuit parties and recreational drug use) onto their existing health services since 2014. By offering less expensive, generic versions of PrEP and by integrating other AIDS-related health services, those clinics have become the site of attractions that interest global drug buyers who seek to enhance their sexual health. Based on the fieldwork conducted in one gay sexual health clinic in Thailand, this study explores how the gay clinic offers the gendered and personalized healthcare in the neoliberal context of drug's marketization. It first situates the rise of the gay clinic—defined as the health establishment that predominantly targets gay men or men who have sex with men— in a broader historical context of Thai medical tourism. It then explores how health has become gendered, eroticized, and aestheticized in one gay clinic's spatial arrangement and PrEP-related health campaigns. Finally, it draws on the stories of gay Taiwanese men's medical travel to Thailand to elaborate on the transformation of health, risk, safe sex, and other taken-for-granted notions in public health. Ultimately, this study argues that the rise of the gay clinic should not be treated merely as the privatization of the HIV-drug market but rather a queer response to the normative aspects of health management and the malfunction of the nation-state. In East and Southeast Asian, the gay clinic serves as an essential site for considering the transformative features of Bangkok, health, and queer embodiment.

Session Organizer:

Magdalena Halina Góralska, Koźmiński University in Warsaw

Chair:

Magdalena Halina Góralska, Koźmiński University in Warsaw

137. Lost in the Dreamscapes of Modernity? Theorizing Agency, Multiplicity, and Scale in Sociotechnical Imaginaries 1
8:00 to 9:40 am
virPrague: VR 17
Participants:

Imagining Transformations To Sustainability In Energy, Agriculture, And Cities: Plurality, Diversity, And Multiplicity In Sociotechnical Imaginaries Research. *phil johnstone, Science Policy Research Unit, University of Sussex; Andy Stirling, Science Policy Research Unit, University of Sussex; Rose Cairns, Science Policy Research Unit, University of Sussex; Joel Onyango, African Centre For Technology Studies*

Despite best efforts, ambiguities and contention continue around how categories based on specified instances of polities or sectors or constituencies relate to 'sociotechnical imaginaries' as units for analysis and how these relations change over time. Complexities grow as a globalising world is increasingly encountered as multiple, fluid, supranational and nonscalar (ie: not neatly scaled). Queries arise not just around conditions and degrees in which specific instances of imaginaries may be considered 'national', but also whether (or under what conditions) either the concept or its manifestations are reasonably treatable at all as monothetic (ie: describable by a conjunction of properties, rather than many) or monotonic (ie: changing in a broadly consistent direction, rather than cyclically). So, the undoubted value of the 'sociotechnical imaginary' as a lens may be enhanced by careful attention to multiplicities, nonlinearities and ecologies in associated articulations, co-constructions, contestations, partitionings and reconstitutings over time. As part of an international comparison with wider scope, we discuss resulting questions by reference to imaginaries of ongoing transformations around energy, agriculture and cities in Kenya. We examine relations and dynamics between imaginaries by also attending to more fine-grain narratives and storylines. Among other implications, methodological questions emerge concerning how interpretations can try to resist overly categorical or singularising tendencies by becoming more granular, polythetic

and multivalent. Here, we critically explore potential contributions of Q method in sociotechnical imaginaries research, to help understand implications of nonscalar diversities of settings, pluralities of perspectives, constitutive multiplicities and nonmonotonicities of change over time.

Visions as Make-believe: How Models and Narratives Represent Sociotechnical Futures *Maximilian Roßmann, Karlsruhe Institute of Technology (KIT)/ ITAS*

When prominent experiments, simulations, and prototypes fail, sociotechnical futures become contested. This paper discusses the negotiation of visions as make-believe in an attempt to give the considered feasibility of future imaginaries a greater account in innovation dynamics. Following Walton's theory of representational arts, I propose that imagined futures possess a certain kind of objectivity according to the considered data, models and artifacts – just as certain pictures, films or novels represent fictional details about lightsabers, teleporters, and the Death Star's vulnerability. In introducing and applying the make-believe concept onto the empirical analysis of uncertain futures, I study visions, not in terms of their epistemic or aesthetic value, but in their authorization and motivational power arising from their contested representations. In a game of make-believe, the data, models, and prototypes are used to tell stories that make them politically and economically significant as representations of promissory futures. However, if the authorization of the story declines or an experiment fails, the vision is contested and the question arises whether the promissory story is rewritten or the object evicted from the game. Drawing from a stakeholder workshop on microalgae nutrition, I demonstrate how fictional narratives reveal ambiguous but meaningful sociotechnical boundaries for the imagination and the assessment of unproven technology. The perspective shows how barriers in fiction are considered insurmountable and how narratives change. In sum, I argue for a greater account of the self-dynamics of props and the authorization of make-believe in the debate on sociotechnical imaginaries.

Scaling Geographical Imaginaries and Infrastructures of Development *Aybike Alkan, Koc University*

Construction of large-scale infrastructures has been a crucial agenda for policy-makers in Turkey for achieving national integration by reducing interregional disparities. Struggling to establish state legitimacy and hegemony in postwar years, state elites promoted the first integrated regional development project of Turkey (GAP) that included the construction of a series of irrigation and hydropower infrastructures in the southeastern part of the country, mainly populated by Kurds. During the project, the tensions between different, incompatible nation-making strategies such as assimilation, integration, and marginalization got translated into the tension between different types of technical interventions made in the name of regional development. This process was further complicated by conflicting views of experts who saw the objects of development from the perspective of their own professions. Focusing on the tensions between different strategies of co-constructing infrastructures and nation, I aim to reveal how the diverse conceptions of "region" and "nation" affected engineers' work and how they attended the process of translating political problems as technical ones in Southeastern Turkey. I take my point of departure in the concept of "sociotechnical imaginaries" and mainly ask how engineers adopted state elites' sociotechnical visions, and under which conditions these visions turned into sociotechnical imaginaries to be materialized as water infrastructures. My archival research on parliamentary debates, newspaper articles and engineering magazines from the 1950s to 1990s shows that discussions on the location, type, and scale of infrastructures not only reflect but also transmit policy-makers' longstanding fears related to the unity of the Turkish state and Kurdish autonomy.

Session Organizer:

Alexander Wentland, Technical University of Munich

Chair:

Alexander Wentland, Technical University of Munich

138. Making & Doing - Wednesday show

8:00 to 6:00 pm
virPrague: VR M&D
Lineup of meetups: 8:00-8:40 Emoji technology assessment: experiments in sociotechnical engagement 10:20-11:00 Ancient Passages: Echos of Prague 2121 11:00-12:20 The Atlas of Research on Research: tracing how ideas, priorities and practices move 12:20-13:00 Drawing Spatial and Bodily sensitivities - a training kit 13:00-13:40 Learning while doing: vlogs about digital inequality 14:00-15:00 Un/Doing human-microbiological coexistence in time of Covid-19 15:00-16:20 Maintaining CS 16:20-17:20 Poking Holes in Borders with Tiny Machines 17:20-18:00 The Gig Lane See https://4sonline.org/md20 for details of the meetups. And don't forget to engage with the fascinating digital objects in the gallery which are available during the whole conference and after: *For Novelty Use Only: DIY Methods of Assessing Sexual Health Microbiomes *Crash Theory *"Making and Doing TopEndSTS – on country… and online?" *Crafting Medicine: A Sensory Exhibit of Three Medical Schools *Is Another World Possible? Imagining a Post-Automobility Future Through an Anti-Motor Show *Exploring Ethical Decision Making in Video Games *Robocops, flowers and stones: technologies and arts of repression, resistance and protest *Giving birth as a struggle between bodily experience and medical practice

Participants:

Ancient Passages: Echos of Prague 2121 *Shomit Barua*

The Atlas of Research on Research: tracing how ideas, priorities and practices move *Helen Woods, University of Sheffield; James Wilsdon, University of Sheffield; Sarah de Rijcke, Centre for Science and Technology Studies (CWTS); Ludo Waltman, Centre for Science and Technology Studies (CWTS); Thomas Franssen, Centre for Science & Technology Studies (CWTS), Leiden University; Ismael Rafols, Centre for Science & Technology Studies (CWTS), Leiden University; Vincent Traag, Centre for Science and Technology Studies (CWTS)*

Drawing spatial and bodily sensitivities – a training kit *Ulrike Scholtes, UVA; Marlies Vermeulen, RESEARCH CENTRE FOR ARTS, AUTONOMY AND THE PUBLIC SPHERE*

Un/Doing human-microbiological coexistence in time of Covid-19 *Lukáš Senft, Institute of Sociology of the Czech Academy of Sciences; Tereza Stockelova, Institute of Sociology of the Czech Academy of Sciences; katerina kolarova, Institute of Sociology of the Czech Academy of Sciences*

Poking Holes in Borders with Tiny Machines *Evan Light, Glendon College, York University*

The Gig Lane *Pradyumna Taduri; Janaki Srinivasan, International Institute of Information Technology - Bangalore*

Maintaining CS *Loren Britton, University of Kassel; Helen Pritchard, Goldsmiths University of London*

Crafting Medicine: A Sensory Exhibit of Three Medical Schools *Rachel Vaden Allison, Faculty of Arts and Social Sciences, Maastricht University,; Anna Harris, Maastricht University; John Nott, Maastricht University; Andrea Wojcik, Maastricht University*

Crash Theory *Adam Fish, University of New South Wales*

Exploring Ethical Decision Making in Video Games *Maximilian Reiner, Technische Universität München; Maximilian Braun, Technische Universität München; Matthias Gabriel, Technische Universität München; Clara Valdés-Stauber, Technische Universität München; Xinghan Liu, Technische Universität München; Sarah Eidam, Technische Universität München*

For Novelty Use Only: DIY Methods of Assessing Sexual Health Microbiomes *Hazelle Lerum, Rensselaer Polytechnic Institute; Runa Archer, Rensselaer Polytechnic Institute; Xen Riccardi, Rensselaer Polytechnic Institute*

Is Another World Possible? Imagining a Post-Automobility Future Through an Anti-Motor Show *Richard Randell, Webster University; Robert Braun, Institut für Höhere Studien Vienna*

"Making and Doing TopEndSTS – on country… and online?" *Michaela Spencer, Charles Darwin University; Cathy Bow, Charles Darwin University; Yasunori Hayashi, Charles Darwin University; Leonie Norrington, Charles Darwin University; Simon West, Charles Darwin University; Jennifer Macdonald, Charles Darwin University*

Robocops, flowers and stones: technologies and arts of repression, resistance and protest *Henry Chavez, Pontificia Universidad Católica del Ecuador / CTS-Lab FLACSO / Divergence; Denis Ismael Chavez Ordoñez, EPHE; José Egas, EHESS*

Emoji technology assessment: experiments in sociotechnical engagement *lauren Keeler, SFIS - Arizona State University; Sean McAllister, SFIS - Arizona State University; Joshua Loughman, SFIS - Arizona State University; Steven Weiner, SFIS - Arizona State University; JP Nelson, SFIS - Arizona State University; Jan Cordero, SFIS - Arizona State University; Elma Hajric, SFIS - Arizona State University; Martin Andrés Perez Comisso, SFIS - Arizona State University*

Giving birth as a struggle between bodily needs and medical practice *Lenka Formankova, Institute of Sociology, Czech Academy of Sciences, Prague, Czech Republic; Eva Hejzlarova, Faculty of Social Sciences, Charles University, Prague, Czech Republic*

Learning While Doing: Vlogs About Digital Inequality *Nicole Sylvia Goedhart, Athena Institute, VU University, Amsterdam; Teun Zuiderent-Jerak, Athena Institute, VU Amsterdam; Christine Dedding, Metamedica, Amsterdam UMC-location VUmc; Jacqueline E.W. Broerse, Athena Institute, VU Amsterdam*

Chair:

Ludek Broz, Institue of Ethnology of the Czech Academy of Sciences

139. Social Dynamics in Interdisciplinary Energy Projects
10:00 to 11:40 am
virPrague: VR 01
Participants:

Doing cross-disciplinary research as affective engagement. An apprenticeship in urban hydrology *silvia bruzzone, Mälardalens högskola*
Despite the increasing push towards collaboration between the natural and social science, little is still known about work at disciplinary boundaries. How does work actually take place at disciplinary boundaries? In the literature, the topic is often addressed in hierarchical terms and an on the basis of fundamental epistemological differences. In this contribution I apply on autobiographical notes to give account of my own experience of collaboration with urban hydrologists on a project aiming to assess the performances of devices for the treatment of urban runoffs. While the work among disciplines in the project is framed as separation, I wish to suggest a more critical perspective on work at disciplinary boundaries by introducing how I became entangled with urban hydrology practice. By applying on Practice-based studies, I give account of my own apprenticeship in urban hydrology through the selection of attention on instrumenting processes, the participation to a heterogeneous community of practitioners, the encounter with these devices materially and the development of aesthetic skills on urban infrastructures. So, I bring the attention on the work at disciplinary boundaries not as cognitive work but as situated and sensible knowledge and as the development of a "way alongside" (Latimer, 2019). I claim this does mean to overcome epistemological differences but rather to let emerge alternative narratives on the same object/practice and to give life to science.

Measuring Interdisciplinarity in Climate Change Research

Mallory Fallin, Northwestern University; Antonio Nanni, Northwestern University

Does interdisciplinary research lead to more effective scientific communication between scientists and the public? Climate change is a highly interdisciplinary field, and has become a high priority research area for scientists from fields as diverse as geochemistry, biology, medicine, and the social sciences. While the study of climate change as a whole is interdisciplinary, it is not known the degree to which scientists within the field engage in interdisciplinary dialogue. Using a dataset of over 30,000 abstracts of journal articles of climate research from the year 2000, we used word embedding to construct an abstract space where each article is represented as a point based on the words in the abstract. From the topological properties of this space, we assign to each article an interdisciplinary score and assess whether climate change research is growing more interdisciplinary. Rather than mapping individual authors to one another, we map the dialogue happening within the field. We hypothesize that certain disciplines, especially disciplines that have pre-existing ties to one another, are more interdisciplinary than others, and that some disciplines will be relatively isolated. Moreover, we hypothesize that the levels of interdisciplinarity have effects on what types of climate research enter the public sphere. This paper demonstrates the importance of interdisciplinary research in facilitating the effective communication of climate change both within and beyond academic institutions.

Session Organizer:

Antti Silvast Silvast, Dept. of Interdisciplinary Studies of Culture, NTNU

Chair:

Ruth Woods, Dept. of Interdisciplinary Studies of Culture, NTNU

140. Politicization of Sociotechnical Futures 2: De- and Re-Politicizations

10:00 to 11:40 am
virPrague: VR 02

The studies on expectations, imaginaries and visions reveal how sociotechnical futures and the associated promises and fears increasingly influence innovation and transformation processes. In various societal contexts, for example, in research politics, scientific collaborations, parliamentary debates, and social movements these imaginaries serve as visionary resources to legitimate decisions, coordinate practices, steer developments, or to raise awareness for specific problem-solutions. At these sites, futures are politicized and represent or conceal present stakes at dispute. The objects of politicization materialize in a variety of forms (e.g. terms, symbols, metaphors, narratives, artifacts, traditions, organizations). We will discuss how both, the characteristics of the societal context (e.g. power constellations) and the forms (e.g. discursive narratives or prototypes) are conditions for the politicization.

Participants:

Sociotechnical weapons: AI myths as national power play
Jascha Bareis, Institute for Technology Assessment and Systems Analysis; Thomas Christian Bächle, Humboldt Institute for Internet and Society

During past years national AI strategies have been popping up all around the globe and position papers concerning military AI have been submitted by states to the UN Convention on Certain Conventional Weapons. These documents are employing a hybrid prose of sober tech-policy, fierce national strategic positioning, and sketch bold imaginaries of national power and social order enabled through AI. Currently, nation states perceive themselves in a constellation of a global AI race competing about economic market shares and military geopolitical advantages. This constellation converts AI definitions in national position papers into strategic political assets. Politicians intentionally craft AI anthropomorphizations through the introduction of loaded concepts such as autonomy, consciousness or intelligence in order to convert AI into a mythical endeavor between fact and fiction. The consequence is international confusion that leads to a lack of shared understanding of meaning among policy makers concerning AI functioning and impact, blocking the establishment of common ethical standards and legal regulation. Supported by the empirical basis of national AI position papers (Germany, UK, US, China), this contribution argues that sociotechnical imaginaries not only act as tools for political legitimation or as empty signifiers, where social orders can be read. The present geopolitical power constellation around AI (context) lets national players convert sociotechnical imaginaries into fantastic AI myths (form). Such not only reshuffles and limits the political regulation possibilities, but repoliticizes the mythical AI imaginaries as political weapons of deliberate confusion and deterrence between states.

The Depoliticization of Gene Editing Technologies, Narratives and Practices *Tomiko Yamaguchi, International Christian University*

Gene editing technologies have not yet been used widely; however, within the emerging discursive space concerns are being raised about the potential uses of this technology. While the voices of dissent are fragmented, the social dynamics created by the narratives of those who support these technologies have driven material changes and laid the groundwork for the establishment of a permissive regulatory framework. It is against this backdrop that this paper examines Japanese public policy documents pertaining to plant gene editing technologies, to see how future visions driven by modernist agendas shape the trajectory for research and development of agriculture and food. By obtaining support from policy-makers and funding for R&D, scientists have succeeded in creating a network of scientists, industry and policy-makers to further commercialization of gene editing technologies. Coordination of these actors combined with narratives of futures helps to prevent the eruption of social controversy about gene editing technologies. Using Japan as a case study, this paper examines narratives of futures and coordinated practices of scientists so as to understand the depoliticization of the use of gene editing technologies. Data is collected by participant observations in seminars and conferences in which the topic of gene editing technologies is covered, as well as public policy documents published by the authorities. Despite some setbacks with respect to the commercialization of GMOs, "orchestration" of various practices and discourses that surround gene editing technologies has shaped Japan's research and innovation path, while limiting the opportunities to open up debate to the wider society.

Metropolis in Flux: Mobility and Mobilization in the Transport Debate *Aleksandra Kazakova, Gubkin Russian State University of Oil and Gas, Bauman Moscow State Technical University*

With more than twofold increase in territory in the last decade, Moscow witnessed a boom of the infrastructure projects. Reintegration of the social services system, redirection of the flows of commodities and waste, restructuring of the estate market and other processes resulted in more or less intense conflicts of interests. At the same time, transportation became the major sector of public and private investment. Historically, metro system was the central symbol of common good and sociotechnical progress. Its development and complementation had to become a source of political legitimation nowadays. However, instead of unifying and organizing different actors like a guiding image, the promoted metaphor of "City in motion" has a conflict potential which manifests itself in the social media and local communities. The rapid growth resulted in the unique combination of the post-socialist urban planning, the ongoing motorization and digitization of the urban environment, while the generous funding of the urban projects is combined with the informal labor market. With a few cases of the platform services (taxi aggregator, car sharing and scooter rental), the contesting views on mobility and safety and their visualizations are discussed. The controversies around the public space and the new forms of solidarity, emerging between the online and offline worlds, cannot be reduced to the clashes of economic interests, revealing the different conceptions of risks and access, as well as the real and desired lifestyles.

Place-based Forms and Motives of Concerns: Futures of the French Seine-Northern Europe Canal *Gabrielle Bouleau, INRAE, LISIS*

The French Seine-northern Europe canal project aims to reduce carbon emissions due to road transport by shifting part of the corresponding load to a new wide-gauge navigation canal. Although the construction and operation of this infrastructure will profoundly change the local environment, the mitigation objective tends to obscure other impacts and depoliticise the project. Using semi-structured interviews, we sought to find out what forms of local environment are of concern to local stakeholders with regard to the future canal and the prospect of climate change and biodiversity. We analysed the response with manual coding of institutionalized and controversial environmental forms and motives. We combined them to sketch three contrasting worst-case scenarios for the future of the canal. In this paper, we present the list of environmental forms and motives expressed in the interviews. We explain the method used to design coherent and politicized scenarios. We discuss the merits and limitations of these scenarios based on stakeholder reactions. We argue that environmental forms, motives and scenarios are hybrid ontologies that offer the possibility of public debate about their material and political nature.

Session Organizers:

Maximilian Roßmann, Karlsruhe Institute of Technology (KIT)/ ITAS

Paulina Dobroc, Karlsruhe Institute of Technology

Chair:

Andreas Lösch, Karlsruhe Institute of Technology (KIT)/ ITAS

141. Identification, Datafication and Data-Diven Governance

10:00 to 11:40 am
virPrague: VR 03

The proliferation of (biometric) identification technologies across the globe – especially in Africa, South Asia and Latin America – is nested in profoundly new aspirations for the rationalization and even automation of political decision making in public-private governance. Building on interoperability-based data infrastructures, states and financial institutions, among many other organisations concerned with the surveillance of individual behaviour, subscribe to the idea that digital "data doubles" (Bouk 2017) circulate between previously disconnected registers, allowing thus the "datafication" (von Oertzen 2017) of new, previously unobserved areas of life, and thus ultimately the creation of new "human kinds" (Hacking 1995). The panel explores continuities and discontinuities of socio-technical configurations that have led to connecting recent innovations in identification technologies with the production of quantitative knowledge for decision making. While this happens in conventional state administrations and "global administrative apparatuses" (Eriksen 2012), the panel pays particular attention to the merging and blurring of these realms in largely privatized epistemic centres where tech giants radically transform quantitative data collection and the production of statistics through the development of learning algorithms. The by now classical analysis of statistical knowledge production as in "governance by numbers" (Rottenburg 2015) and the implications for "digital citizenship" (Isin and Ruppert 2015) needs to be revisited in light of these transformations. The panel seeks empirical contributions that examine how these developments play out in concrete settings in the Global South.

Participants:

Precision Global Health, or the Segmentation of the World Against Disease *Vincent Duclos, Drexel University*

Data science techniques open onto vast possibilities for global health monitoring and intervention. Datafication promises unprecedented precision in the management of public health, rupturing with universalistic approaches to deliver the "right intervention to the right population at the right time." This paper pays particular attention to psycho-behavioral segmentation, a set of techniques rapidly gaining traction in global health. Developed in behavioral economics, but powered by recent advances in data science, segmentation techniques have recently been adopted by major stakeholders including UNICEF, the World Bank, and the Rockefeller Foundation. Analyzing data from a great diversity of sources, segmentation aims to capture clear, discrete, relevant, and actionable differences within populations. It does not aim to establish universal patterns but rather one-time, situated predictions. To do so, psycho-behavioral segmentation seeks to differentiate people by their behavior, and most importantly, to understand what drives behavior: how do people behave the way they do? Drawing upon early ethnographic data, and in dialogue with STS work on quantification, identity, and behavior, this paper examines three questions raised by these recent developments: a) What general assumptions about behavior underlie the deployment of psycho-behavioral segmentation? b) How are methods developed in other sectors – including market research, experimental psychology, and decision science – adapted in the conceptualization and design of global health interventions? c) How may segmentation techniques redraw the lines between what is visible and what is not, the healthy and the ill, the predictable and the erratic, and with what implications for the government of care and threat?

The Public-Private Welfare State : constructing a data-driven governance in the Global South *Marine Al Dahdah, French National Centre for Scientific Research (CNRS)*

Ann and Sita just arrived at a clinic near their village; both came because their delivery is taken care of. Ann showed her mobile phone and Sita her "smartcard" to access the workroom without spending any money, a revolution in their country - Kenya and India - where from transportation to birth certificate, women have to pay for each component of the delivery procedure. Ann and Sita are benefiting from new data-driven welfare policies made to facilitate financial access to healthcare in the Global South. These services offer their first health coverage to Kenyans and Indians, as the majority of them use health infrastructures without any health insurance and go into debt to cover their health expenses. Both these services offer health coverage closely linked to the consumption and production of digital products. By allowing individuals to pay or cover their healthcare expenses through the use of virtual money, stored on mobile or smartcard, these devices are feeding a data-based private economy. Through the empirical study of the two national health coverage programs used by Ann and Sita, this communication illustrates both the construction of health policies based on partnerships with digital businesses and the emergence of digital markets through public policies. Whereas these schemes promise health coverage for all, their digital infrastructures complicate access to health services and reveal new patterns of exclusion. Thus, it will detail how data-driven public-private policies and datafication condition access to healthcare in India and Kenya.

Population Data Innovations for "Real-Time" Decision Making in Ghana *Alena Thiel, Martin Luther University Halle-Wittenberg*

This paper explores the introduction of new technologies for the management and analysis of large amounts of population data for "real-time" decision making in Ghana. Positioned in the larger political vision of the Ghanaian "data revolution", management information systems in the health and education sectors serve as role models for making administrative registers available for quantitative analyses of development. The paper traces the development of new interfaces and applications across the Ghanaian population data system – in particular, mobile apps and dashboards – that connect data producers and users in new ways while promising accurate and timely data for local, regional and national planning purposes. While considering data users' resistances to new methods of quantitative analysis, the paper locates the unfinished innovations in Ghana's population data infrastructure in the current moment of intensifying contestations around citizenship (and access to state services) in West Africa.

Making the Disabled Body Legible: Biometrics, Documentary Evidence and the Indian State *Kim Fernandes, University of Pennsylvania*

How do disabled bodies come to be made legible to the state? In what ways are the legitimacy of these bodies negotiated through documents, papers and other bureaucratic procedures? In India, there is an ongoing debate about the ways in which the construction of one's biometric identity mediates claims to full citizenship. This debate is salient for groups that have been disabled by the state due to their identities and social locations, including people with disabilities. Building upon several previous identity card programs, the current Aadhaar card is one component of the world's largest biometric identity system being implemented within India. In addition to this central identification system, the recent unique disability ID (UDID) is

of particular relevance to questions of legitimacy and access that India's disabled population grapples with. Thus far, the state has rolled out Swavlamban i.e. the UDID in 38 states as a replacement to the disability certificate. This paper will draw upon ethnographic fieldwork carried out in Delhi to examine the ways in which governing with biometrics has created specific kinds of entanglements that constrain the disabled citizen. It will begin by outlining some of the processes involved in the transition from the disability certificate to the UDID card and will pay specific attention to the ways in which state claims about the non-duplicability of data have proven to be an obstruction in accessing social welfare schemes for disabled people. Finally, the paper will examine the impact of changing categorizations of disability through the recent UDID.

Session Organizers:
Alena Thiel, Martin Luther University Halle-Wittenberg
Richard Rottenburg, University of the Witwatersrand
Chair:
Alena Thiel, Martin Luther University Halle-Wittenberg

142. Careful engagements 2
10:00 to 11:40 am
virPrague: VR 04

During some time, interventionist research has become an important topic of conversation in STS (Zuiderent-Jerak 2015). This is important in a time where many research grants come with stipulations about partnership with actors outside academia. It appears that nobody offers clear advice on what to do or whom to turn to while engaging as a researcher in practice (Martin 2016). Thus, in this panel, we will discuss dilemmas and ambitions to engage and intervene with STS. Jensen (2007) proposes to 'sort' the various attachments the researcher encounters to different parties in the studied field to be aware of which parties the research strengthens and weakens. This leads to a number of questions. What inequalities do we risk producing especially when there is funding involved? Are there ways to avoid these by engaging with care (Viseu 2015)? What tensions and struggles do we meet while engaging in practice? How does this affect academic work and output? There is not much doubt that considering closer engagement as a scholarly method for producing new STS-insights into our research topics is opposed to using strategic interventions for achieving normative goals defined by managers, professionals and researchers. We foresee that the prospect of engagement will help STS scholars to explore what it means to live in concerned communities. In addition, engaging as a STS researcher in practice undoubtedly evoke Howard Becker's pivotal question "Whose side are we on?" Niels Nickelsen, Aarhus University, School of Education Doris Lydahl, University of Gothenburg

Participants:

Modeling and the Competence in Care *Morten Nissen, Aarhus University*

This presents a qualitative experimental study of the modelling of care, aimed at contributing to cultivating the competence in care. That competence is in much demand yet neglected, given current changes in governance and infrastructures of knowledge. Recent science & technology studies move beyond dyadic interpersonal relations to conceptualize care as involving socio-material networks of persons, institutions, technologies and knowledges. Following this track, our assumption is that competence in care involves dealing with multiple interconnected models and genres, in complex infrastructures, yet in their relevance for singular persons and situations. Thus, rearticulating practical experiments with the modelling of care – creating meta-models – may be a good way to cultivate care (as well as to boost the social relevance of the humanities). In this project, the prototype is the "U-turn Model" for helping young drug users, a front-runner in the key field of youth mental health, where the professionals work reflexively with modeling care at several levels, from aesthetic and performative (self-) representations of users to the 'U-turn model' infrastructure itself. Our project connects three work packages: WP(A): Careful Modeling studies and rearticulates how modeling is integral to networks of care; WP(B) Modeling Competence focuses on the place of modeling in the formation of knowledge and competence; WP(C). Translating Models distills our rearticulations with theories of care – with key proponents – and probes their relevance in other fields of care.

Too detached - too close. Engaging in care ethics *Niels Christian Nickelsen, Aarhus University, School of Education*

Increasingly, research grants come with stipulations about partnership with actors outside academia. The issue of engaging in the field has been an issue of interest in STS for some time. According to the philosopher of science Ian Hacking, 'intervention' is a crucial concept for analyzing what scientific practices entail (1983). Hacking challenges the importance of theorizing leading him to say that the point is not to understand the world, but to change it. Vikkelsoe (2007) proposes that good descriptions are interventions, but also that STS researchers could learn from arch-interventionists, therapists. Researchers should stay longer in the field, to get more links - and to learn. While it is evident that intervention is not simply a question of 'one way causation' (Nickelsen, 2009), this paper discusses the tensions and struggles researchers meet while engaging and staying longer in the field? How does engagement affect academic output? What does being too detached or too close as a researcher lead to? (Zuiderent-Jerak, 2015, p.14). Based on a research grant from The Independent Research Fund Denmark, I report from my own experience in concluding a cooperation agreement with a municipality. The aim of this was to analyze emergent professional collaboration across sectors, comprising discussions at a workshop of different care ethics in relation to telecare for elderly suffering from COPD. Thus, my ambition is to discuss challenges of careful engagements in relation to technologically driven innovation in healthcare. It appeared the collaboration rested on distinctive features shaped by the particularities of the collaborators.

The Academic Struggle for the Common *Eve Seguin, UQAM*

STS scholars are being called upon to reflect on adverse natural, economic, and sociotechnical evolutions that are taking place globally, and to engage with concerned communities seeking to slow down such evolutions. Parallel to this twofold programme, scholars are beginning to pinpoint their own professional settings - universities - as part of the problem (Dardot & Seguin, 2019). By means of concepts such as "academic capitalism", several STS studies have shown that the university has been a major locus of neoliberal governmentality in the last forty years, and has undergone profound cultural changes. Universities are no more homogenous than any other workplace. Some university players largely benefit from the current situation whilst others remain at a disadvantage. However, a number of indicators show that the quest for excellence and the imperative of technological innovation typical of the neoliberal ethos generate negative consequences on all scholars. Many argue that such ethos adversely impacts research itself, and question the dominant practices of knowing. After reviewing evidence of these deleterious effects, the paper will discuss several actions and initiatives that are being taken by scholars to steer their work and universities' activities in a direction more sustainable for both academia and non-academic communities. One aim of the paper is to show that academics qua academics can and do contribute to the struggle for the common (Dardot & Laval, 2019 [2014]). Another is to explain how STS scholars can amplify this movement. Dardot, Pierre & Laval, Christian (2019) Common. On Revolution in the 21st Century [2014]. London: Bloomsbury Dardot, Pierre & Seguin, Eve (2019) "Common, Research, and Politics", ACFAS Magazine. Online: https://www.acfas.ca/publications/magazine/2019/03/commun-recherche-politique

Theorizing figuration as engagement – deceptions and problematizations *Esben Langager Olsen, Copenhagen Business School, IOA*

In the recently published "Giving Depth to the Surface an Exercise in the Gaia-graphy of Critical Zones" Alexandra Arènes, Bruno Latour and Jérôme Gaillardet" make an attempt to re-figure the Anthropocene, foregrounding the soil beneath the surface as an expression of mankind's effect on the planet. The figurations are meant to 'distort' the dominating image the state of the globe potentially problematizing current matters of concern. The paper reminds us that purpose-driven re-figuration can be a mode of careful engagement. However, as STS-studies show, figurations tend to make shifts in what they represent,

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raising questions concerning the approach. How to theorize figuration as engagement? In this paper we foreground the effects of figurations in situated action. We draw on interviews and video recordings of a game-based leadership development program, focusing specifically on the functioning of board-game figurations of management theory concepts, which were used to structure the learning experience. Our findings are two-fold. 1) Figurations become problematization-devices when users inscribe themselves, others and the organization. This reconfiguration translates discussions of the problematic, potentializing constructions of doubt, blame but also collective action. 2) Similar to how figurations reconfigure its users, users also reconfigure figurations to fit their situated needs. The findings foreground the tension of figurations as not only effective problematization devices but also disloyal messengers.

Session Organizers:
Niels Christian Nickelsen, Aarhus University, School of Education
Doris Lydahl, University of Gothenburg

Chair:
Doris Lydahl, University of Gothenburg

143. Locating Care
10:00 to 11:40 am
virPrague: VR 05
Participants:

Enacting Mental Healthcare Online: Young People's Experiences of Intimacy, Trust, Harm, and Self-Knowledge *Susanna Trnka, University of Auckland*

Questions of how to best harness digital technologies for promoting mental wellbeing have become a hotbed of government, corporate and social debate. Focusing on how digital technologies are used to create virtual places devoted to supporting young people's mental wellbeing, this paper draws from the literature on geographies of care to examine youths' experiences of virtual therapeutic sites. Based on interviews conducted in New Zealand, I draw from three sets of accounts: 1) health professionals who have developed youth mental health apps/websites or regularly recommend apps/websites targeted at youth; 2) "lay-experts" or youth who create and promote their own digital therapeutic places through websites, YouTube channels, Instagram and Twitter; and 3) youth who traverse through such therapeutic places as part of their strategies to promote mental wellbeing. Examining accounts of youth who embrace online places – e.g. a 19-year-old who recounts that "just calling it YouTube" feels like a denigration of the therapeutic work he experiences there – and those concerned over what is lost by shifting healing online, I consider how intimacy, trust, harm, self-knowledge, and responsibility for oneself and others are experienced in digital sites. Empirically, this paper weighs up the importance of online places' potential anonymity, immediacy, and constancy, as compared to the significance of gesture, body language, and acts of co-presence that occur during therapeutic endeavours in shared, physical spaces (i.e. the clinic). Conceptually, the paper examines how digital therapeutic places expand our understandings of relations between emplacement and (beneficial and harmful) forms of care.

From the Urban Brain to the Rural Psyche: Place, Personhood and Rural Mental Health *Martyn Pickersgill, University of Edinburgh*

In recent years, increasing attention has been paid to city life and its purported neurobiological corollaries. Rather less concern has been evident with the always less modish domain of 'the countryside'. This is despite the continuance of this locale to the lives of many, not least when it comprises their home; in the United Kingdom, for instance, around 10 million people live in rural areas. Further, just as urbanicity tends to animate more excitement that rurality, so too does neurobiology generally spark more intrigue than psychology. In this paper, I elide efforts to understand 'the urban brain', and examine instead the intersections between rurality and psychological health. In particular, my focus is on how these become imbricated in the imaginaries of clinicians (and the policy that seeks to govern their work). The paper draws on 20 interviews with clinical psychologists working in rural settings within England and Scotland. I consider how the where of care influences the what: i.e., how the spacing and placing of National Health Service (NHS) mental health care in rural settings impacts on the kinds of care that can be given – and to what ends. Further, I reflect on how clinicians envision the psychology of rural life more generally, and the implications that this might have for the subjectivities constituted through therapeutic practices. In doing so, I aim to foreground both rurality and psychology within STS. The paper thus contributes to and connects debates about subjectification, and about how the imagined and actual material conditions of care contour the possibilities of its realisation and the forms it does and could take.

Place Made Manifest: Affect and hormones in choosing a birth place *Andrea Ford, The University of Edinburgh*

Discourses around childbirth in the US articulate strong positions on birth place: home, hospital, or "middle ground" birth centers. Key to these discourses is the idea that the body works differently in different places, depending on the affects those places produce. People I spoke with over 2+ years of ethnographic fieldwork in California argued that feeling safe enables the oxytocin system to work, while feeling threatened produces cortisol and adrenaline, inhibiting the oxytocin response. Oxytocin is considered responsible for causing uterine contractions, progressing labor, providing analgesic relief, initiating breastfeeding, and stimulating bonding between birthing person and infant. Medical procedures such as inductions and epidurals are said to interrupt this physiological process, causing a "cascade of interventions." A key difference between birth places is access to such medical procedures, and indeed promotion of them, yet this is held responsible for producing feelings of both safety and threat! Hospital bids to become more "home-like" in recent decades include welcoming family members and doulas, inviting patients to bring their own pillows, lighting, and music, and otherwise crafting a "positive atmosphere." Practices of care provision are key to producing a place's affect, and infrastructure and policy shape the kinds of care practices possible in a place. A "shadow discussion" around places for abortion provision echoes these concerns about the materialization of affect. This paper explores the discourses around how places of care are made manifest in bodies through affects, with hormones as mediators between the socio-emotional and material-physiological realms.

Reconfiguring place in a place. Insights from quality of life-initiatives in Austrian nephrology practices *Anna Mann, University of Copenhagen*

Since it has become possible in the 1950s to clinically prolong the life of patients in renal failure through dialysis, the "quality of life" this treatment affords has been a concern for nephrologists. This has been mentioned in qualitative studies of nephrology practices (Lehoux 2008; Lin 2012). Other topics have been investigated, however. To fill this gap, this presentation builds upon an approach to values as enacted in practice (Pols 2004; Dussauge et al 2015) and is based on fieldwork carried out between 2016 and 2018 in Austria. It reports from two initiatives launched by nephrologists focusing on "quality of life". The first one consisted of a nurse driving to patients' homes to support them carry out peritoneal dialysis. The second was a guideline to offer to certain patients treatment that focused solely on an individually discussed "quality of life" (instead of quantity of life). In both initiatives, the presentation will bring out, "quality of life" serves as a device to problematise the standard treatment of four hours haemodialysis in the hospital. The alternatives that are developed, however, are specific to the legal, settlement infrastructure and geological environment, the place, in which health care is provided in. Through the case of quality of life in nephrology practices, the paper, thus, sheds light on how imaginaries and materialities of care in a "good" place are themselves embedded in a place and hopes to contribute to a joint exploration of what the accounts do that we, STS scholars, provide about them.

White-Robed Angels Necessary Across the Taiwan Strait :

Transregional Migrations of Chinese Nurses to Taiwan, 1945-1970s *Shu-ching Chang, Chang Gung University*

The history of nursing in China and Taiwan is dramatic and complex. Before 1945, Taiwan was ruled under Japan and carried out the German-Japan healthcare model, otherwise the Chinese Government applied Anglo-American healthcare model mostly. After 1949, many Chinese nurses retreated to Taiwan with the Republic of China government. Most of these Chinese nurses were nurse elites. They graduated from the School of Nursing of Peking Union Medical College or a nursing school created by a foreigner. During their studies in the nursing school, they learned American-style nursing models, and those who performed well might get scholarships to study in the United States. During the Sino-Japanese war, they were put into battlefield for rescue works. Drawing upon extensive archival documents, interviews, diaries, and memoirs, this paper I will examine the militarization effects upon nurses' choices and experiences from 1949-70s. Meanwhile I will analyze how these Chinese elite nurses brought American nursing expertise and technology to Taiwan and how to interact with the original German-Japanese healthcare model in Taiwan. How these Chinese nurses made impact on nursing education and nursing professions in Taiwan. Expanding upon on works exploring the Chinese experience across the Taiwan Strait, I will portray the push and pull factors driving transregional migrations of Chinese nurses between China and Taiwan, as well as the renegotiation of racial boundaries, knowledge hierarchy.

Session Organizer:
Dara Ivanova, Erasmus School of Health Policy and Management
Chair:
Iris Wallenburg, institute for Health Policy and Management

144. Proliferation and dispersal in security communities of practice (Proliferation, dispersal and (in)security #3)
10:00 to 11:40 am
virPrague: VR 06
Participants:

Science, technology, security: towards critical collaboration
Samuel A Weiss Evans; Dagmar Rychnovska, IHS Vienna; Matthias Leese, ETH Zurich

Science and technology play a central role in the contemporary governance of security, both as tools for the production of security and as objects of security concern. Scholars are increasingly seeking to not only critically reflect on the interplay between science, technology, and security, but also socially engage with the practices of security communities which shape and are shaped by science and technology. To further help this growth of interest in security topics within STS, we explore possible modes of socio-technical collaboration with security communities of practice. Bringing together literatures from STS and critical security studies, we identify several key challenges to critical social engagement of STS scholars in security-related issues. We then demonstrate how these challenges played out over the course of three case studies from our own experience in engaging security communities of practice. We use these vignettes to show that there is a rich vein of developments in both theory and practice that STS scholars can pursue by attending to the interplay of science, technology, and security.

Shadowy Conjunctions in the War on Terror *Katja Lindskov Jacobsen, Copenhagen University*

This paper explores an often-overlooked dimension of counterterror biometrics, namely the place of biometrics as collected by non-military intervention actors. Through an exploration of multiactor biometrics in Somalia, I argue that non-military biometrics feed into counterterror efforts in two ways. First, at the level of infrastructure, the production of ever-growing and potentially shareable biometric databases are vulnerable to use for counterterror-purposes. Second, at the level of imaginaries, varyingly experimental non-military uses of biometrics generate 'success stories' and other 'laboratory effects' that engender expectations about how, for example, accuracy and continuous advancements in biometrics will espouse not only technological superiority on the battlefield, but

also supposed ethical superiority. Building on existing scholarly work that critically scrutinizes 'biometric algorithms' (Amoore, 2009) and the broader fallacy of claims for accuracy and ethical killing in counterterror programmes (Suchman, 2020; Schwarz, 2016), this article shifts attention to the place of non-military biometrics in expanding counterterror infrastructures and in animating imaginaries that 'help' legitimize military uses of this infrastructure. To frame this exploration, the article combines selected STS-insights – notably Tilley (2011) and Jasanoff (2015) – to formulate questions about what gets produced during various 'laboratory' uses of biometrics in Somalia. Appreciating broader effects stemming from such uses offers a starting point for a more nuanced understanding of critical conjunctions between counterterror-biometrics and the trialling, collection and storage of biometrics by numerous non-military intervention actors.

The Everyday Cultures of (Cyber)Security *Ashwin Jacob Mathew, King's College London*

Cybersecurity is often conceived to be a new professional field, emerging in response to novel threats in an increasingly networked and digitized world. However, no professional field exists in - or emerges from - a vacuum. Beyond an involuted account of knowledge circulation within the field of cybersecurity itself, how do cybersecurity engineers form their ideas of what constitutes the "security" in cybersecurity? In this paper I show how the ideas and ideologies underpinning the everyday practices of cybersecurity are intimately connected with cybersecurity engineers' own experiences of, and engagement with, the security apparatuses of policing and militarisation that structure their lifeworlds. To make my argument, I draw from 2 years of ethnographic research among cybersecurity engineers, spanning organisational settings and professional communities. I illustrate the mechanisms through which everyday cultures of security and cybersecurity are connected: through the proliferation of relationships involving cybersecurity engineers and security personnel; and through the dispersal of the physical apparatuses of security that cybersecurity engineers encounter in their everyday lives. Cybersecurity may appear to be a wholly novel technical field - and in many ways, it is. But to understand its continued evolution, it is critical to pay attention to the cultures of security within which cybersecurity engineers live their lives, and engage in their practices.

Session Organizers:
Annalisa Pelizza, University of Bologna and University of Twente
Claudia Aradau, King's College London
Chair:
Claudia Aradau, King's College London
Discussant:
Anna Leander, Graduate Institute of International and Devleopemnt Studies, Geneva

145. STS Perspectives on Innovation: Significance and Agency in Emerging Worlds - 1
10:00 to 11:40 am
virPrague: VR 07

There is now a well-established story of STS and innovation studies working at some distance from one another, with innovation scholars sometimes calling for a closer relationship with STS in order to repair this division. However, there have always been good examples of STS scholars working across both fields – and contributing to each. At the same time, there is a growing strand of STS research which addresses innovation in terms (for example) of imaginaries, co-production, responsibilities, transformations and incumbencies. Very often, such research challenges the universalistic claims made for innovation and instead stresses the contingencies, multiple possibilities, interruptions, emergences and contexts within which specific innovations are enacted. Themes of innovation cultures, futures, regenerations and democratic engagement are also important here. This open panel invites contributions from STS scholars whose work addresses the broad topic of 'innovation in emerging worlds'. We welcome empirical studies exploring innovation in specific contexts but also those which seek new conceptual possibilities regarding the relationship between STS and innovation. What place can – and should – the study of innovation play within STS?

Participants:

China's R&D policy in the dynamic between the central government and the local government *Cong WANG, University of Warwick, UK*

This paper explores how China's R&D policy is operating in the tension and cooperation of the central government and the local government through a case study of China's new transportation upgrading program-Smart Transportation System. This study conducts face-to-face interviews with Chinese scientists, engineers, and local government officials in 7 Chinese metropolis chosen from three typical regions - Cheng-Yu Economic Zone, Yangtze River Delta, and Beijing—Tianjin—Hebei Region. Also, it uses the document analysis method to look at the aspects which are hardly mentioned by the interviewees such as the government policies. The research argues that the central government creates a notion as a "Smart Transportation System" which is broad and vague. It serves as a man-made "obligatory passage point" to integrate different scientific groups and different government departments even before the program actually launching. Local governments play an important role in promoting this new technology because they are the major investor of the program. The leaders in local governments interpret the notion in their own ways trying to stand out in the cadre assessment system. Moreover, the local governments would decide the direction for Smart Transportation System according to their interpretations. From a technology studies perspective, this paper shows the process of realizing an R&D policy in a Chinese context. Moreover, it gives a chance to see how the dynamic between the central government and the local government affects the operation of an R&D policy.

Emerging worlds, emerging sustainabilities in China *Julia Kirch Kirkegaard, Department of Organization, Copenhagen Business School; Mikkel Dehlholm, Copenhagen Business School, IOA*

This paper addresses sustainability as an emerging world in China on the background of China´s sudden emergence as a global leader in renewable energy. While China´s STI-policy along with its economic policy was earlier driven almost exclusively by a mantra of economic growth, a new imaginary of China's development couples 'Scientific Development' closely with 'Sustainable Development'. Using the case of renewable energy, this paper looks into the construction of this emerging green socio-technical imaginary, and how it is linked to matters of concern for fostering a sustainable development through innovation. Through analysis of policy documents and interview data, we explore how this imaginary is interpreted and contested among and across governmental and non-governmental actors. We discuss how sustainability comes to take on different and sometimes colliding and contested meanings in varying contexts, arguing against an essentialist understanding. We furthermore explore how China´s particular political and economic structure plays into a distinct framing of problems and the particular Chinese conceptual toolbox to deal with them.

Exploring innovations in local context: Creativity, inspiration and love for unfinished products in Russia *Olga Bychkova, European University at St.Petersburg*

Many Russians believe that local engineers are very creative. One Russian fairy tale even features a well-known local inventor (Levsha) who is capable to outperform his English colleagues and put microscopic horseshoes on a flea. Historically, however, the numerous inventions created by Russian and Soviet engineers have rarely ended up as products available on the shelves of department stores around the world. Are Russian inventors indeed creative in comparison with their Western or Asian colleagues? With what motivations are such proclaimed creativity associated, - getting money, fame, reputation or producing something for its own sake? Is such shared conception of creativity a benefit or a barrier to the development of innovations and successful hi-tech economy? In my presentation, I propose to answer these questions, employing idea of 'orders of worth' from French pragmatic sociology and using in-depth interviews with Russian technopreneurs - scholars and engineers who have started hi-tech business after the collapse of the Soviet

Union. For comparison with the Russian case, I will use another set of interviews with engineers collected in two countries with a history of modernization that resembles the current situation in Russia—South Korea and Taiwan—and with Finland as an opposite case of technological development. In my paper, I will demonstrate that, contrary to the Finnish, South Korean and Taiwan cases, the creativity, inspiration and love for unfinished product are dominant motivations in Russian innovation culture. However, in spite of being a natural benefit, they are possible factors that indirectly hinders successful commercialization and technological development in the country.

The MAIS Approach: a New Tool for Analyzing and Facilitating Innovation *Takuji Hara, Kansai University*

This paper is centred around the MAIS approach, which is a research approach intended to elucidate social phenomena from the interactions among material entities (M), actors (A), and institutional/structural factors (I/S). The MAIS approach seeks to determine and understand the relationship among material entities, actors, and institutional/structural factors, which are intricately intertwined. It is intended to operate as a tool to affect the social phenomena such as innovations it analyzes rather than just to describe them. The approach originates from a body of research on 'The Social Shaping of Technology (SST)'. The SST covers many aspects of the processes behind the reciprocal formation of society and technology, and it facilitates the exploration of findings that contribute to implementation. I propose the MAIS approach as a single research approach intended for the understanding of the formation of not only technology but also society. Therefore, the approach can become a powerful tool for analyzing and facilitating innovation. This paper elucidates the characteristics of the MAIS approach, such as clear attention to material entities, analytic distinction between material entities and institutional/structural factors, or between material entities and actors, through the comparison of the 'Structuration Theory' and 'Actor-Network Theory'. Finally, I demonstrate the significance of the MAIS approach in STS and innovation studies by applying it to case studies of pharmaceutical innovation and bio-cluster creation.

Session Organizers:
Alan Irwin, Copenhagen Business School
Jane Bjørn Vedel, Copenhagen Business School
Chair:
Jane Bjørn Vedel, Copenhagen Business School

146. Editing future life and biotechnological utopias/ Bio-political materialization and potentialities of CRISPRcas9 _ 01 session
10:00 to 11:40 am
virPrague: VR 08
1st session of the panel "Editing future life and biotechnological utopias"
Participants:

CRISPRcas9. Designing future life and agricultural promises
Virginie Tournay, SciencesPo; Guillaume Levrier, Sciences Po; Anaïs degache, INRAE/PACTE

The New Plant Breeding Techniques (NPBT) syntagma brings together gene-editing technologies, the most famous of which is CRISPR-Cas9. Their anticipated uses in agriculture have raised a European socio-legal controversy around the qualification of these tools, and whether or not they lead to genetic modifications such as those which currently define GMOs. The challenge is both historiographical and political. It is a matter of deciding in which techno-institutional narrative these new tools are to be used. Ensuing NPBT regulations play an important role in defining how these technologies can be integrated in agricultural practices, soil balance and the future of sustainable development. The objective of this paper is to discuss relations between different meanings of "genetic" modification, representations of what should be "good nature" and promises / risks associated with the future of agriculture. Based on interviews with various stakeholders in Europe (CRISPR-cas9 researchers, farmers, NGOs, Biotech companies, anti/pro-GMO lobbying groups), this survey identifies different ways of representing the living matter and its capture for "making society" through agricultural expectations. Particular attention will be paid to the meaning

given to the expression "genetic modification" by the interviewees and the dividing line with what concerns epigenetics. The natural or artificial feature accorded to this expression is directly related to the way of considering the balance of the living world, that of ecosystems and the ways of acting on soils to preserve a harmonious relationship with the environment.

GMOs and complex collectivity: a discourse analysis of public debate on Norway's Gene Technology Act *Sigfrid Kjeldaas*

As our awareness of climate change and anthropogenic degradation of the natural environment grows, the question arises of whether the new techniques for genetically modifying organisms are part of the solution to our problems – or a symptom of them. Norway's Gene Technology Act of 1993 is unique in an international context in that it applies a precautionary principle to the production and use of genetically modified organisms (GMOs), and demands that sustainability, societal utility and ethics be part of their assessment. In 2017, the Norwegian Biotechnology Advisory Board (NBAB) invited the public to debate their suggestions for revision of the Norwegian Gene Technology Act in light of recent technological developments (like CRISPR/Cas9). Inspired by Latour's political ecology, this paper uses the ensuing debate as case study of how hybrid entities like GMOs are introduced and debated as possible members of the natural-cultural collective. I apply poststructuralist discourse analysis to investigate 1) how the invitation itself frames the public debate, and 2) what kind of responses it kindles. How do the different actors perceive of the collective in which the GMOs will be part? What are its outer limits and agencies, and what entities does it include and exclude? Looking at the functions the different statements perform, Latour's model for a politics of nature is used as a measure of how far we have come towards a truly democratic discussion of how GMOs may contribute to a good, common world.

Why Intellectual Property Mechanisms Are Not The Best Way To Encourage Progress of CRISPR-Cas9 Technology in Academic Sector *Franc Mali, University of Ljubljana - Faculty of Social Sciences*

In my contribution, there will be presented some issues of human genome editing technologies which are connected with adequate choice of property right mechanisms. In the last times, especially CRISPR/Cas9 as 'niche' area of the genetic engineering is reshaping the way scientists conduct research. Because of big applicative potential of CRISPR/Cas9, there are growing the tensions who will keep the property rights to this revolutionary discovery. These growing tensions which are expressed on different ways could have a negative implications for the progress of basic research in genetic engineering, especially because such tensions are today nowhere more evident than just in academic sector (e.g. the disreputable case of a patent battle between the University of California and the MIT/Broad Institute). Namely, still it is expected that academic science will encourage free distribution of new discoveries. In the contribution, there will be presented the most known cases of tensions around the property rights of CRISPR/Cas 9 technology, the negative implications of such tensions for the free flow of information and progress of open innovation models. Concomitantly, I will present through the history of patent battles in genetic engineering that property right tensions are not something new connected with the new CRISPR/Cas9 technology. Just opposite, I'll argue that CRISPR-Cas 9 is a continuation of the already long-running IPR and (wider) bioethical debates in genetic engineering. The conclusions in my contribution will be drawn on the results of my theoretical and empirical research in the last five years.

Session Organizer:
Eva Slesingerova, Masaryk University, Brno, Czech Republic
Chair:
Eva Slesingerova, Masaryk University, Brno, Czech Republic

147. Engineering Extinction: Prospects, Uncertainties, and Responsibilities in Planned Extinction
10:00 to 11:40 am

While more and more policies are sought to be implemented and countless efforts are undertaken as immediate and urgent responses to the rapid loss of biodiversity—which is often described as the sixth mass extinction in the geological history of the planet—novel genetic strategies are becoming a technoscientific reality for vector control purposes and the containment of so-called invasive species. Aiming at the suppression, if not complete annihilation, of entire species that are considered as pest or 'out of place', genome editing techniques such as, for example, gene drive systems are presented as technological fixes to epidemiological, environmental, and health related challenges. Differing from other forms of extinction—which are often understood as unintentional consequences of the reckless extraction and exploitation of natural resources—these experimental forms of extirpating entire species are raising their own pressing ethical, (bio-)political, and ecological questions. This panel seeks to explore the prospects, promises, and uncertainties associated with novel genomic strategies for controlling biological vectors and undesired species. To what problems are these techniques positioned as a response and how is responsibility addressed and embedded in the narratives of a controlled species extinction? How and on what scale is risk assessed? How is life and death reworked on a molecular scale? How are these novel approaches not only irritating prevalent understandings of a linear progression of life into death, but also practices of governing life if death and even extinction becomes that which entails value?

Participants:

Reinventing life and death on a molecular scale: the technobiopolitics of planned extinction *Josef Barla, Goethe University Frankfurt*

Against the backdrop of the increasing importance of molecular biology for the tackling of vector borne diseases, this paper explores the turn to gen drive mechanisms as a technoscientific strategy for transforming the vectors themselves into vector control tools. Discussing the case of Target Malaria's gen drive mosquito as such a technology, the paper asks how death is put to work at the intersection of vector control, public health, and technoscience, reworking not only the targeted organisms but potentially also capital and biopower. Focusing on synthetic gen drive mechanisms employed as a technology for 'fixing nature', in what follows, the paper will outline that with the rise of the technosciences in the late 20th century not only a shift from biopower to technobiopower occurred, but also nature got 'reinvented' insofar as life and death have become reconfigured on a molecular scale. Following this idea, the concept of 'rendering life dieable' will be mobilized for shifting the perspective on death as that which entails value. Instead of killing vectors, here, life is technoscientifically (re)invented in order to die. Life that has been designed in order to die and to go extinct is thus not only not grievable life but life whose very fading comes as a relief. Consequently, neither killing nor death itself is what is at stake here but 'the cutting of the tissue of ongoingness', as Donna Haraway urges us to not to forget in the face of surplus killing and the enfolding of the sixth mass extinction.

German experimental multi-species Governmentality or: The environmentally friendly local eradication of the Asian tiger mosquito *Kevin Hall, Goethe University Frankfurt, Germany*

The concept of so called invasive species has undermined purely positive accounts of biodiversity and often these species are targeted for local eradication. The paper discusses the case of the Asian tiger mosquito (Aedes albopictus) in Germany which is problematized by public health authorities as an invasive vector for infectious diseases such as dengue, chikungunya and zika. First detected in 2007 on service areas along the southern motorway, so far the tiger mosquito has only established itself in small allotment gardens and residential areas in Southern Germany. While historic environmental management strategies employed area-wide spraying of DDT and petroleum oils, today, mosquito control efforts are also made accountable towards environmental regulations and community concerns where what kills mosquitoes could also harm companion species. Against this backdrop mosquito control units employ a range of techniques such as sterile insect technique (SIT) where male mosquitoes sterilized by irradiation are released into the environment to reduce population size. Drawing on ethnographic research on

invasive mosquito control strategies in Europe the paper first discusses how contemporary strategies relate to historic strategies of environmental management by performing themselves as environmentally friendly. Secondly, it argues that in order for SIT and other technologies to work the managed area has to be transformed into an experimental system (Rheinberger) where mosquito visibility is linked to their killability. In this way European strategies of invasive mosquito management emerge as an experimental governmentality.

The Mosquito as a Tool: Insect Entanglements in Malaria Control *Marianne Mäkelin, University of Helsinki*

Transgenic mosquitoes are a recent development in vector control of insect-borne diseases. Strategies vary between reducing and replacing wild mosquito populations: mosquito biology is a link in an exchange of the malaria parasite between hosts, and this link is the focus of the intervention. Compared with the use of insecticides or bed nets, what is being controlled is the reproduction and population dynamics of the mosquitoes themselves rather than the environment they live in. This presentation situates the production of transgenic mosquitoes in malaria control in a history of experimental animals and model organisms, and of insect work in laboratories. The presentation examines the intermediate space between scientific model organisms and animals as tools that the transgenic mosquitoes in malaria control inhabit. Based on interviews and observations with researchers working with mosquitoes, I discuss what the mosquito is a model of and what work it does both in malaria control and in developing gene drive organisms whose reproduction patterns are made to work for human aims. The transgenic mosquito emerges as the focal point in an intersection of trends in global health towards scalable, universal and technological solutions and biotechnological research.

Session Organizer:
Josef Barla, Goethe University Frankfurt
Chair:
Josef Barla, Goethe University Frankfurt

148. Forms, Protocols, and Artefacts of Resistance

10:00 to 11:40 am
virPrague: VR 10

How is technology used to facilitate, support or enable resistance? STS has often looked how technology is used to concur with political goals or ideas of morality. And what forms of resistance does emerge at the interplay with politics, collectives and technologies? In this session, we aim to look at how the notion of technology as neutral entity is deliberately dismissed and rather used as a tool for political action.

Participants:

Everything Under Control? On Access Control, Privacy and Security of Blockchain Technologies in Health Care *Victoria Neumann, Lancaster University*

Today's healthcare systems are large networked systems managing different kinds of data with a multitude of stakeholders diverse contextual purposes within and often across organisational boundaries. In order to ensure that the right users get access to the right data within those systems, Access Control models and policies are implemented. Access Control is an important concept from data security to manage access within (distributed) networks; their implementation is often complex and hence centrally managed. Commonly found in health care are Role-Based Access Control (RBAC) as they are seen useful to respond to the complex hierarchies commonly found in healthcare organisations. With the introduction of Distributed Ledger Technologies (DLT), other forms of Access Control become more relevant with the promises to re-distribute control back to the patients and to enhance privacy. In particular, incorporating cryptography is seen as tool to distribute Access Control. The idea of control here is inherent within Western privacy studies, in particular the idea of restricting the flow of information. Informational privacy has been long declared under threat through the digital and the governmental overwhelmingness of individual data permission management. Can new forms of distributed technologies lift part of this burden? In this talk, I will examine how access control in a UK-based research project of blockchain in health care correspond to

social values of privacy and challenge current practices of data flows in health care. Especially, I will examine the merging of computer security with ethical and social questions of data, privacy, and control.

Experimental Media Infrastructure As A Laboratory For Communication Practices *Aleksandra Skowronska, Adam Mickiewicz University*

In my conference speech, I would like to present a paper on speculative and experimental media infrastructures. Is it possible to return to networked independence? What does it mean in the context of the process of globalization and hegemonization of communication? In order to try to answer this question, in the paper, I will recall practices derived from examples of technological and artistic practices (Danja Vasiliev, NETLESS, Sara Grant, SUBNODES, Pedro G. C. Oliveira and Xuedi Chen, BACKSLASH.CC). The experimental and speculative models of communication and data exchange proposed by the authors will be the basis for an attempt to formulate an answer to the question about the role of media infrastructure in the face of (globalized and reduced to a tool of surveillance capitalism) communication.

The rise of federation in secure messaging: technological compromise or ideological choice? *Ksenia Ermoshina, CNRS; Francesca Musiani, CNRS*

With the growing popularity of the "Fediverse" and its flagship project Mastodon, the introduction of OTRv4 and a number of "chat-over-email" projects, federated architectures are experiencing a phase of increased development and use in the field of secure messaging. They are presented as alternatives to both centralized applications that introduce a single point of failure in the network, and peer-to-peer apps that presuppose higher engagement, expertise and responsibility from users (and their device). Federation is described as an ambitious techno-political project, opening up the "core-set" of protocol designers and involving a new actor, the system administrator, responsible for maintaining the necessary cluster of servers. Thus, it is believed to alleviate the high personal responsibility of a centralized service provider, by distributing it as well as computing resources, with different possible degrees of engagement, and favoring users' freedom to choose between solutions and servers. On the other hand, federation presents challenges in terms of security; it is harder to audit all implementations of a federated protocol and ensure that all servers are properly configured. Federated solutions add a layer of complexity in the governance of the socio-technical networks they structure, by introducing the need for decentralized administration of servers (or "instances"). This presentation, based on fieldwork conducted in the H2020 NEXTLEAP project (nextleap.eu), retraces debates on federation in encrypted messaging and analyses the construction of federation as both an infrastructural and a social experiment, one that seeks a compromise between distributed responsibilities and high levels of security and better usability.

Session Organizer:
Victoria Neumann, Lancaster University
Chair:
Victoria Neumann, Lancaster University
Discussant:
Anna Adamowicz, Institute of Philosophy, Adam Mickiewicz University

149. Health, care, (dis)abilities II

10:00 to 11:40 am
virPrague: VR 11
Participants:

How Can a Patient's Personal Account of Illness not be a Boundary Object? *William Leeming, OCAD University*

In her final article on the topic of boundary objects, Susan Leigh Star wrote about the limits of the relation between the "mediational qualities" of boundary objects and standardization in "working arrangements." "Over time," she wrote, "people (often administrators or regulatory agencies) try to control the tacking back-and forth, and especially, to standardize and make

equivalent the ill-structured and well-structured aspects of the particular boundary object" (2010: 613-614). "What is not a boundary object," she observed, "has much to do with scale [and scope]" (2010: 612). In this paper, I compare; first, the mediational qualities of how patients' personal accounts of illness have operated as boundary objects in what of has been called a new "patient-centered" ethos in biomedicine and, second, the limits of scale and scope of patients' personal accounts of illness as aestheticized boundary objects in the visual arts that operate both inside and outside biomedicine. In the context of a new "patient-centered" ethos, the use of patients' personal accounts as the boundary objects have tended to emphasize what Arthur Frank (2013) has called the "restitution narrative" of the restoration of health. This offers to make sense of what the patient is experiencing and literally pre-script their future. Patients' personal accounts of illness as aestheticized boundary objects in the visual arts, on the other hand, can be seen to both serve as platforms for patients to invent and elaborate their own, personal perspectives of what it means to live with illness and to challenge medical authority.

Implications of Adaptive Frameworks for Reproductive Regularity Case Study: Emily Martin's Thought Experiment *Ashley Teodorson-Taggart*

In the preface to 2001 edition of Emily Martin's, The Woman and the Body, Martin writes, "women's bodies are often described in medical texts as if they were mechanical factories or centralized production systems". Martin then takes a hard left and shares a theory emerging out of cardiology research (Skinner 1990). This research suggested that the heart, quite contrary to what one might assume based on contemporary pedagogy, becomes regular only when it is very near death. Within this framework, irregularity may be understood as an indicator not of illness, but of health, an adaptive environmental response that's just right for our own particular experience.This theory, she explains ,has its roots in chaos theory. With this in mind, Martin proposes to her reader, "what would happen if, as a thought experiment, we described some of women's reproductive functions...in terms of a chaos model, leaving aside the body as mechanical factory or centralized production system?" This paper takes up Martin's speculative thought experiment as it asks- what could it mean for discourse around reproductive experiences, such as childbirth to use Martin's model as a theoretical scaffolding? Might we be allowed to ask more productive questions about existing constructs of 'regularity' and 'normalcy'? How might this approach encourage collaboration between patients and providers, social scientists and STEM researchers? Might this frame promote engagement which is more ecologically focused, that is, that considers the reproductive body in relation to the environment rather than some fictional isolation?

(In)Fertile relations amongst reproductive experts: the practice of producing and circulating knowledge *Sandra Patricia Gonzalez-Santos, Universidad Anahuac*

Infertility and reproduction are studied by two epistemic communities in Mexico: the clinical community, composed of embryologists and physicians located in hospitals and fertility clinics, and the basic-science research community, composed of biologists and physicians working at universities and research centers. Although these two communities are concerned with apparently the same issues–infertility and reproduction– their publication and conference activities suggest they engage in little communication and collaboration (e.g little cross-referencing or participation in each-other's events). In this paper I share the findings of the first stage of an ethnographic and document-based exploration looking into the practices of knowledge production and circulation between and within these two epistemic communities. I specifically look at the elements that shape this type of (non)interaction as well as the rationale to how and why the knowledge that each of these communities produces and consumes is (not) shared. I am interested in establishing a dialogue with the members of the panel and those who attend to explore how these practices shape the content of knowledge sets, particularly in terms of public health policy making and clinical practice.

Innocent Technology? A Emperical Study on User's View about the Relations of Information Communication Technology(ICT) and HIV Infections *Bu Kai, The School of Health Humanities, Peking University Health Science Center*

An example of information communication technology(ICT) development was the popularization of social networking software(SNS). Interviewing five users that infected HIV by homosexual behavior dating on SNS, this study tried to unfold their opinion on the relation of ICT progress and their infection. A semi-structured questionnaire was implemented in one-to-one interviews. All interviewees were over 18 and were informed the study purpose and could quit the interview freely. The five cases reported in this study were representative although the limited "sample sizes". All had registered longer than one year and had several sexual partners on homosexual SNS. Study found all respondents used SNS as a primary tool to meet new partners and believed that ICT did provide convenience for casual sexual behavior. But it was worth noting that all respondents charged their infections mainly upon the lack of knowledge and vigilance, rather than the "original sin" of technology; they maintained that ICT guaranteed human rights for gay group. This study highlighted dilemmas between technological progress and its social impacts. It testified man's subjectivity in our technological age on one hand as users mainly attribute their infection to their personal factors; it can be argued that any attempt to halt these technological application for blocking HIV transmission was untenable. On the other hand, however, the neutrality/objectivity of technology did not signify its innocence; SNS operators should more explicitly indicate the risk of casual sex facilitated by new technology instead of hesitating between the risk warning and user experience.

Designing precision oncology: an ethnographic study of experimenting and organizing *Jessica Polk, McGill University; Peter Keating, University of Quebec at Montreal; Jonah Campbell, McGill University; Alberto Cambrosio, McGill University; Pascale Bourret, AIX-MARSEILLE UNIVERSITE / UMR SESSTIM*

Nearly half of all drugs recently approved by the U.S. Food and Drug Administration (FDA), and a majority of those approved in oncology consisted of personalized, molecularly targeted treatments. This is a dramatic expansion of the nature and scope of genomic initiatives. Oncology stands as a privileged site for the analysis of the impact of genomics on clinical research and treatment. Cancer clinical trials—the gold standard of modern clinical research—illustrate how genomics redefines the boundaries between research and care, experimentation and treatment, standard forms of expertise (e.g. clinicians, biologists, and surgeons), and new collective forms of specialization (e.g. bioinformaticians, computational biologists, and molecular pathologists). Molecularly-driven trials (e.g. basket, umbrella, and early phase trials) not only reconfigure the traditional sequence of Phase 1 to Phase 3 trial designs, but also pave way for new outcome measures and methodologies. More than simple tests of drugs, genomics-driven clinical trials explore and evaluate bio-pathological hypotheses, selective and predictive algorithms, and treatment practices. The proliferation of these novel trial designs raises unprecedented technical, scientific, logistic, organizational, and social challenges. Drawing from ethnographic fieldwork at major cancer centers in the US and France, we examine the epistemic-organizing nexus within early phase clinical trial units by investigating how they have established "working groups" and protocols based on both gene variant pathways and therapeutic entities, and how they prioritize new pipeline studies based on a number of heterogeneous considerations beyond simply unmet medical needs, ranging from the presence of competing protocols to innovative designs and hypotheses.

Session Organizer:
William Leeming, OCAD University
Chair:
William Leeming, OCAD University

150. Value in Biomedicine: Value creation of emerging technologies

10:00 to 11:40 am
virPrague: VR 12
This session focuses on the creation of value in emerging technologies in health care. It looks at value questions as they pertain to the use of data, and the use of digital technologies to aid research on, and patient management of, diseases.

Participants:

How data gain a quasi-monopoly: DNA methylation and the "streetlight effect" in the value production processes of biomedical research *lola auroy, Université Grenoble-Alpes (UGA), France*

This presentation investigates how certain types of data gain a quasi-monopoly in processes of value production in biomedical research, with the case of epigenetic data. It questions how DNA methylation data become highly "valuable", and in which sense. It is based on an ongoing empirical study (observations, interviews) of researchers in biology as part of a Ph.D. thesis in the sociology of science at the PACTE laboratory in Grenoble, France. Epigenetics refers to the study of changes in gene expression that do not involve changes in the DNA sequence. Data on epigenetic changes raise high expectations because of their potential scientific, but also clinical and economic values (e.g. through the design of epidrugs). Although epigenetic mechanisms are highly diverse (e.g. histone methylation and acetylation, microRNA), research efforts focus mainly on DNA methylation. The scientific rationale often put forward for focusing on DNA methylation, conceals how its clinical, economic and scientific values are produced. This presentation will suggest that data on DNA methylation are considered highly valuable by combining different issues: accessibility (technical feasibility and cost), scientific credibility, and the prospect of bio-clinical "actionability". The presentation will also show that the over-investment in DNA methylation data produces a "streetlight effect", which limits basic and clinical research on other epigenetic mechanisms. This presentation aims to contribute to the literature on the production of value data in biomedicine (Pinel, Leonelli), but also more broadly to STS studies showing that the production of "valuable knowledge" also generates ignorance.

Making Clinical And Commercial Value: Examples From The Translation of Biomodifying Technologies *Michael Morrison*

How is value created in translational healthcare research? What makes some potential applications of emerging technologies worth pursuing while others are abandoned or dismissed? I will try to shed light on these questions, using examples from two contemporary emerging biotechnologies: gene editing and induced pluripotent stem cells (iPSC). These technologies are the latest in a long line of 'biomodifying technologies': techniques from molecular biology that manipulate 'life itself' at the level of molecules, cells and tissues, being developed or translated into clinical treatments. They follow a well-established route from 'basic' or exploratory research to potential applications pursued by translational researchers and companies. Drawing on data from qualitative interviews and analysis of the scientific and grey literatures on each technology, I will examine how potential applications are evaluated as 'low hanging fruit' or 'good targets' by clinicians and academics engaged in translational research projects, and by representatives of biotech firms attempting to commercialise these technologies. The concept of 'value' that I draw on is influenced by Valuation Studies, where value is not regarded as innate, but rather is envisioned as the outcome of practices of valuation and evaluation. Value is not static, but 'in the making' and contingent. We can assess how the worth of applications is subject to different practices of e/valuation by clinical and commercial actors, whilst each group also attempts to account for the anticipated e/valuations of other actors such as regulatory agencies, health technology agencies and patients, and how this shapes how translational trajectories unfold.

Silicon Valley's Knights in Shining Armour: How Digital Therapeutics Came to Save the Planet's Mental Health *Susi Geiger, University College Dublin*

This paper is a reflection on a recent move in healthcare toward so-called 'digital therapeutic' technologies, particularly in the realm of mental health. Digital Therapeutics (or DTx, as they are called by their proponents) are a category within digital health technologies that heavily borrows from conventional and recognized healthcare therapies. DTx technologies are typically directed at chronic conditions, prominently including mental health issues and other diseases that many health systems are not well equipped to cater for and/or struggle to provide at scale. Those who devise, sell or otherwise promulgate DTx for mental health insist on its potential to overcome healthcare inequalities and access issues while maintaining and in some cases improving clinical quality standards. Much has been written about the shifts in value regimes that digital psychiatric tools engender, for instance in the therapist-client relationship or in their neoliberal responsibilization of the self (e.g. Pickersgill 2019). By contrast, this paper considers the tools' value – and potential costs - from a societal and public health perspective. By analyzing how the market for DTx is shaped in the broader context of a digital technocracy driven by private organisations, the presentation critically engages with the technologies' claims for their emancipatory and democratic potential – and whether despite the now ubiquitous warnings against digital hegemony, privacy issues and potential discrimination that such tools may entail, DTx may in fact be a force for the better in the long term. Reference: Pickersgill, M. (2019). Digitising psychiatry? Sociotechnical expectations, performative nominalism and biomedical virtue in (digital) psychiatric praxis. Sociology of Health and Illness, 41 Suppl 1, 16-30.

Session Organizer:
Katharina Kieslich, University of Vienna

Chair:
Katharina Kieslich, University of Vienna

151. Making Home, With Care: (Imaginary) Geographies

10:00 to 11:40 am
virPrague: VR 13
This series of five papers on Making Home, With Care focus on localizing and situating the material and geographical and other transformations involved in carefull home-making, and on the imaginaries that at times inform these transformations of home and care.

Participants:

Home making in elderly care as relational/material practice *Bernike Pasveer, Maastricht University; Ingunn Brita Moser, Det norske Diakonhjem; Oddgeir Synnes, VID Specialized University Oslo, Norway*

The aging-in-place paradigm in policies and practices of care for later life takes home for granted as the desirable place to stay and be cared for when fragility sets in. This paper unpacks this unquestioned notion of 'home' as a fixed, singular and given place, and asks instead what it takes to make and/or unmake home in light of fragility, when home is, and who cares. It explores and analyses home as an emergent quality of shifting arrangements of people, things, stories, imaginations, places, identities, relations and affects. For this, the paper works through empirical material from several studies including on home sickness and storytelling in dementia and end of life care; of the institutional organization of homeliness in care; and of care at home for people with dementia. It argues that home, and home making, is about people's ongoing experiments and work of arranging things, bodies, places, technologies and relations so as to bring forth, but not always succeed in, home with care. Home in care is a result of relational and material practice. And, it turns out to be more about out relationality and learning to be dependent, than about autonomy and independence.

Staying/Leaving Home as a Care Continuum: Home-making within European Temporary Migration *Marianne van Bochove, Erasmus School of Health Policy and Management; Dara Ivanova, Erasmus School of Health Policy and Management*

This paper conceptualizes home making as a fractured activity, in terms of both space and time. The empirical case explores in-house care work, done by migrant women in the Netherlands and Italy. These women leave their homes behind, in order to care for

elderly people, who are in turn able to continue living in their home at old age. The caregiver migrants embark on two different kinds of home making – one literal (establishing their own space in the employer's home, Skyping with their own home, decorating the house, etc.) and one metaphoirical (they do this care work, in order to be able to provide their families back in the sending country with a better home). Using data from migrant care workers in two European countries, we analyse home making as a multiplicity of temporal and local fractures, which must be gathered, figuratively and literally. We call this complex process of home making(s) a "care continuum". The paper explores how these home making practices are not separate elements but rather co-constituting each other in surprising and productive ways. Addressing the second fold of the panel, we argue that home making, maintaining, improving, constructing, loving, longing for is a careful calibration of international entanglements, which for the most part remain invisible. Discourses on home making tend to stay within country boundaries – yet it is also being solved through entanglements with other places (migrants leave their homes to make other home-makings possible). We 'unsettle' these segmentations (Murphy 2015), questioning home's time and place.

The Home is Moving Out – Caring for the Home in a Social Sustainable City District *Maria Eidenskog*

Social sustainability is important in modern urban planning and in Linköping, Sweden, a new city district has been built with a social sustainable profile. In this city district, social sustainability is enacted as sharing spaces and creating meeting places which in turn have effect on the making of the home. Some of the practices of the home are moved to shared spaces and thus care for the home is often done in collaboration within a local community. This research studies the distributed home and its consequences for the residents. The research builds upon document studies from the planning process as well as ten workshops with residents. The study asks how care for the home is done in the socially sustainable city district when more spaces and responsibilities are shared within the local community. Our research shows how some shared meeting places are cared for by the residents while others are not as successful in engaging caring practices. Meeting places that do not create engagement, due to lack of interest or design flaws, fail to become the intended extensions of the home. However, when the residents care for shared spaces, new living rooms outside the private homes can be created, both in the built environment and on social media. The research in this project shows how the borders to the home are flexible and that caring practices in some instances can extend the home to include new places.

When Is A House (Not) A Home? Querying The Power At Stake In Negotiations Of Home And Care *Gunhild Tøndel, Norwegian University of Science and Technology (NTNU); Ingvill Stuvøy, NTNU; Ann Rudinow Saetnan, NTNU*

Famously, according to the Bacharach song, "a chair is still a chair when there's no one sitting there" and "a room is still a room even when there's nothing there but gloom", but "a house is not a home when there's no one there to hold you tight, no one to kiss good night". The house, we gather from this, becomes a home through care. Care and home are plurivalent and mutually malleable concepts, pointing at once to needs and emotions, intimacy and privacy, but also to labor, autonomy/dependency and power. In this paper, we explore negotiations of home-making and how it intersects with similarly ongoing material-emotional negotiations of the content of care. We do this by drawing on two multisite ethnographies of Norwegian practices of home/care in the making in different life phases, ranging from the phase of family-making to fragile old age. Starting our analysis with a case of "in-home" care for elderly people in Norway and the effects of the increased presence of care technologies to the "homeness" of those in need of care, we cross-read this with a case of transnational surrogacy where projects of home-making in Norway are enabled through the commoditized and technologically assisted "care work" of surrogate mothers in other countries. In both cases, technologies are introduced into home-making processes to the tune of empowerment narratives, yet both cases demonstrate the

hollowness of such narratives. While power is in play and does shift, some care remains coerced, some houses unrecognized as homes.

Session Organizer:
Bernike Pasveer, Maastricht University

Chair:
Oddgeir Synnes, VID Specialized University Oslo, Norway

152. The (In)Visible Labour Of Translation: Creating Value In Translational Medicine I

10:00 to 11:40 am
virPrague: VR 14

Substantial public and private investments have been funnelled into building the infrastructure of translational medicine which, according to proponents, offers huge potential for advances in health and for economic growth. Such potential, however, is predicated on a variety of labour practices. It is performed by many different categories of worker, from research nurses to data scientists, in various settings and locations. This labour is highly uneven, and often unnoticed or unseen by policymakers and the public. In this panel, we focus attention on the labour that facilitates and underpins translational medicine as a key feature of life sciences research and the bioeconomy. We are keen to explore the ways in which labour is understood, organised, and valued—including interrogating the hierarchical and gendered arrangements within which various stratified forms of labour take place. We want to question how such structures enable some practices to be rendered invisible and devalued, while some are highly privileged, prestigious, and valuable. We are equally interested in exploring if and how variously situated categories of workers contribute to the production of knowledge through their support, administrative, or care practices. We invite papers from various disciplinary, empirical and theoretical perspectives to question what it takes to produce valuable knowledge in contemporary translational medicine. This panel contributes to the growing body of STS scholarship on the bioeconomy and translational medicine, as well as literature exploring the constitutive role of care in the production of knowledge and value.

Participants:

In search of the paperless clinical trial? How digital technology is reshaping hidden work practices in contemporary clinical research *Alex Rushforth, University of Oxford; Trisha Greenhalgh, University of Oxford, UK; Chrysanthi Papoutsi, University of Oxford; Sara Shaw, University of Oxford*

Whereas the shift from paper to electronic clinical records in the 1990s was extensively researched by STS scholars and ethnomethodologists, electronic research records have been little studied. In recent years, clinical trials have become larger, more multi-centre and more heavily regulated; there is pressure to reduce 'waste', manage risk and support audit and secondary uses (including the contribution of research data to the knowledge economy). For all these reasons, electronic systems are tipped to replace traditional paper records in clinical trials. Based on a multi-site ethnography of four UK academic clinical trials units at different stages of initiatives to replace paper data entry forms with electronic alternatives in frontline clinical settings, we show how in some circumstances, electronic research record systems may generate benefits – but also tensions, inconsistencies, and dilemmas for actors in the research process that are unevenly distributed. In particular, we argue that while electronic records can offer advantages from a data management perspective, they risk undermining the largely hidden work practices of research clinicians (doctors, nurses and midwives) responsible for collecting data from patients. We will discuss how digitization initiatives might more appropriately value the hidden contributions of frontline professionals in the contemporary translational health research systems, supporting rather than displacing the skilled care work, autonomy and discretion that goes into generating data and striking rapport with patient-participants.

Who Knows, Who Cares?: Making visible the labour of clinical research delivery *Rachel Faulkner-Gurstein, King's College London*

Recent investments in an infrastructure for clinical research in the United Kingdom have transformed the organisation of clinical research delivery within the National Health Service

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(NHS). Research delivery, a vital yet often overlooked part of the clinical research process, involves administrative, governance, and clinical tasks and is performed by a diverse workforce primarily composed of clinical research nurses and midwives, as well as a new category of NHS worker, the clinical research practitioner (CRP). Building on theories of cognitive capitalism, and drawing on focus groups and interviews with 40 research delivery staff in an NHS hospital trust, this paper develops a critical analysis of research delivery in order to make visible the key workers and labour processes that underpin the bioeconomy. I argue that the crucial labour of research workers draws on a complex set of skills that combine cognitive and care labour. Understanding the labour that these workers provide can help us see the crucial connection between knowledge production and care in the bioeconomy. The rise of the CRP signals a shift in the relationship between knowledge and care, but it does not break up the knowledge-care nexus.

Invisible practices in translational medicine: the case of clinician scientists *Barbara Hendriks, Humboldt-Universität zu Berlin and German Centre for Higher Education Research and Science Studies; Cornelia Schendzielorz, Deutsches Insitut für Wissenschafts und Hochschulforschung/Humboldt Universität zu Berlin; Martin Reinhart, Humboldt-Universität zu Berlin*

Clinician scientists are discussed as key actors for (bio-)medical translation as they are able to speak the two languages of biomedical research and medical practice and therefore seen as capable of bridging the metaphorical `valley of death'. As so-called translators they are politically highly valued as facilitators for medical innovation and translation. Various programs have been launched to raise the number of clinician scientists and to improve their professional standing. This high visibility of clinician scientists in the discourse on translation stands in stark contrast to the invisibility of their work practices and the positions they hold. We discuss three processes of the invisibilization of translational work, in the context of German university hospitals: a) Translational work, e.g. providing expertise to colleagues, teaching students, lab-time for clinicians, is not (yet) part of organizational performance measurement and is, thus, neglected as an important contribution. b) In many settings, patient care takes precedence over translational work. As such, the improvement of diagnostic and therapeutic work based on background knowledge from research are not recognized as achievements of translational competence. c) Clinician Scientists are visible during the program period but are rendered mostly invisible once they take professional positions in the German health care system. To underpin this argument, our paper relies on qualitative interviews with clinician scientists conducted in 2019/20 in a research project that aims to evaluate a clinician scientist program in a major university hospital in Germany. This local program has since become the role model for a (long-term) national program.

'Miscellaneous Care': More-Than Scientists, Doctors and Nurses in CAR T-Cell Therapy in China *Isabel Briz Hernandez, Chinese University of Hong Kong*

Ada and I met in the corridors of a hospital in Beijing, she was there to assist an Italian patient to do an apheresis, the first step of CAR-T Cell therapy, a cancer treatment under clinical research. We weren't formally introduced, someone pointed at her and told me to address her by her foreign name, Ada. We spent that whole day together but we barely talked, she was busy with the paperwork for the admission, with translating, with ordering the patient's father a take away for lunch, with sending the cells to the lab as fast as possible, or with holding the patient's hand when she was crying. Understanding pharmaceuticals, or in this case biopharmaceuticals, as "made and remade […] fluid, ever evolving in relation to their context" (Hardon and Sanabria 2017), in this ethnography, I trace the development of CAR-T cell therapy from a laboratory in China, to the international patients who travel to this country seeking treatment. I have conducted fieldwork among scientists, lab technicians, doctors, nurses, patients, their families, and people like Ada, whose job is hard to label and whose tasks are even harder to list. In this paper, I focus on those practices, actions that

do not strictly fall under the scope of clinical research and will most likely not be included in protocols. What are these miscellaneous practices? Who performs them and why? How do they contribute to clinical research? To illustrate these questions I draw on the entanglement between care and technology.

Making Data Work Visible *Barbara Prainsack, Department of Political Science, University of Vienna; Alena Buyx, Technical University Munich; Amelia Fiske, Kiel University*

In the era of data-rich medicine, an increasing number of domains of people's lives are datafied and rendered usable for health care purposes. Yet, deriving insights for clinical practice and individual life choices and deciding what data or information should be used for this purpose pose difficult challenges that require tremendous time, resources, and skill. Thus, big data not only promises new clinical insights but also generates new—and heretofore largely unarticulated—forms of work for patients, families, and health care providers alike. Building on science studies, medical informatics, Anselm Strauss and colleagues' concept of patient work, and subsequent elaborations of articulation work, in this presentation, we analyze the forms of work engendered by the need to make data and information actionable for the treatment decisions and lives of individual patients. We outline three areas of data work, which we characterize as the work of supporting digital data practices, the work of interpretation and contextualization, and the work of inclusion and interaction. This is a first step toward naming and making visible these forms of work in order that they can be adequately seen, rewarded, and assessed in the future. We argue that making data work visible is also necessary to ensure that the insights of big and diverse datasets can be applied in meaningful and equitable ways for better health care.

Session Organizers:
Rachel Faulkner-Gurstein, King's College London
Clemence Pinel, Center for Medical Science and Technology Studies, University of Copenhagen
David Wyatt, King's College London

Chair:
Clemence Pinel, Center for Medical Science and Technology Studies, University of Copenhagen

153. Exploring the Configuration of the Public in Innovation
10:00 to 11:40 am
virPrague: VR 15

This session explores how the co-creation of innovation, meaning collaborative activities among different stakeholders in a product or service innovation process, can lead to many different configurations between the public, the enterprises, policy-makers, and the material infrastructure in which the process takes place. We seek to better understand how end-users such as citizens define and have their roles defined in the innovation process, and where this process of negotiation and resistance can have an impact. We also explore the discourse of co-creation in contemporary European policy, and seek to understand how this might have configured the way co-creation is practiced. The contribution aims to shed light on the tensions and opportunities of co-creation for innovation through analytical concepts such as configuration, and analyzing the role the public plays in the midst of this process.

Participants:
Co-creation with whom? Configuring 'the public' in innovation procurement between co-design, democracy, and the market *Benjamin Lipp, Technical University Munich; Shelly Tsui, Eindhoven University of Technology; Federica Pepponi, MCTS - Munich Center for Technology in Society (TUM); Carlos Cuevas-Garcia, Technical University of Munich; Mathieu Baudrin, CSI-Ecole Des Mines De Paris; Magdalena Rozwadowska, Wroclaw University of Economics and Business*

Innovation procurement by public bodies has undergone fundamental changes in recent decades. It has essentially morphed from a mere sourcing mechanism for public institutions to a promising tool for innovation policy to stimulate new markets and "meet societal challenges" (Wesseling & Edquist 2018). Within this innovation context, procurement activities get

increasingly confronted with the imperative to co-create, i.e. to develop new policies, technologies and services 'with the public not for it'. However, such calls remain vague when it comes to the question of who is actually meant with 'the public'. Are people enrolled as users of a given technology or service? Are they addressed as citizens with political concerns? Or, do they play the role of self-interested consumers? These three options scratch but the surface of a new diversity of user roles in public procurement and open innovation at large. In this paper, we argue that it greatly matters to the success of innovation procurement procedures how beneficiaries are configured, i.e. what role is reserved for them and, consequently, how co-creative they can be in the process. For this, we offer a qualitative, comparative analysis of three innovation procurement projects across Europe. Here, we focus in particular on who is identified as 'the public' and how its role is configured in each case in possibly multiple ways. We pay special attention to how much 'co-creativeness' is inscribed in these roles and how this translates into public interventions in innovation procurement procedures. Based on our findings we will go beyond a typology of ideal user roles and instead offer empirical accounts of the situatedness of co-creation in innovation procurement.

Imagining and infrastructuring publics in the making of Smart City Vienna *Pouya Sepehr; Ulrike Felt, University of Vienna, Department of Science and Technology Studies*

Since its emergence, smart city programmes pushed for and were pushed by a technology-driven neoliberal agenda. However, beyond the sole focus of technological smartness, we also observe in some cases the emergence of a strong rhetoric of "putting people first", suggesting people-centre approaches to smartification stressing the need for diverse forms of participation. The EU has been both an advocate for such an approach and an influential agent in promoting citizen-centered smartification. In this vein, inhabitants of urban spaces emerge under labels of "smart citizens." In this paper we aim to critically engage with conceptualizations of citizens in processes of smartification, with justifications to perform specific kinds of engagements, and with the expectations towards smart citizens in contemporary smart urbanism. We argue that smartification processes have to be understood not only as infrastructuring the urban space through digital implementations, but also as a new form infrastructuring publics (Korn et al. , 2019). Cities thus become spaces of social experimentation (Felt & Fochler, 2010) with the making of urban publics. In our analysis we draw on the City of Vienna Smart Agenda, and the ways in which smart citizens are narrated in urban documents, PR materials, EU-funded smart city projects, and interviews with related experts. We aim at tracing imaginaries of smart citizenship, the ways in which citizens are imagined to participate in shaping the smartification process and how processes of technological /digital infrastructure and the infrastructuring of citizens relate to each other.

Interest-based Participation in Co-creation of Renewable Energy Innovations *Lene Gjørtler Elkjær, Technical University of Denmark - DTU; Maja Horst, Technical University of Denmark - DTU; Sophie Nyborg, Technical University of Denmark - DTU*

Public participation in wind energy development is, despite a history of grassroots innovation, mostly conceptualized and practiced as deliberative engagement through discrete events. Thus, the primary locus of interaction between experts and lay people is one in which the former sets the rules and the latter performs its part within this frame. However, alternative approaches as co-creation is increasingly gaining traction, with its proposals of reconfigurations of actor relations and agency. To further the research agenda and improve our understanding of what a co-creative approach could mean for the development and governance of renewable energy development, this paper takes stock of the research on the topic through a systematic review. The paper reviews 43 academic publications and discusses how a co-creative approach affects our understanding of the role of participators. The analysis shows that co-creation works on different levels: public participation in renewable energy innovations can be both a way of creating concrete projects but

also a way of shaping the socio-technical system as energy producers and owners. In the literature using co-creation, citizens are categorized together with other actors as industry associations, NGOs, business actors etc. as a maybe more equal representation of the role of publics. Furthermore, the language used to refer to 'citizens' often has market-oriented connotations. We suggest that a way of tapping into this configuration is to consider participation not always as deliberative consensus seeking but also as interest-based negotiations aimed at achieving robust compromises.

Old Wine in New Bottles? Tracing Co-creation in the European Policy Discourse *Anja Kathrin Ruess, Munich Center for Technology in Society, Technical University of Munich; Ruth Müller, MCTS TU München; Sebastian Michael Pfotenhauer, Technical University Munich*

Co-creative innovation, that is practices bringing together diverse actors to achieve mutually beneficial outcomes, seem to be flourishing across academia, industry and civil society. Publics are increasingly engaged upstream, both as a means of unlocking new sources of innovation and of contributing to responsible and more robust policies, so the hope. While the discourse on co-creation has surfaced at the EU policy level only about a decade ago, its premises strike a familiar note: Since the 1960s, policymakers and social scientists alike have framed public engagement as the key to a new mode of techno-science governance through citizen/stakeholder consultation in network-like constellations and as a particularly useful tool in the context of controversies. However, this seeming conceptual overlap results in a blurred delineation, which in turn challenges researchers to justify the study of co-creation as a distinct subject. In this paper, we explore the discursive boundaries between public engagement and co-creation. More precisely, we trace and compare the underlying norms and values that pervade both co-creation and public engagement with science and technology. Drawing on a qualitative discourse analysis of EU innovation policy documents, we carve out the subtle connotations of the two concepts as well as the similarities and differences between them. Understanding such delineations will help researchers better conceptualize co-creation and provide a framework to critically reflect upon the hidden value inscriptions of co-creative innovation practices and resulting policy implications. This paper is part of SCALINGS, an EU-funded research initiative addressing the challenges of mainstreaming co-creation across Europe.

Session Organizers:
Shelly Tsui, Eindhoven University of Technology
Anja Kathrin Ruess, Munich Center for Technology in Society, Technical University of Munich
Benjamin Lipp, Technical University Munich
Meiken Hansen, Technical University of Denmark
Magdalena Rozwadowska, Wroclaw University of Economics and Business
Chair:
Shelly Tsui, Eindhoven University of Technology

154. Methods in Studying Data/Natures

10:00 to 11:40 am
virPrague: VR 16

This session focuses on methodographic (rather than methodological-normative) accounts of STS methods used to study data and/or natures/environments.

Participants:

ROCK REPO: Trans*feminist scanning practices for geocomputation *Helen Pritchard, Goldsmiths University of London; Jara Rocha, The Underground Division; Femke Snelting, Independent Researcher*

During recent years geocomputation has become increasingly entangled with so-called 4D visualization. The contemporary infrastructure of fossil fuel extraction depends on these software tools for geological data handling, interpretation and modelling of subterranea. In this paper, in the context of co-research workshops, as part of the creative practice research work "ROCK

REPO" we discuss hands-on engagement with entangled game engines and earth modelling software--collective explorations of the space-time matterings of geocomputation data. We argue that when undergrounds are rendered as 4D objects – these imaginaries align with other geo-computation tools, to form normative understandings of inhuman agency and the representation of the earth-as-resource. From smooth sliders that move across mega-annums of geological time to the technical temporalities of generating point clouds through LiDAR, these practices, make present undergrounds as visible data volumes in space-time. In turn these volumes are rendered as available for timely and optimised extraction. Drawing on the inquiries of the "ROCK REPO" we suggest that there are multiple space-time matterings present in computational environments. In addition we argue that this is a practice of "eventual (in)consistency" in which multiple renderings of space-time intersect all the time and at the same time not at all. As a response we propose a set of trans*feminist scanning data practices for affirmative responsibility-taking.

Ethnography and Data Natures *Agata Jalosinska, Newcastle University*

Urban Observatory is the largest city-sensing project in the United Kingdom. Its goal is to design infrastructure to collect complex data about the city. It functions between the academy and city council, producing data on urban natures to support policy making. Being engaged with the lab as an ethnographer, who wanted to study how nature can be represented in data, I have an opportunity to participate in the Observatory team's everyday life and observe how the data production infrastructure is actively produced and maintained. I also learn what the presence and engagement of an ethnographer can bring to the team. To do so, I have designed a model for engagement that consist of three stages, initially titled "developing an understanding", "collaborative sense making" and "joint problem making". Stage one is the ethnographer's task of collecting data through participant observation, which will, in stage two, be presented to the team for feedback, discussion and negotiation. Stage two is both "fact-checking" in intent, and an arena that allows for a multiplicity of voices and opinions to be presented. It serves as a mirror in which these opinions can be reflected and heard by the full team. Stage three, joint problem making, is planned to function as a map of actual critical situations and problems that arise within the team, allowing critical discussion about Urban Observatories responsibilities. During my fieldwork, which finishes in July, I will explore how tools from ethnography, service design and participatory design can support an ethnographer in interactions with data/natures institutions, and consider their potential research contribution.

Designing Multimodal Artifacts For Exploring Urban Life. An Experimental/Ethnographic Proposal By Times Square And I *Santiago Orrego, Technical University Munich (TUM)*

How to describe, to represent, and to approach unstable, temporal and always changing urban life? What can we learn from Times Square for doing urban ethnography from an STS approach? This paper, divided in three parts, offers an overview of the conceptual constructions, the methodological discussions, the findings, the tactics, and exchanges between Times Square and I, regarding how to do a sort of STS ethnography of the life outside based on multimodal and interactive descriptions and flattening processes. The first part is a general introduction to my piece of research, framed into my doctoral studies in TechnoScience, about those urban structures that are composing a specific version of what we understand as Times Square after its pedestrianization. The next part will take care of the two main objectives I want to attain with this research process: 1. To propose a discussion about what is the meaning of the urban as a constitutive element that defines our current way of inhabiting particular places. 2. To present an experimental method, based on the creation of artifacts for doing multimodal urban ethnography from STS, specifically from ANT. Finally, I will show some of those artifacts I already designed, and then, the paper will end with a double invitation to explore Urban life learning from the life itself, using all the possible resources that life is offering us, and to conceive STS ethnography as a creative, inclusive, and a multidisciplinary space for experimenting and proposing new ways of understanding the world outside.

Intersectional Gender-Responsibility in Arctic Knowledge Production *Mervi Aulikki Heikkinen, University of Oulu*

Gender has a significant impact on improving the epistemic justice i.e. quality of scientific knowledge on three interrelated levels: 1) in composition of research groups, 2) for research questions presented, methods used, data gathered and analyzed and 3) in application of the research results. Additionally, a gender-responsible research management and strengthened societal empowerment as a result of the research needs consideration. For the just and sustainable future in the Arctic it is crucial to ensure the high quality of the academic knowledge production process. Therefore, it is important to make visible, further elaborate and to strengthen an intersectional gender analysis in the Arctic academic knowledge production process. A Circumpolar Thematic Network (TN) was established to facilitate elaboration of knowledge production practices in and of the Arctic. The multidisciplinary TN gathers in a balanced and representative manner interested researchers together to discuss, map and analyze the socio-material relationalities and ethico-onto-epistemologies in the Arctic knowledge production processes including the definition and inclusion of indigenous knowledges. The TN works on-line by sharing defined institutional digital documents (e.g. GEPs), providing descriptions of formal and informal institutional academic practices (e.g. methods) and presents and debates on them in aim to identify gaps in the Arctic knowledge production processes. The methodological approach could be defined as co-creation. The paper address intersectional gender-responsibility in Arctic knowledge production and thus critically engages with policies on promoting gender equality and of sex and gender analysis in research and innovation (R&I) to further insights on responsibility and sustainability within STS.

Session Organizer:
Tahani Nadim, Museum fuer Naturkunde

Chair:
Ingmar Lippert, IT University of Copenhagen

155. Lost in the Dreamscapes of Modernity? Theorizing Agency, Multiplicity, and Scale in Sociotechnical Imaginaries 2
10:00 to 11:40 am
virPrague: VR 17

Participants:

Experiencing and Imagining the City on Two Wheels: A Phenomenological Approach to the Sociotechnical Imaginary *Bernhard Isopp, Munich Center for Technology in Society, Technical University of Munich*

The sociotechnical imaginary has become a definitive STS concept over the last decade, orienting research in hundreds of studies and expanding the insights of STS into other fields. In addition to offering a means for reflexive normative engagement, its appeal stems from its co-productive assumptions: pointing to the reciprocity between and inextricability of politics and science, the social and technical, imagination and infrastructure, discourse and materiality. Despite its promise, long-standing methodological and philosophical preoccupations still loom: what is the ontological and epistemological nature of these conjunctions/distinctions? How do we make sense of the different kinds and scales of agents and effects at play in the complex systems we study? This talk attends to these perennial questions by more specifically considering the relationships between imaginaries and the material effects of technologies. I suggest that one possible route to contributing to these inquiries is via (post)phenomenology. Despite sharing underlying concerns with imagination and potential forms of life, phenomenological approaches have been almost entirely absent from thinking about sociotechnical imaginaries. As a case I return to a category of artefact that played a definitive role in STS approaches to technology: bicycles. Bicycles are central to various alternative sociotechnical imaginaries. Why? What are the connections between the materiality of bicycles and the experiences and imaginations tied to them? I will offer a comparative analysis of the role of bicycles in urban visions in two cities, Toronto and

Munich, attending closely to the experience of material artefacts, infrastructures, and environments defined by these contexts, and drawing on different data sources, from mapping technologies to popular media discourses, to think about the kinds of empirical groundings required to address these longstanding quandaries.

Future Imaginaries In The Making And Governing Of Digital Technology: Multiple, Contested, Commodified *Christian Katzenbach, Alexander von Humboldt Institute for Internet and Society (HIIG); Astrid Mager, Austrian Academy of Sciences*

This paper is a conceptual contribution to the ongoing diversification of the notion "sociotechnical imaginaries" (SIs) in the context of digital technologies. Technology companies and political institutions dig into the rich pool of narratives, visions, and values to support their services, products and regulations. Building on an extensive literature review and illustrating its findings with case studies investigating the making and governing of digital technologies, this contribution will show that the initial focus of the notion SIs as monolithic, linear future trajectories primarily enacted by state actors needs to be refined and extended. We will particularly highlight three aspects in our talk: (1) Multiple: SIs often appear to be multiple. Based on our analysis, we will demonstrate that the circulation of single imaginaries is the exception, not the rule. Studying digital futures hence involves tracking the trajectories of multiple imaginaries and their relation to one another. (2) Contested: Imagined futures are seldomly consensually defined. The study of imaginaries of digital technology further involves the investigation of more or less explicit controversies and struggles over dominance. (3) Commodified: Corporate actors have become key agents of imaginaries who attire their products and services in utopian visions of the future. Negotiating digital futures thus finally implicates tendencies of commodification of sociotechnical imaginaries. We conclude with discussing that sociotechnical imaginaries increasingly figure as multiple, contested and commodified in digital realms due to powerful technology companies that not only take over the imaginative power of shaping future society, but also partly absorbing public institutions' ability to govern these very futures with their rhetoric, technologies and business models. In that way, an advanced concept of SIs also contributes to the prominent debate on platform governance and private ordering.

How Does A Traveling Sociotechnical Imaginary Land? From Grand Challenge To Human Brain Project *Jongheon Kim, University of Lausanne, Faculty of Social and Political Sciences*

This research demonstrates how a "traveling" sociotechnical imaginary lands in a specific context while stimulating the evolution of existing imaginaries and even the creation of new ones. To this purpose, this paper draws upon a case study of the Human Brain Project (HBP) of the European Commission, aimed at delivering ground-breaking discoveries for brain research. Not only does the paper examine how the traveling imaginary of "Grand Challenge" has emerged and become anchored in the EC's innovation policy, which led to the construction of the HBP at the political level, but also, by drawing upon observation and interviews, it conducts a micro-level analysis of the HBP's development revealing the institutionalization process of the traveling imaginary. First, it will be argued that, whereas the vision of Grand Challenge has been traveling around the world, to be institutionalized, the vision had to obtain a specific meaning by interacting with existing sociotechnical imaginaries such as that of European integration. Second, this paper asserts that the landing of a traveling imaginary gives groups of people, called "sociotechnical vanguards," a chance to foster their visions. Finally, it will be stated that the landing of a traveling imaginary tends to reinforce existing imaginaries within the target population, since the vanguard visions, to be successfully promoted, should be formulated in a way resonating with the traveling imaginary as well as existing imaginaries. As such, this paper will provide an empirical study on how a sociotechnical imaginary emerges, travels, and lands at the macro as well as micro-level.

Session Organizer:

Alexander Wentland, Technical University of Munich
Chair:
Alexander Wentland, Technical University of Munich

156. **Governing Reproductive Bio-economies: Policy Frameworks, Ethics and Economics 2**
10:00 to 11:40 am
virPrague: VR 18

Reproductive bio-economies, i.e. economies that are built and function around assisted reproduction and reproductive tissues, cells and processes, are largely consolidated economies, which have seen considerable growth in terms of treatment cycles, technologies, revenues, numbers of actors, countries and stakeholders. Since the first IVF birth in 1978, reproductive bio-economies have expanded to include: IVF clinics, legal firms, gamete donors and surrogates, intermediaries and agencies, gamete and embryo banks, investment funds, research institutions and public health care centres, in a global network worth billions of Euros worldwide. Amidst this globally interconnected expansion, questions about the policy and governance of reproductive bio-economies become a matter of considerable interest. A consideration of regulatory systems that govern reproductive technologies raises questions about how bio-economies emerge within different national and supranational contexts, how and if they challenge existing governance arrangements and how existing or new policy frameworks contribute to the re/shaping of bio-economies. An exploration of the regulation of reproductive bio-economies allows for improved understanding of how "moral regimes directed towards reproductive behaviours and practices are fully entangled with political economic processes" (Morgan & Roberts 2012). Such an exploration allows consideration to be given to the distribution of actors and affects within different moral frameworks and regulatory formations.

Participants:

Academic Capitalism and the Normalization of Genome Editing *Santiago J Molina, University of California Berkeley*

With over 20 clinical trials for treating human diseases with genome-editing technologies underway, scientists and regulators wait anxiously for early evidence of patient outcomes. Alongside the scientists and regulators, investors watch to see who will be the first to either capture the promised financial gains and scientific accolades of successfully treating patients by modifying their DNA or face sobering clinical results and stock buybacks from over-valuation. Previous sociological research suggests that whether the technology underlying genome editing, the CRISPR-Cas9 system, is fated to be a flash in the pan or a durable institution in biomedicine will not just depend on whether the technology works or not. It also depends on a) whether or not robust and reproducible alignment can form between the multitude of actors involved in the practice and politics of genome editing; and b) whether ethical concerns over the equity, safety and morality of modifying human DNA can be co-produced or normalized. Research examining partnerships between academic laboratories and the biotech and pharma industries, under the lens of "academic capitalism," has shown that emerging biotechnologies thrive in organizational ecosystems made up that are rich in scientific networks and capital. Departing methodologically from previous research on biotechnology clusters, which focuses on network and patent analysis, I draw from ethnographic and interview data to describe the micropolitics of CRISPR research and examine how interactions between academia and industry shape the normalization of genome editing by producing an affective narrative for curing disease and reshaping value frameworks around research misconduct.

In the Name of Innovation: Law and the Political Economy of Reproductive Future *Jennifer Denbow, California Polytechnic State University*

In the wake of the Human Genome Project, biotechnology companies scrambled to develop non-invasive prenatal tests (NIPTs) and attracted millions of dollars in venture capital funding. Once developed, industry spearheaded the rapid translation of NIPTs into clinical practice despite ongoing concerns about their reliability and social impact. Globally, 6 million pregnancies have been screened for chromosomal conditions like Down syndrome using NIPTs. This accelerated intervention has meant that NIPTs have been rolled out with little

public deliberation, yet they raise a number of complex political and ethical questions. This paper examines how a preoccupation with health innovation as an inevitable good across financial, legal, and medical domains has contributed to the shrinking of public space for deliberation about NIPTs in the United States. Rather than focusing on individual decisions regarding prenatal testing, this project considers the financial, legal, and political conditions that create and structure pregnant person's choices regarding testing. The project employs tools of critical inquiry drawn from law, political theory, disability studies, and feminist STS to contextualize and analyze laws and policies concerning venture capital, patent law, medical malpractice, and US FDA regulations. The project is especially attuned to how the state cut social services to people with disabilities at the same time that state policies shifted to enable biotechnology corporations and venture capitalists to play an outsized role in framing disability and shaping reproductive practices.

Reproductive Futures: Transgender Youth, Fertility Preservation, and Cross-Border Governance *Erin Heidt-Forsythe, Pennsylvania State University; Hil Malatino, Penn State University*

Although there is increasing scholarly attention to the presence of reproductive healthcare disparities among transgender and gender nonconforming people in the United States, there is little research, or empirical evidence, about how such disparities impact younger people. Given that feminizing and masculinizing hormone treatments may threaten a person's ability to have children in the future, assisted reproductive technologies (such as egg/sperm freezing and banking) have been identified as important resources for the reproductive healthcare of transgender and gender nonconforming youth. Little research – and few professional guidelines – exist around helping youth make such decisions about their reproductive futures. As the World Professional Association for Transgender Health explains, there is currently "no technique for preserving [reproductive] function" for pubertal adolescents taking feminization or masculinization hormones (WPATH 2011, 51). How do communities, institutions, and practices surrounding transgender and gender nonconforming youth help individuals make decisions about fertility preservation? How might this knowledge lead to possible transformations in healthcare to overcome disparities in access? In this paper, we explore these ideas through a case study of the ways that subnational health policies in the US and Canada contribute to trans health care systems, particularly for youth and adolescents. Analyzing the ways that social justice, medical institutional, and political/ideological contexts interact around issues of education, access, and alternatives to fertility preservation, we clarify how governance of fertility preservation for trans youth, in this case, is created out of entrepreneurial social justice organizing, clinical practices, and subnational health policy.

Session Organizers:
Nicky Hudson, De Montfort University
Vincenzo Pavone, Consejo Superior Investigaciones Cientificas (CSIC)
Chair:
Cathy Herbrand, De Montfort University

157. Growing old in a more-than human world: Materialities of care and interspecies entanglements I
10:00 to 11:40 am
virPrague: VR 20
Participants:

Considering more-than-human participation in co-design with older adults: Implications for a material gerontology *Helen Manchester, University of Bristol; Juliane Jarke, University of Bremen*

New materialism champions the idea that our (social) worlds are co-produced by multiple, more-than-human entities. Recently the design research literature has taken up the idea that we are not only designing more-than-human futures but that the design process itself involves a broad range of heterogeneous entities (e.g. Storni et al. 2015; Giaccardi et al 2016; Rice 2018). What

has received less attention, are the implications of this approach for (our understanding of) specific user groups. So far, co-design research with older adults mainly considers the differing power relations between human participants, in particular the dichotomous relationship between those with power (e.g. designers) and those without (e.g. older adults). Our argument is that attending to the more-than-human in co-design processes draws attention to the assemblage of multiple materialities in practice and has the potential to make visible elements of practice in co-design processes that have been hitherto ignored in technology design for older people. In this paper we critically explore empirical data from technology co-design processes with older people – living in care settings and at home. We examine what can be gained by attending to more-than-human entities in the process and analysis of these projects. Our approach allows for an understanding of old age and ageing as co-produced through a variety of heterogeneous entities such as discourses, things, technologies, spaces (Höppner & Urban 2018) and acknowledges that design processes themselves configure particular materialities of ageing.

Alexa, Care Worker Platforms, and Emergent Precarious Technologies of Care in the UK *James Wright, The University of Sheffield*

Digital technologies are increasingly being introduced into practices of social care in the UK. Apps and websites, as well as next-generation telecare systems featuring sensors, "smart hubs", mobile or wearable devices, and analytics, are becoming part of emergent, highly fragmented, and increasingly diversified sociotechnical assemblages of eldercare. This paper examines some aspects of more-than-human entanglements of care relating to these processes of digitisation. In particular, I focus on the emergence of precarious care technologies. These are technologies that are precarious themselves (dependent on unstable, emergent, and unequally distributed ICT and human infrastructure and resources) and increasingly aligned with a consumer electronics market that deals in far shorter and more fragile product lifecycles than those of "traditional" telecare and other specialist care devices. These technologies may also exacerbate forms of labour precarity among paid care workers. Although this paper focuses on the situation in the UK, its findings are likely to be applicable in other ageing postindustrial countries undergoing similar processes of digitisation in eldercare.

Socio-material arrangement by 'invisible users' - the constitution of ageing in digitalised society *Signe Yndigegn, Design Department, IT University, Copenhagen*

Using the concept of socio-material arrangements inspired by Gómez (2015) as a heuristic, this presentation explores constitutions of ageing in a society of increased digitalisation of public and private services. Denmark is a leader in introducing and allowing digital solutions to replace existing services in both the public and private sectors. Digital strategies are introduced with the promise of creating efficient and productive citizens (Schou & Hjelholt 2019). Drawing on a collection of interviews and small observations I conducted with older people in shelters in Denmark in 2018, I will analyse how they adapt to and modify digital services. The older people are heavily depended on informal care and help from family and the civil society. The exploration, though, makes visible 'invisible users' of digital services (Burrell 2012) and how socio-material arrangements enable these users (older people) to continue living independently. At the same time, these arrangements are testing the idea of autonomy and efficiency - and puts to question ideas of active ageing in elderly policies. In the presentation, I will draw on the body of literature within STS (Lassen et al. (2015), Peine et al. (2015) on active ageing as well as digitalisation to discuss the constitution of ageing and put to test the concepts of active ageing, independence and efficiency. References Jenna Burrell (2012) Invisible users: Youth in the Internet cafés of urban Ghana. Mit Press, 2012. Daniel López Gómez (2015) Little arrangements that matter. Rethinking autonomy-enabling innovations for later life, Technological Forecasting and Social Change, Volume 93, 91-101, https://doi.org/10.1016/j.techfore.2014.02.015. Birgit Jæger

(2004). Trapped in the Digital Divide? Old People in the Informations Society. Science Studies, 17(2), 5-22. Aske Juul Lassen, Julie Bønnelycke, Lene Otto (2015) Innovating for 'active ageing' in a public–private innovation partnership: Creating doable problems and alignment, Technological Forecasting and Social Change, Volume 93, 10-18, https://doi.org/10.1016/j.techfore.2014.01.006. Jannick Schou & Morten Hjelholt (2019) Digitalizing the welfare state: citizenship discourses in Danish digitalization strategies from 2002 to 2015, Critical Policy Studies, 13:1, 3-22, DOI: 10.1080/19460171.2017.1333441 Alexander Peine, Alex Faulkner, Birgit Jæger, Ellen Moors (2015) Science, technology and the 'grand challenge' of ageing—Understanding the socio-material constitution of later life, Technological Forecasting and Social Change, Volume 93, 1-9, https://doi.org/10.1016/j.techfore.2014.11.010.

Pharmaceutical care; polypharmacy and eldercare in contemporary Denmark *Sofie Rosenlund Lau, Department of Public Health, University of Copenhagen*

Medication management takes up one third of homecare nurses' time and is a growing element in the provision of eldercare in Danish municipalities. With increasing age comes increasing chronic diseases and hence a multitude of pharmaceutical treatments. In Denmark, one third of all above the age of 60 take more than five different medications per day. Above the age of 80, the average number of daily drugs is ten. "It's a bit like a game of Kalah" a nurse described to me, with sarcasm, while dispensing pills for an elderly woman in a home close to Copenhagen. Based on an ethnographic assemblage study (Wahlberg 2016) of the routinization of polypharmacy among frail seniors, this paper explores how sorting and dispensing medication transforms care encounters between seniors in need of daily homecare and homecare workers. In these meetings, the configuration of care is structured around practices centered on the medicines rather than on the senior. In the presentation, I question what care becomes, when the majority of time is spend on managing the practicalities of polypharmacy. Pharmaceutical care is suggested as a term that embraces the socio-material capacities of polypharmacy and the entanglements of materiality, moralities and affects in Danish eldercare.

Session Organizers:
Nete Schwennesen, Copenhagen University
Daniel Lopez Gomez, Universitat Oberta de Catalunya
Joanna Latimer, SATSU, University of York
Chair:
Daniel Lopez Gomez, Universitat Oberta de Catalunya

158. Social Sciences and Humanities in Energy Research: STS perspectives
12:00 to 1:40 pm
virPrague: VR 01
Participants:

Future Directions for Sociotechnical Energy and Climate Research: A Critical Review and Research Agenda *Benjamin Sovacool; David J Hess, Vanderbilt*

Science and technology studies (STS), or the field of science technology & society, refers broadly to a collection of disciplines seeking to understand the nexus of the social relations and technical or material infrastructures, as well as a specific approach to doing constructivist research. The aims and objectives of the study are threefold: to interrogate which STS concepts or tools are useful at better understanding or interpreting energy and climate change topics; to reflect on prominent themes and topics within those approaches; and to identify future research gaps and direction. To do so, it utilizes a novel mixed methods approach involving (1) co-construction analysis and text with sixteen prominent STS scholars as well as (2) a systematic review of 262 journal articles and books with a stratified sample of 68 STS works published from 2009 to mid-2019. Based on this evidence, this study first identifies three main bodies and fifteen topics of STS work relevant to the study of energy and climate. The category of sociotechnical systems captures important research on sociotechnical transitions; social

practices and domestication; gender and justice; large technical systems; and actors, networks, and heterogeneous systems. Policy reflects salient work on transforming innovation; sustainability experiments; governing complex transitions; the politics of design and resilience; and disparity and hegemony. Expertise and publics involves work on public engagement and deliberation; expertise and social construction; expertise and democracy; expectations and hype cycles; and imaginaries and frames. The study then discusses ways that STS research can push itself to look inward, at underlying assumptions and stronger research designs; across to less conceptual dogmatism and greater theoretical triangulation; and outward to more transdisciplinary approaches and research that relies less on Western, Educated, Industrialized, Rich, and Democratic (WEIRD) societies, case studies, and data. We conclude by calling on STS research to be reflective about philosophic assumptions, open to ontological parallax, and committed to pluralism.

The Role of Social Sciences and Humanities in Norwegian Environment-friendly Energy Research and Innovation *Antti Silvast Silvast, Dept. of Interdisciplinary Studies of Culture, NTNU*

Low-carbon transitions of energy systems have multiple dimensions, which poses challenges for contemporary societies, research, and policy. It has been growingly expected that interdisciplinary research that crosses academic disciplines, sectors, and policy areas will develop new knowledge and help address this situation. Over the past years, academic disciplines from the social sciences and humanities have been especially expected to contribute new knowledge to energy research, policy, and innovation and hence further energy transitions in societies. The research question of this paper is: what role have social sciences and humanities played in sustainable energy research programmes and projects in Norway? The research addresses the question by presenting qualitative interviews, desk-based research, and fieldwork with professionals aligned with and around Norwegian Centres for Environment-friendly Energy Research (Forskningssentre for miljøvennlig energi, FME:s). The FME:s were established by the Research Council of Norway to transform how sustainable energy provision is conceptualized in Norway: including increasing innovation; contributing to emissions reduction, energy efficiency, and renewable energy; developing research environments; and increasing research based knowledge on energy debates. The FME:s work through university-industry collaboration, and technological and social scientific FME:s have been established. The research examines how interdisciplinary research is carried out in the FME:s, mapping the range of academic disciplines in the FME:s, and studying the interpretations of innovation that the FME:s are drawing upon. The presentation presents new understanding on how the FME:s have worked as a way of conceptualizing transformative change anew.

In search of a sustainable urban future: Experiences and reflections from an interdisciplinary research project *Michael Ornetzeder, Austrian Academy of Sciences; Gloria Rose, Austrian Academy of Sciences*

More sustainability can only be achieved if societies are fundamentally transformed. To date, we still have little experience of how such fundamental changes can be achieved in a deliberate way. However, it seems to be clear that feasible solutions depend very much on the collaboration of different disciplines and that there must be sufficient room for real-world experimentation and deep learning. In this contribution we refer to experiences within the on-going research project "Urban pop-up housing environments and their potential as local innovation systems". In this interdisciplinary project, launched in 2018, several models for temporary forms of housing in Vienna are being developed and in addition conceptualized as spaces for sustainability learning. The aim is that these "interim solutions" hold the potential to become new elements of local innovation systems, offering a wide scope of possibilities to explore, apply and evaluate new technical and social concepts. In order to meet diverse needs and requirements involved in designing forward-looking temporary living models, technical, scientific, spatial

planning and social science disciplines and local stakeholders work together intensively. In our presentation we will briefly report on the status of the project and, based on this, discuss several tensions that have appeared during the collaboration in the project: tensions arising from widely divergent ontological positions; tensions related to the discrepancy between ideal solutions and the openness in intended experimental settings; and tensions resulting from different normative views on sustainability.

Session Organizer:

Antti Silvast Silvast, Dept. of Interdisciplinary Studies of Culture, NTNU

Chair:

Ruth Woods, Dept. of Interdisciplinary Studies of Culture, NTNU

159. Politicization of Sociotechnical Futures 3: Rhetorics and Discourse Dynamics

12:00 to 1:40 pm
virPrague: VR 02

The studies on expectations, imaginaries and visions reveal how sociotechnical futures and the associated promises and fears increasingly influence innovation and transformation processes. In various societal contexts, for example, in research politics, scientific collaborations, parliamentary debates, and social movements these imaginaries serve as visionary resources to legitimate decisions, coordinate practices, steer developments, or to raise awareness for specific problem-solutions. At these sites, futures are politicized and represent or conceal present stakes at dispute. The objects of politicization materialize in a variety of forms (e.g. terms, symbols, metaphors, narratives, artifacts, traditions, organizations). We will discuss how both, the characteristics of the societal context (e.g. power constellations) and the forms (e.g. discursive narratives or prototypes) are conditions for the politicization.

Participants:

Visions as cultural techniques. Cultural semiotic reflections on future visions *Paulina Dobroc, Karlsruhe Institute of Technology*

Future visions became increasingly important elements in innovation and transformation processes. Governance of these processes, too, is increasingly concerned with visions and there are already some suggestions about how to cope with them. However, a theoretical concept is still missing, which could explain the conditions of the dynamics within visions, the preconditions of future oriented communication processes, to which STS Studies has referred several times (Selin 2007, Jasanoff 2015, Schneider & Lösch 2019). In the theoretical reflections of my presentation I will describe visions as cultural techniques. I will refer to cultural semiotics and thinking such as those of Charles S. Peirce and Roland Barthes. This perspective makes it possible to think about the pre-conditions and rules of the communication process itself as a part of the visioneering process. The dynamics within this process arise in an interaction between context and form and become the basis for the politicization of visions. In this process of reciprocal interaction visions function as cultural techniques. These theoretical reflections will be underpinned with an example. Based on the vision of openness, I'm working on within my dissertation project, it can be shown how the meaning of one vision vary and evolve in different contexts. The vision of openness, which evolved from the concept of Open Source Software and from which concepts such as Open Government, Open Execution and others emerged, is a great example due to the variety of contexts in which the vision seeks to assert itself and in which it is politicized.

Un/doing Future – Air Taxis As Technologies Of The Future Staged As Present Futures *Marcel Woznica, Johannes Gutenberg-Universität Mainz | Institut für Soziologie*

The air taxi as the means of transport of the future has a particular impact on the discourse on future air mobility: numerous air taxis have already made their maiden flight, and the first people have already been able to fly with such an air taxi. The media presentations of socio-technical futures in which air taxis are integrated into everyday life and have solved numerous

mobility problems are shaping the discourse on mobility, innovation and future technologies. In the presentations, the yet unfinished air taxis are staged as finished objects that are integrated into everyday life in an anticipated world. The paper will show the means by which socio-technical futures around an artefact not yet integrated into everyday life are produced as present futures, how they are connected to certain discourses and which expectations are asserted and negotiated along a production and innovation claim. The aim of the paper is to explain the performative character of the future as un/doing future using the example of the presentation of air taxis and the relationship between visions, expectations, contexts and narratives connected to them.

"Listen to the Science" - The Use of Scientific Knowledge in Environmental Movements as Re-Politicization of the Climate Debate? *Christopher Pavenstädt, Hamburg University; Simone Rödder, University of Hamburg*

With the recent advent of climate-related protest groups such as Fridays for Future (FFF) and Extinction Rebellion (XR), climate policy has become a major issue in German politics. It is an open question, however, whether these new social movements (NSM) introduce new future imaginaries to the climate discourse, as scholars have already pointed out their comparatively weak goals, which would manifest the current de-politicized state of climate policy. To shed light on the situation in the German case, this paper presents an analysis of NSM's imaginaries for climate policy in Germany based on interviews in newspapers and website content. Through narrative discourse analysis, similarities and differences in politicizing the future by FFF and XR will be identified, especially in relation to advocating ideas with transformational quality, conceptualizing system change beyond consensual policy-making, and contentious action to challenge power. A key aspect are the movements' relations to and uses of scientific knowledge. With their major claims "Listen to the science" and "Tell the Truth", these NSMs emphasize a more pivotal role for science in climate policy, yet, it is unsure what they conceptualize as 'the science' and 'the truth' and which boundary arrangements between politics and science they advocate for. As these movements are in constant flux, another interest lies in the identification of discursive dynamics, assuming an emerging shift towards radicalization. In conclusion, the paper will assess the climate future imaginaries of FFF and XR as being de-politicized or rather as attempts to re-politicize the climate discourse.

Lithium exploration in the North of Portugal: notes on the importance of long-term perspectives *Emilia Araujo, universidade do minho*

Portuguese politics is strongly marked at national and regional level by a strong valorization of the sociotechnical futures. This is noticed in many situations, particularly those concerning the development of renewal energies, airport building or high-speed trains. This communication focus on a present-day controversial issue: the lithium exploration. It is an issue full of controversy, at national and regional level. However, is mostly politized as inevitable opportunity for some Portuguese regions. Therefore, it attracts several private interests from national and international companies which also tend to reinforce the worlds need for lithium, in face of the progressive digitalization. Debates on the effect's lithium exploration cause in the localities – which are strongly rural and nature tourism dedicated – both in the present and in the future of those communities occur in public space, begun to happen, but their power of influencing political decisions, especially at national level, are reduced. This communication analyses the concept of sociotechnical futures in association with the disruptions it cause on the times of the communities that have now being suddenly touched by a strong political program of land exploration whose main arguments is the future of the regions, and ultimately, the future of the country. The communication is aligned with theoretical discussions of several authors within STS, as well as those provided by Herminio Martins and Barbara Adam, about the importance of long-term perspectives when deciding a bout technoscientific objects. Empirically, the communication traces the chronology of the debate about lithium exploration in

Portugal, and more particularly, in the north of the country. In addition, the communication identifies the main actors in the process, their arguments and how the debate has developed in the space of the national and local media.

Session Organizers:

Paulina Dobroc, Karlsruhe Institute of Technology

Andreas Lösch, Karlsruhe Institute of Technology (KIT)/ ITAS

Chair:

Maximilian Roßmann, Karlsruhe Institute of Technology (KIT)/ ITAS

160. Frameworks of Agency and Dis/Media. The Significance of Current Digital Technologies and Dis-/Abling Media Practices

12:00 to 1:40 pm
virPrague: VR 03

Today, an ever rising number of assistive devices, mobile apps and algorithm-driven applications is populating our current crisis to address subjectivities across a wide variation of abilities. Encounters of digital media, assistive technologies, and people with disabilities increasingly shape contemporary practices. However, analyses regarding the relationships between daily practices, (sensory) experiences, digital media technologies as well as critical reflections of the concept of agency or the complexities of media participation are still in their infancy. Human and nonhuman entities, people, animals, technologies etc. shape, maintain, disrupt and change socio-technical assemblages through their relational becoming. Disability Studies (Kastl 2010) criticizes new technologies for frequently fertilizing a discourse about the "fix" of deficit bodies. These approaches often rely on the social model taking for granted a marginalized but autonomous (and empowered) subject. Studies connecting these two strands of research are still rare (Winance 2016) but have recently gained momentum in Crip Technoscience centering around the political significances of technology, (h)ac(k)tivism, and socio-material practices of disability world building. By engaging this approach, we aim to critically analyze specific socio-technical settings on a micro (local) and macro (cross-cultural) analytical level and contribute to a discussion that furthers an understanding of dis/-ability and dis/media practices (Mills/Sterne 2017) of (non)human. The papers of this panel will address important challenges by questioning the ways in which the concepts of agency, disability and care of (non)humans are interrelated from (inter)disciplinary frameworks and thus contribute to discussions and STS approaches on dis/continuities re/shaping sociotechnical entanglements of dis/ability.

Participants:

Rethinking Hearing: Techno-mediated music hearing *Beate Ochsner, Universität Konstanz*

The dis/ability of hearing is still an equally necessary and unreflected condition. We designed a media ethnographic study informed by an STS approach on music hearing practices with cochlear implants (CI), which was conducted in cooperation with the CI-Center in Freiburg, Germany. We departed from the idea that by transmitting incoming acoustic signals to the brain the cochlear implant opens various interfacing processes that are not only of direct use for individual CI-users, but occur within a much larger socio-cultural environment (Schillmeier 2010). In the complex music hearing situations described by the interviewees, human and non-human actors are not pre-given entities but should be seen as effects of interactions happening in between, mutually shaping heterogeneous actors and distributing agency in a larger environment (Verbeek 2015). In our talk, we will elaborate on a couple of questions referring to the intimate relation between the hearing technology and users (Bense 1997), to the effort of listening as well as to processes of en- and disabling (music) hearing resulting from the complex assemblage of assistive hearing technologies, music devices and daily practices of music hearing. We thus aim at rethinking hearing in new forms of techno-mediated experiences through collaborative processes of hearing technologies, dis/media practices and environments (Mills/Sterne 2017).

Playing with (In)Accessibility. The Microsoft Adaptive Controller as a Ludic Experimental System for alternative Bodily and Technosensory Configurations of Digital Gaming *Markus Spöhrer, Universität Konstanz*

Video game controllers have often been criticized as being utterly restrictive and inaccessible to people with physical and/or sensory disabilities. The material designs of contemporary control devices are inscribed with specific conventionalized bodily techniques (Parisi 2011) that are tightly related to the historical and cultural context of digital gaming and thus prescribe and require normative body functions and sensory configurations that rigorously disable people with different abilities. By such standards, digital gaming is materially, discursively and praxeologically normalized as a cultural practice that requires two hands, two thumbs, index fingers, certain trained reflexes and skilled hand-eye coordination that is inseparably connected with the material design of the controller. In order to address this issue, in 2019 Microsoft released an 'open' peripheral device – the Adaptive Controller – a construction kit that allows for combining a range of different input elements such as switches and buttons in different shapes and sizes, pedals, joysticks, steering wheels as well as alternative sensory input devices such as microphones, which can be configured by individual button mapping. In this talk, an effort is made to describe the Adaptive Controller from an STS perspective, by conceptualizing the corresponding sociotechnical arrangements as experimental systems (Rheinberger 1997), that, instead of prescribing an 'ideal body', enables an individual ludic "reciprocal tuning" (Pickering 2001) of human and non-human elements, sociotechnical configurations and bodily functions. Such individual set-ups then not only subvert materialized inaccessibilites (and 'disabilities'), but also create alternative dis/mediations (Mills/Sterne 2017) of bodily techniques, agencies and ways of digital play.

The constitutive work of non-humans at the development of a (self)-tracking technology: A reconstruction from the actor-network-theory *Mandy Scheermesser, Zurich University of Applied Sciences, School of Health Professions*

The phenomenon of self-tracking is very popular in the society. Many people in the private and wellbeing sector use self-tracking technologies like apps and wearables (Lupton 2016). These technologies are worn on the body or even in the body. They measure behavior patterns, emotional states or body performances and translate them into data (Duttweiler et al. 2016). This illustrates the close connection between human and technology, which extends into the human body (Belliger/ Krieger 2006). Self-tracking technologies are the result of many interconnected and heterogeneous actors. Thus, they cannot be fully understood if they are considered as isolated technical artifacts (Callon 2006). Such a tracking technology is the actibelt, in which the activity sensor is integrated in the belt that measures the physical activity of the patients over several days. The aim of this work is to reconstruct the actibelt from the actor network theory (ANT) (Callon 1984; Latour 2005), with a focus on the non-humans of the actibelt-actor-network. Drawing on qualitative interviews with users (patients, health professionals) and technology developers, and ethnographic observations, this study analyzes the contribution of non-humans at the translation process of the actibelt-actor-network. I will show how the non-humans fulfil an important function between the users and technology developers by translate the instructions of the technology developers to the users (operating instructions, flyers) and the wishes and experiences of the users to the technology developers (in presentations, publications, reports). In this way, the non-humans (temporarily) stabilize the actor-network.

Dis/media assemblages surrounding the care for street cats of Istanbul *Burak Taşdizen, Orient-Institut Istanbul*

Once with determined tasks with regards to the sustainable functioning of the city (Atauz 2002, Pinguet 2010, Zeybek 2014), street cats of Istanbul, with an estimated population of 125.000 (2017), are neither workers nor customers (Atauz 2002, Zeybek 2014); they are unemployed, idle and vulnerable following the (re)shaping of urban technologies of modern living. Street animals' right to the city (thus to life) is a recurring theme on Turkish national and social media coupled with the urge to 'protect' these animals, on banners the local municipalities are placing within the city reminding the citizens of the 5199 Animal Protection Law, and in the more-than-human geographies Istanbul's citizens are carving for street cats in particular which populate the streets of Istanbul in districts such as Cihangir.

Informed by an anthropology beyond humanity (Ingold 2013) and STS, this research is based on in-situ observations of technologies of care involving street cats of Istanbul, Istanbul's citizens, local municipalities and other actors. I argue that the different (inter)action strategies of these actors regarding the street cat issue shape a landscape of various media, in different formats and on different scales within the triangle of state, media and non/human entities, which can be interpreted through dis/media assemblages. Arguing against the ableist notion conceptualizing domesticated animals as weak due to their dependency (Taylor 2014), this paper explores the ways in which dis/media assemblages justify and encourage care for street cats, all the while reproducing an ableist, and sometimes anthropomorphic, rhetoric.

Disclosing the Entanglement of Life, Humans and Social Accountability While Interacting with Social Robots *Diego Compagna, Hochschule München*

Regarding social robots the ability to be sensitive is of paramount importance. However, the research in our "Human-Robots-Interaction Lab" shows that being sensitive should be restricted to humans as "animate beings". Especially in the course of a several years ongoing technology assessment using various scenarios within a focus group setting had brought us to this conclusion. These findings are supporting a differentiation of "bios" and "zoë" as well as biopolitical theories in general. They are also pointing towards the peculiarity of new interactive technologies endangering humans' status in modern societies as the sole social actors. In my talk I would like to discuss to what extent the development of interactive technologies (e.g. so-called social robots) affects the perception of life (itself) and could therefore disclose its entanglement with the concept of humans as social actors. Furthermore, how could the development of such technologies not just reflect the relationship between "bios", "zoë" and the self in contemporary (modern) societies as the primary frame of reference for the constitution of social actors but as well be a key to create alternative societies with new relations between humans and other living beings.

Reconfiguring Life Under the Techno-Political Condition.The Cases of Social Robotics and Neuro-Engineering *Benjamin Lipp, Technical University Munich; Sabine Maasen, MCTS, Technical University of Munich*

Technology takes an unprecedented position in contemporary political life. Today, we witness ever faster successions of hypes and fears around novel techno-scientific developments. Innovation in fields like social robotics and neuro-engineering promises to tackle societal challenges like demographic ageing or the inclusion of disabled people. But they also challenge established categories of life itself. For example, care robots shake traditional humanistic norms and distributions of labour in care work, e.g. who cares for whom or what (Lipp 2017). Neuro-engineering seeks to establish ever more intimate connections between machines and the human body profoundly changing bodily experiences (Dalibert 2016). Hence, we argue that technologies such as these are political in that they reconfigure what it means to live and, incidentally, what it means to be human today. This calls for reconceptualising the relationship of life, technology, and politics. Hitherto, critical enquiries into the politics of life have framed this relationship in terms of bio-politics (Foucault 2007). In contrast, we argue that 'life' should not simply be understood in terms of bios but rather, additionally, in terms of how it is reconfigured under a genuinely techno-political condition. Here, we argue that we can witness a decentring of life in terms of its everydayness. For example, contemporary concepts of Active and Healthy Ageing (Lipp 2019) and Patient-Centred Care (Gardner 2017) broaden the notion of life towards the daily lifeworld of patients and elderly people. The decentring of life is answered with ever more intimately interfacing life with and through technology and thus dis/media.

Talking with a synthesized voice: co-constructing meaning in conversations with Ivan Bakaidov (video-analysis) *Sasha Aleksandra Kurlenkova, New York University*

People with disabilities have always had their ways to engage with inaccessible material-discursive infrastructures. In the absence of convenient ways to navigate physical spaces, they used different strategies to "crip, reclaim, hack, and tinker with" inconvenient roads, entrances, domestic spaces, themselves creating rumps, curb cuts and other DIY accommodations (Hamraie, Fritsch 2019). In a similar vein, people with communication impairments, such as aphasic speakers or people with developmental speech-motor disorders, display great ingenuity in using various semiotic resources, including gesture, writing, graphic representations (Goodwin 2003), as well as specialized text-to-speech (TTS) programs which have been recently subsumed under the rubric of Augmentative and Alternative communication (AAC). One example of such a crip world-building activity is that of Ivan Bakaidov, a 21-year Russian programmer who creates computer interfaces for communication of people with slurred or non-standard speech (his project is called LINKa, https://linka.su/. Ivan himself has dysarthria due to cerebral palsy and, while talking through embodied speech with family members and friends, he uses text-to-speech programs to communicate with strangers on the street, do groceries, etc. In this presentation, I analyze several video-recordings of naturally occurring conversations with Ivan recorded in 2019-2020 where he uses text-to-speech technologies, as well as a complex of other resources, such as gestures, facial expressions, embodied speech, tying his talk to the sequential and material organization of conversation. Using methodology of Conversation and Multi-Modal Analysis, I will examine the communicative skills creatively deployed by Ivan and his interactional partners to co-construct meaning and achieve mutual understanding.

Range Anxiety? Questioning Mobile Dis/Abilities *Robert Stock, University of Konstanz*

In a time of ubiquitous computing and algorithmic cultures, mobility becomes a contested field which is approached from different disciplinary perspectives and societal fractions. Moreover, activities like walking, using a long cane or wheeling through cities become ever more entangled with digital technologies. Assistive apps, digital maps and other elements assemble people in new ways. Coalitions of media, infrastructures and people with disabilities engage in accessibility and care work (cf. Hamraie 2018). This talk will approach the significance of digital mobility assemblages by focusing on dis/abling practices and distributed agencies thus confronting media studies, STS approaches and Disability Studies. Of particular interest is how wheelchair mobility and non-visual navigation are related to range anxiety, instable GPS, non-functioning infrastructures and other problematic aspects of e-mobility. In my analysis, I also shed light on initiatives for inclusive mobile technologies or platforms (Elevate Project) and their impact on the field of dis/abling mobilities by drawing on interviews, testimonies and audiovisual material. I aim to show that mobile dis/abilities are continuously embedded and fabricated in socio-technical arrangements hence becoming a computable yet unstable and questionable phenomenon.

Session Organizers:
> *Melike Sahinol*, Orient-Institut Istanbul
> *Robert Stock*, University of Konstanz

Chair:
> *Melike Sahinol*, Orient-Institut Istanbul

Discussants:
> *Vasilis Galis*
> *Michael Schillmeier*, University of Exeter

161. Careful Engagements 3
12:00 to 1:40 pm
virPrague: VR 04

During some time, interventionist research has become an important topic of conversation in STS (Zuiderent-Jerak 2015). This is important in a time where many research grants come with stipulations about partnership with actors outside academia. It appears that nobody offers clear advice on what to do or whom to turn to while engaging as a researcher in practice (Martin 2016). Thus, in this panel, we will discuss dilemmas and ambitions to engage and intervene with STS. Jensen (2007) proposes to 'sort' the various attachments the researcher encounters to different parties in the studied field to be aware of which parties the research strengthens and

weakens. This leads to a number of questions. What inequalities do we risk producing especially when there is funding involved? Are there ways to avoid these by engaging with care (Viseu 2015)? What tensions and struggles do we meet while engaging in practice? How does this affect academic work and output? There is not much doubt that considering closer engagement as a scholarly method for producing new STS-insights into our research topics is opposed to using strategic interventions for achieving normative goals defined by managers, professionals and researchers. We foresee that the prospect of engagement will help STS scholars to explore what it means to live in concerned communities. In addition, engaging as a STS researcher in practice undoubtedly evoke Howard Becker's pivotal question "Whose side are we on?" Niels Nickelsen, Aarhus University, School of Education Doris Lydahl, University of Gothenburg

Participants:

Unsettling usefulness within? *Doris Lydahl, University of Gothenburg*

In this presentation, I will suggest finding frictions within (Zuiderent-Jerak 2016) and critical care studies (Murphy 2015) – which emphasize that care is both attachment, responsibility, concern and unsettlement – as an entrance point for thinking with and through engagement. The presentation builds on a recently started ethnographic project about the introduction of welfare technologies in Swedish municipal elderly home care, with the aim to discern how care personnel interact with welfare technology, and what values and expectations about welfare, care work and technology are articulated. As part of the project funding stipulation, the project is for two thirds of its time hosted by a co-operative organisation uniting thirteen municipalities in western Sweden. This organization have high hopes on the project and its usefulness and utilization. But for whom is it meant to be useful? For the municipalities offering instructions on cost saving efforts? For users? For elderly care employees? Engaging with the frictions and struggles around usefulness within my host-organization this presentation seeks to tease out and stir up the normativities, positions and attachments related to usefulness. Rather than offering precise guidance on how engagement and intervention should be done, this presentation seeks to unsettle usefulness from within. In doing so the presentation seeks "to stir up and put into motion what is sediment, while embracing the generativity of discomfort, critique and non-innocence" so that it might be "acknowledged and remade" (Murphy 2015).

Collaborative Anecdotalization *Alicia Smedberg, Malmö University*

The notion of anecdotalization (Michaels, 2012) suggest that anecdotes can be performative. They are not merely curious vessels of information or observations, but through the act of telling of them they can also do. Using examples from a city planning project in Malmö, Sweden, where methods for citizen engagement have been developed and tested I will discuss how anecdotalization can be collaborative (and how this potentially can lead to multiple understandings/worlds). The project saw a meeting between the participant's practices, worldviews, and priorities - which did not always align. Finding ways of cultivating a mutual understanding between the various actors has been imperative, while at the same time disagreements and ruptures into the work were welcomed as a natural part of any democratic process. But welcoming agonism is not the same as being able to handle it, or knowing how to move forward. Anecdotalization, a chain of re-tellings of an anecdote, afforded the group to collaboratively build an understanding of a rupture that encapsulated more than one perspective. Collaborative anecdotalization is a shared, relational practice of performing many-world worlds (Law, 2015). Law, J. (2015). What's wrong with a one-world world? Distinktion: Scandinavian Journal of Social Theory,16(1), 126–139. Michaels, M. (2012) Anecdote. In Lury, C; Wakeford, N. (ed) (2012) Inventive Methods: The happening of the social. Routledge: New York.

Comics as a strategy to rethink visual tools in STS and Feminist Theory and practice *Federica D'Andrea, Utrecht University*

Visualization plays a crucial role in the field of Assisted Reproductive Technologies (ARTs) and has long been the object of debate within Women's Studies. While analysing Nilsson's photo essay The Drama of Life before Birth (1965), Barbara

Duden (1991) problematises the established relationship between scientific images and discourse. Duden demonstrates an inner misbalance between these two elements, through which contemporary institutional and scientific frames convert the pregnant body into a public space. More recent studies produced deep analysis focusing on performative and agential instances within ARTs (Franklin 2000, 2006) and introduced the notion of Ontological Choreography (Thompson, 2005). Lucy van de Wiel's work on Eeva Test (2016, 2019) suggests interesting insights regarding the manipulation of temporality patterns and the different meanings produced and conveyed. By also connecting with the idea of dance of agency (Coeckelbergh 2019), I will refer to the neo-materialist framework (Haraway 1985, 1988; Barad 2003, 2007) to deal with such issues between image and discourse, space and time patterns, and move towards multiple and non-linear narratives. My attempt consists of the investigation of comics' use and potentialities within scientific theory and practice, as a creative strategy that allows the development of new analytical paths able to expand abstraction potentialities and research tools. I will argue that this medium enables a semiotic kinesis involving the reader's active participation in providing meaning and sense to the combination of images and words, that in such a context co-constitute each other without falling into hierarchic dynamics.

Session Organizers:

Doris Lydahl, University of Gothenburg
Niels Christian Nickelsen, Aarhus University, School of Education

Chair:

Niels Christian Nickelsen, Aarhus University, School of Education

162. Dilemmas in the production of advisory science - Session 1

12:00 to 1:40 pm
virPrague: VR 05

Participants:

Between Uptake and Rigor: Dilemmas of Open Science *Stefan Reichmann, ISDS; Bernhard Wieser, TU Graz*

In an attempt to further evidence based policymaking Open Science practices promise to facilitate the knowledge basis used for policymaking. In this paper, we focus on the uptake of scientific expertise in policymaking. In particular, we ask if and how Open Science promotes new ways to facilitate evidence-based policymaking. Answering our research question, we draw on a broader scope of literature on the evidence-policy gap (e.g. Tennant et al. 2106; Olesk et al. 2019). Here a number of key barriers has been identified. Most of all effective communication was found to be one of the most crucial factors of successful policy advice. However, recommendations that may be instructive on how to close the evidence-policy gap may compromise academic practices and cultures (Haynes 2012; Cairney 2016). This observed dilemma raises deeper questions regarding the underlying differences between the policy domain and academia. Policy briefings need to be short, present numbers and statistics in order to influence policies. Yet, academic careers require outputs that follow a different type of criteria. These "epistemic cultures" are at odds with each other and lead to practical dilemmas faced by individual researchers (e.g. publishing academically with research conducted as advisory science and written in a more accessible language). Exploring possible ways to overcome dilemmas of differing epistemic cultures we take a step back and ask for alternative ways of framing the relationship between of scientific knowledge production and policymaking. This may also require to reconsider prevailing expectations towards open science outputs awaiting successive uptake by policymakers.

Bringing Models Home: External versus In-house Modelling Expertise within the EU Commission's Trade Sustainability Assessments *Titus Udrea, Austrian Academy of Sciences, Inst. of Technology Assessment (ITA); Anja Bauer, University of Klagenfurt; Leo Capari, Institute of Technology Assessment, Austrian Academy of Sciences; Daniela Fuchs, Institute of Technology Assessment of the*

Austrian Academy of Sciences (ITA-OeAW)

Within the European Commission's larger framework of evidence-based policy-making, computer models are increasingly used to anticipate and evaluate the consequences of various policies. Yet, models are not neutral tools solely providing analysis and direction to policy questions, but also serve to empower and legitimate public policy. Modelling at the science-policy interface entails specific dilemmas and evidence practices that entangle multiple epistemic, political and social rationalities, demands, principles and norms. In our presentation we discuss the specific characteristics and dilemmas of modelling for policy (advice) by the example of the EC's Trade Sustainability Impact Assessments (SIA). Based on two case studies of recent SIAs, i.e. TTIP and EU-Australia, we analyze how distinct organizations and procedures of computational modelling influence respective science-policy interactions. While in the TTIP case, an external consortium was tasked with modelling potential economic effects, in the EU-Australia case, modelling results were provided by DG Trade. Specifically, we ask: How do the socio-technical arrangements of modelling differ between external and in-house contexts? How are boundaries (between expertise and policy, stakeholders, etc.) negotiated and (re)conceptualized in these distinct cases? Which implications does the recent shift towards in-house modelling have for the transparency and communication of modelling results and ultimately their (political) usability? Our results show how the shift to internal capacities within DG Trade has implications for potential lock-ins and dependencies of the central models used, the extent multiple modelling approaches are integrated, as well as questions regarding tensions between flexibility, transparency and independence related to the in-house modelling context.

Certainty in locality: citizen science, observation and agency
Dick Kasperowski, University of Gothenburg; Niclas Hagen, University of Gothenburg, Dpt of Philosophy, Linguistics& Theory of Science

This presentation reports on the significance and agency of Swedish citizen in the of production of data in environmental advisory processes. The production and use of data by public authorities at the regional level is important part in decision and knowledge making in Sweden on climate, biological change and degradation. Observations and classifications are predominately done by citizens and reported to the Swedish Species Observation System (SSOS), hosted by The Swedish Agricultural University one of the largest platforms in the world for citizen science, serving public authorities in carrying out policies developed by The Swedish Environmental Protection Agency and by the Environmental Courts. Turning an observation into a scientific fact is described as relying on chains of references, usually with a professional scientist at the beginning. Throughout the process of observing, measuring and sampling, locality and particularity is lost through shifting materialities and continuity. Gaining compatibility, standardization, text, calculation, circulation, and relative universality. Results in this study to what makes quality in an observation in the case of SSOS, is better described as a distribution of references, largely consisting of non-professional scientists working to attain certainty in locality. Thus, an observation must be attached to a specific locality to gain credibility and be circulated. This network is activated not by a scientific issue, but by a need to create references to the law governing the use of land. Creating certainty in locality, references are built through entities like trustworthy individuals, biotopes, red listing, maps, time, photos and coordinates.

The Validation and Accountability of Indigenous and Local Knowledge at IPBES *James White, Örebro University; Rolf Lidskog, Örebro University*

Environmental experts are increasingly seeking legitimation through engagement with local and situated knowledge practices and systems. The Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) is an international organisation founded to synthesize knowledge on biodiversity, and improve the interface between environmental science and public policy. Since its founding, it has developed protocols and practices to formalise the assessment of indigenous and local

knowledge (ILK), and incorporate it into its international science-policy reports. While this signals a pluralistic approach to the production of global scientific knowledge, IPBES have consigned ILK holders to the role of stakeholders, where they have neither voting rights within the organisation nor decision-making power over the final content of its publications. The IPBES approach to ILK raises dilemmas of both validation and accountability. In terms of knowledge production, engagement with indigenous and local communities is always selective and incomplete. Ensuring that knowledge is valid and representative is difficult, as the judgment and verification of such situated knowledges cannot easily be performed from a different epistemic frame. In terms of knowledge communication, given that IPBES stakeholders do not administer or perform knowledge assessments they are not accountable for their inclusion in its reports. Any push-back becomes the responsibility of the organisation's appointed experts, who may not fully believe in the rigor, validity and authority of the material. Drawing on interviews with IPBES experts and stakeholders, this paper explores how these challenges are regarded and negotiated, and what this means for pluralistic knowledge production in international advisory science.

Session Organizer:
Sebastian Linke, University of Gothenburg
Chair:
Sebastian Linke, University of Gothenburg

163. Doctoral Research, Inventive Inquiry and Making New Spaces within and beyond the Academy - II
12:00 to 1:40 pm
virPrague: VR 06

Amid concerns about the "neo-liberal university," we see a surge in studies *about* early-career researchers and the precarity of career trajectories. In turn, more and more special events, like pre-conferences and self-care workshops, promise supportive settings *for* early-career academics. While these developments are important, they do not always consider how scholarship carried out *by* new scholars themselves might be working to re-shape the academy. This panel seeks to foreground the agency of doctoral researchers, as well as their particular constraints, by inviting them to share how their practices resist, subvert and reconfigure the spaces where scholarship comes to matter. We wish to offer a platform for "inventive" and critical doctoral inquiry that generates "alternative ways of combining representation of, and intervention in, social life" (Marres et al. 2018, 18), using e.g. art, design, performance, activism, alternative methodologies and more. We contend that this creative and active relationship with "the social" is reflexive–that inventive research both transforms, and is transformed by, its "objects" of study. Our panel asks: How do emerging researchers "invent the social" within the contemporary university and beyond? And, critically, who bears the costs and/or consequences of such change? We invite doctoral students from all disciplines to present the space-making potentialities of their inventive research, and collectively forge a space of solidarity for early-career scholarship. We welcome all presentation formats to explore how this emerging body of inventive work might contribute to existing knowledge structures and also reconfigure the spaces where scholarly careers are constituted.

Participants:

Inventing a future: what life looks like after a heart transplant
Nadine Tanio, University of California, Los Angeles

Imagination is an embodied craft (Marini, 2019). When I asked young people how they hoped our work together would be received—we had just completed two documentary short films about growing up with a heart transplant— they said they hoped their stories might help doctors, parents and future transplant patients imagine what life can look like after a transplant. A generation ago, few children diagnosed with severe illness or disability, survived to 21 (Blum et al, 1993). Today, the average pediatric post-transplant heart patient survives 12-18 years (Hollander, Chen, Luikart & Burge, 2015; Kirk et al, 2012). There is a small, but emerging, community of young people coming-of-age in the aftermath of heart transplantation, surviving into adulthood. Still most adolescent and young adult heart recipients calculate their future in years, not decades. Through the craft of collaborative filmmaking young people want others

to see what lives are possible within the context of existential precarity. Parents yearn for this information. Together our work connects FSTS with youth participatory action research (YPAR) to create knowledge in the interstices of interdisciplinary networks including education, media arts, health and science. What can FSTS scholars learn from young people's imaginative work? As early career scholars can we utilize imagination as embodied craft to invent sustainable futures within the Academy? Do the insights of FSTS help build knowledge communities that foster new socials?

Socialization Experience of Doctoral Students in Disciplinary and Interdisciplinary Departments of Indian Universities *Modho Govind, Centre for Studies in Science Policy, School of Social Sciences -1,JNU, New Delhi*

Socialization at doctoral levels is a form of 'adult socialization', which is 'role specific' and includes learning of knowledge and skills required for the performance of specific role- of scholarship. During the socialization students imbibed a 'moral order' of their disciplinary culture and their disciplinary identity and structure is constructed through patterned interaction-research collaboration, conferences, seminars, teaching, informal interaction and all that they get exposed during their undergraduate and post graduate training. Post liberalization policies have necessitated shift towards a 'new mode' of knowledge production. India's policy on higher education is also encouraging the shift from 'disciplinary mode' of teaching and research to interdisciplinary and trans-disciplinary mode. This has led to decline of many traditional departments and flourishing of various interdisciplinary programmes in Indian universities. On the basis of survey and personal interview of doctoral students and their supervisors located in six science departments this paper aims to understand how the changes in mode of teaching and research are affecting the preparation of new generation of Ph.D. scholars and how they see their professional identity and future role in society. We found that in an interdisciplinary department doctoral students are expected to bring their 'domain knowledge' from a specific discipline to explore its possibilities of hybridizing with the knowledge of other disciplines. It was found that interdisciplinary orientation at graduate and post-graduate level often hampered the capability of students to acquire competency in the 'domain knowledge' of any disciplines and they also grappled to define their professional identity in the world of academics.

Session Organizers:
Lisa Lehner, Cornell University
Jade Vu Henry, Goldsmiths, University of London
Chair:
Lisa Lehner, Cornell University

164. China, Technology, Planetary Futures: Lessons for a World in Crisis? 1) Governance, Big Data
12:00 to 1:40 pm
virPrague: VR 07

Two issues are set to become increasingly central in coming decades. First and foremost, amidst the Anthropocene, are issues of environmental crisis at planetary scale, and what this means for a global economy and associated model of science and innovation premised upon ever-accelerating exploitation of natural resources. Secondly, and in comparison a highly neglected issue in mainstream (still largely Western) social science, is the rise of China. But how these two issues will come together and shape the 21st century receives even less attention, even as their conjunction is likely to prove increasingly influential. This is both an increasingly problematic oversight and a missed opportunity for insights that do not merely confirm relatively established, i.e. Euro-Atlanticist and short-termist, readings of the state of the 'world'. STS has much to contribute to the development of this missing analysis, not just because the construction of new environmental, infrastructural and technological (and, in particular, digital) innovations from and in China is already evident as a key dynamic. But also because of STS's capacity to draw on empirical exploration that does not take theoretical categories as given but pursues development of new illuminating concepts adequate to a constantly changing socio-technical landscape of uncertain futures. This panel thus invites contributions studying Chinese socio-technical projects (in China or overseas, e.g. via the Belt Road Initiative (BRI)) for insights into how these

two 'mega-trends' may be coming together; and what may be learned from China, positively or negatively, to confront the current apparent impasse(s) regarding global crisis.

Participants:

Knowledge Construction in an "Infodemic:" Roles of Social Media in Chinese People's Life during Coronavirus Outbreak *Rui Zhou, Georgia Institute of Technology*

In January 2020, a novel coronavirus was found spreading quickly in China. To control its spreading, the Chinese government required all the Chinese people to stay in their homes, except healthcare workers, people doing deliveries, etc. Due to this lockdown, Chinese residents primarily relied on the Internet, with its numerous online social media, to seek information, help, and comfort. However, while social media offers plenty information, it also contributes to an "infodemic:" "an over-abundance of information – some accurate and some not – that makes it hard for people to find trustworthy sources and reliable guidance when they need it" (World Health Organization, 2020). Observing this infodemic happening in China, we wanted to learn how ordinary Chinese people construct knowledge (Latour, 2005) about and during this coronavirus outbreak by using various social media. We selected three of the most popular Chinese social media channels to focus on (Statista, 2020): WeChat Moments, Weibo, and Douban. By analyzing posts on these social media and interviewing users, we found social media as a whole acts as an information source and outlet for the Chinese, while each channel plays a different role in providing specific kinds of information and value. We conclude that ordinary Chinese people understand the nuances of different social media channels and use these channels strategically, making it possible for them to acquire trustworthy information and construct reliable knowledge despite the infodemic. This paper highlights the significance of Chinese social media in a period that ordinary Chinese people's health is under constant threat.

Financial Inclusion In The Age of Digital Finance: Opening Black-boxes Of Digital Lending In China *Mats Frank, Edinburgh University*

Widely unnoticed in Western academic research China has in recent years become the world leader in digital lending and more specifically what has been coined as 'Internet Finance'. This development is also mirrored in the vast rise of Ant Financial, the largest Fintech company in the world, which issued a sum of 78 billion Euros worth of loans to Micro, Small and Medium Enterprises (MSMEs) alone in the past three years. Yet, despite of this rapid development and its framing as 'silver bullet' to address the global challenge of financial exclusion, the underlying interplay between technology and society in the context of Chinese Internet Finance has so far not been subject to proper, academic scrutiny. The study addresses this gap in academic research by examining several interrelated themes. Drawing on Actor Network Theory (ANT), the first theme focuses on the question how digital lending developed into a leading formal financing option for MSMEs in the country. This forms the basis for a detailed exploration of the question if MSMEs profit from increased levels of private-sector Fintech lending in the same way or if applied algorithms discriminate. Using an ethnographic approach, the project finally also explores how this development shapes accounting practices within organizational borrowers. The study hence follows calls of scholars such as Bailey and Barley (2019) as well as Hyysalo, Pollock and Williams (2019) to study intelligent technologies from multiple perspectives and consequently to extend scrutiny within STS beyond innovation and application to institutional changes.

Privacy? or quantified collective-selves in China's pandemic *Xiaobai Shen, University of edinburgh*

The coronavirus outbreak in China, that to date infected 78000 (BBC 27/02/2020) and stricken the whole nation, is now on the mend. The containment of the epidemic has been achieved by the automated processing of big data traces of individuals' movements held in the digital clouds of varied internet platforms. Peoples' movements have been restricted according to their risk level of being contagious, as shown by a green, yellow or red QR

code on their mobile phone, issued online and verified by the system. China's use of citizens' data has faced sustained international criticism over privacy infringements (Reuters 26/02/2020). Solove (2008) has criticised existing theories which view privacy "as a unitary concept with a uniform value that is unvarying across different situations". China's coronavirus outbreak provides a unique observation point for Tarde's theory of "quantification of the social" (Latour 2009:150) which conceives collective developments "as the product rather than the producer of the infinitely numerous individual characters" (Tarde 1969 : 27-8). Observing social media, we see the mobilisation of widespread fears and bravery, information and disinformation, selfish and selfless behaviours. The dynamics change alongside the development of the fight against the pandemic, which has brought to the fore increasing solidarity including consent to deploying digital social technologies and experimentation in seeking more accurate data traces. Support for privacy rights has not gained much grounds in fighting the epidemic. We argue that if privacy holds as human value, it needs to be seen as part of a spectrum of quantified collective-selves.

Session Organizer:

David Tyfield, Lancaster University

Chair:

David Tyfield, Lancaster University

165. Editing future life and biotechnological utopias/ Bio-political materialization and potentialities of CRISPRcas9 _ 02 session

12:00 to 1:40 pm
virPrague: VR 08

2nd session of the panel "Editing future life and biotechnological utopias"

Participants:

Biotechnological Utopias_DNA recombinant and techno-imagination *Eva Slesingerova, Masaryk University, Brno, Czech Republic*

The paper shows the outcomes and results of an ethnographic study I conducted in a biochemical laboratory during 2017 and 2019. Recombinant DNA technologies are understood here as the induced mutation, reconfiguration, and exchange of DNA strands to produce and design new nucleotide sequence arrangements. Using examples from the ethnographic research, the paper analyzes the context of these technologies, specifically relations among scientists, their emotions and their utopian visions in connection with living "techno-others," edited proteins and their simulations, models and predictions. The main aim of such technologies is to explore, via experiments, the possibilities of repairing damage to human DNA, healing or enhancing human bodies and health in the future, in not-yet-realized, future bodies. These experiments are part of "machines for making the future" or the process of producing "epistemic things" as described by Rheinberger. Specifically, the paper focuses on technologies and praxis that deal with lifelike entities, bioinformatics life models, immortal(ized) cell lines, genetic tools, genes as tools, edited DNA sequences, and living things. Rather than analyze ideas of the constant fragmentation of bodies in time and space, I explore the relational character of some fractal distinctions, repeated again and again in the form of specific relationships and networks of biological material, DNA information, technologies, and also as the emotions and visions of scientists. But notions of immortality and the timeless character of biotechnological utopias are tricky. It is repetition, rather than duration. Is utopia another version of an infinity within the finite then?

Gene drives for Nature conservation – technological interventions and the ideal of non-human nature *Rosine Kelz, Institute for Advance Sustainability Studies (IASS) Potsdam*

A gene drive is a system of biased inheritance in which the ability of a genetic element to pass from a parent to its offspring through sexual reproduction is enhanced. Gene drives can be used to genetically modify "wild" animal populations. Some nature conservationists propose the use of gene drives, for example to eradicate 'invasive' species, or to convey resistance to certain diseases to animals threatened by extinction. The question whether a highly invasive molecular tool like gene drives should be used for nature conservation brings to the fore a long-ranging debate about conservationists' concepts of nature. While most commentators seem to agree that notions of untouched wilderness or of 'nature' as a realm apart from human influence are no longer, or even have never been, commensurable with a reality where human activity has left palpable traces almost everywhere on earth, the normative value of a realm of nature apart from human intervention remains contentious. This debate shows an important overlap between debates in ecology, environmental philosophy and nature conservation on the one hand and STS theory on the other. STS has often helped to highlight the problems with a nature/techne or human/non-human distinction, but had little to say about the normative meaning of nature as an 'other' to humans. In this paper I seek to explore these theoretical debates in order to foster a fruitful exchange between disciplines, but also between STS theorists and people involved in nature conservation policy and activism.

Editing future life and biotechnological utopias in the Nordic countries *Kristofer Hansson, Malmö University; Andréa Wiszmeg, Dept. of Public Health and Faculty of Health and Medical Sciences, Copenhagen University*

This paper is based on a three-year project recently started in Sweden. In this project we will investigate how "Responsible research and innovation" (RRI) is (re)produced at the intersection between the laboratory and the surrounding society, and between the researchers' everyday work practices and society's discourses on modern biomedicine. The two technologies studied in the project are CRISPR technology and neuro-transplantation with stem cells. A question central to the project, is to study the biomedical researchers' everyday life and how they "respond" to the uncertain and unpredictable consequences that exist in the research on the biomodifying technologies. What ethical issues are raised in relation to different bio-modifying technologies? This is a question that relate to the panel theme and we will therefore focus our paper on the discourses in the Nordic countries – manly Sweden and Denmark - and what modes of de/politization we can find concerning editing genome technologies. We will do this by focusing on laboratories that recently have started to work with, or are in the start-up phase for using CRISPR technology. Drawing on the issues from the panel abstract, we want to raise questions like: What kinds of new social control, hierarchies, exclusion and domination can we see in the laboratories? What kind of care and social inclusion are discussed or practised there?

CRISPR States: Genome Editing As A Biopolitical Means *Guillaume Levrier, Sciences Po; Virginie Tournay, SciencesPo*

This paper argues that there is a missing discussion over the role of State actors in defining and wielding the power conferred by genome editing. The political struggle over genome editing since the CRISPR-Cas9 "breakthrough" has so far brought into play epistemic communities which stemmed from prior controversies. The categorization debate over genome-edited plants in Europe (should those be considered as GMOs or not) has been led by Green activists who had been fighting the patenting of vegetal traits for more than thirty years. The germline editing debate has mostly seen the re-enactment of the prior abortion, in-vitro fertilization (IVF), pre-implantation genetic diagnosis (PGD) and mitochondrial replacement therapy (MRT) debates by similar social actors. Yet the biopolitical implications of genome editing for State actors is seldom being discussed. When S. Jasanoff asks "to what extent are we designers and engineers of ourselves and our own futures?", the crucial question is who is the "we". While we are all entitled to have a say in formulating our ideal future in a world where somewhere exists a capacity to edit genomes, the role of the State as an actor wielding genome editing as one of the tools to enforce its claim on monopolizing violence must also be discussed. This requires editing the concepts underlying contemporary conceptions of biopolitics, and particularly the concept of bare life, and vice versa how biopolitics provide a specific framing for coping with the issues raised by genome editing.

Session Organizer:

Eva Slesingerova, Masaryk University, Brno, Czech Republic

Chair:

Eva Slesingerova, Masaryk University, Brno, Czech Republic

166. Broken and Livable Futures with Automated Decision-Making – I
12:00 to 1:40 pm
virPrague: VR 09

The growing use of automated decision-making (ADM) makes automation increasingly relevant to the lived experience of people, with examples ranging from credit scoring and predictive policing to self-care within health services and automated content moderation. A technological imaginary favours the strengthening of existing infrastructures with ADM: it is characterized by political-economic aims of efficiency and optimization. A critical imaginary, in contrast, questions technological developments: recent research details problematic aspects of ADM systems, for instance, their connections to discrimination and inequalities, and their lack of transparency and accountability. Our panel concentrates on re-articulating ways in which ADM systems are currently described and debated. To make possible a creative move beyond the dominant logics of automation driven by the technological imaginary, scholars themselves should bypass their critical imaginary and explore alternative conceptualizations and frameworks. Therefore, we seek to open a practical and analytical space for the re-articulation of ADM systems and their effects. Papers demonstrate that new socio-technical directions are possible, bringing into being ADM futures that we would rather live in. Various theoretical or methodological approaches might be employed, including broken world thinking to highlight breakdown, dissolution and change as starting points in discussing ADM (Jackson, 2014); situated interventions that experimentally engage with ADM practices to produce new normative directions (Zuiderent-Jerak, 2015); or feminist approaches offering alternative ways to care for socio-technical arrangements (Puig de la Bellacasa, 2012). Together, the papers can reinvigorate research on ADM systems and identify harms and benefits that are currently not addressed.

Participants:

Deep automation bias: how to tackle a wicked problem of AI and automated decision-making? *Stefan Strauß, Austrian Academy of Sciences, Inst. of Technology Assessment (ITA)*

The hype around artificial intelligence (AI) and machine learning (ML) seems yet unbroken and increasingly affects the development and use of automated decision-making (ADMS). Accordingly, ML algorithms gain in influence on economic, social and political decisions affecting individuals directly and indirectly. As these impacts become more apparent, there is a growing political and academic debate on how to tackle the risks of algorithmic bias and discrimination through ADMS. However, this debate is mostly dominated by discussing technological fixes: e.g., how to improve algorithmic accountability, implement FAT-ML principles (fairness, accountability and transparency in machine learning), or criteria for "trustworthy AI" etc. (cf. Annany/Crawford 2016; Caplan et al. 2018; AI-HLEG 2018; ACM-FAT 2019). Ironically, such attempts to reduce societal and ethical risks with algorithms, though, could even reinforce these various risks ranging from discrimination, repression, erosion of privacy, human autonomy and to its ends, even liberty. There is thus need for a broader debate on how to tackle sociotechnical risks related to AI and ADMS beyond sheer technological fixes. This paper ties in here and discusses a wicked problem of AI identified as deep automation bias (DAB) (Strauß 2018). The aim is to discuss how the multiple dimensions of DAB could be conceptualized through a systemic lens as part of an ethical impact assessment framework. Because in order to envision non-dystopian futures we need novel perspectives on AI and particularly ADMS that re-activate to overcome technocratic and to revitalize humanistic approaches.

Judgment Time: On Normative Dimensions of Algorithmic Speed *Daniel Susser, Penn State University*

Existing discussions about algorithmic decision-making focus primarily on its inputs and outputs, raising questions about data collection and privacy on the one hand and accuracy and fairness on the other. Less attention has been devoted to critically examining the temporality of decision-making processes—the speed at which automated decisions are reached. Human action unfolds, often indeterminately, over time. And deciding whether or not some activity conforms to shared values can hinge not on the nature of the activity at one particular moment, but rather on how it develops. Moreover, when one intervenes in some activity—e.g., preventing, interrupting, or penalizing it—has important implications for both the judge and the judged. As computational tools are increasingly tasked with making judgments about human activities and practices, the designers of decision-making systems will have to reckon, we argue, with when—and how fast—judgments ought to be rendered. Though computers are capable of reaching decisions at incredible speeds, failing to account for the temporality of automated decision-making risks misapprehending the costs and benefits automation promises.

Knowing Algorithmic Governance Beyond Fairness And Transparency *Florian Eyert, Weizenbaum Institute for the Networked Society*

Rather than a mere automation of conventional organizational decision procedures, algorithmic governance constitutes a specific form of governance. The contribution argues for an analysis of such algorithmic governance that understands it not as a technical innovation, but a reconfiguration of ways of „knowing governance" (Voß/Johnson 2016). This shifts the focus from the technical systems themselves to the varieties of forms of expertise behind their design and shows that, as tools of legibilization (Scott 1998), computational models are artifacts through which epistemic and social order are co-produced. Recent analyses of computational models from the social studies of science (Knuuttila 2005, Humphreys 2009, Svetlova/Dirksen 2014, Merz 2016) can be fruitfully transferred to machine learning-based systems in order to think about them as epistemic objects imbued with pragmatic aims and thus as socio-technical systems that are not concerned with accurate, fair or transparent representation but with intervention. The contribution points out two epistemic shifts that occur with the rise of current forms of algorithmic governance: 1. an increased embedding of naturalizing forms of social science practices in governance processes and 2. a reconfiguration of societal distributions of epistemic inferences from public and deductive to inductive and privatized modes. In this way one can rethink algorithmic decision-making as a particular source of epistemic harm that current calls for fair, accountable and transparent machine learning will not be able to address. Rather, the choice seems to be between a comprehensive democratization of modeling practices themselves and the rejection of current forms of algorithmic governance.

The Problem with AI Ethics *David Moats, Linköping University, Tema-T (Tema Technology and Social Change)*

AI and machine learning techniques seem uncannily adept at predicting the future, so long as the future resembles the past. They are less adept at dealing with completely unexpected combinations or risks which lurk outside of their training data. In this paper, I argue that designers of automated systems need to be more attentive to what constitutes the social or more than social worlds that they will eventually inhabit. However, current ways of framing the problem in terms of AI Ethics tend to focus on the automated analysis of data, rather the selection and formatting of that data and more on action rather than the sources of information which inform action. I ague that this framing short-circuits true colloboration between social scientists and engineers. I then discuss two examples of interdisciplinary collaborations around automation 1) between social scientists and engineers over the design of autonomous vehicles and 2) between myself and epidemeologists over the development of a disease alert based on Twitter data. In both cases I argue that questions of what is "right" must be paired with questions of what is "real" or what is possible. Finally, drawing on a sci-fi short story by Stanislaw Lem and discussions of automation in music composition, speculate if machine learning techniques could be used to generate surprises and unexpected connections rather than merely control regularities. This is not to say that algorithmic systems should "know" more but that questions about what is worth knowing must be on the table.

Session Organizers:
Tuukka Lehtiniemi, University of Helsinki
Minna Ruckenstein, University of Helsinki

Chair:
Tuukka Lehtiniemi, University of Helsinki

167. Re-emerging Psychedelic Worlds: Altered States, Altered Subjects, Altered STS? (1)

12:00 to 1:40 pm
virPrague: VR 10

After decades of repression by governmental and intergovernmental bodies, psychedelic substances such as psilocybin, LSD and MDMA are being studied scientifically for their potential to tackle widespread mental health issues including depression and anxiety disorders. Psychedelic science, the mainstreaming of psychedelics (in Anglo-American contexts in particular), and the globalization of (indigenous) plant medicines - most notably with the Amazonian psychedelic plant brew ayahuasca - can all be seen as responses to a variety of crises, including the opiate crisis, mental health crisis, and environmental crisis. Simultaneously, the psychedelic movement is encountering its own crises, seeing its core values threatened by capitalist interests, the tension between science-led medicalization and grassroots-driven decriminalization, and identity politics forcing a confrontation with power inequalities within the movement itself. STS analyses are essential in aiding and complicating the responsible (re)integration of psychedelics into society. This panel seeks to bring together STS psychedelic researchers in order to address the following: • Which ways of being, seeing, and doing STS can contribute to psychedelic worlds that are emerging and continue to flourish in indigenous, scientific, underground and therapeutic contexts; • How the cultural and socio-political dimensions of altered states of consciousness can be studied from STS and related perspectives; • How non-ordinary states could inform STS sensibilities, alter researchers' subjectivities and theories, and potentially re-shape the field of STS. We particularly invite people, presentations and performances that reflexively attend to their form, style and content as necessarily entangled with, rather than apart from, questions of consciousness-changing practices and substances in society.

Participants:

Contextualizing the Renaissance of Psychedelics *Vera Borrmann, Vienna; Christopher Coenen, KIT-ITAS*

Our times are still profoundly shaped by psychedelic practices and related visions of the mid-twentieth century, including such paramount global tendencies as digitization and cultural globalization and glocalization. Currently we are witnessing a renaissance of psychedelics for example in terms of increased interest in therapeutic uses, new waves of globalization of indigenous psychedelics, the comeback of widespread intensive psychedelic experience in nightlife club culture, and LSD micro dosing in creative industry work life. This ongoing renaissance is also increasingly receiving attention in STS. In our presentation, we aim to help bring more into focus a couple of historical, philosophical and sociological aspects that may further enrich current discussions and future studies: In light of pertinent works (by Bardini, Markoff, Turner and others), we will relate psychedelic roots of our digital world culture (such as the Augmentation Research Center) to transhumanism, an ersatz religion of digital elites today arguing for a transgression of human bodily, cognitive and psychological boundaries. Taking the brothers Aldous and Julian Huxley as exemplary cases, we show how in the "Western" mind the transgression of boundaries has been conceptualized in terms of an intermingling of grand techno-scientist visions of a unified and transformed future humanity with religiousness and fervent irreligion and with references to Asian and other non-"Western" traditions. By strongly influencing early "Western" psychedelic cultures, these visionary conceptualizations are still and increasingly relevant today. Against this backdrop (and Foucault's Death Valley trip), we argue for deconstruction, as a concept and method, to take centre stage in a broad discourse on psychedelics in society, which includes perspectives from Asian meditation and thought on modern subjectivity as well as a critique of current self-optimization ideologies and techniques.

Between Indigenous Rituals and Pharmaceutical Thought Styles: Imaginaries of a Potentially Legal Psychedelic Future *Maram Mazen, Munich Center for Technology in Society (MCTS)*

Psychedelic substances' potency in treating mental health issues appears to be the psychedelic experience itself. The biggest

impact comes from the set and setting, support during the experience and in integrating it afterwards, and not simply through the direct effect of consuming a psychedelic drug. Studies on psychedelic drugs consider the experience's spiritual and enlightened aspect as a way for healing and growth. In studies done at Johns Hopkins, the higher the "mystical- type experience" participants reported, the higher the positive result experienced in studies over different foci, including relieving anxiety and depression due to life-threatening cancer and smoking cessation. Therefore, psychedelic substances are effective when consumed in a method that challenge fundamental scientific values, principles, and boundaries in mainstream western pharmaceutical thought collectives, where the efficacy of an agent is isolated and tested for its direct bodily chemical impact. With psychedelics, the chemical agent is effective when provided within a supported setting inspired by older indigenous rituals. Scientists studying psychedelics are aware of this aspect, but how will this requirement be mediated with wider expert groups when/if psychedelics are legalized in assisting psychotherapy? I plan to do a discourse analysis over how the set and setting and spirituality of psychedelics are discussed within the thought styles of scientists studying psychedelics compared with other groups in mainstream western mental health scientific fields. I aim to locate compatibility and rifts in imaginaries over the topic. I plan to compare journal articles, opinion pieces, public talks, documentaries, and official guidelines for care.

Beyond medicalization: Socio-psychedelic imaginaries in the United States *Claudia Schwarz-Plaschg, University of Vienna*

Since May 2019 three city-wide decriminalization initiatives for naturally-occurring psychedelics successfully passed in the United States, which means that the use and possession of these plants and fungi became lowest law-enforcement priority. The flourishing grassroots-driven decriminalization movement (over 100 US cities are incubating similar initiatives) indicates a shift in public attitudes and an increasing multiplicity of political strategies. The past 20 years have been dominated by researchers' slow-moving efforts to legitimate psychedelics via rigorous clinical trials that have attracted positive media and public attention. Now that the medicalization of psychedelics seems within reach, many psychedelic researchers worry that growing unsupervised use, fostered by decriminalization, could jeopardize their efforts and cause a similar government backlash as in the 1960s. In this presentation I argue that STS provides a much-needed, politically-informed perspective that challenges such fear-based reasoning and makes room for a more symmetrical approach between science and other social movements. Based on two years of empirical research in the United States (including qualitative interviews, media analysis, observations at conferences and events), I map the evolving landscape of socio-psychedelic imaginaries, i.e. collective visions as to how to reintegrate psychedelics legally into US society. By exploring the imaginaries that currently dominate in the psychedelic space (medicalization, decriminalization, legalization, sacramental), the talk will contribute a nuanced understanding of the tensions and convergences between them, and how responsible use, nature-society relations, science, politics, and social change are envisioned in the respective imaginaries.

Tracing Psilocybin in India :STS perspective on home grow and foraging practices of entheogenic fungi. *Nagesh Anand, Woodpeckers Initiative Foundation*

In this paper I would like to discuss various trends of Psilocybin home grow and foraging practices of entheogenic fungi in India, how groups of trusted growers across the world are helping each other understand how to work with these medicinal fungi.I would also be tracing Psilocybin use in India for the past 50 years and how widespread internet and current innovations of knowledge transfer is creating a new generation of healers and growers without traditional knowledge set to work with these medicinal fungi and how they are coping with the vacuum created because of it. I would also be presenting case studies of various individuals undergoing non traditional informal Psilocybin aided therapy within ambient set and settings currently in India, how

their macro dose interactions with these medicinal fungi, has affected them through the passage of time. I would also be exploring the prolific commodification of these fungi in Kodaikanal,India where psychedelic tourism has emerged as a lucrative economic incentive for native foragers. I would also be exploring the conflict between law enforcement agencies and native entheogenic fungi foragers in kodaikanal and the judicial activism being done for decriminalisation and desigmatization of entheogenic fungi in India.

Session Organizers:
Claudia Schwarz-Plaschg, University of Vienna
Tehseen Noorani, Durham University

Chair:
Tehseen Noorani, Durham University

168. Health, care, (dis)abilities III
12:00 to 1:40 pm
virPrague: VR 11
Participants:

Making the Measuring Body *Anna Harris, Maastricht University*

Medicine has long been criticised by STS for its measuring practices. The racist use of tools such as measuring tapes, even in today's public health programs, has shown to problematically shape the worlds measured and overshadow alternative narratives (García-Meza and Yates-Doerr 2020/Yates-Doerr and García-Meza 2020). To date, focus has been on the clinician/healthcare worker/medical researcher at work, with their tools of measurement to hand. In this paper I step back into the training of clinicians. I draw on ethnographic fieldwork in medical schools (part of a larger project, Making Clinical Sense) where bodies as standards of measurement are continually formed and calibrated. I look at how, through the very same instrument that interests critical scholars of metrics - measuring tapes – numbers get implicated into doctors' embodied knowledge. With this soft and flexible tape, medical students learn to calibrate their own sensory knowledge as they measure lung expansion, gestation on plastic models and the length of their fingers. In doing so they create their own bodies as the standard or measure of things (Hoel and Carusi 2018). I suggest that unpacking this inexpensive teaching device, part of medical knowledge creation that wraps itself around and into bodies, offers new insights into the study of metrics in medicine (Adams 2016). Tracing the making of measuring bodies, as well as measured bodies opens up questions about the implications of the sociomateriality of learning, the politics of using one's own body as standard, and the never-ending quest for the numerical objectification of sensory knowing.

Transcending experiences, limiting concepts: How to rethink 'recovery' in a non-standard comparative study? *Aysel Sultan*

Historically an Anglo-American concept, recovery has been one of the most debated and yet insufficiently scrutinized topics within critical alcohol and other drug scholarship. While the Western drug policy has only recently introduced recovery-oriented systems of care, the concept remains rather contested and underrepresented in most drug treatment strategies across the world. This is especially evident in the way the term is understood, contextualized, and structurally and well as systemically and individually supported. This study investigates recovery from drug use related problems among young people aged between 16-21 living in Azerbaijan and Germany. This is a multi-lingual study, in which the word 'recovery' has never been directly used in any language the interviews were conducted in (Azerbaijani, Russian, English, and German), and thus the interpretations of recovery were understood on a local, contextual way, rather than informed by formal treatment strategies, specific places, or agendas. The study has a series of methodological commitments among which adhering to a non-standard comparative design was the core element informing the structure of the overall research project. Following Isabelle Stengers (2011) and Bruno Latour's (2004) works, neither of the countries is taken a standard against which to compare the other one. Instead, a flat ontological approach is used to contextualize

recovery experiences without putting a specific focus onto national or cultural dimensions. In order to achieve this, recovery is thought of as an assemblage the characteristics of which are drawn from Deleuzian assemblage thinking, but also Actor-Network-Theory to illustrate continuous motion and the role of nonhuman vectors of recovery process. This design allowed to restrain from potential methodological nationalism (Chernilo, 2006; Wimmer and Glick Schiller, 2006) when attempting a comparison of two different country contexts. The results suggested that recovery as an assemblage can take a variety of forms (four, as suggested) which are not bounded to any stable understandings of a setting or context. Instead, recovery happens as an ensemble of socio-material relations that are not isolated from drug use, but in fact intertwined with and dependent on it. This further suggest a non-linear approach towards recovery that encourages a more open, contingent treatment strategies, stepping away from abstinence-based or zero-tolerance models.

Feeling out of the box: Unmaking chronicity through immunostimulation in Brazil *Márcio Vilar, Goethe University Frankfurt, Germany*

How do physicians and patients with diagnosed autoimmunity feel, act and think when they unexpectedly encounter an unconventional immunostimulating drug that helps them to heal, instead of palliatively controlling symptoms of autoimmune reactions through conventional immunosuppressants? How do these encounters affect their lives, their perceptions and attitudes towards their respective medico-legal environments, and to what extent do their dechronicizing experiences affect their respective worlds in turn? In this paper, I report on my analysis of over one hundred letters sent by users of an immunostimulant drug (VAB) to a physician who produced and administered its application at a distance during the 1990s and the 2000s, in Brazil. Despite several reports acting as witnesses for the healing effect of VAB, this drug has never been recognised and included within the established field of rheumatology, and it was ignored within the context of public health. This exclusion caused the treatment to fade into invisibility, whilst simultaneously being administered for many years by health professionals and patients, sometimes illegally. In my analysis, I focus on the letters of physicians, who collaborated with other VAB users, and/or were patients themselves, and who integrated their experiences of re-disciplining their senses in an unexpected fashion into their modes of scrutinizing the reality of immunology in Brazil. Considering VAB users as capable of systematically evaluating and communicating their therapeutic experiences, I seek to identify and understand the tensions surrounding their positioning within the co-production of medical evidence in the context of biotechnological innovation and regulation in Brazil.

Reflecting on "disaster prone areas" in Freetown, Sierra Leone *Lorenz Gosch, Martin-Luther-University Halle-Wittenberg, Germany*

A handy term the disaster prone area is conjured up on a regular basis in Freetown, Sierra Leone. As I experienced it, the term was mainly though not exclusively used by people in official roles such as government bodies or humanitarian organizations. This is not just since the fatal mudslide and flooding events taking place in 2017, although they certainly rendered public attention to disaster prone areas more intense. In this contribution, I want to reflect on the forms the notion of disaster prone areas takes on as well as the contexts and conditions it is entangled with. I engage with a range of questions. What exactly is a disaster prone area? In what ways does a reference to it engage with concerns about causality and responsibility? How are environments fused with specific ideas about the future? During my fieldwork in Freetown, I was struck by both how strangely intuitive the idea of disaster prone areas is as well as how concave it appears to be when being looked at more closely. That is, the categories involved in the use – say erosion risk or conditions of possible water contamination – do not always serve well to demarcate clear areas. They might as well render the matter utterly vague. Despite of this vagueness (or maybe precisely because of it?), it is a very powerful device in formulating a problematic and build up politico-ecological claims. Through it, a plethora of charged issues are negotiated.

Securitizing Global Health: Global Health Politics Between Preparedness, Security And Economy *Mara Linden, Goethe-University Frankfurt, Germany*

NCov-2019 is the latest health crisis where globalization has increased the spread of a disease from one place to others, making it a global health problem with different local manifestations. In face of such an event, pandemic preparedness is emphasized by institutions such as the WHO, States and other actors. Global health strategies – as in the case of Germany, developed by the foreign ministry – increasingly treat health as a biopolitical component of security, signifying the relationship between global health strategies and economic and political security. Security is thereby marked by an entanglement of geopolitical and biopolitical governmentalities, and by an inherent contradiction of the competing projects of tight, secured borders, and free trade and global flows. Economization, therefore, is an increasingly important aspect in the securitization of global health, as pandemics are seen as an economic threat to national economies as well as global networks. The permanent mode of preparedness is one feature of this new rationality, as there is a need for constant attentiveness and financial support (by public and private agents) as well as continued adjustment to current developments. The research project is concerned with how global health is framed in strategies and action plans, such as the German global health strategy. Using ethnographic research in the institutions preparing these strategies, I scrutinise which socio-political and socio-technical decisions influence technologies and regulations increasingly being elaborated on. Thus I am tracing the emergence of new rationalities in global health policies regarding preparedness, security and economy.

Session Organizer:
Aysel Sultan
Chair:
Aysel Sultan

169. Flows and overflows of personal data S2

12:00 to 1:40 pm
virPrague: VR 12
Participants:

Imagining health data flows: everyday life, sensors, and a data platform *Robin Rae, University of Vienna, Department of Science and Technology Studies*

This paper aims to contrast imagined health data flows before and during the development of a health data platform. It draws on the first working period of the H2020 project Smart4Health (Grant Nr. 826117), which aims to be interoperable and host health data from different sources, e.g. health records, wearable sensors. Being funded under the EU's framework program presupposes that a convincing vanguard vision of how data should flow to and from a data infrastructure has been crafted and approved. Yet, the project's citizen-centered approach in co-creating the platform entails that citizens are not a mere audience of a sociotechnical vision, but a public engaging in science and technology. It is thus crucial for the research and development to include alternative imaginations by citizens on how health data should flow in the future through different logics of exchange (e.g. collect, share, provide to research). Empirically, this paper is based on several citizen engagements in Austria, Germany and Portugal. These provide insights into imaginations on how a health data platform integrates into everyday life practices – of citizens and those exchanging data with, e.g. health care professionals. Imagined future impacts of the technology in the making relate to work, leisure, and the use of sensors producing data on embodied movement, which are then contrasted against the initial project vision. The unfolding story is not only about how data flows should be regulated, but also how valuable they are to whom. Thereby the grand vision is put into conversation with everyday life imaginations.

Electronic Health Records and the Diffracted Matterings of Primary Care Data for Real-World Research *Paraskevas Vezyridis, University of Nottingham; Stephen Timmons, University of Nottingham*

Big data in healthcare is materialising new imaginaries of healthcare improvement based on the routine collection and analysis of standardised data from Electronic Health Records (EHRs). At the same time, its epistemological robustness and uncritical deployment, which relies on the unrestrained collection of vast amounts of biased information and observational studies of inadequate reproducibility, has been questioned (Lipworth et al., 2017). Drawing from a qualitative study of a big data programme in the NHS, we explore the variability of General Practitioners' data coding practices to identify what and how (situated and systemic) social, technological, methodological, institutional, economic and political norms, values and logics are accepted, tolerated or resisted for the enactment of sometimes "'perfect' but inaccurate" (Pine and Mazmanian, 2014) EHRs and, subsequently, of datasets for secondary analyses. Using a diffractive lens from feminist STS (Barad, 2007), we attempt to theorise how various apparatuses, such EHRs, classification systems, remuneration schemes and so on, are entangled with GPs, patients and medical phenomena during consultations in primary care to materially and semiotically make certain worlds of health, illness and care observable and measurable, while others become 'residual' (Bowker and Star, 2000). We conclude by arguing that EHR data-driven research and development will continue to produce 'incomplete' data objects and data subjects for "a highly focused but limited view of the whole" (Latour et al., 2012) as such diffracted knowledge-makings around health and illness are institutionalised and bureaucratised across contemporary health systems, research 'laboratories' and societies.

Data Oceans and the Commercialization of Health Inequity *Mary Ebeling, Drexel University*

What has become an empty platitude – patient empowerment through health data – hides the ongoing structural inequities of the data economy and medical capitalism in the United States. The promise that data-driven predictive and analytical machine learning, which rely upon massive oceans of patient data shared between healthcare and third-party companies, will solve the most vexing questions in medical science, as well as make healthcare more accessible, affordable, and equitable is used to sell publics on a bargain they were never privy to negotiate. Far from making medicine more equitable, this bargain tends to reinforce deeply entrenched biases. Obermeyer et al. (2019) found that a commercially available predictive risk platform, widely used in American hospitals, systematically discriminated against Black patients in predicting the medical care that a patient might require. The bias derives from the tool's reliance on claims data – information contained in patients' medical bills — to make a prediction of a patient's projected healthcare needs, since it calculates how much a patient might cost the medical system rather than project a patient's medical care needs based on their clinical data. The predictive tool reflects the stark fact that the American healthcare system spends less on Black patients when evidence shows that African American patients have comparatively higher chronic disease burden. Since patients who are already marginalized by medicine due to their immigration status, gender, race or class status, commercial, data-driven predictive tools and machine learning used in clinical decision-making can have profoundly dire consequences for patient health, because these tools can literally render some patients invisible and untreated. This paper examines the commercial bargains made in American healthcare between the producers of clinical and claims data – patients, clinicians and health informatics researchers—and the third-party companies that use these data to create new predictive and scoring instruments. Far from more equitable outcomes for more patients, these bargains establish larger data oceans for these companies to draw from.

Session Organizer:
Mary Ebeling, Drexel University
Chair:
Mary Ebeling, Drexel University

170. Making Home, With Care: (Moral) Materialities

12:00 to 1:40 pm
virPrague: VR 13
This set of five papers on Making Home, With Care, focusses on situated and socio-material arrangements of making home with care, here special

attention to the normativities, the moralities, and the policies of home making in light of care-needs as they are scripted into care technologies, articulated or rendered invisible in home/care arrangements and practices.

Participants:

Repotting the home: Utilizing personal items in creating a sense of home in nursing homes *Hanna Stalenhoef, Erasmus School of Health Policy and Management; Jitse Schuurmans, Erasmus University Rotterdam; Iris Wallenburg, institute for Health Policy and Management; Roland Bal, Erasmus University Rotterdam*

Moving into a nursing home has been experienced as challenging for elderly people. In order to mitigate this feeling, great importance is attributed to the personal items that elderly take with them when moving into a nursing home. The Dutch Alzheimers foundation, for instance, proclaims that personal items 'will help your loved one feel at home'. The importance of material objects in (re)making home resonates with various studies on material culture of homes. As Marcoux states in his study of material culture and mobility: "Things are at the heart of the creation of a sense of place and of its recreation. (Macroux, 2001:74). From this perspective, personal objects that are brought into a nursing home can be seen as 'transitional objects' (Parkin 1999): objects which help displaced people to remain connected to their personal history while re-settling. Most studies on the material culture of homes focus on the meaning of the materialities that constitute home for its individual residents. (e.g. Hurdley, 2013; Miller, 2008) Scant attention is however paid to how 'other actors' (e.g. family, care personnel) are involved in this process of packing and unpacking home. This paper will take a closer look at the role of material objects in the practices of home making in nursing homes. We build on a visual ethnographic study in which we've visualized and discussed the materiality of home in residents' rooms by means of photo-elicitation and participant observation, elucidating the ways residents, their families and care givers interact with home-making objects.

Ageing In A Healthcare Smart Home: Home Is Where The Smart Is? *Rachel Creaney, University of St Andrews/ James Hutton Institute*

Ageing-in-place has emerged in recent years as an alternative to residential or infirmed care, especially within the Global North, potentially through innovations such as healthcare smart homes (HSH). HSH are digitalised homes that allow residents to remain independent at home for longer by using technology, such as wearable fall alarms, remote GPS trackers, or more general smart technologies such as Alexa. These homes may offer an empowered and innovative solution to overburdened health, housing and social care services in line with (in this case) the Scottish Government's push for ageing-in-place and self-management of care, at a time when people are living longer with more complex mixes of chronic conditions. Most HSH living research has emerged from technocentric or healthcare domains and assumes that the feeling of homeliness will remain unchanged. However, there is a literature gap for more critical social science and STS perspectives, which my research seeks to address. Drawing on ethnographic research with several rural HSH residents in Scotland, this paper considers how the residents, and their wider caring networks make a home in a HSH, in which the healthcare and housing needs of the residents are in constant flux. It highlights the extent, and multitude of ways, that (dis)empowerment may be experienced by the HSH residents as they navigate through the contingencies, changes and contradictions that emerge from living at home with smart home technology. Overall, this paper highlights the importance of understanding the real-world impacts of this governmental push for ageing-in-place from the resident's perspective.

Invoking the 'Home and Hearth' in Care: An Exploration of Home-Based Palliative Care in India *Nishanth Kunnukattil Shaji, Department of Science and Technology Studies, Rensselaer Polytechnic Institute*

This paper focuses on how the materiality of home and medical technologies of pain relief impinge upon both the caregiver and care receiver. Multiple medical technologies of pain relief

including painkillers, catheters, feeding tubes, anti-decubitus mattresses, and cleaning solutions enframe ideas of intimacy that structure the delivery of care for the terminally ill. I place homecare in the larger context of Kerala's Palliative Care Movement that is undergirded by the competing ideas of localized views on "alleviating suffering" and the medicalized views of good care practice. The paper analyses 'the home' as a site of material arrangements that are transformed into sites of care, of everydayness, and performativity. Kerala's Palliative Care Movement is unique in that it is a grassroots initiative that provides free palliative care to people through a network of volunteers, local self-governing institutions, and civil society at large. Here, care is primarily provided at the homes of the terminally ill. Finally, I invoke the larger debate within anthropology over of what is categorized as the 'Dark' and the 'Good' (Ortner 2016). The former describes anthropological work that attends to a world reeling under the effects of neoliberal capitalism while the latter caters to the ideal of wellbeing, inflected by morality and ethics. Following Ortner, I argue that the 'home' becomes a site that invokes both healing and suffering and is mediated by care and technology. Locating home-based care within the larger palliative care movement shall carefully attend to both the good and the dark in ethnographic work.

Session Organizer:

Bernike Pasveer, Maastricht University

Chair:

Bernike Pasveer, Maastricht University

171. The (In)Visible Labour Of Translation: Creating Value In Translational Medicine II

12:00 to 1:40 pm
virPrague: VR 14

Substantial public and private investments have been funnelled into building the infrastructure of translational medicine which, according to proponents, offers huge potential for advances in health and for economic growth. Such potential, however, is predicated on a variety of labour practices. It is performed by many different categories of worker, from research nurses to data scientists, in various settings and locations. This labour is highly uneven, and often unnoticed or unseen by policymakers and the public. In this panel, we focus attention on the labour that facilitates and underpins translational medicine as a key feature of life sciences research and the bioeconomy. We are keen to explore the ways in which labour is understood, organised, and valued—including interrogating the hierarchical and gendered arrangements within which various stratified forms of labour take place. We want to question how such structures enable some practices to be rendered invisible and devalued, while some are highly privileged, prestigious, and valuable. We are equally interested in exploring if and how variously situated categories of workers contribute to the production of knowledge through their support, administrative, or care practices. We invite papers from various disciplinary, empirical and theoretical perspectives to question what it takes to produce valuable knowledge in contemporary translational medicine. This panel contributes to the growing body of STS scholarship on the bioeconomy and translational medicine, as well as literature exploring the constitutive role of care in the production of knowledge and value.

Participants:

More-Than-Cryogenic Worlds: Maintaining And Transforming Biobanks In Spain *Violeta Argudo-Portal, Universitat Autònoma de Barcelona*

In the last two decades, policy reports, newspapers, and scholarly publications have pointed to human-based biobanks as relevant technoscientific infrastructures for contemporary and future biomedical research. Biobanks tend to be described and imagined as sites of storage and stockpiling, repositories of human biospecimens, and associated data. Much of the literature has studied biobanks under the ELSI (ethical, legal, and social issues) framework, yet, anthropological and STS approaches have also contributed to their study. This research is based on 16 months of multi-sited fieldwork with Spanish biobanks' personnel, including an ethnographic case-study, semi-structured interviews, participant observation in workshops and conferences, and document analysis. In this paper, I argue that biobanks in Spain are reconfiguring the way they work to be worth maintaining,

hence, biobanks worthiness is under construction and their fragilities visible. Which ways of working are being kept, and which ones transformed to make biobanks worth maintaining? Lab technicians, security guards, researchers, administrative staff, or science directors describe their work, and by doing so, decompose maintenance strategies to avoid letting biobanks "fall." In a context that places data accumulation at the forefront, the reconfigurations of biobanks practices are good to think with, particularly shifts around biospecimen storage and stockpiling. Storing biospecimens does not necessarily involve anticipation and/or preparedness. Pivoting from the analysis of biobanks maintenance as infrastructural regimes, what I am calling 'modes of bioavailability' can be a useful tool to reflect and explore their reconfigurations as mediators for translational medicine.

Social determination in spaces of translational medicine and diagnosis *Jean Harrington, University of Exeter*

To 'translate' is defined as to 'carry over', or 'to move something from one place to another'. At the cusp between the fields of science and medicine the phrases translational research and translational medicine have become synonymous with the movement of concepts or material substances, from the 'bench' to the 'bedside' – less frequently the reverse, bedside to bench. Translation however can also be said to occur at other points in medicine, for example at the point of diagnosis where interpretation of observation and diagnostic tests are translated into procedures, treatments, labels, the provision of support and so forth. Theorists in the field of sociology have pointed to the inherent place of social process and enculturation at the point of both translational research and diagnosis; Wainwright et al, 2009 discuss the manner in which science and society are co-produced within 'translational research' and Brown et al, 2011 have coined the term 'social diagnosis' to capture the work conducted by various social actors ('social diagnosticians') within 'diagnosis'. In this paper I shall provide empirical examples from my studies on these translational spaces in medicine to demonstrate the influence of the social and how workers, practitioners, lay people and the concept of gender shape the production of knowledge. By so doing I shall highlight how beliefs, notions and practices lay invisible yet sculpt the medical landscape.

Bioeconomies of contraceptive risk: moving towards a user-centered risk assessment *Alina Geampana, Aston University*

In the past decade, a number of new birth control pills have stirred controversy in Europe, Canada, and the U.S. due to an allegedly increased risk of blood clots. However, such claims have been contested by pharmaceutical companies as well as voices in the medical community. North American regulatory agencies have advised caution, but have not agreed on the exact risk increase despite deciding to keep the pills on the market. While professionals debate uncertainties, users are encouraged to manage risk individually. As a result, patients seeking an oral contraceptive have to navigate complex risk information in order to make informed decisions. Drawing on 43 in-depth interviews with stakeholders and content analysis of legal, medical, and regulatory documents, I here analyse organisational strategies that, according to key actors, might better facilitate informed patient choice and safer drug options. Study respondents make the case that risk uncertainty can be managed through several interventions in the process of drug development and distribution. Areas of improvement include: the testing and development of new hormonal contraceptives, regulatory processes, information leaflets provided in the drug package, and doctor-patient interactions. Thus, this paper emphasizes the risk work that needs to be carried out in the future in order to ensure better outcomes for patients. It also furthers research on contraception as a technological source of uncertainty, by bridging the gap between scholarship that focuses on the social meaning of contraceptives and work that deals with their risk assessment.

Session Organizers:
Rachel Faulkner-Gurstein, King's College London
Clemence Pinel, Center for Medical Science and Technology Studies, University of Copenhagen
David Wyatt, King's College London
Chair:

David Wyatt, King's College London

172. **The Era of Voice: STS and Emerging Healthcare Activism around Science, Politics and Markets**
12:00 to 1:40 pm
virPrague: VR 15

Fostered by social media and the development of transnational social movements, new forms of activism have emerged. People once silenced can now easily find others in similar conditions, build connections and speak up. These movements affect the fields of science, regulation and markets by catalyzing public attention and provoking increased political and commercial engagement. In the medical domain, publics increasingly coalesce into activist groups and articulate their concerns and interests around all sorts of issues, including clinical practices, research priorities, pricing levels, pharmaceutical regulation, and policies around socio-environmental exposures. This session investigates how the healthcare landscape is reshaped by the unprecedented capacities of voice and activism in a reflexive way, by scrutinizing the engagements of STS in this process: by going through diverse case studies in different healthcare contexts, we aim to discuss the potential roles of STS in analyzing renewed healthcare activism, in engaging with activists, and possibly in doing activism.

Participants:

Engaging with Vaccination Controversy: A Role for STS. *Tarryn Abrahams, Virginia Tech*

Vaccine hesitancy epitomizes a transnational movement facilitated by social media and the internet. As such, it's become the veritable poster-child for online misinformation. STS has not been immune to this, with "anti-vax" being incorporated, often without question, under the umbrella of "alternative facts," "Post-truth," and science denialism (Collins, 2014). Yet many who are vaccine hesitant articulate an experience of injury or concern of harm, which mainstream discourse frequently dismisses as debunked, disavowing some peoples' lived experience or embodied knowledge. Additionally, much vaccine skepticism and hesitancy utilizes scientific research in framing concerns, and as evidence for counter-arguments to vaccine advocates. Some activists even accuse medical and health authorities of junk science! I will argue that taking a symmetrical approach to vaccination controversy offers fruitful insights into resistance, epistemic authority, power and biopolitics. It also offers an opening to consider how we decide what counts as good science, who gets to decide, and how people engage with science. With vaccination framed as an "obligatory passage point" to health (to invoke Latour), vaccination opens the question as to what people view as health, how we obtain it, and who defines it for us. With an increasing health imperative integrated within neoliberal societies, what does it mean to question vaccines? How do socio-economic forces such as sick leave or compassionate leave to care for a sick dependent enter into this controversy? Vaccination and questions around it provide numerous avenues to interrogate how we engage in daily life, with our health and our bodies.

Becoming Victims of Nuclear Power Plants and making voices to the public sphere *Kim Woo-Chang; Sun-Jin Yun, Seoul National University*

Gori #1 is the first NPP in Korea, whose operation started on 19th June 1977. Moon Jae-in government decided to stop it permanently on 19th June 2017 after 40 years operation. However, 24 nuclear power plants (NPP) operate are under operation and unknown diseases occur to local residents around NPPs. Kyundo's family is typical in that case. They settled within 3km of the Gori NPP. Kyundo's father got colon cancer and his mother got breast cancer. Even Kyundo was born with a developmental disorder. There is still little scientific evidence of the relationship between their disease and NPP. Are the misery and pain of Kyundo's family just personal problems? Or can we analyze social and structural reasons associated with NPPs? These questions lead to the movement of Kyundo's family, named 'Walking the World with Kyundo and his father'. Until now, they have done 4 times of 'Walking the World'. They argue their body pain was not just unlucky and personal one, while asking anti-nuclearization. This study focuses on the way how Kyundo's family came to raise their 'personal' problem to

'public and institutional' one, unlike from the usual local residents' movements, which tend to be isolated. Because some of them stick to 'Nothing about us without us' slogan, they can't connect with public. However, Kyundo's family raise their question at the public level as well as the personal level , assisted by professionals in the fields of law and medical. Key words: Gori Nuclear Power Plant, Cancer and Disease, Kyundo's family, Anti-Nuclearization

Young People's "Voice" – Discussing Healthcare Matters Online On Their Own Terms *Martyna Gliniecka, Institute for Culture & Society, Western Sydney University*
This presentation will explore the dialogical lens on the concept of the 'voice(s)' concerning young people's agency in online discussions as a part of a Ph.D. study examining conversations on peer-led health-related online forums. The dialogism-based notion of voice disregards conceptualizing it as a vocal-auditory utterance and refers to it as a "speaking consciousness" which comprises of embodiment, personal signature, and topical perspectivity. Voice is not given nor static, and whatever is being said always emerges from the self, among others or by collective parties within context (Holquist, 2003; Linell, 2009; Wertsch, 2009). Young people are increasingly generating more agency and organising themselves without the knowledge or permission of adults. Adolescents, to engage in conversations about health issues on their own terms, initiate online discussions on anonymous platforms like Reddit to seek both information and support. These peer-to-peer interventions are prevalent, especially about sensitive health topics. What differs them from institution-led healthcare initiatives is precisely the genuine youths' voice, which is unheard and neglected to the point when it encourages them to act and foster resilience. This need for authenticity within the community and its importance can inform shaping the youth-aimed healthcare services. Holquist, M. (2003). Dialogism: Bakhtin and His World (2nd ed.). Routledge. Linell, P. (2009). Rethinking language, mind, and world dialogically: Interactional and contextual theories of human sense-making. Information Age Pub. Wertsch, J. V. (2009). Voices of the mind: Sociocultural approach to mediated action. Harvard University Press.

Reconfiguring Healthcare for Capital Accumulation: "Neoliberal Activism" in Financialised Pharmaceutical Firms and Precision Medicine *Théo Bourgeron, University College Dublin; Ilaria Galasso, University College Dublin*
Based on David Harvey's (2005) definition of neoliberalisation as the extension of profit accumulation logics to new fields of social life, we study the role of activism in the neoliberalisation of healthcare. We study recent forms of patient and industry involvement in the shaping of the healthcare sector, that we define as forms of "neoliberal activism". As opposed to traditional social movements, contemporary healthcare activism is constituted by industrial lobbies, NGOs, and solidaristic movements (Lang 2012). We argue that the new definitions of healthcare practices and technologies promoted by these emerging activists participate to the neoliberal framework elaborated since the 1980s and do not question its accumulation agenda. To illustrate this theoretical argument, we analyse two emblematic fields of this neoliberalisation process. First, the financialisation of pharmaceutical companies. Using archives from the 1980s to today related to the French pharmaceutical market, we show how the rise of the financialised pharmaceutical business model has been enabled by an alliance between the state, industry lobbies and patient groups. Secondly, precision medicine. Through discourse analysis and interviews to stakeholders in leading precision medicine projects in the UK and the US, we show how emerging solidaristic movements and institutionalised involvement practices for patients and citizens are constitutive of precision medicine, while remaining aligned with its neoliberal framework. We conclude by scrutinizing potential engagements of STS in this process. Using a co-productionist framework (Jasanoff 2004), we argue that, in the absence of any ideological shift, "neoliberal activism" and the neoliberalisation of healthcare foster one another.

Session Organizers:
Ilaria Galasso, University College Dublin

Théo Bourgeron, University College Dublin
Sonja Erikainen, University of Edinburgh
Chair:
Ilaria Galasso, University College Dublin

173. Sensing In/Security. Sensors as Transnational Security Infrastructures
12:00 to 1:40 pm
virPrague: VR 16
The interplay of sensing and (algorithmic) sense-making marks an important momentum in the social construction of security in increasingly digital societies. Sensory devices are not only producing multiple ontologies but also produce and mediate "macro-level" entities through information infrastructures in the making. This session therefore seeks to understand the role of sensors and data infrastructures in the construction and interpretation of changing local and global socio-technical environments in recent discussions in science and technology studies, critical security and data studies. Contributions explore how sensing devices - from satellites, drones and surveillance devices - become invested with global and socio-political significance. A major question that drives this panel is how collective actors, such as states or international institutions, are not only informed by sensors but also shape and stabilize sensing practices and knowledge, as well as these (infra)structures are contested through and by activists. Contributing to the emerging intersections between STS and security studies, presentations simultaneously attend to questions of macro-level security politics and micro-level sensing practices as being enabled and mediated through boundary infrastructures. The contributions critically investigate sensors and sensory networks as situated security practices of infrastructure making, using both large-scale empirical accounts of historical and contemporary cases across the globe. These topics are thereby approached from the perspective of traditional academic papers and visual vignettes, integrating critical reflection from an art perspective.

Participants:

Infrastructural Coercion: Mobile Security Vulnerability and Stingrays *Evan Light, Glendon College, York University; Fenwick Mckelvey, Concordia University*
The past ten years have seen a rise in the use of International Mobile Subscriber Identity- catchers, or IMSI-catchers – devices used by police departments, intelligence agencies and any number of non-state actors to monitor cellphones. These devices have become a covert part of the built world, present but absent from public knowledge. In this presentation, we question the consequences of ISMI catchers to theorizes of infrastructure and surveillance. Drawing on the concept of infrastructural parasitivism (Mckelvey & Gehl, 2019), we argue that ISMI- are technically a hack, collecting data not meant to be technically shared by our phones. The first part of our paper questions how the ISMI catcher, through its parasitivism, produces a new mobile security assemblage through an act of infrastructural coercion wherein infrastructure is forced to work in unintended ways (Haggerty et al, 2000). We then explore how this new mobile security apparatus evades regulatory accountability, precisely because of its elusiveness. As a hack, , the ISMI catcher avoids legal captures. We conclude through our own attempts at parasitism, how to take data from these infrastructures, trying make their existence visible through the deployment of cheap and open-source sensors. Our interest in ISMI catchers provides a crucial case for interdisciplinary research in surveillance and infrastructure studies. The infrastructural qualities of the ISMI catcher, its parasitism that alters its hosts, enables new, elusive surveillant assemblages likely becoming more common in a sensor society.

Visual Vignettes: writing images, drawing words *Mascha Gugganig, Technical University Munich; Rachel Douglas-Jones, IT University of Copenhagen*
The issue of representation in research continues to be crucial when thinking of the form, normativity and power of written words. The role of visuals and graphics 'illustrating' such words has received equal attention across different disciplines' critical approach to images, film and media. Practicing this dialectic is also evident in the growing trend of making academic research accessible beyond the university. The genre of Visual Vignettes

is an invitation to subvert and combine two genres – the vignette, and visuals (photographs, graphics, etc.) — by writing with images, and drawing with words. It allows researchers to engage with an experimental, creative research (dissemination) format that challenges the order and 'division of labour' between words – often as descriptor – and images – as illustration. Other than photo essays, this format integrates text and image to create short, evocative descriptions of a particular phenomenon, conveyed quickly while also providing substantive content. It can be posted on department websites, posted on websites, printed as a series of postcards to be distributed to research participants and interested folks, hung in department hallways, galleries or cafes, or even function as street art.

Social sensing: roles and functions of occult evidence in industries of prediction *Katja Mayer, Vienna University; El Iblis Shah, Aden Academy of Science*

The era of big data is the heyday for now-casting and industries of prediction. Social media data are used to study online and offline worlds. The label social sensing builds on the idea of crowdsourcing data collection and captures the convergence of analytic techniques based on the fusion of mobile, social, and sensor data. The market for explaining and predicting social behaviour based on digital evidence is huge, not only in business and marketing, but also in security or military contexts. Past and current research calls in the domain of military funding and elsewhere show one important focus is on making sense of latent content accumulated by scraping social data, and data driven theories and models of human interaction. "People analytics" strive for probabilities of not yet visible expression or behaviour, working with hidden variables and training machines to bridge the gap between observation and prediction. In our contribution we focus on social sensors and their modes of evidence production. We are going back in time and provocatively confront contemporary techniques of social sensing and interpretation of social behaviour in the security sector with traditional yet rather controversial approaches to sensing and predicting. From oracles, pseudoscientific concepts of extra sensory perception such as remote viewing, or the failed Human Terrain Analysis system of the US military, we conclude that more attention should be given to the interplay of sensorial assemblages. As social technologies they profit by the occult dimensions formatting both evidential practices and the committees of interpretation.

Hacking Satellites: A Conversation on Security and Response-abilities *Jan-Hendrik Passoth, Technische Universität München*

This presentation will address questions of, and experiment with possible forms of engagements between social science, technology and security policy, and engineering by drawing on a semi-structured conversation between a hacker and two social scientists, that is, in a second step, reflected upon by STS scholars with a background in informatics which will allow a two-directional translation of both, languages and perspectives. Our aim here is (at least) two-fold: First, we want to explore novel ways of listening to, and discussing and engaging with people who are experts on sensors outside of academia – yet explicitly not in a sense of an extraction of knowledge and information, that is almost always at risk of patronizing or exploiting the "expert engineer", but as a form of mutual exchange of perspectives, questions, and issue. Second, we aim to experiment with and develop novel formats of integrating these engagements into an academic edited volume while being sensible to the different work logics as well as the different disciplinary logics of crediting (academic) work and the challenges that bear for traditional processes of academic peer-review.

Session Organizers:
Nikolaus Pöchhacker, University of Graz
Nina Klimburg Witjes, Vienna University
Chair:
Nina Klimburg Witjes, Vienna University
Discussant:
Geoffrey C. Bowker, University of California, Irvine

174. Lost in the Dreamscapes of Modernity? Theorizing Agency, Multiplicity, and Scale in Sociotechnical Imaginaries 3
12:00 to 1:40 pm
virPrague: VR 17
3/3 Sites and applications
Participants:

Sociotechnical Imaginaries Of A Circular Economy: Place And Scale In Desired Futures *Abe Hendriks, University of Groningen*

The aim of this research is to generate an understanding of the interaction between place-specific characteristics and the emergence, stabilization and manifestation of sociotechnical imaginaries. The empirical focus of this research is the circular economy (CE), a concept that is understood as a response to the contemporary ways of producing and consuming in a take-make-dispose manner. The concept is highly mentioned on regional, national and supranational agendas, but the understanding of the concept differs widely (Korhonen et al., 2018). Approaching the CE as an umbrella term (Rip & Voß, 2013) allows us to elaborate on the idea that the transition to a CE is not merely a descriptive question, but entails a normative understanding on what a future with a CE should look like. Following Murphy's (2015) argument that the politics of sustainability transitions are in essence frictions between divided interests over the development of specific places, raises the question: what is the interaction between place-specific characteristics and how is there 'dreamed' about a desired future of a CE? Using an in-depth case study of the Dutch province of Fryslân, numerous interviews and written content provide the empirics for reflections on how the future can be understood as a site of struggle of development for a specific place. We contend that the focus on these place-specific characteristics of sociotechnical imaginaries is a potentially important contribution to STS as a field as it gains insights on the scalar nature of imaginaries as well as the situatedness of sociotechnical innovations.

The rise of hyper-speculation in post-conventional energy futures *Magdalena Kuchler, Uppsala University; Gavin Bridge, Durham University*

In recent years, both Poland and the United Kingdom have rapidly become fertile (under)grounds for geological projections, industry ambitions and political objectives sutured around one specific natural resource: unconventional natural gas from shale rock formations. Despite very optimistic, yet highly uncertain estimates of the resource potential in both countries, no commercial production of gas from shales has been established to date. Although the Polish and British shale gas developments have been the subject of increasing attention from different scholarly domains, less attention has been placed on identifying and scrutinizing practices of volumetric resource appraisals and what capital and political movements they trigger and sustain. Building upon the burgeoning scientific work on resource-making and political geology, as well as emerging insights from STS, this paper examines the specific nexuses of speculation through which are combined knowledge production, capital accumulation and political power. By taking the Polish and British cases as empirically comparative points of entry into activities surrounding shale gas prospecting and exploration in the period between 2009 and 2017, the paper discloses and interrogates three distinct, but inextricably interwoven, spheres of speculation: 1) uncertain geological knowledge, 2) the anticipatory returns from circulating capital, and 3) the chancing of national and regional futures in a political gamble. The paper argues that from these three unfixed fields of unknowability, risk and anticipation emerges hyper-speculation that may forge post-conventional energy futures for years to come.

Urban Energy Transition Policy Work Practices And Imaginaries. The Role Of Local Policy Workers Towards Sustainable Futures *Stefano Magariello, Anglia Ruskin University*

The concept of sociotechnical imaginaries is a key element to investigate local intervention towards low-carbon energy transition and policy workers' actions towards desirable decarbonised futures. In this context, considering that the low-

carbon energy transition of urban areas has emerged as a crucial component of energy and climate change mitigation policies, the main objective of my PhD research is to investigate how local policy work is organised and driven by shared and institutionalised visions of futures cities. I understand the role of urban policy work (not just policy-making) as a relevant building block within the ongoing energy transition process and, consequently, I focus on the way local policy-workers act day by day enacting professional practices to pursue sustainable goals which are shaped within specific imagined futures. Making use of a practice-based approach and taking inspiration from the sociotechnical imaginaries concept, I aim to investigate [1] how this specific category of professionals enacts policy work practices [2] how institutionalised visions of future affect their daily work and [3] how policy work systems of practices contribute reproducing imaginaries. In doing so, I set my case study in an energy department of a Southern European municipality, actively committed in a Horizon 2020 project towards the creation of effective energy transition-related roadmaps. Data collection includes ethnographic fieldwork during H2020-related training and meetings, through which I aim to provide outcomes on the way different local policy workers act jointly co-producing and co-shaping sustainable vision of futures and active plans for their cities interacting within a supranational framework.

Session Organizer:

Alexander Wentland, Technical University of Munich

Chair:

Alexander Wentland, Technical University of Munich

175. Governing Reproductive Bio-economies: Policy Frameworks, Ethics and Economics 3

12:00 to 1:40 pm
virPrague: VR 18

Reproductive bio-economies, i.e. economies that are built and function around assisted reproduction and reproductive tissues, cells and processes, are largely consolidated economies, which have seen considerable growth in terms of treatment cycles, technologies, revenues, numbers of actors, countries and stakeholders. Since the first IVF birth in 1978, reproductive bio-economies have expanded to include: IVF clinics, legal firms, gamete donors and surrogates, intermediaries and agencies, gamete and embryo banks, investment funds, research institutions and public health care centres, in a global network worth billions of Euros worldwide. Amidst this globally interconnected expansion, questions about the policy and governance of reproductive bio-economies become a matter of considerable interest. A consideration of regulatory systems that govern reproductive technologies raises questions about how bio-economies emerge within different national and supranational contexts, how and if they challenge existing governance arrangements and how existing or new policy frameworks contribute to the re/shaping of bio-economies. An exploration of the regulation of reproductive bio-economies allows for improved understanding of how "moral regimes directed towards reproductive behaviours and practices are fully entangled with political economic processes" (Morgan & Roberts 2012). Such an exploration allows consideration to be given to the distribution of actors and affects within different moral frameworks and regulatory formations.

Participants:

Egg Donation Practice in Iran: a Feminist Study of Under-Regulation in Assisted Reproductive Technologies *Tiba Bonyad, The University of Manchester*

Iran is the only Muslim country where various types of assisted reproductive technologies (ARTs), including gamete donation and gestational surrogacy, are widely practiced among involuntarily childless couples. The use of ARTs in Iran is strictly based on Islamic law (Sharia) and it is confined merely to heterosexual married couples (Tremayne, 2018). Remarkably, since the first Iranian IVF baby was born in 1990, only one legal act, called 'the embryo donation law,' has been put in place. This law underlines that the embryo donation should be 'free of charge' (Naef, 2018). However, due to the absence of any national regulations on egg donation for assisted reproduction, the ART sites have turned into the black markets of reproductive bio-economies. In this paper, I aim to illustrate how under-regulation of oocyte donation - which is the most common type

of third-party assisted reproduction in Iran - has created precarious 'reproductive labour' (Pande, 2014) of egg provision. This labour targets socioeconomically disadvantaged women, being employed to repetitively carry out the egg extraction process. I will build my argument based on 35 in-depth interviews with medical staff, egg providers and recipients, as well as, my four-month fieldwork in two IVF clinics in Tehran, Iran, between September and December 2019. Accordingly, I aim to explore how these uncertain and fluid spaces of reproductive bio-economies de/construct the local struggle of women in negotiating their reproductive rights/ commodities in juxtaposition with technologies of reproduction, gender norms and religion.

Reproductive Sisterhood? The Marketing and Regulation of 'Altruistic' Egg Donation in Europe *Nicky Hudson, De Montfort University*

The expansion of the use of donor eggs in fertility treatment has been exponential, with over 56,000 cycles of egg donor IVF treatment taking place each year in Europe. Altruism is a dominant organising principle in the management of egg donation within the EU; and is enshrined in the EU Tissue and Cells Directive, embedded in national regulations, laws and organisational practices, professional rationalities and individual meanings. Aspects of this regulatory requirement are enacted within EU member states to ensure that procurement of human tissue is not commercially based. To service a growing demand for third party eggs, clinics and a growing number of commercial intermediaries, are finding new ways to recruit egg donors and to create efficiency and profit in an emerging reproductive bio-economy. Drawing on data from an ESRC-funded study of the economic, political, cultural and moral configuration of egg donation in the UK, Spain and Belgium (EDNA project, ref ES/N010604/1), this paper examines how altruism is framed in fertility clinic marketing and recruitment materials. It draws on a sample of 58 fertility clinic websites across the UK, Belgium and Spain, analysed using a combination of content analysis and frame analysis. The data demonstrate how clinic websites are important cultural spaces that manage the tensions of the market and the logics of altruism within the European context. It considers how altruistically motivated egg providers are mobilised by recourse to representations of egg shortages and discourses of medical need. It is argued that altruism is deployed as a framing principle in an increasingly commercialised sector, creating unique vulnerabilities and potential exploitation for potential egg providers, which are often overlooked.

Selecting women, taming bodies? Body ontologies in egg donation practices in Spain *Laura Perler, University of St. Gallen; Anna Molas Closas, Monash University (Australia)*

According to the Spanish law of assisted reproduction, women intending to donate eggs must be "in good psychophysical health" and "do not suffer from genetic or infectious hereditary transmissible diseases to the offspring" (chapter II article 5). However, what 'good' psychophysical health condition is, what the 'transmissible diseases' are, and what counts as disease at all remains contested. In this paper we explore how this broad legal criterion materialises in clinical practices through different tests and selection procedures. Drawing on extensive fieldwork in Spanish fertility clinics and participant observations both in clinics, genetic companies and with egg donors in Spain, we argue that selection and management procedures are organised to split egg donors as 'multiple bodies' (Mol 2002), which will have to be tamed in different ways. On the one side, we will refer to the making of a 'biographical subject', for which we understand the donor enacted as a conscious autonomous subject, and on the other side, to the 'medical object', for which we understand the donor as a terrain of potential extractability. As we will argue, clinics aim to select a responsible biographical body that kindly obeys professionals' instructions throughout the process in order to make the medical object accessible to doctors' extraction purposes. Finally, our paper aims to demonstrate how contrariwise to the efforts of doctors to scrutinise and shape donors' minds and bodies with a focus on standardised features, egg donors remain embodied as subjects who not only reproduce but also contest and resist these taming techniques.

Silences, omissions, and over-simplifications: the UK debate on mitochondrial donation *Cathy Herbrand, De Montfort University*

The UK remains the first and only country to have legalised mitochondrial donation, the high-profile reproductive techniques aimed at preventing the transmission of mitochondrial disorders. If the particular ways of developing, regulating and engaging with biomedical innovations in the UK have certainly facilitated the adoption of the law on mitochondrial donation, this might not have been possible without a number of more strategic actions by the advocates of the techniques. In this paper, I question and analyse the processes whereby particular information and issues were omitted or downplayed during the UK public and parliamentary debates. Drawing on work from the field of ignorance studies (Gross and McGoey 2015), I distinguish and identify the 'known unknowns', i.e. particular recognised health and safety risks, from the 'ignored knowns' of the debates, i.e. key issues which were side-lined, omitted or overlooked. I show that unlike earlier reproductive health treatments or drugs (such as Primodos), the potential risks and negative implications of mitochondrial donation were not ignored but were explicitly acknowledged and examined. However, significant efforts were made to silence the limitations of the techniques, its requirements and its alternatives, in order to make them appear unique and desirable. I suggest that these omissions and over-simplifications were part of wider efforts ultimately deployed in order to maintain the UK as a leader in human embryo research on the international biomedical scene, rather than serving what were presented in the debates as the patients' needs.

Session Organizers:

Nicky Hudson, De Montfort University

Cathy Herbrand, De Montfort University

Chair:

Vincenzo Pavone, Consejo Superior Investigaciones Cientificas (CSIC)

176. Governing Assisted Conception in Asia

12:00 to 1:40 pm

virPrague: VR 19

This panel is engaged with the governance of assisted conception in Asia. Each of the seven papers analyzes how diverse stakeholders—including the state, medical societies, practitioners, activist groups, media, and lay users—negotiate the meaning of and build public action on assisted conception. The issues range from sperm donation in Japan, egg donation in Taiwan, and third-party conception in India to public financing of assisted reproductive technology (ART) in South Korea, infertility coping in Vietnam, Myanmar, and the Philippines, miscarriage prevention during IVF in Taiwan, and anticipatory regimes of ART globally. Following the analytical approach of technoscientific governance, we emphasize the making of new knowledge and new ways of doing technology along with governance. Diverse governing tactics include follow-up surveys of children conceived by donor insemination, informed consent for egg donation, higher dosage of progesterone to prevent miscarriage after IVF, health insurance coverage for infertile couples, and the making of clinical guidelines and new statistics. With an emphasis on comparative studies, we aim to demonstrate the sharp contrast in reproductive governance within Asia, and to better capture an Asian bio-power that remains under-researched in the current social studies of ART.

Participants:

The History of Japanese Follow-up Surveys of Children Conceived by Artificial Insemination by Donor (AID) *Hideki Yui, The Health Care Science Institute (Japan)*

When medical researchers perform new assisted reproductive technology as a clinical study, they sometimes conduct a follow-up survey of children conceived through such technology for "ethical consideration." This study focuses on follow-up surveys of children conceived through Artificial Insemination by Donor (AID) in Japan. AID was started at Keio University Hospital in 1948. It has attracted various opinions due to the use of donated sperm. The obstetricians in Keio University checked up on AID children several times. They published the results of their follow up surveys from the 1960s to the 1980s and clarified that the children were in good physical health and had high IQ scores.

According to an obstetrician from Keio University, such follow-up surveys were the "ethical consideration" for AID procedures. However, AID children have complained not about their physical health or IQs but of their emotional distress, such as identity crisis due to the anonymity of the sperm donors and distrust of their parents, who did not tell them for a long time that they were conceived through AID. Many bioethics researchers in Japan believe that the distress of such children is the main ethical problem of AID. Thus the surveys, which neglected to track children's mental health issues, did not release the obstetricians from the ethical problems of AID. This case suggests that analyzing the contents and effects of follow-up surveys is important for Science, Technology and Society (STS) studies.

The Making and Unmaking of Relatedness through Third-Party ARTs in India *Mizuho Matsuo, National Museum of Ethnology (Japan)*

This paper examines the ways in which women who engage in third-party reproduction create and imagine multiple relationships in the context of third-party assisted reproductive technologies (ARTs) in West India. Accelerated use of ARTs in India over the past two decades has brought not only the rise of transnational commercial surrogacy but also human gamete (sperm, egg, and embryo) transactions in the commercialized medical market. Gamete donation has recently evoked important concerns, such as the right to know one's biological origin, whether in the West or elsewhere. Many societies are now placing greater emphasis on children's rights to know their origins than was common in the past. Related rights movements are linked to society's general tendency to consider biological parents to be the "real" ones to whom people relate themselves "naturally." This is the logic behind the gestational surrogacy practiced widely in India, which does not treat surrogates as "real" mothers. At the same time, however, in the case of egg donation it is uncommon for people, including women who donate their eggs, to regard egg providers as "real" parents. What kinds of relations, then, are created during third-party reproduction processes that make the involved actors feel "real"? In other words, how do surrogate mothers, egg donors, and intended parents perceive the connections between biological relations and cultural attitudes about kinship and relatedness? This paper elucidates the multiple kinds of relatedness that appear and that are created through the deployment of ARTs in India.

Increasing ART through Public Financing and the Unexpected Negative Results *Jung-Ok Ha, National Museum of Korean Contemporary History*

South Korea's total fertility rate (TFR) has been the lowest in the world. As an aspect of its policy to counter low fertility, the Korean government began public financing for ART in 2006. Since October 2017, ART has been covered under the national health insurance (NHI) in South Korea, the first country to do so in East Asia. In this paper, I analyze the consequences of this policy. With public financing, the total numbers of cycles of ART have risen. The occurrence of premature births and babies with low birth weight has increased drastically, along with an explosion in multiple births. And several indicators of maternal health (e.g., maternal death ratio) in South Korea are now higher than the averages in other OECD countries. The public financing policy neglects the health of mothers and babies. To further boost the fertility rate, the new government has proposed offering more NHI benefits for infertility treatments, and infertile couples have been requesting "wider NHI coverage" as well. The public financing of ART should decouple ART from the pronatalist goal, and aim to prevent the health risks caused by multiple embryo transfer (MET).

The Socio-cultural Context of Coping with Infertility in Vietnam, Myanmar, and the Philippines *Chiaki Shirai, Shizuoka University*

The research team conducted a survey on reproductive behaviors in 14 countries in East, Southeast, and South Asia in 2017-2019. We selected two urban and non-urban areas in each country, and interviewed at least five professionals in obstetrics and gynecology and midwifery, and at least ten women whose youngest child was under 10 years old. In this paper, I discuss the

survey's questions on "dealing with infertility" in Vietnam, Myanmar, and the Philippines. In addition to structural factors such as healthcare systems and the cost of ART, social norms strongly influence women's attitudes toward ART. In our investigation, people did not always prefer to use ART to maintain the biological connection between parents and children. For example, some answered that "I don't need to deal with infertility. I can take care of the children of my siblings." This suggests that in some extended families, a child does not necessarily only belong to her or his biological parents. Another interviewee had adopted children, following the fortune telling. We also found that some interviewees used gamete donation or surrogacy to have children, and appreciated that ART had helped them have children without having a sexual relationship with someone other than their spouse. ART is recognized as a desirable alternative to traditional custom. The way people perceive infertility and the use of ART needs to be put in the socio-cultural context.

Liable Care: Miscarriage Prevention from Antai to Defensive Medicine *Wen-Ching Sung, University of Toronto*

What is a better approach for prenatal care? In standard biomedicine textbooks, early pregnancy loss is associated with a defective fetus, thus proactive medical intervention of miscarriage is not always in patients' best interest. Securing the fetus (an'tai), however, is a pillar in the traditional Chinese medicine's management of pregnancy. Chinese medicine focuses on the maternal body instead of the fetus in preventing spontaneous abortion. It also assumes that pregnancy loss results from human errors and is preventable. In Taiwan, these two distinct ways to prevent miscarriage simultaneously fuse in a clinical setting and affect how physicians and patients treat the signs of pregnancy loss. Based on fieldwork in Taiwan, the researcher found Taiwanese doctors prescribe a higher dosage of progesterone to women undergoing in vitro fertilization procedure. Note the common name of this hormone is "the medicine for securing the fetus." Clinicians know their prescription is not evidence-based, but they claim it is a decision to respond to their clients' requests for parenthood. The researcher also observed practitioners use diverse accounts in explaining their prescriptions. The senior physicians tend to link their prescription to their moral liability in preventing losing baby, which resonates with the an'tai viewpoint. Yet the younger practitioners regard it as defensive medicine to avoid their legal liability. Despite the same practices persist across generations of doctors, the logic underneath this procedure change significantly.

Anticipatory Regimes of IVF: Success, Failure, and/or Health Risk *Chia-Ling Wu, National Taiwan University*

This paper analyzes the changing anticipatory regimes of IVF. "Anticipatory regimes" are systems of rules and practices, formed for the best possible future through the mode of prediction, and often with affective engagement. The early success of IVF in the late 1970s was portrayed as a "miracle," but the high failure rates also raised debate on its efficacy. To handle this paradoxical nature of IVF, scientists calculated predictions based on clinical data, and reached the global consensus since the 1980s that the more embryos are transferred during IVF, the higher the pregnancy rates. Practitioners adopted multiple embryo transfer (MET) to enhance the possibility of success. However, it became evidence that MET creates a new risk of IVF: multiple pregnancy and birth. To manage the adverse outcomes of twins, triplets, and higher-order births, some public health experts, feminist health movements, and practitioners advocated a new anticipatory mode, focused on moving from increasing success to preventing danger. Some countries and medical societies propose the guideline of single embryo transfer to reduce health risk, but others still aim to reach success first. A country's national sociotechnical imaginary and its healthcare system are the two leading factors to explain this diversity. These anticipatory practices have gradually redefined IVF as a commodity, an urgent public health issue, a hope technology, or as an ever-evolving medical advancement. Based on the case of IVF, I build an analytical framework for researching anticipation: the framing of anticipation (hope or fear), the shaping of anticipatory modes (power relationship between stakeholders and knowledge production), and the reconfiguration of technoscience

and society along with anticipatory practices.

Session Organizer:
Chia-Ling Wu, National Taiwan University
Chair:
Wen-Ching Sung, University of Toronto

177. Growing old in a more-than human world: Materialities of care and interspecies entanglements II
12:00 to 1:40 pm
virPrague: VR 20
Participants:

Care Practices Among Older People: Collective Constitutions On The Boundaries Between Formal/Informal Care *Elin Siira, Gothenburg University; Signe Yndigegn, Design Department, IT University, Copenhagen; Bertil Rolandsson, Department of Sociology and Work Science, Gothenburg University, Gothenburg; Axel Wolf, Institute of Health and Care Sciences, Gothenburg University, Gothenburg; Helle Wijk, Institute of Health and Care Sciences, Gothenburg University, Gothenburg*

Back in 1984 Kari Waerness observed that convictions of 'community-care' as being cheaper and morally preferable to public caregiving services spread rapidly. Today, in line with active aging policy, there are numerous technology driven community-initiatives searching for ways to promote self-reliance and wellbeing among older people (Lassen, Bønnelycke, & Otto, 2015). Too often, such initiatives take a paternalistic stance (Neven & Peine, 2017) applying interventionists (Peine & Neven, 2019) and instrumental logics (Cozza, Cusinato, & Philippopoulos-Mihalopoulos, 2019) to caring. Little is known about how care is constituted as part of public-private community-care initiatives that often subsist on the boundaries between formal and informal care. Drawing on Mol, Moser, and Pols (2010) we argue that viewing care as collectively constituted achievements (involving human and non-human actors) that establish new forms of material practice (Suchman, 2002) will bring more useful understanding on these issues. Through an ethnographical endeavor and with a socio-material lens, we explore how care practices are collectively constituted as part of a public-private technology driven initiative in Denmark . The initiative aimed to release unexploited potential among older people for tasks supported by the public sector. Tentative findings suggest that care practices were constituted through clashes between public actors and older users' views on responsibility at the boundaries of informal/form care, and that 'innovative technology' acted as an extend arm of a discourse promoting care that could promote a new innovative take on welfare services.

Interspecies entanglements and politics of relationship in care homes *Nete Schwennesen, Copenhagen University; Daniel Lopez Gomez, Universitat Oberta de Catalunya*

In this paper we explore how interspecies entanglements at a care home for elderly in Denmark, can be used as a lens to understand the politics of 'anthro-zoo-genetic-practice' (Despret 2004) towards end of life. Understanding the care home as a liminal zone between life and death, were spaces are simultaneously domestic and institutional, public and private, 'home' but 'not home', we argue that care homes can be seen as contested regulatory spaces where relationships are governed, socio-spatial boundaries are drawn and hierarchies (including species) are maintained and perpetuated. We study how humans and animals become available and attuned to each other and how their situated interrelationship are constructed and regulated. As a result of this we also show how care and mundane practices of daily-life are reconfigured as innovative interventions and valued in terms of homeyness, naturalness and humanness. Based on this, we discuss how ethnographic studies of interspecies entanglements in the liminal zone of the care home, raise critical questions about what to care for and the politics of relationship towards end of life.

Delivering Silent Care: Training Assistance Dogs For Veterans. *Mara Miele, Cardiff University; Harriet Smith, Cardiff*

University; Nickie Charles, Warwick University; Rebekah Fox, Warwick University

In recent times there has been an increased use of non human animals in care work, particularly dogs. Recent studies have documented the various psychological benefits of animal-assisted therapy: decreased stress levels, increased feelings of self-worth, and assistance in adjusting to an altered body image. The therapy uses animals that have been evaluated for temperament, are in good health, and have undergone extensive training that involves obedience and behavioural conditioning. Over 7,000 people in the UK rely on an assistance dogs that have been trained by accredited member organisations of Assistance Dogs International (ADI) to help with practical tasks - offering emotional support and independence. In this paper we look at the training for assistance dogs, focusing on one organisation that train dogs for veterans with Post Traumatic Stress Disorder (PTSD). We carried out a multispecies ethnography of the training practices and our focus here is the care that is delivered by the dogs and what is made of. Following Despret (2004) we look at the assistance dogs and their acquired ability to make human bodies be moved and be affected. We argue that the assistance dogs become a living apparatus that enables humans to become more aware about their bodies and their emotions. Moreover they offer the chance to explore ways by which human and non-human bodies become more sensitive to each other, but also more open to a wider web of multispecies sociability.

Geriatric Ex-Dairy Cows: Caring for Otherwise Expendable Life *Juno Salazar Parrenas*

The high cost of animal feed and the low price of milk forced a farmer in the German state of Nordrhein-Westfalen to take his herd of dairy cows out of economic production. They were not sent to slaughter, as to be expected of the millions of dairy cows every year when they are no longer reproductive. Instead, with the help of a vegan activist, they were afforded the possibility of retirement. The exceptional circumstances of this herd allow for experimentation in the care of otherwise expendable life. How does the act of taking dairy cows out of economic production reimagine other modes of productivity than capitalist growth? What geriatric life histories are possible to sustain in more than human worlds? This paper contributes to feminist concerns in STS about care, life, livelihoods, and more than human worlds (Besky and Blanchette 2019; Haraway 2008; Parrenas 2018). It draws from a larger ethnographic study about the ideas and pragmatics that shape retirement and geriatric care as they are extended to nonhuman animals in a moment when humans experience greater uncertainty about achieving retirement. Bibliography: Besky, Sarah, and Alex Blanchette, eds. 2019. How Nature Works: Rethinking Labor on a Troubled Planet. Santa Fe: School for Advanced Research Press. Haraway, Donna Jeanne. 2008. When Species Meet. Minneapolis: University of Minnesota Press. Parreñas Juno Salazar. 2018. Decolonizing Extinction: The Work of Care in Orangutan Rehabilitation. Durham: Duke University Press.

Session Organizers:
Nete Schwennesen, Copenhagen University
Daniel Lopez Gomez, Universitat Oberta de Catalunya
Joanna Latimer, SATSU, University of York

Chair:
Nete Schwennesen, Copenhagen University

178. The politics of progress
12:00 to 1:40 pm
virPrague: VR 21
Participants:

Anachronistic Progress? User Notions of Lie Detection in the Juridical Field in Germany *Bettina Paul, Universität Hamburg; Larissa Fischer, RWTH Aachen University; Torsten H Voigt, RWTH Aachen University*

In recent years, the public understanding of progress in the field of lie detection has linked it with technological advances from classic polygraphs to neuroscientific brain scans. In our empirical investigation, however, we found different notions of progress that do not comply with the popular understanding of progress as technological innovation. We follow the users of lie detection procedures in order to find out how they embrace seemingly old and new technologies so as to frame them in terms of notions of novelty and improvement. We identify two notions of progress: a view of the polygraph in the specific juridical field as instrument for procedural justice, and one in which the device functions as a symbol of openness to improvements in the judicial system. This paper sets out to explain why the polygraph is regularly used in a context where it is considered inappropriate. By focusing on the persistence of a technology instead of centering our research on technological inventions, we can extrapolate users' notions of progress in the juridical field that would otherwise go unnoticed. Furthermore, we are able to show that the idea of 'progress' is still of value in the public understanding of science even though it has been replaced in scientific realms by the term 'innovation'. However, this value does not come from a purely technological notion of progress but rather from connecting visions of societal improvement to the understanding of the term.

Politics of Progress and the Social Sciences *Jan Schank, Albert-Ludwigs-Universität Freiburg, Centre for Security and Society*

This presentation draws on the author's experiences of working in / for a highly specialised software development project. The project „SUSQRA" aims to develop a software tool for security experts to predict the impact of an attack using self-made bombs („Improvized Explosive Devices", IEDs), as well as enable inferences about the IED(s) used after an attack has occured. My role as a social scentist is mainly to facilitate an „agile" development process, assuring the developments meet users' needs and that the tool can be fitted to their existing practices, organisationals routines, and procedures. „Progress" is invoked on several levels and by several actors within this context. For the security experts / users, it seems to mean enhancing their protective as well as forensic capacities; the engineers involved aim at improving and expanding the scope of their models used to calculate the effects of detonations; the funding agency (the German Ministry for Education and Research) seems to envision the introduction of new technologies as progress in itself. The presentation will follow these various conceptions of progress, unravelling their politics by showing how they are coordinated at various stages and in different episodes of this collective endeavour. This will include a reflection on the role of the social sciences when tasked to be involved in these politics of progress, while also accounting for them vis-a-vis funding bodies and within the discipline itself.

Techno-Optimism on the Defensive: Digital Innovation for (What Kind of) Good? *Jurate Kavaliauskaite, Vilnius University*

Does techno-optimism mutate in the digital age? How does it maintain 'Phoenix-like' vigour amidst technical rearrangements and new socio-economic concerns? Stepping back from/beyond digital materialism (Gottlieb, 2018), I turn to the discursive dimension of current techno-optimistic sensibility and trace it in meaning-making practices at the vanguard of global digital industries. With the amplified socio-political critique of contradictions in corporate digital innovation cultures (Cassin, 2006/2018; Hillis et al., 2013; Srnicek, 2016; Taplin, 2018; Noble, 2018; Andrejevic, 2019), global giants go on the defensive – (re)enact techno-optimism by linguistic (re)articulation, their own voice of advocacy and (self)legitimation (Schmidt & Cohen, 2013; Nadella, 2017). What does digital innovation stand for and serve in this quest? What is progressive about 'new' technologies and tech-saturated social life? Ultimately, what kind(s) of good and normativity does the digital transformation embody and anticipate, are these kinds mutually compatible? To address these questions, I focus on the case of the long-term hybrid corporate discourse of Google Inc., aimed at heterogeneous stakeholders globally, and employ computational text analysis techniques, conducive to the interpretivist mode of inquiry (Nulty, 2017; van Atteveldt, 2008; Roberts et al., 2019), to map and critically read the intricate socio-semantic space(s) linking digital technologies/ media, techno-progressivism, and peculiar teleology of innovation and change. The case study is expected to contribute to the broader

discussion on the viability and limit(ation)s of contemporary techno-optimism, as well as its uneasy liaison with the ever-changing capitalist / techno-liberal ethos (Boltanski & Chiapello, 1999/2017; Pfister, 2019).

The Bioeconomy agenda between Legal Pragmatism and a General Ecology of Law: Settler Colonialism and transnational law in the relations between extraction and life. *alex stingl*

Abstract: We have entered a new phase of biotechnology and its respective legal regimes that involve international treaties and supra-national legal proceedings, which in the coming years, will intensify a number of transitional pathways that are establishing what is known in business, policy, and science circles as the Bioeconomy. A "present to future"-oriented minimal consensus for this agenda, the BioEconomy, can be found in white papers such as were issued by "institutions" like the European Commission (EC), the German ministry for research (BMBF), the (Obama) White House, or the French ministry for agriculture (alim'agri), and many others. In fact and over the previous decade, in the interstices of political-economical regimes of transnational governance and in what is called the technosocial imaginary, the concept of Bioeconomy increasingly gained purchase: "As imaginary, the bio-economy is perhaps best captured by the OECD's aspiration to 'turn the disruptive potential of bio-technology to economic advantage [...] It is also in these frontiers that biopolitical struggles are fought over a new emancipatory "ethics of the bio'." (Christian Haddad) Like many technoscience-oriented public-private governance agendas, BioEconomy is characterized by a conceptualization of progress as "moving ahead and along" versus "falling behind". This rationale goes in stride with a rationale that assumes that any technoscientific progress leads to more social progress and justice. But such a rationale – and the scientific inquiry that feeds it – is fundamentally structured around ideas of "assets" and "property" and governed by both the logic and the laws of extraction. Fundamentally, the legal under-growth of the generally touted "transition to Bioeconomy" is rooted in the legal legacies of Settler Colonialism, the colonial archive, and the coloniality of power and Being. In particular, one can identify such a trajectory in the attempts of "naturalizing" a particular kind of jurisprudence globally, which guises itself as (American) Legal Pragmatism. In this talk/paper, I will first aim to illustrate what is currently at stake in the transition to Bioeconomy as conceived in current discourse; second, I will trace the logic behind the political and legal aspects to their colonial roots;

Achieving Moral Progress Through Universal Education In Rural India *Iva Capova, Ecole Normale Superieure, Paris*

In order to support the growth and social development, India launched in 2001 the program of the universal and free primary education. Since two last decades, the numbers of schools grew massively and other social programs, such as the free school lunch, were introduced to stimulate the school enrolment. However, the simple local presence of school infrastructure in the villages could not lead to the engagements of large numbers of children in daily schooling, without the growing aspirations of the local population and their longing for progress, which is believed to be brought about by the school. This paper is based on twelve months ethnographic research conducted in rural Bihar, the poorest and the least literate state of India. For the locale population the school represents a hope to escape the poverty by getting a qualified job. Besides the pragmatic reasons, formal education represents the intrinsic value of progress, modernity and development. School education is seen as a tool to shape the modern self and to transform people into good citizens worthy of respect. By contrast, "uneducated" people are often attributed a lack of self-control, the ability to manage one's budget and living environment and to think in the short term, which prevents them from anticipating the future. Being illiterate is also linked to the imagination of a potential tendency towards alcoholism, violence, rape or crime. The massive supply of formal education in the village is, therefore, considered as the future protection of the community's environment from danger.

Session Organizers:
Torsten H Voigt, RWTH Aachen University

Larissa Fischer, RWTH Aachen University
Bettina Paul, Universität Hamburg
Chair:
Bettina Paul, Universität Hamburg

179. Speculative Futures and the Biopolitics of Populations: Session 1
12:00 to 1:40 pm
virPrague: VR 22
Participants:

Reproducing Russia. Crisis talk and the technological promises of IVF *Veronika Siegl, University of Bern*

This presentation explores how professionals in the field of assisted reproduction in Russia legitimise IVF-technologies as paving the way to a bright future. I argue that they do so by emphasising the potential of assisted conception to overcome the "demographic crisis" by reproducing not only Russians per se but the right Russians. My findings are based on ethnographic fieldwork and interviews with physicians, lawyers and intermediaries in Moscow. In post-/socialist countries, "demographic crisis" has been an omnipresent term for the last hundred years, enabling far-reaching state interventions in the name of boosting fertility rates. Since the start of Putin's third term of power in 2012, such "crisis talk" has experienced a revival and is coupled with the apparent need to return to traditional Russian values in order to protect the country from a gloomy future. Such discourses particularly target two threatening groups of people: immigrants from other (Muslim) post-Soviet countries as well as Asia, who are feared to soon outnumber ethnic Russians due to their high birth rates; and morally deviant "Others", such as gays and lesbians, who cannot but also should not reproduce. Professionals in the field of assisted conception seize on contemporary discourses of demographic and moral crisis in order to argue that IVF-technologies, rightly used, are necessary for the survival of the Russian nation. Such technologies – particularly when commercialised – facilitate the reproduction of "desired" segments of the population: well-educated, rich, heterosexual and ethnically Russian citizens, thus not only saving but also enhancing the nation.

'Bare branches', 'leftover women', DINKs and rising infertility: demographic speculation in China today *Ayo Wahlberg, University of Copenhagen*

After 40 years of comprehensive efforts to prevent birth, state authorities in China are now seeking to promote birth, urgently. Family planning officials are grappling with the many unintended consequences of their infamous 'one-child policy': rising infertility rates (due to infections, iatrogenic effects of multiple abortions, reproductive deferral and exposure to pollution), skewed sex ratios and a resulting generation of single men or so-called 'bare branches' (guang gun), a growing demographic of so-called 'leftover women' (sheng nu) who are educated, in jobs and not marrying, and finally, now also below-replacement-level fertility rates. Through an analysis of expert statements, government policy documents and media stories in the past three years (2015-2018) I show how demographic anxieties are being reconfigured away from concerns about overpopulation and towards worries about below-replacement-level fertility resulting from 1) a 'marriage squeeze' exacerbated by 'bare branches' and 'leftover women', and 2) reproductive deferral and increasing infertility among married couples. Are we witnessing a reconfiguration of China's restrictive reproductive complex from family planning to family making? If so, what form might this new reproductive complex take in coming decades? Will fertility clinics replace abortion clinics as one of the most important family planning institutions? Will single women as well as gay and lesbian couples be given access to reproductive technologies? How will state agencies incentivize, or perhaps even enforce an augmentation of reproductive desires? How will 'singlehood' be addressed as a national and social problem in coming decades?

Embryo culture as knowledge production: the politics of knowing and not-knowing through technology *Elina*

Helosvuori, University of Helsinki; Riikka Homanen, University of Tampere

Culturing in vitro embryos prior to implantation into the uterus of the intended mother is one of the key phases of in vitro fertilization (IVF) practice where uncertainty about pregnancy outcomes is still a chronic state of affairs. The culturing practice aims at selecting the most viable embryo for transfer according to the knowledge gained from the culture. In this paper, we explore embryo culture as a site of knowledge production. Based on multi-sited ethnography conducted in private fertility clinics in Finland, we inquire into how knowledge on embryos is produced and what does that knowledge "do". We aim to draft a picture of how the knowledge on embryos is governed and, by implication, uncertain embryonic futures affected in the local material settings of IVF labs. Our analysis shows how embryos are known through and by microscopes, laboratory science, growth medium and incubator technologies. Pharmaceutical and medical technology companies have power over not just how the embryo can be known but also how embryos perform viability. This knowledge also has ethically concerning consequences: accordingly, different kinds of variably manipulated embryo are transferred to wombs. Finally, it is not only the viability of the embryo or the health of the baby-to-be that is at stake in embryo culture, but also the reproductive IVF-process and decision-making of the intended parents.

#No Babies, Greener Planet? Feminist Speculations Beyond "Population" Geographies *Susanne Huebl, University Münster*

Can refraining from the birth of another human child, mitigate the effects of the ongoing climate crisis? Recent debates on this question relate growing birth rates with climate crisis in considerably different ways. Initiatives such as Population Matters, GINK or the birthstrikers movement in the UK discuss population reduction as a green act and with frequently neomalthusian arguments. We are witnessing an alarming revival that Eva Barlösius calls a Demographization of the Political (2007). Being situated in the field of feminist human geography I speculate how the demographic in general and geographical practices of counting human life in specific can be (re-) politicized. Therefore, I build upon the work in feminist science and population studies, who critically examine how counting as a political technology constantly (re-)produces hegemonial ideas of heteronormativity and racism in demographic knowledge production processes (Hendrixson 2019, McCann 2016, Murphy 2017). By critiquing the internal hierarchizations in population thinking, I show how to enable practices of knowledge production that transcend climate crisis narratives. By drawing inspiration from Michelle Murphy's concept of Alterlife (2018), and ideas around reproductive justice movements (Ross 2017, SisterSong), I will use Haraway's SF (2013, 2016) as a tool to draft concrete feminist speculations. With these storytelling practices for earthly survival, I will contribute to a feminist engagement with numbers of human life beyond population and will further the politicization of demographic knowledge production practices.

Session Organizers:
 Mianna Meskus, Tampere University
 Ayo Wahlberg, University of Copenhagen
Chair:
 Mianna Meskus, Tampere University

180. EASST Awards Ceremony and EASST General Member Meeting
1:40 to 3:00 pm
virPrague: VR 01
We will start by announcing the EASST Awards 2020. Then we will continue with our General Member Meeting: Among other we will give a review of past activities since the Lancaster 2018 conference, share news from our publications (EASST Review and Science and Technology Studies), report on membership and financial situation. We will draw specific attention to the upcoming election of new council members and of the president of EASST as well as the future conferences. We are looking forward to meeing our membership virtually.

Session Organizer:
 Ulrike Felt, University of Vienna, Department of Science and Technology Studies
Chair:
 Ulrike Felt, University of Vienna, Department of Science and Technology Studies

181. Frameworks of Agency and Dis/Media. The Significance of Current Digital Technologies and Dis-/Abling Media Practices - follow-up discussion
1:40 to 3:00 pm
virPrague: VR 03
Session Organizer:
 Melike Sahinol, Orient-Institut Istanbul
Chair:
 Melike Sahinol, Orient-Institut Istanbul

182. Governing Assisted Conception in Asia - follow-up discussion
1:40 to 3:00 pm
virPrague: VR 19
Session Organizer:
 Chia-Ling Wu, National Taiwan University
Chair:
 Chia-Ling Wu, National Taiwan University

183. Book Publishing drop in with Emerald - Exhibits Weds A
1:40 to 3:00 pm
virPrague: VR 23
Stop by and meet Jen McCall, Senior Publisher at Emerald Publishing, responsible for commissioning Emerald's list of books in STS, reproductive sociology, medical sociology, communication and digital studies! Jen would be really happy to chat about your research or to set up a good time for a more detailed one-to-one meeting at another time during the conference. Emerald publishes monographs, edited collections, shortform books, comprehensive handbooks and some straight-to-paperback trade titles.
Session Organizer:
 Jen McCall, Emerald Publishing Ltd
Chair:
 Jen McCall, Emerald Publishing Ltd

184. Bristol University Press - Meet the Editor | 19 August
1:40 to 3:00 pm
virPrague: VR 24
Visit this session to meet senior editor Paul Stevens, who is responsible for our new list in science, technology and society: bristoluniversitypress.co.uk/science-technology-and-society. Paul will be delighted to speak with you about your publishing plans. He'll be available at the times listed below, so if you'd like to set up a separate meeting then please drop him a line (paul.stevens@bristol.ac.uk). August 18: 13.40 – 14.40 (CEST) August 19: 13.40 – 14.40 (CEST) August 21: 13.40 – 14.40 (CEST)
Session Organizer:
 Bahar Muller, Bristol University Press
Chair:
 Paul Stevens, Bristol University Press

185. Science as a Site of Inequality: Theoretical, Empirical and Reflexive Insights From STS
3:00 to 4:40 pm
virPrague: VR 01
According to the Agenda 2030 for Sustainable Development, reducing inequality (Sustainable Development Goal 10) is an essential prerequisite for a world of justice and non-discrimination, and of equal opportunity permitting the full realization of human potential. Science is expected to play a key part in achieving this vision – although being as well structured by multiple forms of inequality and divides within its own system. Epistemic hierarchies not only put certain disciplines before others, but also marginalize knowledge not conforming to dominant paradigms and/or produced outside scientific centers. Aside from researchers' position in the global research landscape, socially constructed categories such as social

class, gender, ethnicity and race affect the degree of scientific credibility ascribed to them. This panel shifts the spotlight on inequality in science as a subject of scholarly debate, presenting theoretical and empirical papers that deal with manifestations, causes and impacts of different forms of inequality in academia. In particular, the panel highlights how gender and North-South asymmetries are reproduced by scientific practice in the context of global developments. The aim of the session is to bring together scholars concerned with inequality in science from different perspectives, such as feminist and post-colonial STS, in order to share insights, explore linkages and trigger reflection: how do different dimensions of inequality intersect? How do structural conditions and professional practices mutually reinforce prevailing patterns? How could relations be transformed?

Participants:

Inequality in Science as Subject of Scholarly Debate: A Multi-disciplinary Research Synthesis *Susanne Koch, Technical University of Munich*

With the rise of inequality as a subject of political and societal debate, research on inequality has significantly grown and diversified in recent years. Adopting a reflexive stance, scholars in the humanities and social sciences have shifted the spotlight on their own institutions and pointed out that science is far from being an even playing field in which the brightest ideas prevail. Instead, it is a field structured by asymmetric power and unequal chances to participate in the collective endeavour of knowledge production. This is highlighted by researchers in diverse academic communities, ranging from STS, human geography, post-colonial theory, critical philosophy, and gender studies. While these communities provide highly valuable insights on the topic, their discourses and contributions rarely transcend disciplinary boundaries. Aiming to address the discursive disconnect, I provide a multi-disciplinary research synthesis that takes a systematic look at contemporary scholarship concerned with inequality in science. Therefore, I compare existing bodies of knowledge along the dimensions of disciplinary contexts, topical foci, levels of analysis and explanatory approaches. Based on this systematic stock-taking, I identify blind spots of scholarship and interfaces that could serve as spaces of interdisciplinary exchange. Notably absent in literature is integrative research that explores how different inequality vectors intersect and how structural contexts and practices are interlinked; moreover, empirical studies that substantiate epistemic effects of inequality in science are missing. The field of STS suggests itself to fill these gaps.

Power relations and the construction of a sociotechnical future in rice in Uruguay *Santiago Alzugaray, Universidad de la República, Uruguay*

Rice is one of the main export goods in Uruguay. Its cultivation is central for entire populations in the most deprived regions of the country. The crop is highly dependent on science and technology, and the country has developed, over the years, its own scientific and technological trajectory. The research and development agenda is highly negotiated between farmers, mills' representatives, the state and researchers in the National Institute for Agrarian Research. The power structures and interactions in the field are significant in explaining the S&T trajectory, and the construction of desirable futures. The trajectory has demonstrated highly unsustainable, not only in environmental terms but also regarding social and economical justice. The desire for the imagined futures is extensively shared among the prementioned actors. Both potential winners and losers in that imagined future share the vision, and neither the environment is a major concern in imagining that future, nor social equality. This desired future, with the social and environmental inequalities, is imbricated in the definition of research and technology development agenda, and therefore, is defining the future S&T pathway. This presentation will reflect upon the experience of a two years ethnography, addressing the following questions to add on the discussion on the panel: Is there any margin for re-politicizing the desired future that guides the R&D agenda? Can sustainability and social justice become part of that future? Is it possible to overcome the incumbent powers in the field? Can other, marginalized, actors become part of the discussion?

A comparative study of career trajectories and epistemic living spaces among men and women professors in Norway and

Japan *Guro Korsnes Kristensen, Norwegian University of Science and Technology; Vivian Anette Lagesen, NTNU; Siri Øyslebø Sørensen, Norwegian University of Science & Technology (NTNU)*

In this paper we analyse career narratives of men and women professors in Norway and Japan, to shed light on the gendered dimensions of academia in the two national contexts. Through focussing on narratives of career trajectories we analyze so-called becoming processes in academia. We are here particularly interested in issues of inclusion and exclusion in such processes, and our main question is whether inclusion and exclusion mechanisms gendered, and if so, how? In addition to the career narratives, we will explore so-called epistemic living spaces, which can be characterised along at least five dimensions: an epistemic, a spatial/material, a temporal, a symbolic, and a social dimension" (Felt and Fochler, 2010, p. 5). All these dimensions are highly pertinent to the analysis of gender dynamics in academia. We spesifically focus on the spatial, the temporal, the symbolic and the social dimension. The spatial/material aspects include the physical context of and the artefacts needed to do research but also the geographic features, like international mobility. In our context, we investigate our interviewees' access to research facilities and resources as well as the possibility of being mobile. Adaptation to an increasingly international Academy with regard to travels and use of English vs. native tongue is part of this. The temporal dimension addresses the perceived tempo of academic work but also the bureaucratic time regimes that impose on academic life. Life-phases and family responsibilities may also influence such trajectories. The symbolic dimension is concerned with values and virtues that influence academic work, like current emphasis on excellence, relevance, mobility and accountability. Finally, the social dimension addresses how researchers think about and practice their work in terms of competition and collaboration but also how they adapt to current metrics-oriented management or pursue other goals. A particular relevant aspect of this is the quality of collegiate relations and the quality of the local work culture.

Session Organizer:

Susanne Koch, Technical University of Munich

Chair:

Nelius Boshoff, Stellenbosch University

186. Decentring datacentres: their politics, energy, waste and epistemics
3:00 to 4:40 pm
virPrague: VR 02

Data centres have gained attention in STS for their politics of territoriality and geographic location (Vonderau 2016 & 2019, Maguire & Winthereik 2019). We seek to extend the focus to the material configurations of data centres by discussing them as situated spaces of high resource consumption and excessive waste production, of contested politics and of knowledge production. Half of the information and communication industries' greenhouse gas emissions comes from data centres (Belkhir/Elmeligi); roughly 1,5% of global greenhouse gas emissions. Millions of gallons of water are used to keep data cool (Hogan 2015). Energy Humanities (Szeman &Boyer 2017) and Discard Studies (Lepawsky 2018) urge us to reflect on how such excesses are formed and maintained, by which actors and through which practices. Data centres are important actors in configuring common resources: electricity, water, heat and knowledge. Nonetheless, they are hidden away and hardly accessible (Hogan &Shepard 2015). How are the politics of data centres made visible, and how can data centres be turned into a matter of democratic debate and regulation? This question is relevant both on state and industry level, as it is in workplaces where practices are increasingly shaped by the configurations of data centres. Even though knowledge production of both corporate 'data scientists' as well as university scientists and researchers increasingly depend on data centres for both storage and data processing, little literature exists on the epistemic effects of data centre configurations. We invite papers submissions addressing the political, ecological and epistemic entanglements of data centres.

Participants:

Bogs, Storage, and the Temporalities of Repair *Patrick Brodie, Concordia University (Montreal, CANADA); Patrick*

Bresnihan, Maynooth University

In 2018, Bord na Móna, the Irish semi-state body responsible for peatlands, announced plans to phase out industrial extraction of peat as part of Ireland's commitment to reduce carbon emissions and offset climate impacts. Around 5% of the surface of Ireland is covered in bogs, a unique habitat that has been industrially harvested for carbon fuel since the 1950s. Obligated to deliver a "just transition" for the 3000-4000 workers and their communities who have been reliant on peat-cutting, especially in the rural midlands of the country, one proposal from 2017 was to incentivize private data centre developments on boglands. This supposedly greener kind of industry is positioned to replace one of outright, carbon-intensive extraction. However, data centres, as infrastructures that require vast amounts of energy and few workers, will not provide meaningful alternatives for the population of the midlands, while externalizing energy footprint elsewhere. Underneath the headlines of FDI-driven projects, such as data centre development, are alternative, minor projects and histories for the bogs and their communities. Bogs have remarkable capabilities of carbon storage and natural preservation, contrasting starkly with the temporalities of storage represented by data centres. Small-scale efforts to rehabilitate the bogs or to repurpose redundant industrial infrastructures for community enterprise speak to discourses of alternative and sustainable futures of environmental care and repair. Using policy analysis and fieldwork conducted with communities in the Irish midlands, this paper will foreground existing practices and politics of repair against the FDI-driven temporalities and extractive imaginaries of data centres.

Making the politics of data centers visible. Experts reports, local protests and trials in France *clement marquet, IFRIS, Costech*

Between 1999 and 2010, Plaine Commune, a group of municipalities located in a suburban area in the north of Paris, became the first European concentration of data centers – according to elected officials. While promoted by a few political actors, such concentration suddenly became the focus of a controversy which, between 2012 and 2015, opposed residents and environmental activists against elected officials and public servants, and also divided the administration itself, between supporters of the economic development of the territory, on the one hand, and those in favor of environmental transition on the other. At the heart of the controversy were the energy and economic imbalances linked to the proliferation of data infrastructures: understanding and exposing data centers ins and outs became an urgent matter. Relying on a four-year research and articulating an STS perspective on the politics of technology with sociology of public problems, this presentation will investigate the ways in which data centers became a matter of public investigation by studying how the settlements triggered various local and heterogeneous troubles. I will show how those protests contributed to the first production of public knowledge in France regarding data centers' impacts on territories and electric infrastructures, while a local trial threatened, for a few days, data centers' quiet growth. Finally, I will show that locally, data centers operators and public officials ended up assimilating some of the critics that were held against those infrastructures, though the production of binding regulations at a national level is blocked by data center lobbyists.

Chasing standardization: Everyday data work in a research data centre *Katharina Kinder-Kurlanda, GESIS - Leibniz Institute for the Social Sciences*

This contribution views research data centres as spaces of contested politics of knowledge production, where – often hidden from the attention of academia or the public – important decisions are being made about what we can know from the data stored there. The everyday data management work required to accomplish ingesting, processing, documenting, backing up, storing and retrieving research data are entangled with specific database structures and conventions. These are influenced by technical 'affordances' of hard- and software aswell as by historically grown practices. As data from commercial platforms such as social media is gaining importance in many disciplines, increasingly, research data curators and data center

administrators are also entangled in new complexities. The archiving of social media data is embedded into interconnections between (commercial) social media service providers, tools and affordances; social media users' various and evolving practices and expectations of ethical usage of data; and research infrastructures, from publishers and data repositories to community-sourced tools that challenge structures built around more traditional sources of research data. I am taking a closer look at the breaks and contingencies in data curators' everyday work as they are finding workarounds, patching broken and inefficient documentation tools, striving for findability and interoperability in the face of changing methods and epistemologies around social media data. In this my aim is to contribute to STS work on standards and infrastructures as accomplished rather than given things.

Managing Data-Centres: infrastructuring university "small tech" *Estrid Sørensen, Ruhr University Bochum; Laura Kocksch, Ruhr University Bochum*

The STS literature on data centres primarily focuses on "big tech", such as Facebook, Google and Amazon. Due to the corporate nature of these data centres their infrastructures are characteristically surrounded by a "cloud" of secrecy and lack of information. Accordingly, the focus of most studies concerns the implications of data centres (i.e. for local towns, the environment, or working conditions), while studies rarely allow analyses of the practices of infrastructuring data centres (i.e. decision making, management, and organisational issues). In order to address this gap, we have turned to study a "small tech" university data centre, which as a public organisation is more accessible for ethnographic research. Based on interviews with planners, managers and future users of the data centre, which is currently under construction, the paper analyses the organisational challenges involved in establishing and managing a data centre. Central are questions concerning distribution of access, the negotiation of highly different requirements, and about what and how data centre operations, resources and waste are made (in)visible. These questions are accompanied by controversies about responsibilities for data's durability and usability, and with these about who counts as manager, technician or scientific producer/ user of data. With a focus on the organisational embeddedness of data storage the paper analyses first the practices of planning and managing the university data centre, and secondly it discusses how "small tech" public data centres studies may be relevant for the analysis of data centre management more generally.

Digital Pollution: Exploring epistemic material and normative challenges of knowledge production and circulation. *Federica Lucivero, The Ethox Centre, University of Oxford; Gabby Samuel, King's College London /Lancaster University*

Data and digital technologies promise to contribute to the goal of sustainable development by offering a green alternative to industries and behaviour with a higher environmental footprint. However, the so-called "digital revolution" has an important environmental impact: it is widely acknowledged in the context of environmental research that Information and Communication Technologies (ICT) in general, and data centres and cloud computing in particular, have a heavy footprint. Though currently, little evidence exists on the exact environmental impact and this evidence suffers from being non-comparable across different disciplinary and non-academic contexts. As the dawn of 5G technology is upon us, together with its ever-increasing need for material data infrastructures, it is becoming progressively urgent to explore epistemic, material and normative challenges and obstacles related to assessing the environmental impact of the digital revolution. In this paper we will present the results of a mapping exercise aiming at displaying available knowledge, relevant actors and perceived challenges for a governance approach to the environmental sustainability of the digital revolution. This mapping exercise draws on the findings of a scoping review and an interdisciplinary workshop on this topic. We will focus on material infrastructures of knowledge production in this context, assess perceived gaps and uncertainty and address obstacles to the emergence of this issue at the public and governance level (Axe 2 of this panel).

Session Organizers:
Laura Kocksch, Ruhr University Bochum
Stefan Laser, Ruhr University Bochum
Estrid Sørensen, Ruhr University Bochum
Chair:
Stefan Laser, Ruhr University Bochum

187. On the Interplay of Images, Imaginaries and Imagination in Science Communication (Transdisciplinary Focus)
3:00 to 4:40 pm
virPrague: VR 03

Tables, graphics and IMAGES – e.g. representations of small but complex macro-molecules in 'gestalt' of the Watson-Crick Double Helix or of even more immaterial objects like bits and bytes sliding down a curtain of strings as green drops – play an important role in SCIENCE COMMUNICATION. This applies to processes of communication between sciences and the public as well as to those between or within scientific disciplines. The function of IMAGINARIES as associative complexes is to simultaneously shape and limit our understanding of scientific findings. The idea of gene expression within the relationship of DNA and entire organisms is an example here. Another is that of data mining with regard to the retrieval of information from networks of signal transmission. IMAGINATION, finally, points to some generative activity of creative minds figuring out how to recognize unknown phenomena or such not yet conceived nor determined in distinct structures. Albert Einstein who wrote about a dream in which he was riding on top of a sun beam during the time he was struggling to elaborate his theory of relativity, is an example here. How to detect and observe, analyze and understand the constructive dynamics unfolding within the INTERPLAY of images, imaginaries and imagination in science communication? We invited all kind of papers that can contribute to the challenging task of making progress with regard to the question of that interplay of visual, aesthetic, semantic and epistemic forms and practices. Those relevant to technology assessment, health research, informatics and studies of interdisciplinarity were particularly welcome. In this session of our open panel On the Interplay of Images, Imaginaries and Imagination in Science Communication we will hear 5 paper presentations and will discuss our complex topic with some TRANSDISCIPLINARY FOCUS.

Participants:

Visualizing Perspectives on Arizona Helium Extraction *Noa Bruhis, Arizona State University; Kirk Jalbert, Arizona State University*

This presentation examines current discussions related to an emerging helium extraction industry in northeastern Arizona. Helium has many uses, from superconductor cooling to space travel, and is recovered from underground gas sources. Through semi-structured interviews, observations of public meetings, and document analysis of materials produced by government agencies, industry, and activists, this project seeks to understand how stakeholder groups mobilize visuals to communicate different futures with regards to helium extraction and its likely impacts. Concerns and conversations of residents living near an extraction site focus on their dependence on the Coconino Aquifer for drinking water and fears for its health as a resource. In presentations to the public, residents contrast idyllic imagery of their land with photographs of Colorado, which has been impacted by thousands of gas wells drilled in close proximity—a future they fear. Their visual messaging relies on the above-ground, relaying pragmatic rural values and imaginaries of loss with pending extraction. In regulatory spaces, however, activist voices are largely absent, a vacuum filled by the imaginaries of the helium industry. In their pleas for regulatory exceptions, industry members rely on subsurface maps and cross-sections of advantageous geology. These visuals bring abstract imaginations and excitement about economic gains that play to governmental ambitions. In documenting these different styles and modalities of communication, we seek to develop pathways to engage wider audiences in this dialogue and broker conversations between various stakeholders.

Images, Imaginaries And Imagination In Communicating Dementia Through Narrative Picturebooks For Children *Elizabeth Caldwell, Lancaster University*

Recent years have seen a steep growth in the publication of richly illustrated picturebook stories that aim to help children understand the changes that dementia can bring to family life. In addition to producing engaging visual and verbal narratives, these books also have the challenge of communicating health information to young children as well as inspiring positive interactions between children and their relatives living with dementia. This paper presents an interdisciplinary study of 10 picturebooks about dementia and draws on theoretical perspectives from feminist technoscience studies, children's literature, health communication and critical age studies. The study uses analytical approaches from literary criticism and visual studies to interrogate the both visual and verbal narratives and we develop a methodology for analysing visual narratives carried through sequential images. Our analysis reveals that the books frequently utilise ageist tropes of decline in order to represent dementia visually to young children, such as increasing use of technology to support the physical body. However, the picturebooks also present narratives of ongoing personhood for people living with dementia and encourage children to become involved in memorial work to preserve memories and identities for their relatives, both whilst they are living and once they have passed away. These findings reflect both the polyvocal nature of discourses surrounding dementia in contemporary society, as well as the complexity inherent in visual texts.

The Ambiguous Power of Visual Communication in Healthcare *Viola Davini; Matteo Coppi; Ilaria Marchionne, Universy of Florence; Eugenio Pandolfini; marco sbardella, University of Florence*

Visual communication can help to mediate competences necessary to take care of oneself but as well to generate disorientation in all those who interfere with the world of health and healthcare. In fact, there is a clear difficulty in recognizing when a content can be considered authoritative, verified and reliable. Most of the citizens do not have the necessary skills which allow them to deal with the different contents, to analyze them and to evaluate their quality. All these contents have the potential to influence imaginaries that do not correspond to reality and can have consequences in adopting wrong and, therefore, potentially harmful behaviors. In this context, we need to re-establish a fruitful dialogue between the professional experience of doctors, researchers and healthcare staff and the questions of lay persons and citizens that are reflecting "popular" imaginations. The question is whether it is and how it may become possible to do so by supporting medical professionals to take up and to address fears, anxieties and questions as articulated from citizens, clients and patients. Actually we a working on a particular case study about "Who is afraid of childbirth?" in order to intensify our general research in this field (in collaboration with the Materno Infantile Department of the University Hospital of Careggi in Florence). This research responds to critical issues related to the public perception of childbirth and to fears that are associated with that imaginary and will focus on the viewpoints of pregnant women, their partners and their families during pregnancy. Our paper will present the main results of the analysis of the impacts of visual communication - conveyed through films, television programs, websites, social networks - on the womens imaginary and their perception of the risks of childbirth in order to find out how to elaborate a suitable communication strategy. Main References · Bessett D, Murawsky S., 'I guess I do have to take back what I said before about television': pregnant women's understandings and use of televisual representations of childbearing, in «Sociology of Health & Illness», 40, 2018, pp. 478-493 · Lagan B. M., Sinclair M., Kernohan W. G., Internet Use in Pregnancy Informs Women's Decision Making: A Web-Based Survey, in «Birth», 37, 2010, pp. 106-115 · Marchionne, I., Coppi, M., Davini, M. (2020), Il rumore mediatico nuoce alla salute. La comunicazione come strumento per valorizzare la complessità. In Baldi, B. (Ed.), Comunicare ad arte, Milano: Zanichelli, pp. 191-204 · Toschi, L. (2011), La comunicazione generativa, Milano: Apogeo

From Cell to Ecological Pyramid: How Centralized Thinking and Dominance Hierarchy Pervade in Biological Discourse *Charudatta Navare, Homi Bhabha Centre for Science*

Education, Tata Institute of Fundamental Research

We look at the way the ideology of social dominance hierarchy influences biological representations and models. We analyse the visual and verbal discourse of biology by specifically focusing on two cases: (a) the discourse on the biological cell being a centralized system, with the nucleus as the control centre and DNA as the program or instruction manual, and (b) the discourse on predators being dominant in the ecological hierarchy as portrayed through representations such as the Eltonian pyramid. We characterize the ideological nature of biological representations through the analysis of representational and linguistic cues. We dissect the visual representations as well as metaphors to note our tendency of postulating centralized systems and then problematize these centralized narratives by borrowing from complex systems research (Resnick, 1996). We show that the new research, albeit sometimes using the old imagery, creates a picture of both the systems as decentralized ones, without a single stable locus of power and agency. We explore alternative narratives wherein DNA can be input data for the biochemical computing network that is the whole cell (Altman and Koppel, 1990) instead of a program, or simply as a book of ingredients instead of being a recipe or instruction manual. We discuss the affordances that the alternative narratives might provide. Finally, we talk about the two-way interaction between the scientific narratives with the social discourse and analyze the way in which the biological discourse is used to justify and reinforce the social dominance hierarchy and power structures within a society.

Participatory Data Physicalization as a way to design publics through images, imagination and bodily interactions. *Alvise Mattozzi, Free University of Bolzano; Matteo Maria Moretti, Free University of Bozen-Bolzano; Sheldon Studio*

We intend to propose a reflection, based on an empirical analysis of a design project one of us has developed, about Participatory Data Physicalization (PDP). Data Physicalization is a way to display data through physical artifacts in space, which has gained more and more relevance in the information design community and which has become more and more relevant also for the communication of science. Participatory Data Physicalization is a way to engage possible publics in the creation of Data Physicalization artifacts. This is achieved, for instance, by asking people to carry out some actions, like connecting two or more spikes with a rope, adding bricks to a construction or inserting a token in a box, in relation to certain preferences, choices or ideas. We intend to discuss and compare various PDP projects (among which, Barry and Kimbell 2005) on two grounds: on the one hand the way in which PDP practices create a tension between images – the final image which will result through the participation of the public and the initial image of the PDP dispositif – and between images and imagination – the imagination a non completed image elicits. On the other, the way PDP is a device to address public issues and to design a public (Marres 2012; Di Salvo 2015; Le Dantec 2016).

Session Organizer:
Andreas Metzner-Szigeth, Free University of Bolzano
Chair:
Luca Toschi, University of Florence
Discussant:
Andreas Böhn, Karlsruhe Institute of Technology

188. Social Justice in Climate Adaptation Policies
3:00 to 4:40 pm
virPrague: VR 04
Participants:

Adaptation's Unruly Subjects: The Remaking of Climate Change Adaptation Projects in the Ecuadorian Highlands *Megan Mills-Novoa, University of Arizona; Rutgerd Boelens, Wageningen University; Jaime Hoogesteger, Wageningen University; Jeroen Vos, Wageningen University*

As climate change impacts escalate, donors, international organizations, and state actors are implementing adaptation projects seeking to transform landscapes and livelihoods away from climate change vulnerability and towards resilience. While there has been scholarship on the dominant rationalities underpinning climate change adaptation projects (Camargo and Ojeda, 2017; Paprocki 2018; Mikulewicz 2019), it is crucial to also consider the agency of beneficiaries in contesting and subverting those rationalities (Tschakert 2012; Eriksen et al. 2015; Nightingale 2017). Beneficiaries may consent to and/or participate in adaptation projects, but they often reshape these projects to their needs (Mosse 2004; Beck 2017). In this paper, we examine the case of two concluded, internationally funded climate change adaptation projects in Ecuador to understand how adaptation beneficiaries remake adaptation interventions overtime and towards what end. Our findings are based on 104 interviews with adaptation professionals and community leaders alongside extensive participant observation in former beneficiary communities. We find that beneficiaries remake adaptation interventions through four strategies: 1) subverting the discursive frame of climate change for their own socio-political ends, 2) leveraging their longevity by remaking project interventions beyond the close of the project, 3) exploiting ruptures in the state between national, regional, and local governmental actors, and 4) embodying the beneficiary subject for sustained support. This research contributes to the limited scholarship on the enduring impacts of planned adaptation projects, highlighting the situated and slippery nature of defining success in climate change adaptation.

Controversies about softening borders between fresh- and salt water in the Dutch Delta *Lieke Brackel, Delft University of Technology*

The construction of dams and polders has diminished ecological transition zones between the North Sea and the Dutch South-West delta. After the 1953 flood, a dam was constructed that closed off the Haringvliet estuary. Fisherfolk and nature organizations still protest the losses caused by disappearing tidal movement, mangroves, and marshlands. However, fifty years after the dam's construction, farmers and drinking water companies now also claim their right to the created fresh-water lake. Since 2019, a dynamic compromise is enacted: the dam is sometimes shortly opened to improve the ecological transition zone for migratory species. This experiment with controlled salt-water intrusion is meticulously monitored by the competing stakeholders. Interesting from the perspective of STS, is that invoked notions of naturalness and control around the Haringvliet controversy are problematized by the heavily modified state of the Dutch delta. Protesters have expressed their 'right' to different states of the waterbody over the course of this controversy. Moreover, consequences of climate change such as accelerated sea-level rise, salt-water intrusion, and more extreme precipitation pattern variability will raise extra pressures and need to be addressed in climate adaptation strategies. In the future, more engineering efforts and public funds will be required to sustain today's functions, the outcomes of path-dependent development. While the benefits and burdens of sustenance of these functions are unevenly distributed over society. We will use the Haringvliet case to discuss difficulties with incorporating human induced- bio-physical transformations into different accounts of social justice.

Fluid Environments and Fixed Borders: Risk Reduction Misalignment and Social Justice Shortcomings *Craig E Colten, Louisiana State University*

The Baton Rouge metropolitan region has long considered itself an inland, riparian region. With rising sea levels, elevated risk of tropical weather-driven surge in Lake Maurepas, increasing rainfall intensity in the Amite River basin, and rapid development in flood prone locations, its insularity from coastal influences is diminishing. A review of historical flood management policies since a 1983 flood and a series of focus groups with local officials after devastating 2016 floods reveals contrasting priorities between the upstream parishes and the lower basin parishes. Rapid growth of the two smaller, downstream parishes has encouraged development in floodplains and plans do not take climate change into account. Upstream, Baton Rouge has focused on accelerating runoff toward its downstream neighbors. The absence of basin-wide flood mitigation planning and regulation and the lack of explicit

climate change adaption strategies, displaces risk downstream and excludes residents of high risk parishes from decisions that impact their future safety. The combination of mis-alignment between political territories and the evolving riskscape, the denial of political voice to downstream residents, and the inability of smaller parishes to address climate change adaptation exemplifies the challenges that traditionally inland areas face as coastal influence move landward.

Session Organizers:

Sara Vermeulen, TU Delft, Department of Values, Technology and Innovation

Udo Pesch, Delft University of Technology

Neelke Doorn, Professor

Chair:

Sara Vermeulen, TU Delft, Department of Values, Technology and Innovation

189. Genontologies II

3:00 to 4:40 pm
virPrague: VR 05

Participants:

Fragile Configurations: Contested Reproductive Bio-economies Within A Small, Catholic, European Union Island Nation *Shannon N. Conley, James Madison University*

This presentation investigates the formation and negotiation of reproductive bioeconomies within the small island country of Malta. Malta, a predominantly Catholic European Union nation of approximately 500,000 people, is undergoing rapid political, social, and economic changes – such changes include new legislation on reproductive technologies. These policy transformations have taken place against a complex cultural and geo-political backdrop, which includes the country joining the European Union relatively recently, and an opposing push to retain "Malteseness" and a Catholic identity. Such interconnectedness between the nation state and the Church, in addition to membership in the EU, thus results in fragile configurations within Maltese bioeconomies. While abortion has been and continues to be banned, 2012 legislation regulated IVF in a restricted manner (for heterosexual couples only), with gamete donation and surrogacy prohibited. In 2018, updates to the existing legislation opened up access to reproductive technologies to lesbian couples and single people and legalized limited gamete donation. However commercial and non-commercial surrogacy remains banned- in practice prohibiting gay male couples from accessing treatment. The ebb and flow of multiple Maltese identities, such as being an EU member on one hand, and having a strong Catholic identity on the other hand, thus results in complex bioeconomies, further complicated by some, such as gay male couples who cannot access surrogates, in Malta participating in reproductive tourism to access treatments banned within the country. This presentation explores Maltese bioeconomies via analysis of interviews, policy documents, newspaper accounts, official documents from the Roman Catholic Church, and other artifacts.

Anonymize This: Donor Conception, Direct-to-Consumer Genetic Tests, and Privacy in Canada *Janelle Curry, University of Toronto*

Over the last decade, there have been many accounts of donor-conceived people using direct-to-consumer genetic testing kits to find their previously anonymous biological relatives. In this presentation, I will explore the conflicting privacy concerns arising from this appropriation of recreational genetic databases. I base this research on qualitative data collected in the summer of 2019, in Toronto, Canada, during which I spoke to donor-conceived adults about their motivations for connecting with the donated half of their genetics. Their searches were fuelled by the dual desire for social connection and for knowledge to complete their family medical histories. Following the new kinship studies, I situate my data first within the social space from which these desires to know oneself and find truth through genetics have emerged. I examine how the results of my interlocutors' genetic tests created, negotiated, and challenged their sense of relatedness with biological kin. Next, I situate these experiences

in their Canadian context, in which the contentious practice of anonymous gamete donation is still legal (it has been banned in the UK since 2005), and donors' medical records are only required to be kept for ten years (compared to Germany's 110 years). How have state regulations mediated conflicting rights to privacy and to medical information? The aim of this research is to engage with the intergenerational reverberations and unexpected entanglements between reproductive and genetic testing technologies, like these rising privacy issues, through which the clash between state regulation and neoliberal markets can be intimately examined.

Who's On The Bus? - Metaphors In Deliberation About Ethical And Societal Issues Pertaining Synthetic Cells *Bettina Graupe, Radboud University Nijmegen*

One aim within Synthetic Biology is the creation of viable, self-replicating synthetic cells. Technical control of life's basic principles, scientists believe, will enable us to finally understand life and bring a myriad of scientific and societal advancements. However, synthetic cells also create uncertainties about potential risks to human health and environment or shake public perceptions of life. Although functioning synthetic cells do not exist yet, policy makers already stimulate scientists and societal actors to engage in a dialogue about aforementioned issues. However, as we know (Krabbenborg, 2016; Rip and Talma, 1998), scientists do not automatically engage with civil society actors to discuss their research. Moreover, how to anticipate and reflect upon possible ethical and societal issues, when language and opinions around synthetic cells only have begun forming? In this paper I will discuss the design and orchestration of a deliberative experiment, called a Future Panel, aimed at overcoming these challenges. I will show how the participants - including scientists and an NGO - negotiated the meaning of synthetic cells. Most salient was the fact that the scientists and NGO, despite their usually adversarial position, developed a joint metaphor in order to navigate their discussion pertaining synthetic cells. Metaphors influence understanding and public opinions about science (Nelkin, 2001). Thus, exploring the vocabulary and construction of metaphors provides critical information, in this case on what is at stake according to participants and how roles and responsibilities are assigned regarding the governance of synthetic cells, which may help inform forthcoming public engagement activities.

Session Organizer:

Janelle Curry, University of Toronto

Chair:

Janelle Curry, University of Toronto

190. Inhabiting Warming Worlds - Transforming Climate Knowledge

3:00 to 4:40 pm
virPrague: VR 06

Climate change understandings and narratives have mostly relied so far on highly sophisticated expert knowledge measuring and assessing a 'global' climate, thus excluding lay knowledge and experiences of shifting patterns in local weather and environments (Jasanoff, 2010; Turnhout et al. 2016). This panel aims to unsettle this 'de-terrestrialized' and globalized view of climate change and to focus instead on locally embedded knowledge and 'ordinary' experiences of how the climate is changing in specific places, and how it impacts the local environments and everyday life of inhabitants. Following recent attempts to redefine environmental knowledge and politics away from regimes of official expertise, international negotiations, and public, front-of-stage controversies, and to look instead into the forms of 'slow, intimate activism' that take place in everyday, ordinary practices of knowing and inhabiting warming worlds (Liboiron et al. 2018), we aim to address the capacity of lived experiences for 're-terrestrializing' climate knowledge and politics (Latour, 2019) and fostering new practices of attentiveness, care and local adaptation in a time of climate disturbance . The panel will gather together empirical investigations and theoretical reflections focusing on peoples' experiences of warming environments (including, for instance, heat waves, warmer winters, retreating glaciers, changing seasons, as well as of changing patterns regarding plant growth, soil, animal behaviors or sea levels) in order to examine the epistemological, political and ethical work at play in the ordinary, situated practices of noticing, story-ing and living in warming worlds.

Participants:

Seeking the integration of local knowledge in the observation of social and environmental changes related to global warming: the experimentation of a participatory mapping workshop in Khamagatta (Eastern Siberia). *TRICOT Anne, CNRS et UMR ESPACE Aix Marseille Université; JEAN-JACQUES Marquisar, Université de Guyane; BALLAIS Jean-Louis, UMR ESPACE et Aix-Marseille-Université (AMU); GADAL Sébastien, UMR ESPACE et Aix-Marseille-Université (AMU); ZAKHAROV Moisei, Aix-Marseille-Université (AMU) et Northern Eastern University (NEFU)*

Until very recently, the observation of climate change-related impacts on Arctic and sub-Arctic territories was mainly the domain of geoscience (geophysics and climatology), and it was only during the fourth International Polar Year (2007-2009) that research began to mobilize people to increase knowledge in these vulnerable regions of the globe. During the Fourth Polar Year, research was developed in collaboration with indigenous peoples with the understanding that the people living in these regions at the forefront of climate change were perhaps best placed to observe these dynamics. This movement in favour of integrating local and experiential knowledge has existed since the 2000s, mainly in the Western Arctic zone (Greenland, Canada, Alaska), whereas in the Eastern Arctic zone, in Russia and a fortiori in Siberia, collaborative and participatory approaches are almost non-existent. At the scientific level, the integration of local knowledge constitutes a valuable source of information: when data are virtually non-existent or when the measurements that can be acquired in a limited time (that of a research programme for example) are not sufficient to understand the evolution over time of phenomena. From an ethical and scientific point of view, integrating local or vernacular knowledge implies recognizing it not as anecdotal knowledge but as knowledge systems on the environment and territories, anchored in experimentation. Recognizing and integrating non-academic and local knowledge requires the construction of research production methods in which concerns linked to social and cultural changes and even human experiences are not dissociated from research linked to the evolution of spaces, natural and/or urban landscapes. Finally, this implies the production of knowledge in which the latter take their place in the more global interplay of scientific observation systems for space and the environment. The chosen site is Khamagatta : a municipality in Eastern Siberia, located on the banks of the Lena River north of Yakutsk: a particularly sensitive territory that is emblematic of the fragility of Arctic spaces (melting permafrost, increased forest fires, major break-up floods and bank erosion). These changes, combined with rapid urban and population growth and urban planning that only marginally integrates risk, are factors in the increase in vulnerability. However, the relationship of these societies to their environments cannot be limited to the question of risk, even if this is a major issue. In the Yakut culture, Lena occupies a central place both in the organization of the territory and in the rhythms of life and symbolic activities. It fulfils vital functions such as the supply of drinking water and the link with the rest of the territory (river in summer, land in winter). As a North-South communication route in Siberia, its banks are home to a large part of the Yakutian population: 630,000 of the 960,000 people living in Yakutia live on the flood plains, a legacy of the Soviet era during which this semi-nomadic people were forcibly settled in these areas. On the spiritual level, the relationship with nature is animistic, Lena is assimilated to a female spirit, and it is not uncommon to see offerings placed at the edge of roads, the river or at the foot of trees in order to appease this spirit, which is both nourishing and threatening. We are then led to wonder about the impact of these changes (environmental and social) linked to global warming on the socio-environmental system of these territories of the Siberian Arctic. The communication presented will initially focus on developing the issues related to the integration of local and experiential knowledge in the observation of the progress of bank erosion and flooding in this territory of the Russian Arctic. In a second step and in support of the research developed in the form of a participatory mapping workshop conducted with children in June 2019 in Khamagatta, we will show the scope of the approach, of course its limits and the perspectives envisaged in the framework of further research.

Knowledge Production Amidst the Volatile Space-Time of the Halley VI Antarctic Research Station *Spencer Adams, University of California at Berkeley*

The Halley VI Antarctic research station is, as its name suggests, the sixth in a line of research stations developed by the British Antarctic Survey to sit atop floating ice sheets. Each of the first four Halley stations lie abandoned on ice sheets at the edge of the Antarctic land mass, while the fifth was demolished in 2012, when Halley VI became operational. Uniquely conceived and built as a mobile research base, Halley VI was designed to withstand the volatile conditions that left prior stations inaccessible. In this paper, I take up the Halley VI research station as a speculative spatial form that, in its designed mobility, uniquely temporalizes scientific research amidst a hostile and ever-changing landscape. Through a mix of archival and ethnographic work, carried out at the Cambridge-based Scott Polar Research Institute, I consider the way the space of the Halley VI research station figures its own precarity and how this bears on and re-orients the day to day research practices of scientists working there. How does the time of the everyday life of Halley VI occupants coexist alongside the volatile time of a hostile and increasingly crisis-ridden landscape? And how might we situate the knowledge production emanating from the station in terms of the distinct space-time produced through and amidst it? If Halley VI exists at a far extreme of environmental hostility, I would argue it nonetheless reflects a privileged site for thinking through the problems of locally produced knowledges in shifting and threatened landscapes, offering a glimpse into the threats and concerns that climate research and knowledge production more generally will increasingly face and navigate in an ever-warming world.

Contextualising Environmental Activists' Knowledge Practices on Climate Change Adaptation in a German City *Catharina Lueder, Ludwig-Maximilians-Universität Munich*

Andreas has been engaged with nature since ever. His knowledge of nature is fed by his everyday practices (Shove et al. 2012) which aim at transforming the city he lives in into an edible city. In my ethnographic research I collaborated with Andreas and his colleague Julia to find out how we could establish infrastructures that helped other citizens to live a sustainable lifestyle. Their project aims at climate change mitigation on a micro level. In this contribution, I draw on ethnographic material showing how their knowledge practices relate to knowledge of other experts, for example city authorities, in adapting the city's nature-culture environment to a warming climate that was perceptible in Germany especially throughout the last two years. Both activists gain knowledge about changes in nature-culture city environments in a different way than actors of the city's authorities (Harris 2007). They are representatives of a nature-culture perspective on city environments (Haraway 1991) that has a long tradition in environmentalist milieus and is gaining popularity in public debates on climate change. Societal self-reflection as an ongoing process is developing out of historically interwoven elements. Recent debate on climate change has seen a shift from only relying on expert knowledge towards rethinking how we live together on an everyday basis (Tsing 2017) in a warming world. Both forms of knowledge are vital for societal transformation and with Julia and Andreas we can see how different experts' knowledge practices interact on a city level.

'What Can I Do To Address Climate Change?': Ethical Dilemmas In A Warming World *Anshu Ogra, King's College London*

This paper is based on an innovative course syllabus I am developing for master's students in climate change to teach ethical reasoning using an STS lens. The frequently asked question 'What can I do to address climate change?' represents a learnt need to act coupled with a lack of direction to do so. This 'lack of direction' is indicative of an ethical dilemma emerging from a spatial and temporal disconnect between 'global'/'objective' narrative of the (climate) sciences and the situated experience of lived everyday life. Using feminist science studies concept of situated knowledge as a critical pedagogical

tool to challenge the domination of scientific narrative in climate change discussions this paper argues that the defining characteristics of feminist objectivity— 'context', 'interconnections' and 'place'— are also central to the philosophies of Shunyta in Buddhism, Advita Vedanta in Hinduism and Tawhid in Islam. Like feminist objectivity these three philosophies argue that everything exists through interconnections in a given context and nothing exists by itself (refuting the idea of scientific objectivity). The paper argues the need to explore climate change narrative using feminist objectivity and understand how this new narrative can speak to both, the traditional religious philosophies and sciences, when seeking ethical guidance to inform everyday actions to address climate change. The argument for this paper and course syllabus is based on my PhD work which explored the situated narratives of climate change in coffee grower's community in South India and examples from this case study will be used in the presentation.

Session Organizers:
Celine Granjou, University Grenoble Alps
Coralie Mounet, University Grenoble Alps
Séverine Durand, University Grenoble Alpes
Chair:
Celine Granjou, University Grenoble Alps

191. STS Perspectives on Innovation: Significance and Agency in Emerging Worlds - 2
3:00 to 4:40 pm
virPrague: VR 07

There is now a well-established story of STS and innovation studies working at some distance from one another, with innovation scholars sometimes calling for a closer relationship with STS in order to repair this division. However, there have always been good examples of STS scholars working across both fields – and contributing to each. At the same time, there is a growing strand of STS research which addresses innovation in terms (for example) of imaginaries, co-production, responsibilities, transformations and incumbencies. Very often, such research challenges the universalistic claims made for innovation and instead stresses the contingencies, multiple possibilities, interruptions, emergences and contexts within which specific innovations are enacted. Themes of innovation cultures, futures, regenerations and democratic engagement are also important here. This open panel invites contributions from STS scholars whose work addresses the broad topic of 'innovation in emerging worlds'. We welcome empirical studies exploring innovation in specific contexts but also those which seek new conceptual possibilities regarding the relationship between STS and innovation. What place can – and should – the study of innovation play within STS?

Participants:

Innovation at the Margins: Lived Conceptualizations of Technoculture in Havana *Michaelanne Dye, School of Information at University of Michigan*
Increasingly, STS scholars have adopted a commitment to decenter sites of innovation through explorations of often overlooked practices among communities at the margins of what has traditionally been considered innovation. Based on ethnographic fieldwork conducted throughout 2014-2020 in Havana, Cuba, I explore the innovative ways that people create their own versions of the internet, acting through the Cuban cultural ethos of resolver. Resolver literally means "to resolve" or "to solve" but, in Cuba, it is a cultural ideology describing the ways people collectively invent, make do, and persist alongside hardships. Despite often overly-positivist framings of grassroots innovation, my work illuminates the ambiguous nature of innovative practices in Havana, highlighting how the need to innovate provides avenues for agency but also exists within an environment of struggle. As innovation becomes increasingly tied to development narratives, particularly in "emerging worlds," my paper argues for the incorporation of STS into innovation studies through an emphasis on the lived conceptualizations of technoculture and innovation, noting the value that communities derive from such practices and not granting innovation values that it does not have in practice.

Innovation observed: How world views co-produce emerging worlds *Nona Schulte-Römer, Helmholtz Centre for Environmental Research - UFZ*
LED technology is widely considered as a 'disruptive innovation' which will eventually transform the world of lighting. This paper describes the emergence of new worlds through the eyes of various professional and non-professional observers of the LED innovation process. Observations of new science and technology are a recurrent theme in STS studies. In fact, empirical accounts of scientific experiments, technology tests, public demonstrations and trials that co-produce specific forms of observation have been foundational (Shapin et al., 1985, Gooding et al., 1989, Bijker, 1987). Yet, how such different modes of observation relate to innovation systems (cf. Lundvall, 1988) remains widely unexplored. This paper makes a start. The theoretical argument is threefold: 1) Innovation depends on observation as a prerequisite for the valorisation and adoption of new ideas, products and processes. 2) Practices of observing innovation reflect their specific socio-material configurations. 3) Observation practices co-produce stakeholder roles—innovators, lead-users, laggards, (silent) publics. These arguments are empirically grounded on ten years of research in the field of lighting. STS scholars will not be surprised to hear that the observed observations have also shaped LED technology.

Reconciling the demand side for calculative practices around uncertainty *Denis Fischbacher-Smith, University of Glasgow*
This paper considers the processes by which the demand side for judgements around the probabilities and consequences of hazards are invariably exceeded by the organisational capabilities to provide such judgements. This is particularly problematic when dealing with innovative technologies or emergent disease outbreaks due to the direct and indirect uncertainty that often exists in both the data available for analysis and the underpinning scientific knowledge base used to analyse that data. Taking the seminal work of Knight as a starting point, the paper argues that many of the attempts to quantify uncertainty should not be categorised as risk (which Knight terms measurable uncertainty) due to the inherent lack of predictive validity inherent in expert estimates associated with both the probabilities and consquences of a hazard. The argument is developed to consider how the various calculative practices associated with risk management invariably codify the uncertainty that exists in risk calculations which then makes effective discussion around the underpinning science subject to a range of external influences which further mask the uncertainty in the process. The paper concludes by arguing that the demand side for risk calculations will invariably outstrip the ability of risk analysis to provide the certainty that policy makers seek. The paper speaks to existing work in STS on the role of expertise in the policy making process and reflects on the authors own role as an expert assessor for a major public inquiry and within a government department in the UK.

Trouble along the S-curve: innovation studies, the acceleration of sustainability transitions and potential modes of engagement for STS *Tomas Moe Skjølsvold*
Within studies of sustainability transitions, innovation scholars are increasingly pushing the imperative of accelerated transitions, often understood as increasing the rate of innovation, the diffusion of innovations, growth in green investments or through speeding up the decline and phase out of existing socio-technical systems. This paper reviews literature on accelerated transitions, to examine what acceleration is understood to entail, both in terms of practical endeavors and theoretical understandings. The paper identifies thee distinct operationalizations of acceleration in the context of sustainability transitions: a) acceleration as implicit imperative, b) acceleration as innovation and diffusion, and c) acceleration as a phase of transition. Building from this, the paper finds inspiration in social acceleration theory (e.g. Rosa 2003; 2015) which highlights the general incompatibility of acceleration and democratization in late modernity, and literature in STS calling for a new focus on increased, diverse and systemic modes of participation in transitions (e.g. Chilvers and Kearnes 2017; Marres 2016). It mobilizes these literatures to discuss potential modes of engagement with such issues for STS-scholars who on the one hand might voice concern for the unintended consequences of accelerated innovation, but who none the less

might recognize the need for rapid changes in non-sustainable socio-technical systems.

Ways of seeing: on the borderlands of STS and Innovation Studies *Alan Irwin, Copenhagen Business School*

There are many stories to tell about the development of STS and many 'localizations' to consider. In this presentation, I will focus on the relationship between STS and Innovation Studies (IS). The study of innovation represents a key intellectual zone - or borderland (Strathern, 2004). Innovation talk is ubiquitous at a global level (Pfotenhauer and Jasanoff, 2017). And STS has a long heritage in the area of 'innovation', including current discussions of 'responsible innovation' (Owen and Pansera, 2019; Stilgoe et al, 2013). However, while this important work has been going on, a large edifice marked 'Innovation Studies' has been constructed right outside STS' front door. Some STS colleagues have even made significant contributions to this. But it does raise the question: how should we view the relationship between STS-based work on innovation and the field of Innovation Studies (IS)? While STS has been shaping its identity, IS scholars have been doing likewise – drawing more obviously on policy-oriented and economics-based perspectives. What should be the reaction of STS scholars to the development of a field which puts both the concept of innovation and economic-oriented theory front and centre of its activities? Is this a time for rescuing 'innovation' from those who wish to link it to R&D investment, national systems of innovation (NSI) and company success? Three possible reactions from STS scholarship will be considered: 'the counter-attacking', 'the reflective' and 'the responsive'.

Session Organizers:

Alan Irwin, Copenhagen Business School

Jane Bjørn Vedel, Copenhagen Business School

Chair:

Jane Bjørn Vedel, Copenhagen Business School

192. Strategies for Knowledge Coproduction in the Agrifood Sector - session 2

3:00 to 4:40 pm

virPrague: VR 08

During the last decade of the 20th century STS of agri-food sector interrogated the wisdom of focusing in technological solutions as the way to solve the problem of unsustainable agri-food systems. The STS critique has shown that the most promissory technologies have felt short of expectations, whilst allowing research institution to capture financial resources that could have been used more effectively, particularly in developing countries. Following such critique, public and private research institutions began reforms aimed to facilitate knowledge coproduction and co-innovation. Have such political reforms, and changes in institutional changes made any difference in terms of developing territorial innovation systems (TIS) that incorporate local knowledge and agency of territorial actors? Presentations of this session would critically examine political reforms and/or changes of institutional settings with aim to advice policy reform and implementation to better enable co-innovation process in the sector.

Participants:

Consuming Anthropocene: Transformations of Not-so-human Food *Giovanni Orlando*

Food is one of the most ancient ways through which Homo Sapiens has defined what she is not. This parsing usually employs a structure of difference based on the distinction between the edible and the inedible. Edible foods define us because they contain substances we approve of — as cultural groups, scientists, gourmands, etc. Inedible foods include substances we censure, thus defining the non-human — historically other social groups, animals (wild foods, pet food), and perhaps in the future also robots ("soap" in David Mitchell's Cloud Atlas, nondescript paste in Blade Runner 2049). This structure of difference rests on the combination of notions of nature and culture in cross-culturally diverse ways. This paper seeks to understand how the edible is transforming into the inedible during the Anthropocene, an epoch that many see as being characterized by the demise of the nature/culture distinction due to environmental damage. Empirically, the paper examines ethnographic materials on organic foods in Italy, looking at changes in the relationship between diet, body, and nature resulting from socio-natural processes of "pollution." It analyses in particular organic food consumers' discussions of mediatized food scandals, focusing on four alchemical agents: recombinant DNA, glyphosate, dioxins, and radionuclides. It shows how food is now often believed to be dangerous due too its artificiality, or in other words, how a once wholesome substance has transformed into a risky one. This evidence speaks to the idea that there is now only social nature — a shift that is causing edible foods to become not-so-human.

Macaúba As An Internationalizable Object: Connecting Diverse Socio-technical Imaginaries *Daniela Alves de Alves, Universidade Federal de Vicosa, Brazil; Victor Luiz Alves Mourao, Federal University of Viçosa (UFV-Brazil)*

This article seeks to investigate at the process of internationalization of science taking as its starting point a research laboratory in the field of agrarian sciences. Based on the literature produced in the field of Science, Technology and Society (STS), especially actor-network theory and socio-technical imaginaries, the paper seeks to understand the relations, agents and symbolic configurations involved in the formation of an international research network about Macaúba, a Brazilian native plant. Based upon interviews with laboratory researchers and an ethnography performed in this space, the analysis argues that the process of internationalization of macaúba occurred in a process of co-production of nature and society, in which its potential as a plant and source for knowledge were built together with its adherence to diverse socio-technical imaginaries and to networks of different scales. Thus, aspects related to environmental and sustainable imaginaries are linked to geopolitical imaginaries around elements of knowledge, such as center and periphery, to allow the displacement and production of macaúba as an object of knowledge throughout the international space. The research aims to contribute to the field of research on the internationalization of science, bringing attention to symbolic and imaginary aspects of these processes.

Capturing knowledge in a neoliberal vacuum. Power struggle around the datafication of agriculture in Kenya *GIANLUCA IAZZOLINO, London School of Economics and Political Science; Laura Mann, London School of Economics*

Recent years have seen the explosion of the AgTech landscape, with a growing number of tech firms developing digital solutions for farmers in both rich countries and emerging economies. Often couched in the language of environmental sustainability, these initiatives aim at increasing efficiency along New Institutional Economy (NIE) terms, thus addressing transaction costs, information asymmetries and property titles. However, a little-discussed aspect of the implications of the digitization of agriculture is the impact of AgTech on knowledge production. In this paper, we examine how the digitization of agriculture by tech firms is reshaping power struggles around the production of agricultural knowledge. Focusing on Kenya, a large African living laboratory of technology experimentation in agriculture, we discuss how AgTech firms are capturing value through the reorganization of agricultural knowledge. We argue that, in Kenya, the growing datafication of agriculture challenges existing frameworks of collaboration between the public and the private sector. We thus highlight the risk that multinational agribusinesses and technological corporate giants would leverage discourses of co-production and co-innovation of agricultural systems to take advantage of the neoliberal vacuum which is a legacy of structural adjustments, by shaping knowledge rents and expanding their control of national agricultural production.

Session Organizers:

OSCAR A. FORERO, AGROSAVIA; SOAS-UK

Erika Vanessa Wagner-Medina, AGROSAVIA, Colombia

Chair:

Erika Vanessa Wagner-Medina, AGROSAVIA, Colombia

Discussant:

OSCAR A. FORERO, AGROSAVIA; SOAS-UK

193. Broken and Livable Futures with Automated Decision-

Making – II
3:00 to 4:40 pm
virPrague: VR 09

The growing use of automated decision-making (ADM) makes automation increasingly relevant to the lived experience of people, with examples ranging from credit scoring and predictive policing to self-care within health services and automated content moderation. A technological imaginary favours the strengthening of existing infrastructures with ADM: it is characterized by political-economic aims of efficiency and optimization. A critical imaginary, in contrast, questions technological developments: recent research details problematic aspects of ADM systems, for instance, their connections to discrimination and inequalities, and their lack of transparency and accountability. Our panel concentrates on re-articulating ways in which ADM systems are currently described and debated. To make possible a creative move beyond the dominant logics of automation driven by the technological imaginary, scholars themselves should bypass their critical imaginary and explore alternative conceptualizations and frameworks. Therefore, we seek to open a practical and analytical space for the re-articulation of ADM systems and their effects. Papers demonstrate that new socio-technical directions are possible, bringing into being ADM futures that we would rather live in. Various theoretical or methodological approaches might be employed, including broken world thinking to highlight breakdown, dissolution and change as starting points in discussing ADM (Jackson, 2014); situated interventions that experimentally engage with ADM practices to produce new normative directions (Zuiderent-Jerak, 2015); or feminist approaches offering alternative ways to care for socio-technical arrangements (Puig de la Bellacasa, 2012). Together, the papers can reinvigorate research on ADM systems and identify harms and benefits that are currently not addressed.

Participants:

Discursive Patterns Created Through Co-occurrence Of Hashtags On #Goodlife Instagram Posts: Implications For Sustainable Futures *Anastasia Loukianov, University of Surrey; Kate Burningham, University of Surrey; Tim Jackson, University of Surrey*

The stories we tell about what living well means are crucial both to the maintenance and normalisation of our existing ways of living and to the possibility of envisioning and transitioning towards fairer and more sustainable ones. Social media is a relatively recent mean of interaction and the implications of the good life stories that are told on social media for the possibility of fairer and more sustainable futures have yet to be explored in STS. Social media platforms establish a range of interactional conventions and are supported by algorithmic infrastructures which are likely to shape the construction and maintenance of understandings of living well. In this paper, we explore how the use of hashtags on Instagram shapes the visibility and recognisability of understandings of the good life. As linguistic segments and hyperlinks, hashtags carry out an important patterning of the discursive space as they both solidify semantic relationships between thematic aspects of living well and direct the discursive flow. Using a creative approach to network analysis, we map the co-appearance of hashtags – classified thematically based on semantics - in 793 posts tagged #goodlife to explore the formation of narrative and hyperlink patterns. We argue that a consistent use of hashtags supports the visibility and recognisability of narrative patterns. The visibility and recognisability of narrative patterns is shaped by algorithmic infrastructure and often favours corporate interests. However, some themes could support fairer and more sustainable understandings of living well – we suggest mechanisms through which they could be promoted.

Level up or Game over: Labour in the platform economy *Funda Ustek-Spilda, Oxford Internet Institute, University of Oxford; Fabian Ferrari, Oxford Internet Institute; Mark Graham, Oxford Internet Institute; Alessio Bertolini, Oxford Internet Institute; Adam Badger, Oxford Internet Institute*

Automated decision-making systems are at the centre of the platform economy, with an ever more stress on automation, efficiency and optimisation regardless of the context or the impact on humans involved. In this paper, based on our ongoing fieldwork into conditions of work in the platform economy in India, South Africa, the UK and Germany as part of the Fairwork Foundation, we look at automated decision-making through the lens of gamification: the use of game-like system design for non-game contexts. Platforms use gamification techniques for setting up contracts, benefits and allocating incentives to workers and increasingly invite workers to play the game by introducing lucrative offers for those who meet daily or weekly targets, by staying active on the platform round the clock, by recruiting new members to the platform and so on. We question what it means to gamify the basic tenets of labour both from a socio-technical perspective by looking at the infrastructures that enable gamification; but also from a justice and fairness perspective. Using Puig de la Bellacasa's framework for care ethics, and especially three types of resistance: "thinking with", "dissenting within" and "speaking for", we explore workers' possibilities and capabilities of carving out liveable futures when the focus of companies and their investors remain solely on scaling up or otherwise facing 'game over' in the markets they operate in. We argue that workers develop innovative strategies to cope with the increasingly automated decisions platforms make about them, but their abilities to 'game the system' remain very limited, as platforms hold an unbeatable advantage in data and resources. We thus propose that creating liveable futures in platform economy is only possible through establishing fair work standards that are legally binding and enforced.

Providing control or freedom or both? Developing customer relationship in the not-yet market of behaviour-based insurance *Maiju Tanninen, Tampere University; Turo-Kimmo Lehtonen, Tampere University; Minna Ruckenstein, University of Helsinki*

With the development of (big) data analytics and the hype around the market possibilities of such practices, companies are increasingly using digital technologies to become involved in people's lifeworld. Through producing digital 'maps' (Thrift, 2011), service providers aim to create spaces in which people's and the companies' co-existence feels 'authentic'. This development has been met with social scientific analysis and critique focusing on cases of dataveillance, discrimination, and exclusion. However, only a few studies analyse how companies design the 'maps' to encompass people's everyday life. Through our case study of two Finnish behaviour-based insurance policies, that is, life insurance schemes utilizing self-tracking practices and sensor-generated data, we follow the design process of a new insurance technology that is supposed to participate actively in the customers' lives and manipulate their behaviour. The paper is based on interviews with the insurance companies' employees and participant observations in insurance professionals' meetings, conducted in 2018 and 2019. Our empirical materials indicate that instead of a simple matter of technical choices, becoming a part of people's everyday life is a process of negotiations and knowledge production. Alongside with the companies' targets, the service providers must regard not only their customers' desires and needs, but also the regulatory and the market context. The case of behaviour-based insurance allows us to follow these negotiations and their failures, and to study what kinds of knowledges and practices are inscribed into the digital map of the new insurance technologies.

Session Organizers:
Tuukka Lehtiniemi, University of Helsinki
Minna Ruckenstein, University of Helsinki
Chair:
Minna Ruckenstein, University of Helsinki

194. **Moralizing the data economy: Coping with moral ambiguities**
3:00 to 4:40 pm
virPrague: VR 10
Participants:

The Dirty Work of Optimization in Contemporary Rating Schemes *Malte Ziewitz, Cornell University*

When measures come to matter, those measured find themselves in a precarious situation. On the one hand, they have a strong incentive to respond to measurement so as to score a favorable

rating. On the other hand, too much of an adjustment runs the risk of being flagged and penalized by system operators as an attempt to 'game the system.' So how do those subject of these practices navigate the double bind? What to make of this peculiar kind of moral regulation? In this paper, I explore the 'dirty work' (Everett Hughes) of optimization in contemporary rating schemes like web search engines and credit scoring systems. Drawing on ethnographic fieldwork with optimization consultants and related industries, I show how data subjects artfully arrange themselves to cope with moral ambiguities provoked and delegated by the operators of the system. In particular, I am interested in the rise of services that promise to take on the 'dirty' work of optimization on behalf of paying clients. These industries, I suggest, are central to the operation of these systems while posing moral problems of their own. Exploring this phenomenon will not only shed new light on the politics of platforms, but also complicates recent work in STS on fairness and accountability in data-driven systems.

Wealth of Networks or Gain of Data Economies? Optionality vs. Predictivity on a Fitness Platform *Carsten Ochs, University of Kassel*

When the Internet took off in the 1990ies its networking capacities were deemed to foster social connectedness (e.g. Castells 1996; Wellman 1996) and allow humans to thrive despite „second modernity's" neoliberal impositions (Zuboff 2019): "networked individualism" promised to counter the hollowing-out of public institutions and still facilitate autonomy etc. (Benkler 2006). In this sense, networked sociality was associated with what I call optionality. However, as data economies started in the 2000s to exploit human experience in order to produce and market behavioral engineering potential connectedness was turned into connectivity, resulting in a digital narrowing down of behavioral options: among the shades of optionality data economies' behavioral predictions had cultivated the countervailing forces of predictivity (van Dijk 2013; Christl 2017; Zuboff 2019). In my presentation, I will demonstrate how the structural contradiction between optionality and predictivity plays out empirically when humans attempt to become subjects on health and fitness platforms. To do so, I will present a collaborative ethnography of Runtastic (Adidas Running by now) which combined different methods to account for various facets constituting the platform's data economy (situational mapping: network overview; discourse analysis: subject interpellations; autoethnography: practices; interviews: interactions; technical app analysis: data flow; business model canvas: revenue information). The translation of optionality into predictivity on the platform results in value translations that constitute a moral-political dilemma: the more actors engage in becoming subjects the more they are to be turned objects. Moralizing the data economy requires to break into this scheme to safeguard the optionality of the digital.

Of intimate narratives and superficial measurements: affective computing, intention recognition, identity estimation *Henning Mayer, TU Munich*

Regardless of whether it is humanoid robots, chatbots or social platforms: Algorithmic technologies primarily access humans via surface data (Krasmann 2020, Introna 2017). This means that visible activities, body expressions or text content are used to infer internal states such as identity, affectivity or intentionality. This behaviorist approach is rather old and still oriented towards socio- and psycho-cybernetic concepts of the 70s and 80s. At the same time, a discursive reframing of what should be measured and shaped with and by AI is currently taking place: Zuckerberg (2019) has proclaimed the time of a comfortable 'virtual living room' in which people know each other and can therefore be private. Within the scope of affective computing, 'empathetic robots' are promised as "pleasing little sisters" (Picard 2010: 124), which should make you happy before you feel unhappy. And in an emerging consulting industry that relies on AI, coaching chatbots are presented as opportunities that promise confession without feeling ashamed (i.e. https://woebot.io/). My paper examines this ambivalence of ‚comfortable family narratives' and superficial measurements with multi-sited ethnographic methods (Bosma 2020) by looking at three case

studies: a) The way in which programmers in AI-Coaching startups use "storywriting" techniques to construct connections between ‚what is said' and ‚what is meant', b) the practices of roboticists who use affective computing procedures to derive discrete emotion profiles of users from externally visible expressions.* And c) the production of consistent user identities by cross-measuring user behavior across different action contexts as it is currently being explored by Facebook's research department. *The data (programming thinkalouds, field notes, code scripts, video files) for a) and b) stem from collaborations in which I worked together with the developers over several months on the "socialization" of their algorithms.

Dancing with shackles: a brief study of constraints of traffic data users *Zheng Li, National Academy of Innovation Strategy, CAST; Di Liu, College of Metropolitan Transportation, Beijing University of Technology; HUI LUO, National Academy of Innovation Strategy,CAST; Zhengfeng Li, Institute of Science, Technology and Society, Tsinghua University*

Moralising the data economy in the post-GDPR time has offered STSers a chance and duty to observe, interpret, and construct people's inner beliefs of how to use personal data in more proper ways. Taking the digitalising transportation for example, this paper focused on typical arguments on traffic data usage in China during the past 5 years. Around 100 published discourses from academic researchers, news reporters, industrial practitioners, and lawmakers were selected and studied. Under the method of Qualitative Data Analysis through NVivo software, the main concerns in the texts were statistically analysed by frequency of words. Four types of requirement emerged through clustering analysis, which were labeled as market, technology, administration, and culture. Cross analyses based on the requirements showed that different players/stakeholders were mutually constrained while making trai-and-error progresses in the community of transportation. Risk preference and collective consciousness could be two moral guidelines that might help STSers sketch and explain the boundaries of data acquisition, application, and supervision in China.

Session Organizer:
Kevin Mellet, Orange Labs

Chair:
Thomas Beauvisage, Orange Labs

195. Health, care, (dis)abilities IV
3:00 to 4:40 pm
virPrague: VR 11
Participants:

Unintended Pregnancy and Contraceptive Programs and Policies As Poverty Regulation Devices in the U.S.: A Genealogy *Kelsey Wright, University of Wisonsin, Madison*

Recently, policymakers, researchers, and others, have taken seriously the proposition that increasing access to contraception will both reduce unintended pregnancies and help women escape poverty. Some have gone as far as articulating the relationship between contraception, unintended pregnancy, and poverty as being "obvious," "profound," or "generally accepted." However, the empirical evidence linking U.S. federal or state contraceptive programs, unintended pregnancy, and poverty is contradictory and inconclusive. Existing research has mainly focused on linking the effects of contraceptive provision among low-income, teenage and unmarried women to subsequent births or socioeconomic outcomes, generally reflecting imaginary moral consequences of "cultures of poverty." Here, I argue that the logic of contraception-as-poverty-solution retains its significance in existing policies and research due to the social construction of unintended pregnancy as a politically salient space for regulating "othered" bodies, despite limited empirical evidence linking contraception, unintended pregnancy, and poverty reduction. I first create a genealogy of federal and state contraceptive programs and policies in the U.S. This genealogy creates a "family tree" of the rhetorical use of poverty-reduction logics in current and historical contraceptive programs in the U.S. Second, I examine existing empirical evidence that links federal- or state-

contraceptive policies and programs to 1) unintended pregnancy outcomes and 2) socioeconomic outcomes. I use this evidence to examine how contraceptive programs have been employed politically to put the burden of poverty reduction on women's reproductive bodies, attribute social inequalities to the reproductive practices of individuals, and to legitimize the regulation of fertility and bodies.

"Whatever Works". Building Psychotherapeutic Style in Private Practice *Elsa Forner-Ordioni, EHESS (Paris, France)*

Psychologists and psychiatrists usually start their early career in mental health institutions, dealing with all sorts of mental disorders before setting up as independent practitioners. After learning how to work on highly stressing organizations with standardized protocols, emergency issues and time constraints, setting up as private practitioners is often an exit to reclaim their time in a private space where they can build a therapeutic style of their own. Do they talk about these new perspectives, switching from the hospital constraints to a new status, sometimes comparing themselves to a craftworker in his workshop? Does their professional vision change in the process, getting more leeway in action though less institutional power? Studying cognitive and behavioral practitioners in France and more specifically therapists recently set in private practice, this ethnographic study relies on interviews and observations. This presentation will pay attention to the way these professionals set new therapeutic assemblages, considering each patient, putting new techniques to test, paying attention to small things and singularity. Through this learning process, they re-evaluate and re-create the diversity of their actions and the possibilities of talk therapy without medication. This presentation will show how these new private practitioners progressively shape and settle their own tools, getting deeper and more reflexive on the human part of the practice. By designing therapeutic assemblages, getting diversity back in the "lab", re-enchanting a new professional world, they develop an ecology-oriented vision of care, they explore a full range of techniques and tools, « whatever works » for each patient, focusing on the good in their everyday care practice.

Look at the Numbers: Charting Surgical Practice in China *Bonnie Odelia Wong*

"My colleague asked me what our post-operative fever rate was. I was embarrassed that I had no idea. After searching our charts, I calculated it to be 24%. He had said 30%. Does this mean we are better than them? Does it mean that they are more detailed in monitoring patient data? Do we just categorize patients differently?" Numbers, and comparisons between certain numbers, are agentive in creating shame or pride, in shifting practice and questioning knowledge, and in making claims of truth. This paper examines the role of numbers and metrics in surgical practice, building on conversations on metrics in global health, a questioning of universal and "politically neutral" counting with the growth of health databases, and draws on one year of ethnographic fieldwork at a hospital in Sichuan Province, China. Metrics are an everyday part of a surgeon's life: surgeons are publicly named for exceeding or meeting certain numbers (of cases, discharges, or ICU admissions) and surgeons collect metrics on their own cases, tracking patients in databases that extend back decades. This paper explores how numbers, databases, and metrics, and the comparison and relation between these numbers shift practice for individuals, institutions, and nations, examining the acts of collection, transformation, and comparison which make numbers agentive, and the theaters and fields wherein these numbers operate. It considers the technologies, surveillances, and international structures which have made the work of such databases and metrics possible, as well as futures which these numbers promise and portend.

There Must be Something in the Water – On the Socio-Technical-Therapeutic Infrastructures of Mineral Springs *Sandra Lang, MCTS Technical University Munich*

Apart from spiritual and dietetic purposes, naturally occurring mineral springs have been used for therapeutic practices since antiquity. The natural ecologies of mineral springs and hydrothermal phenomena have attracted patients suffering from numerous diseases ever since. As a result, local water resources were made accessible due to sophisticated techniques of extraction in order to regulate water flow, temperature and purity. The 17th, 18th and 19th Centuries were the golden age of spa towns when mundane spa facilities, clinics, hotels, and gardens were erected. As a result, aquatic ecosystems and environments were transformed into socio-technical-therapeutic infrastructures. A new chapter in the history of balneology and pegology was marked in the mid 19th Century when analytical chemistry came to maturity. The chemical analysis of mineral concentration was interlinked with new epistemologies and knowledge regimes: On the one hand, advancing analytical techniques and clinical studies provided scientific evidence for the assumed healing properties of spa water. On the other hand, the base for the ongoing regime of regulation has been set: Still today, spa medicine is among the most controlled medical spheres in terms of medical education, water quality, clinical evidence, and environmental exposure. This suggested conference paper focuses on the genealogy of the ambivalent relationship between chemistry, medicine, aquatic environments, local communities, legislation and public engagement by focusing on the socio-technical regimes and infrastructures of mineral water in Europe since the late 18th Century.

Session Organizer:
Sandra Lang, MCTS Technical University Munich
Chair:
Sandra Lang, MCTS Technical University Munich

196. Building Digital Public Sector: Drivers behind digitalization
3:00 to 4:40 pm
virPrague: VR 12
Participants:

Co-detecting and Co-defining Clients with AI within Health and Social Care *Juha Koivisto, Finnish Institute for Health and Welfare*

This theoretical paper defines a preliminary framework for co-studying the design and use of AI solutions which aim at detecting persons at risk to become users of several health and social care services. These clients are an expensive and wicked challenge for the health and social care system. The persons who may become these kinds of heavy users should be detected as early as possible to organize the support they might need. This paper tackles these kinds of activities and challenges from the STS perspective. The research framework focuses on the design activities of these kinds of AI solutions, on their enactment in different sites, and on the use of the information they produce for organizing care. In the framework the design and use of AI solutions is co-studied with three user groups: 1) strategic and operational management, 2) health and social care professionals, and 3) clients. The different design and use activities are studied as performative activities that detect persons, but that also define them and their needs as well as the needs of the other actors around the AI solutions. Besides, the enactment of an AI solution in different sites is studied as biographies of artifacts. This paper contributes on STS by opening and domesticating the abstract thing called "artificial intelligence" by defining a framework for co-studying the design, use and biographies of AI solutions.

Promising Too Much? Using "Situation Room" As A Policy Instrument In Building Data-drivenness In Finland *Marja Alastalo, University of Eastern Finland; Marta Choroszewicz, University of Eastern Finland*

Bright and promising cost-efficient data-driven futures of social and health care are envisioned by the various actors - the companies providing consultation and technologies for data analytics as well as public sector actors craving to mobilise those technologies. During past decades concepts such as sociotechnical imaginary, expectation, promise and vision have been widely used in STS flavoured analyses to capture how these imaginaries and expectations shape contemporary societies (e.g. Jasanof & Kim 2009, van Lente 2012). Drawing on our empirical observations we argue that the promises not only shape, but they are actively used to promote certain agendas and to legitimise resource requirements and to downplay opposition or to turn it to appear as (irrational) resistance to change. Furthermore we

suggest that it would be fruitful to conceptualize these promises as policy-instruments (Lascoumes & Le Galés 2007). In this presentation, we use ethnographic approach to trace how an attention-catching exemplar of health and social data analytics, i.e. "situation room", was used to promote a particular data-driven regime. The situation room was meant to be a site from where anyone could at any time get real-time information about that hospital district. Our ethnographic fieldwork was conducted in a Finnish hospital district in 2019-2020 as a part of the project "Data-Driven Society in the Making".

Toward an Anticipatory and Personalized Treatment Plan: A Glimpse into Datafication of Healthcare Fused in Practice
Ilpo Helén, University of Eastern Finland; Heta Tarkkala, University of Eastern Finland

In our presentation, we examine how expectations and a sociotechnical imaginary of data-driven personalized medicine (Tarkkala et al. 2019) are played out, or 'fused in practice' (Jasanoff 2015), in a setting of an endeavor to plan and implement 'cognitive' healthcare and social services in a Finnish region with over 300 000 inhabitants. Based on expert interviews, planning documents and research reports, we analyze what advanced data mining technology is expected and planned to do, and how healthcare organizations and professionals anticipate and get prepared to implementation and adoption of new ICT technology and data-driven healthcare practices. Our analysis is focused on an idea of 'anticipatory and personalized treatment plan' that is highlighted in both interviews and documents. This idea seems to have two roles in expert reasoning. First, it is an emblem of improved and more precise medical care that advanced data mining and management technology promises to deliver. Thus, the personalized plan articulates the imaginary of personalized medicine in the context of actual healthcare practices and provides a concrete vantage point for 'future medicine'. Second, the experts planning and making 'cognitive' healthcare reform use the personalized plan as a scheme or script by which they express and formulate what they want data management and algorithms to accomplish when steering and assisting healthcare in the future. The plan is thus a device of reasoning and communication that translate, redefine and help to reorganize existing clinical practices and other healthcare activities so that they would be understandable' and manageable within the algorithmic machinery, and would also function under algorithmic command. Jasanoff, S. (2015). Imagined and invented worlds. In S. Jasanoff, & S.-H. Kim (Eds.)Dreamscapes of modernity. Sociotechnical imaginaries and the fabrication of power (University of Chicago Press) Tarkkala, H., Helén, I. & Snell, K. (2019) From health to wealth: The future of personalized medicine in the making. Futures 109, 142-152.

Acceleration Tactics, Transparency Requirements: Technology's Impacts On Definitions Of Family In Brazilian Law
Sara Munhoz, Universidade Federal de São Carlos (UFSCar)

I propose to describe how the Brazilian Superior Court of Justice (STJ) digital search platform for legal documentation shapes families. The definition of family has been central in legal and legislative discussions in Brazil and abroad, functioning as a distinctive signal on the party/political spectrum and a recurrent and effective term for conservative as well as progressive agendas; consequently, it is important to describe the technical requirements to define families. These include organization and dissemination of superior court decisions that are precedents in the Brazilian legal system. I will address the impacts of technology meant to ensure swift, secure, and uniform justice, and suggest that accelerator tactics linked to computerization, which respond to emergencies through transparency and accessibility, are neither passive nor reactive. They produce unexpected combinations, bring judicial decisions that might otherwise sink into obscurity back into reach, indicate representative sentences, and discard outliers they consider extreme. Families who can retrieve this data via computers and smartphones become visible through this fine-tuned connection between the law and computers. The classification and disclosure of jurisprudence, restricted to the use of algorithms and filtering

tools that can both highlight and obscure, allow these decisions to be retrieved and added to cases involving similar legal conflicts, consolidating the position of the courts. Through this techno-moral arrangement, the jurisprudence of the STJ pursues its overarching goal: standardizing its interpretations of Brazilian law. Computerized equipment and techniques are essential to defining families within this system.

Session Organizer:
Marta Choroszewicz, University of Eastern Finland
Chair:
Marta Choroszewicz, University of Eastern Finland

197. Collective Forms of Governance
3:00 to 4:40 pm
virPrague: VR 13

Western democracies are facing harsh criticism for their alleged inability to meet their own standards of inclusivity and justice. Against the backdrop of rising inequalities within and across societies, dissatisfaction with the rituals and symbols of representative democracy is mounting. A pronounced anti-establishment rhetoric is eroding the institutional culture of democracy, its reliance on scientific and other established sources of knowledge, and the credibility of expertise and competence. Consequently, collective decision-making about complex sociotechnical options (such as genome editing, access to sensitive personal data for research and care, and climate change) is increasingly taking place within a legitimacy void. Resistance to a Western normativity, both in the Global South and Global North, demands alternative modes, reference points, spaces of decision making. In this panel we ask: How might we deploy collective forms of governance in epistemically fragmented and diverse societies? What role can civic engagement – understood as the involvement of publics in the governance of science and technology within and outside of the traditional institutions of representative democracy – play in producing democratically legitimate decisions on complex sociotechnical matters? What practices of public deliberation can enhance the quality of science and technology governance? Can civic engagement be an antidote to the political manipulation of public opinion? We do not assume civic engagement to be an unproblematic 'good'. Rather we encourage critical reflection and engagement with these questions to ask what can be or might be the effects of such civic engagement? Particularly, looking beyond the precepts of a Western sensibility.

Participants:

Civic Engagement and the Visual Imperative *Joanna Sleigh, ETH Zurich*

Over the last decades, we have witnessed civic engagement evolve from traditional formats such as local meetings to more active engagement approaches that use emerging information and communication technologies (Dybow et al., 2017). However, the potential of communication technologies and the internet to reshape democratic life has seen waves of both enthusiasm and pessimism. As researchers have highlighted, when judged in terms of quantity, quality, or impact on political and policy outcomes, "the reality of online deliberation […] is far removed from the ideals set out in the early mid-1990s" (Chadwick, 2008). Despite this oscillation, the importance of improving the information landscape has become recognized as key. At the same time, knowledge visualisation methods gradually emerged as tools that can potentially redistribute expertise and authority in decision-making processes about science and technology governance (Whatmore, 2009). In light of this context, this paper seeks to discuss visualization approaches that foster civic engagement and participation with science, technology, and governance. Drawing on recent examples in data-activism and climate change campaigns, the paper outlines how visualizations can a) elicit broader public participation in science policy discussions; b) create awareness and reflection on local and civic issues, and c) promote social discussion and political action. In doing so, this paper critically reflects upon both new opportunities and challenges in using visualisation practices for enhancing the quality of science and technology governance. References: Chadwick, A. (2008). Web 2.0: New Challenges for the Study of E-Democracy in an Era of Informational Exuberance. I/S: A Journal of Law and Policy for the Information Society, 5(1), 9–42. https://doi.org/10.7551/mitpress/9006.003.0005 Dubow, T.,

Devaux, A., Stolk, C., & Manville, C. (2017). Civic Engagement: How can digital technologies underpin citizen-powered democracy? Civic Engagement: How can digital technologies underpin citizen-powered democracy? https://doi.org/10.7249/cf373 Whatmore, S. J. (2009). Mapping knowledge controversies: Science, democracy and the redistribution of expertise. Progress in Human Geography. https://doi.org/10.1177/0309132509339841

Technocratic frontstage, democratic backstage? Participatory practices in the production of poverty indicators in developing countries *Justyna Bandola-Gill, University of Edinburgh*

Governing global poverty has in recent decades become synonymous with measuring it. The standards of international poverty knowledge, set largely by the International Organisations, establish it as quantified, highly technical and relying strongly on objectivity as the core epistemic tenet. Correspondingly, the literature on 'governance by numbers' predominantly focused thus far on the processes of rationalisation of governance and technocratic modes of accountability. However, the practices of indicator production are increasingly becoming – due to the crisis of the rationality project and trust in traditional forms of expertise – a sphere of participation and public engagement. In these emerging contexts, production of indicators is becoming a tool of empowerment and contestation of governments' politics. By focusing on the democratic modes of quantification in global governance, this paper proposes an outlook on the production of indicators as a participatory process of de-objectification of measurement. It does so through a qualitative case study of the production of multidimensional poverty measurement between key IOs (the World Bank, UNICEF and UNDP), local government agencies and civil society in selected developing countries. The paper explores the politics, epistemics and praxis of production of metrics by employing the Goffmanian dramaturgical approach to the debates on co-production and democratisation of science. As such, it offers a new theorisation of the process of quantification as driven by the inherent duality in which the technocratic frontstage of global knowledge standards is contrasted with the democratic backstage of local practices where multiple epistemic frameworks and types of knowledge coalesce.

The Fabric Of The Public In Current Debates About Genome Editing *Morgan Meyer*

"Over the course of these past years and since the discovery of CRISPR-Cas 9, there has been a broad consensus for the need to engage the public in the genome editing debate", the WHO (2019) writes in its background paper on the governance of gene editing. Today, such a consideration for the public is not uncommon; decision-making processes within institutions and governments have significantly opened through public engagement. This paper scrutinizes and problematizes the different ways in which the public is imagined and positioned in debates about gene editing. Debates about gene editing reveal multiple modes of existence of the public: as epistemic and economic accepters, as legitimized participants in debates and decision-making, as potential technology users, and as empirical research objects. Defining and problematizing the public in these different ways is not only a matter of academic categorization, such problematizations also engender different forms of politics and modes of governance and they have tangible effects on the social world. Building upon pragmatist-inspired analyses of the public, I argue that a fertile research approach is to study the "fabric" of these different kinds of publics.

Civic Engagement in Science in the Context of Democratization: Evolution and Typology of Citizen Science in Taiwan *Hui-shih FANG, National Taiwan Museum; Tze-Luen Lin, National Taiwan University*

Citizen participation in scientific knowledge production comes in various forms. Previous attempts to categorize citizen science (CS) projects based several aspects including the research subjects, the level of civil engagement, the approach of the project, or the concept of citizenship. Recently the term community science was coined for a major group of CS projects on ecological science to be distinguished in discussions that center at citizens. However, the previous typologies or terms may not be sufficient to explain the relationship between civil engagement and the democratization and development of the society given the different political and cultural contexts across the globe. For instance, Taiwan, whose democracy only fledged in late 1980's, its CS projects are springing up in just recent twenty years and have derived a rich diversity, including those concerning ecological surveys, environmental education, anti-pollution movement, utilizing household scientific equipment, or interpreting local knowledge. This echoes Taiwan's ever-growing civic involvement in public affairs. Recent incidents, like Taiwan-developed mask availability digital maps, also repeat the pattern of certain projects. This paper aims to categorize the CS projects in Taiwan with their political and social context. We have identified four types of CS projects based on five aspects including the social-political and technical background of their genesis, the academic background of the founders, the type of the founding organization, the source of subsidy, and the means of communication among project members. We argue that such typology, absent from previous studies, reflects how Taiwanese society has democratized and developed.

Communicating Coronavirus: Public Panic and Rapid Response *Anna Muldoon, Arizona State Univerity*

As coronavirus disease 2019 (COVID-19), originating in Wuhan, China, spread around the world, extreme public and policy reactions have preceded its arrival, driven by breakdowns in trust, communication, and a rapidly shifting knowledge landscape. Cities with few cases have declared emergencies in advance of outbreaks; quarantined cruise ships have created intense outbreaks onboard; and social and traditional media have amplified emotional reactions and inaccurate information. In the context of rapidly evolving emergencies, public desire for increasingly rapid access to information has encouraged a move to pre-print publication and discussion of results online before peer-review. When combined with slow communication from institutions, both national and international, scientific and public health communication seem to have reached a breaking point . Misunderstanding of scientific and public health information has led to poor policy decisions, dangerous communications by politicians, and a loss of public faith in public health institutions. This paper asks: how can we reconstitute institutions and mechanisms of scientific production, communication, and rapid engagement to rebuild trust and avoid such situations in future? As a shifting climate brings an increasing number of concurrent emergencies, how do we ensure accurate and reliable to multiple publics in evolving situations? Through an analysis of science communication around the COVID-19 pandemic on social media, I will identify successes and gaps in our ability to respond to public concern.

Session Organizers:
Alessandro Blasimme, ETH Zurich
Madeleine Murtagh, Policy, Ethics & Life Sciences Research Centre, Newcastle University
Barbara Prainsack, Department of Political Science, University of Vienna

Chairs:
Alessandro Blasimme, ETH Zurich
Madeleine Murtagh, Policy, Ethics & Life Sciences Research Centre, Newcastle University

198. Sharing and Re-using Scientific Data: Situated Practices, Comparative Views
3:00 to 4:40 pm
virPrague: VR 14

STS scholars have gained empirical and conceptual insights into the social and epistemic complexities of data sharing and reuse that challenge a policy-driven open science discourse that treats research data as commodity and public sharing as a moral imperative (see e.g. Collins 1998, Borgman 2015, Hilgartner 2017). The papers in this panel look in-depth at practices and conditions of sharing and re-using research data in the collective production of scientific knowledge, presenting studies from astronomy, biomedicine, invasion biology, social science and solar physics. Drawing on these cases and others this panel seeks to advance a conversation about how the variety of sharing and re-use practices can be conceived and how

meaningful comparisons between fields can be made (see e.g. Gläser and Laudel 2015, Leonelli and Tempini 2020). Borgman, Christine L. (2015). Big Data, Little Data, No Data: Scholarship in the Networked World. Cambridge,   Mass.: MIT Press. Collins, H. M. (1998). The Meaning of Data: Open and Closed Evidential Cultures in the Search for Gravitational Waves. American Journal of Sociology, 104(2), 293-338. Gläser, Jochen, and Grit Laudel (2015). Cold Atom Gases, Hedgehogs, and Snakes: The Methodological Challenges of Comparing Scientific Things. Nature and Culture, 10(3): 303-332. Hilgartner, Stephen (2017). Reordering Life: Knowledge and Control in the Genomics Revolution. Cambridge, Mass.: MIT Press. Leonelli, Sabina and Niccolo Tempini (eds) (2020). Varieties of Data Journeys in the Sciences. Berlin: Springer.

Participants:

Formulating and Using Instructions for Data Re-use *Goetz Hoeppe, University of Waterloo*

Worries about improper uses of data are one principal reason for scientists to hesitate sharing it (Brewer 2017). How, then, do scientists prepare data for future re-uses? What do they do to prevent misuses of data? One way, it seems, is to provide instructions for potential users, for example, in a publication accompanying a data release (Pasquetto et al. 2017). Informed by ethnomethodology, I focus on the practical reasoning and the practical actions of scientists, particularly on how junior researchers are instructed to produce, use, and re-use digital data using diverse technologies and material probes. One of ethnomethodology's fundamental insights is that instructions are essentially and unavoidably incomplete (Garfinkel 1967). Drawing on an ethnography of exemplary settings in astronomy and climate science in which data are commonly shared, I probe into how researchers seek to resolve the challenge of formulating and using instructions for data re-use. I specify some distinct methods and resources available to them and discuss possible comparisons between these disciplines. This paper draws on ethnographic fieldwork at astronomical and climate science research institutes, and related field sites, where I have documented instructional and collaborative interactions, collaborations and teleconferences with audio and video recordings.

Data, Exposed: Clinical Data, Machine Readability, and the Drive Towards (Disease) Agnosticism *Andrew Staver Hoffman, iHub, Radboud University Nijmegen*

If data is indeed a relational category (Leonelli 2015), then practices of data sharing and re-use -- relational practices, by definition -- can be qualified according to a multiplicity of relationships: as a mode of 'gift-giving' in all its reciprocal complexity (Ferryman 2017), as a 'Maussian bargain' subject to dispossessive accumulation (Fourcade & Kluttz 2020), as a 'virtue' in its own right, bound up with the sharing norms of a given domain's broader moral economy (Daston 1995), along with many other possible formulations. This paper extends discussion of the types of relationships that obtain in data sharing and reuse, focusing on the concept of 'exposure' (e.g. Fecho et al. 2019) as a specific approach to making clinically-relevant data visible (Brighenti 2010) and available for reuse. Drawing from ongoing ethnographic fieldwork being conducted alongside the construction of a large scale data interoperability infrastructure-cum-autonomous reasoning system in the biomedical domain, I argue that practices of 'exposing' clinical data are unique from other possible data relations insofar as they elide the agency of the data subject, instead taking recourse to existing techno-regulatory norms around data de-identifiability in the process of making large stores of existing clinical record data available for reuse within computationally-intensive workflows. In doing so, I situate 'exposure' as a distinct sociotechnical practice wrapped up in wider objectives of increased machine readability and automated exploration, one that is less concerned with somatically-informed clinical interpretation than with the drive towards 'disease agnosticism' -- a fractal instance of the 'logic of domains' (Ribes et al. 2019).

Collection Development as Organizational Strategy: Institutional Practices and Social Science Data Archives *Kalpana Shankar, University College Dublin; Kristin Eschenfelder, University Of Wisconsin-Madison*

As Mayernik (2016) notes, the multiplicity of practices that constitute "data sharing" are embedded in numerous intersecting formal and informal social and organizational systems, including and especially data repositories. They are not passive recipients of data; they take active steps to court and (sometimes) placate data providers whose deposits are important to the repository for many reasons. They may bring in new types of data in order to expand their funder pools and their user base while they remain attuned to changing scholarly and professional interests within scholarly communities and draw on other studies of collection development (Church 2008; Borgman, Scharnhorst, and Golshan 2019). Exploring data sharing at the institutional level is not just important to data studies, but is part of the larger story of the history of computing (Acker 2015). In this paper, we build on Mayernik's theoretical framework of "institutional carriers" to explore collection development as a set of strategic practices in quantitative social science data archives (SSDA) in the mid to late twentieth century. We draw on documentary and empirical research in social science data archives in the US and UK to examine some of the norms, intermediaries, routines, standards, and material objects repositories have created and then invoked to sustain the data organization and in turn helped shape the quantitative social science disciplines during this era.

Field-Specific Forms of the Scientific Reception Process and Reuse Decisions *Nathalie Schwichtenberg, German Center for Higher Education Research and Science Studies*

What makes scientific contributions reliable for reuse? And what role does trust play within the process of making reuse-decisions? Does the role of trust depend on the epistemic conditions under which the decision process takes place? And how can such decision processes be reconstructed, analyzed and categorized? The research on the production of scientific knowledge and the construction of scientific facts has a long tradition in STS (Latour/Woolgar 1979, Pinch/Bijker 1984). What has received little attention so far is the reception of scientific knowledge, taking into account the subject-specific conditions under which it takes place. The constitutive role of the reception process within the collective production of scientific knowledge was recognized some time ago (Bazerman 1988). So far, however, it has only been partially empirically investigated. Either only the reception of a certain form of the receivable resource was examined, e.g. scientific papers (Abraham 1995), data (Leonelli 2014). Or the investigations were focused on individual disciplines, e.g. Physics (Collins 1999). Or only the tip of the iceberg was looked at in form of scientific controversies (Collins 2014). Based on ethnographic research, this paper would like to draw a systematic picture of everyday scientific reception processes, paying particular attention to the incompleteness of information (regarding the received scientific contribution) that actors of that process have to deal with when taking reuse decisions. The design is field comparative, it examines two research specialties from the disciplines of biology and astronomy, and considers the reception of various resources relevant for scientific knowledge production.

A Comparative Approach to Field-Specific Forms of Sharing *Theresa Velden, German Center for Higher Education Research and Science Studies; Nathalie Schwichtenberg, German Center for Higher Education Research and Science Studies*

Given the surge of policy interest in 'open science' and public sharing of research data, the question of how different scientific communities are capable of fulfilling open science and sharing aspirations becomes increasingly relevant. Surveys by a variety of actors seek to determine data sharing rates across scientific fields – for academic purposes, to support evidence-based policy making and to inform infrastructure development. These surveys establish implicit standards for what counts as 'open science' and fulfills expectations in sharing. What they fail to consider is the heterogeneity of research data and the variety in forms and functions of sharing. There is a risk that without a deeper understanding of this variety, researchers working under very different epistemic conditions are subjected to generic instruments of governance that aim to incentivize data sharing but may lead to unintended repercussions for the generation of

scientific knowledge (Gläser et al. 2010). Research in STS has shed light on how research data resist their conversion into a commodified resource due to their relational character: their complex embedding in 'evolving streams of scientific production' (Hilgartner & Brandt-Rauf 1994) and the context-dependency of their scientific significance (Leonelli 2015). Building on these insights and ongoing empirical work in four fields of science (chemistry, biology, physics, astronomy), this paper examines how forms of sharing research data and their function for knowledge production may be compared across scientific fields, e.g. by attending to field-specific sharing-related mechanisms of knowledge production (Velden, forthcoming), in order to lay the foundation for meaningful field comparisons.

Session Organizers:

Theresa Velden, German Center for Higher Education Research and Science Studies

Goetz Hoeppe, University of Waterloo

Chair:

Goetz Hoeppe, University of Waterloo

Discussant:

Grit Laudel, TU Berlin

199. Commodifying Environmental Data

3:00 to 4:40 pm
virPrague: VR 15

As digital tools promise to resolve environmental problems by leveraging new sources of data and by creating new services, this panel calls for papers focusing on the market logics involved in these processes. STS research on informational infrastructures warned us not to dissociate data production and circulation, we aim to enrich this approach by considering that market and economic dimensions are not processed downstream, but that they are already at stake when environmental data are produced. In many cases, the manufacturing of environmental data and their markets is simultaneous. The panel proposes to study both the production of environmental data and services, the role of public and corporate actors, the uses of natural sciences and market knowledge, the invention of new measurement tools and their economic valuation. Case studies include a variety of objects such as predictive maintenance applied to water distribution networks; index insurance based on the integration of climate parameters; customized services based on global infrastructures and low-cost sensors measuring air quality or crop development; forest certification schemes by remote sensing for ecological compensation or biomass valuation; etc. We aim to grasp a broad range of questions: using infrastructures that are often fragile and labor-intensive, how do various actors develop profitable models? What are the links between the trade and circulation of data on one hand, and the associated service market on the other hand? Which types of knowledge are being used and what roles do they play in the valuation of environmental data? In what way is data labor shaped by its commercial use? By exploring these various issues, the contributions of this panel will deconstruct the promises of the greening of public policies and industrial processes through the development of an environmental services economy.

Participants:

Weather Data Commodification, From Low Cost Stations To Consulting Services For Farmers *Jeanne Oui, EHESS*

This communication analyses a process of commodification applied to the production and use of environmental data, studying a commercial chain of heterogeneous actors involved in the construction of a weather services market for French farmers. Based on empirical data, the aim is to describe the various actors in this market, and to document their different constraints and problems along the weather data chain of production. These actors are start-ups that build low-cost stations, distributors that sell these tools to farmers, farmers that produce weather observations using the stations, meteorological engineers that implement data labor (Denis, 2018) to use observations into forecasting models, and software sellers that provide decision support tools to farmers based on both station data and personalized forecasts. Using a "follow the thing" approach (Marcus, 1995) applied to meteorological data produced on farms, this case study analyses how various actors try to build a commercial value upon weather data at the different stages of the marketing chain, as well as the challenges faced by meteorological consulting actors in a context of increasing

availability and free access to meteorological data with European open data policies. The communication focuses on the articulation between the different business models implemented to commodify data, and their impact on the relationships between the actors of the agricultural advisory organizations. In particular, agro suppliers and cooperatives emerge as key intermediaries in this commercial chain, centralizing data and models in the weather services market.

Epidemiological Knowledge, Environmental Data and Public Health Management of Agriculture *Fiona Panziera, INRAE, LISIS*

As it is for humans and animals, crops are more and more frequently affected by emergent diseases. Some, virulent and epidemic, are categorised as quarantine diseases and are then the object of inter obligation at international levels. Concerned areas are submitted to mandatory control, i.e pesticides use or crop destruction. In times of greening for agriculture and of questioning about pesticide use, those mandatory controls are a source of embarrassment. For concerned sectors, precise epidemiological knowledge becomes environmental data. In this presentation I look to Flavescence Dorée (FD) a European quarantine disease of vine that has spread to large part of the French vineyard. It has imposed, and still impose, big scale pesticides treatments to the French agricultural sector that has already got slapped as the worst consumer of pesticides. Last 10 years, French vineyards set up a heavy knowledge infrastructures (KI) from different knowhow, different stages of FD's knowledge and different responsibilities distribution between public and private actors. Those KI coordinate heterogeneous networks that assembles maps, vegetal samples, insect traps, GPS data and laboratory results in order to negotiate the reduction of the mandatory pesticides areas. But with the development of the promise from above (drones) and the democratisation of biomolecular tools, start-ups want to disrupt the FD's epidemiological market. Mandatorily controlled disease seemed to guaranty a strong and safe market but the epidemiological knowledge, builds in partnership between the private and the public sector appears to be more than a market but a tool for the public management before everything.

Rainfall-based Agricultural Index Insurance: Measurement, Matter and Meaning *Luisa Hoffmann, Goethe University Frankfurt*

Rainfall-based agricultural index microinsurance schemes have increasingly gained attention as a climate adaptation tool in the majority world. Working in the nexus of climate change discourse, risk economies and development politics, they are intended to reduce smallholder farmers climaterelated losses. Rainfall is measured remotely via satellites, the weather data is stored on databases and translated into weather indices, which ultimately determine whether the farmers receive payouts from the insurance companies and are able to cover their losses. Building on my empirical observations while embedded with an insurance surveyor based in Nairobi, I engage with the centrality of measurement in their work. I trace how measurement as a mode of thought shapes the microinsurance apparatus, and I look at the materiality of meaning making in the statistical practice of "crop cutting". My angle is motivated by feminist STS thinking. It takes non-human agency serious and critically engages with the presumption that entities exist outside of their context of mattering and meaning. Shifting the perspective to the complexity and messiness of doing science, I argue, makes visible the disconnect between science-in-practice and the presentation of the data it generates, and through that spawns a critical analysis of the moments in which measurement manifests as "governing apparatus".

Early Commodification of Satellite Images in Agriculture and Failure to Market New Services (France, 1975-1990) *Sylvain Brunier, CNRS - Centre de Sociologie des Organisations*

This paper will look back at the first attempts to sell satellite images for the agricultural sector in France during the 1970s and 1980s. I will rely on various administrative archives and interviews to shed light on a little-known aspect of the development of the SPOT Earth observation program. Launched in 1976 by the French government, the Interministerial Remote

Sensing Pilot Operation aims to develop new services, the so-called remote sensing services, based on the use of satellite images. It brings together the Centre national d'études spatiales (CNES), which designs the observation instruments and makes data available, and several ministries (Agriculture, Industry, Research) in charge of identifying future uses: mining exploration, forest inventory, crop monitoring, oceanography, etc. Three arguments in favour of investing in this new infrastructure emerge: sovereignty (against the risk of American hegemony), economic forecasting capabilities (to give a comparative advantage in global competition to agricultural companies that would buy these services), and improved cooperation with countries of the South (mainly to develop services and training in the former French colonial empire). In the agricultural sector, the issue of global yield forecasting is presented as a strategic resource that should respond to the interest of private investors and farmers, but in the late 1980's, the marketing of these services failed. Unlike social science studies that insist on the co-production of innovation between public and private actors, we will show that the commercialization of data appears first as a resource for the promoters of spatial policies to mobilize different segments of the public sector.

Latent Earth Science & Financial Service Networks in Southeast Asia *Andrew Moon, The New School for Social Research*

Infrasound has a legacy in late 19th-century scientific discovery and mid-20th-century Cold War surveillance infrastructures, however, only recently have earth science communities asked: what does infrasound do? Infrasound–sound's "inaudible" other–is conventionally understood to be produced by large geophysical and industrial disturbances to the atmosphere, that propagate low-frequency soundwaves over vast distances. The development of techniques to observe infrasound in laboratories and field stations are said to provide remote access to and an image of hard to get at places: the rupture of an ice sheet; the energy of volcanic vents; the shape of rouge ocean waves; and the transport of ash plumes. This reemerging science has also garnered the interest of the global reinsurance industry for the design of financial services that value the likelihood of "natural disaster" and climate-change related events. The commercial interest in infrasound is advocated as part of a broader industry transformation where non-bank financial services are increasingly designed around parametric indicators of events, rather than the indemnification of economic or property loss–thereby issuing new demands for the supply of verifiable earth science data and expertise. Yet in quotidian practice, infrasound is a latent–a not yet, not quite, but almost–scientific and financial resource, providing scholars across the social studies of finance and economic anthropology with insight into the economization of earth science domains. The paper documents this narrative, drawing on fieldwork conducted with state science agencies and private services firms in Singapore and Indonesia. It aims to comment on the practice of observation and operation at work in infrasonic inquiry to raise questions about the proximity of earth science to financial service design, from a region long examined to generate value for other places and times.

Session Organizer:
Aguiton Angeli Sara, EHESS CAK Centre Alexandre Koyré
Chairs:
Sylvain Brunier, CNRS - Centre de Sociologie des Organisations
Jeanne Oui, EHESS

200. RRI Beyond Growth: Can a Case be Made for Responsible Stagnation?
3:00 to 4:40 pm
virPrague: VR 16
Since 2011, STS scholars have been involved in an increasing number of discourses, practices and studies of Responsible (Research and) Innovation. However, much of this has been focussed on emergent technologies in political economies which expect 'innovation' to produce GDP growth. This discussion panel will explore what a growth-agnostic approach to innovation – what we have called Responsible Stagnation (RS) – can add to our thinking about responsibility in this context, drawing from our book, "Responsibility Beyond Growth" (forthcoming, Bristol University Press), developed through the 4th Quadrant Research Network, an ongoing collaboration between STS, innovation and economics scholars. We will consider what new possibilities arise when 'responsible' includes both a broader concept of 'innovation' as well as the realities of 'stagnation' – defined as both conditions of slow growth in countries past their productivity peak (what economists have called 'secular stagnation') and the need to reduce growth in certain sectors, materials and throughputs in order to maintain planetary and social stability. Discussants will draw from STS's long history of examining the interplay between science, politics, ethics and society, studies of social innovation and of innovation in the Global South, as well as from practical examples of the difficulties (and opportunities) facing firms pursuing RS-type agendas within our present innovation culture and why market-oriented innovation alone cannot deliver the solutions we need. Each participant will have five minutes to present their case, then the floor will open to what we expect will be a lively debate.

Session Organizer:
Stevienna de Saille, University of Sheffield
Chair:
Stevienna de Saille, University of Sheffield
Discussants:
Effie Amanatidou, University of Manchester
Timothy Birabi, University of London
Michiel Van Oudheusden, University of Cambridge

201. Dying At The Margins: Emerging Material-Discursive Perspectives On Death And Dying
3:00 to 4:40 pm
virPrague: VR 17
This session seeks to explore socio-ecological networks of the dying and dead that exist at the margins. The borders between life and death are sometimes unclear. Death may get interrupted, delayed, or come undone, disrupting culturally shared norms and expectations surrounding death and dying. We acknowledge such disruptions as material and discursive; that is, bodies, minds, geographies, stories, technologies, and more act to challenge human perspectives on how people, animals, plants, or things ought to die and where and how the dead ought to be laid to rest. Suddenly, what seemed coherent no longer is, in the breakdown or dissolution of that which is dying but also in the way one orders worlds and afterworlds. This session aims to identify and develop ways to explore and establish connections between dying and death from perspectives that refute a nature/culture binary—to ask questions such as: What boundary work takes place to construct and maintain the categories of alive, not-alive, dead, dying, and undead for places, objects, and beings? How do states and processes of acquiescing to, existing in between, manipulating, or overcoming life and/or death affect normative assumptions about dying and death? What might it mean to reconfigure human understanding of death to a more ecological frame that accommodates more-than-human lives and/or deep time? How might the memories, spirits, or spiritualities related to the dead and dying limit, expand, or explode a material-discursive frame? How do such challenges alter ethical approaches or values attached to dying and death?

Participants:

On Contested Ground: Emergent Ontologies of Soil in Alternative Body Disposal Practices *Hannah Gould; Michael Arnold, The University of Melbourne; Tamara Kohn, The University of Melbourne*

Multiple new technologies have emerged to challenge conventional methods of human body disposal, that is, burial and cremation. Advocates frequently tout the environmental credentials of these technologies that transform the human body into a substance that is, if not enriching and productive, at least neutralised of harms. In these narratives, soil plays a central and highly contested role and necro-ecologists must engage with scientific, legislative, and spiritual discourses that determine the boundaries of where in time and space the human corpse ends and soil begins. Competing ontologies of 'soil', its composition, and value, speak to wider questions about the place of humans, dead or alive, in the natural world. Some corpse-soil is lively, productive, and able to redirect human energy into microbial life; other soil is barren, inert, or toxic and thus represents a blockage

or conclusion to the cycle. This paper draws on research conducted by the DeathTech Research Team, based at the University of Melbourne, with death industry innovators around the world. Specifically, it will examine the fault-lines emanating from soil that have arisen between advocates for four new disposition methods: natural or woodland burial, vertical burial, recomposition (composting), and promession (freeze drying). At stake in the soil debates are environmental credentials, legislative authorisation, and popular acceptance of these still fringe practices. But beyond that, contemplating soil allows us to consider the metaphysics of erasure or transformation of the corpse performed by disposition methods as well as the porous boundaries of the non/human.

Postmortem Imaging:Trouble On The Border Between Life and Death *Celine Schnegg, Haute Ecole de Sante Vaud; Severine Rey, Haute Ecole de Sante Vaud; Alejandro Dominguez, Haute Ecole de Sante Vaud*

In case of suspicious death, medical examiners are responsible for determining the cause and the manner of death. They base their inquiry on a scene investigation, medical files, an external body examination, an autopsy and laboratory tests. For fifteen years, some specialized forensic centers have been developing several medical imaging techniques as complementary tools. These techniques change the way experts demonstrate the cause of death: CT-scan and MRI allow to see inside the body without "cutting" it. In addition to this power of visualization and virtualization of bodies, postmortem imaging also induces a transformation of temporality and challenges the border between living and dead. Indeed, as it artificially restores blood circulation, postmortem angiography makes it possible to simulate the living during the examination. Based on an ethnographical study in a Swiss forensic medicine department using and developing postmortem imaging (hundred days of observation) and an analysis of autopsy and radiological reports, our communication analyzes how postmortem imaging technologies transform investigative practices and the ontology of dead bodies, in comparison with autopsy that remains the gold standard. Our fieldwork results give insights into the resistances and negotiations caused by the introduction of postmortem imaging techniques into the forensic routine, in terms of work organization, scientific evidence and definition of expertise: how do medical examiners manage this new way of examining bodies and the eventual divergences between results of autopsy and postmortem imaging? What is at stake in the digitalization of dead bodies?

Regulating Technologies Of Death And Dying At The Beginning Of Life In Denmark *Stine Willum Adrian, Aalborg University; Laura Louise Heinsen, Aalborg University; Anna Sofie Bach, Aalborg University Copenhagen; Annika Frida Petersen, Faculty of Law, Copenhagen University; Janne Rothmar Herrmann*

In recent years, the Danish Association of Infant Death has witnessed an increase in people seeking counseling after having lost a fetus due to pregnancy termination after prenatal diagnosis. This increase took place in 2017 when the Danish Health Authorities introduced a new information leaflet, designating only the Association of Infant Death, a private NGO, as the provider of counseling to people confronted with a fetal anomaly. Considering the Danish welfare state's investment in the financing and regulation of reproductive technologies in relation to fertility treatment, pregnancy, birth and abortions, the allocation of post-abortion care to an NGO raises questions regarding when the state is involved in reproductive matters and when it is absent. Inspired by Charis Thompson notion of 'ontological choreography', in this presentation we ask: How is a dead fetus resulting from a late-term abortion ontologically choreographed, before, during and after its death/birth? What does this choreographing say about norms of lifeworth and killability in the Danish welfare state's regulation of technologies of death and dying at the beginning of life? Methodologically, we follow the fetus, as what Donna Haraway has described as an imploded knot, looking carefully into how technologies are regulated through the law and used in prenatal screening, and during and after the induced birth, and further to burial or

disposal. In the analysis, we include observations, interviews, legal regulations, media stories, as well as information material from the Danish Association of Infant Death.

Constructing Palliative Care in Norway *Ida Sofie Rettedal Skjaeveland, University of Oslo*

In this paper, I will discuss the changing practices and debates surrounding death and dying in medical practice in Norway in the 1980s and 1990s. During the first postwar decades, it had become a responsibility of medicial care to avoid death, at the expense of alleviating suffering (Abel, 2013). In the Norwegian welfare state, there was a hostility towards introducing special care as an add-on to the ordinary institutions, and the hospice movement was met with resistance. In the paper, drawing on oral history interviews as well as a study of newspaper coverage in the 1980s and 1990s, I will argue that as a result of material and discursive events during these decades, a new patient arises in Norwegian medical practice: the dying, in between life and death. In this period, pain pumps and long-acting, slow-release opioids were introduced to medical practice, changing how pain was perceived and acted upon. At the same time, prominent physicians started pushing the boundaries of what was considered good medical care by helping their patients to die, and brought the attention of the press to the dilemmas they were facing. The resulting lawsuits against them, and a concomitant fervent debate on euthanasia in the public and scientific press, turned the issue in important ways: The result of the intersection of political, juridical, medical and ethical arguments was not an emphasis of the patient's right to die. On the contrary, what emerged from these processes was a new imperative to medical practice: the patient's right to a "dignified death" and for palliative care in the clinic.

Dying Data: Complicating Networked Nonhuman Death *Maya S Livio, University of Colorado / Media Archaeology Lab*

Nonhuman animals are increasingly sensed, tracked, and monitored at ever-expanding scales via networked devices, for purposes ranging from conservation to pet care. The data collected is ostensibly intended to prevent or delay death, either the death of those specific animals being monitored, or of conspecifics, yet tracking inevitably captures the animals in death, as much as in life. This paper examines how nonhuman death is mediated and complicated by the sensors, smart devices, and other technologies connecting organisms to data tracking platforms, what I call the "Internet of Beings," framed in opposition to the "Internet of Things." Using pet monitoring devices as a case study, the paper argues that while these, and other Internet of Beings technologies, do little to control the inevitability of death, and are themselves implicated in nonhuman death through environmental costs, they do provide an unintended opportunity to reduce discomfort with death. Asserting that a deep attention to death shifts focus to the cyclical, and is therefore imperative for resisting the dominant narratives of linear progress, the paper suggests that in making death more visible, Internet of Beings devices can be co-opted to foreground alternative, regenerative narratives.

Storying a Lamb's Transformation: Crafting Life with Death *Elsa Maury, Université de Liège*

'Considering the ends' is both a movie and research I made about the practice of a shepherd who raise a herd in the South of France. Those one hundred and fifty sheep and goats live fully outside, and they eat the grass and leaves they find in the garrigue. Along this fieldwork, I was especially interested in the matter of death, because the shepherd was involved into the process of learning and thinking about how to kill her animals well. While the scientific literature address this question, my artistic research focuses on how the narrative of a movie can relay and dramatize those situated humanimal stories, in which the living and dying intimately depend upon each other. In order to think sideways from the binary opposition life/death, I'll explore one scene that presents the crafting of a possible life relying on a death. It shows the making of a 'pyjamas': how the shepherd slices out the skin of a dead lamb to put it on a discarded living one. In doing so, she attempts an adoption by the ewe who is the biological mother of the dead lamb. By dressing a living lamb with a dead one, the shepherd tries to 'animate' the

young animal for the ewe through an olfactive proposition, along with other tricks. The scene calls to rethink what an 'animation' of a being can be with such a specific technique that weaves together life and death, and to reflect on the film narration that recounts it.

Session Organizers:

Natashe Lemos Dekker, Centre for Social Science and Global Health, University of Amsterdam

Jesse Peterson, History of Science, Technology and Environment, KTH

Philip R Olson, Virginia Tech

Chair:

Jesse Peterson, History of Science, Technology and Environment, KTH

202. Sociotemporalities

3:00 to 4:40 pm
virPrague: VR 18

Participants:

Pitching as a translation: reconfiguring innovations for the Public *Ilkka Arminen, University of Helsinki*

Pitches are presentations of a business or a policy idea to audience involving lay people, investors and experts. Pitching is a phenomenon of interest to STS, as it opens a view to a translation of an innovation from an inner circle to a wider Public. In a way, pitching involves citizen participation through the recipient design of presentations. The pitch consists of a translation in which the knowledge flow from the knowledgeable to non-knowing is an artful strategic achievement that aims at maintaining a favorable impression without seemingly leaving anything unsaid. Typically a pitch includes presentation aids, such as slides, and a verbal presentation consisting of a brief planned talk, e.g., four minutes (in an Elevator Pitch, 60 seconds), and a short time for questions and answers. This presentation will discuss the organization of talk-and-interaction of pitches available publicly in youtube. Theoretically, the presentation draws on conversation analysis (CA) and the sociological translation theory. CA analysis the organization of social interaction in terms of participants' utilization of semiotic resources to co-ordinate their actions in time-space. The sociological translation theory analyses the process through which an agent is empowered to represent the organization. The analysis pays attention to the translation that invokes recipients' involvement, utilize and organize multimodality, and orchestrate the presentation to control and share the policy or business idea. The analysis allows us to address the way in which the innovation is translated to the citizen audience and the innovation reconfigured through its alignment with the recipients.

Sociotechnical Imaginaries of Supercomputers and the Global Hierarchies of Acceleration *Nil Uzun Weidner, Rutgers University*

Supercomputers are the world's most powerful computers in terms of their "computing speed", i.e. the amount of computation a supercomputer can carry out within a given period of time. It is the element of 'speed' that makes a supercomputer 'super'. Twice a year, the "Top500" list ranks the world's fastest 500 supercomputers and the nation states in which they operate. For the last decades, governments have allocated hundreds of millions of dollars in annual budgets to research, develop, build and operate new, faster supercomputers while the leading universities and research centers building and hosting these machines, have been competing fiercely for positions on the Top500 list. Because of the possibilities supercomputers offer for the future in terms of 'scientific progress' and 'geopolitical competitive advantage', they are presented as technological developments of national (security) interest, and often guarded through control over markets and export restrictions. The question of who will first build an "exascale" supercomputer is at the heart of the US and China "trade war", politicians rekindling Cold War fears, popular dystopian narratives of AI and quantum computing, and the ways in which scientists envision their future experiments. This paper questions the relationship between technological acceleration, computing speed and sociotechnical

imaginaries of the future of supercomputing. It demonstrates how computing speed is not only a technological artifact external to geopolitical relations, but it constitutes the ways in which the distinction of future, past and present is actively done, undone and redone through the geopolitics of global race for the fastest supercomputers.

The socio-technical temporalities of children´s game worlds *Emilie Moberg, Stockholm University*

Children's digital game play exists within a highly polarized discourse. Digital games are, on the one hand, associated with violence, addiction, antisocial behavior, passivity and poor physical health while on the other, also associated with 'tech-savviness' and the promotion of digital literacy skills. This paper is concerned with how the videogame Minecraft comes to be played out in everyday events with 5-year-old children in a Swedish preschool, using ethnographic case studies. Even though studies within the area of early childhood education research have focused on the blurred boundaries between children´s digital worlds and their physical worlds manifested through play, Minecraft has rarely been addressed. This body of research also highlight examples of the way children´s online practices work across home and preschool spaces. Drawing on Actor-network theory and game studies, the present paper will use the concept of 'game worlds' to indicate both the virtual world designed into the videogame and the socio-technical environments in which play is manifested. This also concerns relationships between the virtual worlds of the game and the media universes they activate, in this case Lego. Thus, the paper takes on the challenge posed by STS methodologies to stay with the imaginative, performative and transformative game worlds produced through play, and the temporality in socio-technical play situations.

The temporal dynamics of technology promises in digital innovation: the case of the Copyright Hub *Gian Marco Campagnolo, University of Edinburgh; Hung The Nguyen, Science, Technology and Innovation Studies, The University of Edinburgh; Robin Williams, The University of Edinburgh*

What is the expectation work required to ensure that technological innovation initially supported by government funding is subsequently taken up by market actors? This paper explores this question by applying a linked ecologies framework to the study of the Copyright Hub, a digital infrastructure for Intellectual Property trading developed in the UK. We draw our analysis from a five year long study, including forty-six interviews and six weeks of participant observation. We found that expectation work in policy-led infrastructural communities entails (1) leveraging technology to reshape the position of actors in the innovation space; (2) exploiting the different temporalities of expectation work in allied ecologies and (3) mobilising 'slow' expectations to provide momentum to the newly arranged innovation space. Highlighting difference in temporal dynamics for the various partners involved as a 'hinging' factor, our analysis contributes to clarifying the complex temporal alignment of policy and innovation processes in technology projects.

Session Organizer:

Emilie Moberg, Stockholm University

Chair:

Emilie Moberg, Stockholm University

203. The Configurations of 'The Public' in Innovation

3:00 to 4:40 pm
virPrague: VR 19

Incomplete session: The aim of this session is to explore the role of citizens in the co-creation of innovation activities, meaning the collaborative activities that stakeholders are involved in with the goal of achieving a mutually agreed-upon outcome. It is in this process of co-creation that the role of the end-users such as citizens become murky, despite how they are brought into a project, as they are able to negotiate and resist their role when interacting with their environment.

Participants:

Popular Technologies: Expertise, Organization and Production in Civic Tech Toronto *Curtis W McCord, University of Toronto*

Toronto has a rich contemporary history of grassroots

technological innovation and innovation discourse. Despite diverse approaches and focuses, many of these groups share several key elements: an alignment toward addressing social issues and creating public goods, a stated commitment to inclusivity in the process of technology development, and a definitive placement outside of the capital markets of major technoscience. Despite the fact that many of these groups remain marginalized within the mainstream tech community, examining them provides us with opportunities to see how popular technology movements leverage techniques and forms of social production to address everyday concerns that remain intangible to the state. Based on data collected from semi-structured interviews, participant observation, and document analysis within an action research methodology, this paper presents a situational analysis of the group Civic Tech Toronto and related projects. Using these examples, I argue for an expanded concept of sociotechnical citizenship that explores technology development as a popular enterprise, one in which technical and situational expertise are constructed in a diverse and decentralized setting that places emphasis on sustainable communal resources. Studying this kind of popular technology development provides insight into how citizen expertise and subjectivity is exercised, and suggests points of intervention and reform in the public service as governments learn to interface and cooperate with civic technologists. For STS more generally, this approach suggests ways of integrating analytic methodologies like situational analysis with systemic approaches to action research, especially those from critical systems thinking.

Interactive Expertise – How Interdisciplinarity and Digitalisation Reshape the Agency of Expertise *Silvio Suckow, WZB (Berlin Social Science Center)*

In interdisciplinary centres for digitalisation research, a new form of 'interactive expertise' is emerging alongside traditional disciplinary expertise. Based on two rounds of expert interviews in 2018 and 2020 with PIs and PhD candidates of a newly founded interdisciplinary institute on digital society in Berlin (Weizenbaum Institute) this paper shows how scientists develop interactional expertise (Collins / Evans 2010) and distributed agency in building 'interdisciplinary knowledge'. The Weizenbaum Institute is a unique project network of five universities and two research institutes with political expectations from the german government to provide useful evidence for the management of the digital transformation. In 2019 interview data from Berkman Klein Center (Harvard) and Oxford Internet Institute was collected for comparison, resulting in 40 expert interviews total. Here, 'Interactive Expertise' signifies a shift towards developing linguistic skills and a better understanding of tacit foreign knowledge stocks as described by Collins and Evans. In addition interactive actions, like using modern software to collaborate across research groups, writing together on shared documents and teaching each other skills like how to program or how to do an exhibition, are performed repeatedly. The findings suggest a platformisation of expertise between the collaborators with effects on innovations in the still relevant home disciplines, but also the (non-) scientific career perspectives of the PhD candidates. It is argued, that this new layer of expertise is co-produced (Jasanoff 2004) and adds a creative resource to the formation of expertise.

Session Organizers:
Shelly Tsui, Eindhoven University of Technology
Benjamin Lipp, Technical University Munich
Anja Kathrin Ruess, Munich Center for Technology in Society, Technical University of Munich
Meiken Hansen, Technical University of Denmark
Magdalena Rozwadowska, Wroclaw University of Economics and Business
Chair:
Shelly Tsui, Eindhoven University of Technology

204. The "Contemporary Synthesis" of Race and Biotechnology in Emerging/Developing Worlds
3:00 to 4:40 pm
virPrague: VR 20
How are race and racial differences conceptualized, molecularlized and mobilized in emerging and developing worlds? Scientists from racial and ethnic minority backgrounds are pushing for the diverse inclusion of underrepresented groups in biomedical research. Duana Fullwiley (2014) argues that the increasing need for "diversity" produces a "contemporary synthesis" between the conceptualization of race as biological categories and the politically-inclusive call for "diverse" representation in biomedical research. This panel seeks to advance this "contemporary synthesis" argument by exploring ways that science and medicine, a historically-imperial tool of control and colonization, have taken on a new role in building national science, aiding economic development, and constructing national identities among these postcolonial and emerging states. The panel explores how different forms of biotechnologies are giving rise to new configurations of bioeconomies and biopower that are shaping the governmentality, sovereignty, identity and bodies of the emerging/developing worlds. To this end, the panel is motivated to unpack a series of questions including (but not limited to): 1. What are the specific conditions that shape the knowledge making of race science in developing worlds? 2. How do race and racial differences become co-opted into postcolonial science projects? 3. How do we account for transnational networks of people, funding, capital, data, and infrastructure that refigure national belonging and state politics? 4. How are populations ethnically and racially relabeled inscribed and categorized amid the forces of race science and the global pharmaceutical industry? 5. What does "diversity" mean in biomedical research in these emerging/developing worlds?

Participants:

Same, Same but Different: Indian Drug Trials between Race Science and Pharmaceutical Capitalism *Sibille Merz, Brandenburg Medical School Theodor Fontane*

Over the last two decades, India has emerged as a key hub for offshored, industry-sponsored clinical trials for pharmaceuticals. At the same time, commercial drug development has been increasingly aware of population-based differences in drug response; the heart failure drug BiDil is only the most well-known example amongst a range of new therapeutics with differing therapeutic regimens according to race or ethnicity. This paper probes the convergence of these two trends and examines the discourses and practices promoting the genetic qualities of the Indian population as a valuable resource for pharmaceutical research and development. Drawing on documentary analysis and qualitative interviews with researchers from industry, regulatory agencies as well as Indian private and public health institutions, it explores how (historical) ideas about genetic proximity and distance, often expressed through racial nomenclature, inflect clinical research designs and sampling methodologies in global clinical trials. The paper illustrates that race produces particular kinds of bodies and regions as suitable for pharmaceutical exploitation; contrasting predominant examples wherein racialized and economic difference converge, however, the paper argues that Indians are marked as ideal experimental bodies through the simultaneous ascription of racial similarity and economic difference. As such, Indian trials provide an interesting case to think through the complexities and contradictions of racial categorisations in global pharmaceutical capitalism. The paper thus offers a novel, empirically grounded perspective on racialised drug development beyond the US-American context by productively bringing together observations from postcolonial STS as well as the debates on race and pharmaceuticals and clinical globalisation.

Discourses and Practices of Race, Ethnicity, Ancestry, and Genomics in Hawaii *Joan Fujimura, University Of Wisconsin-Madison; Ramya M. Rajagopalan*

This paper shows HOW social assumptions about race get built into the data collection and infrastructures that are used to make genomic categories that some people incorrectly call "biological races." We examine multi-ethnic cohort studies in epidemiology have been repurposed in ways that have contributed to the use of racialized categories in genomics research in and about Hawaii. We examine the development of two central genomic data infrastructures produced by the Multi-ethnic Cohort Study and the International Haplotype Mapping Project. We examine what happens when a biorepository and dataset, organized by ethnic labels, comes to be used, in conjunction with HapMap categories, to construct human population genetic categories. Contributing to recent theory on genomics and race in STS, we examine (1) how

and why Hawai'i became sited as a "virtual natural laboratory" for collecting and examining biomaterials from five different racial and ethnic groups and the consequences of the transformation of those collections into materials for genomic studies. We then discuss (2) the construction of "diversity" against "whiteness" in the geneticists' effort to standardize their study of genomic risk for disease around the globe. We argue (3) that the 21st century has seen the intertwining of "race," "population," and "genome" via GWAS. We show how race has become imbricated in human population genetics and genomic biomedicine. (4) We discuss conflicts between Native Hawaiian concepts of "Hawaiian-ness" and human population genetic concepts of the same, but we also show that the latter are making headway within Hawaiian politics and culture.

Reject scientific recruitment: Biopolitical Citizenship and Identity Politics among Taiwan's Indigenous Peoples *Yu-yueh Tsai, Institute of Sociology, Academia Sinica*

In the 1990s, more and more controversy over the ethical, legal, and social implications of Taiwan's indigenous genes had led the development of biomedicine to face challenges related to recuritmentogy, biopolitical citizenship, and citizen science. The focus of this paper is based on the controversy over Taiwan's indigenous genes and its tendency toward "the refusal of scientific recruitment". Based on qualitative data and historical archive, the paper analyzes indigenous elites (scholars, legislators, non-governmental organization and so on) start to have the ability to voice their protest, challenge scientific recruitment and showed a considerable initiative to biopolitical citizenship of Taiwan's indigenous Peoples . It shows a special bio-political health campaign strategy, which involves some questions of the "citizen science" is a worthy discussion. This paper also reflects the dilemma of collective consent of the indigenous community as the indigenous governance model, including the issue of recuritmentology on trust / distrust, indigenous/Han people, and the unequal power within the indigenous community.

Session Organizer:
Tien Dung Ha, Cornell University

Chair:
Sibille Merz, Brandenburg Medical School Theodor Fontane

205. Materials, Symbols, and Power in Science and Technology
3:00 to 4:40 pm
virPrague: VR 21

Based on the enduring questions on materiality and symbolic interactions in the construction of scientific knowledge, this panel invites presenters to engage with the question of social powers. How material-semiotic theories of STS can shed light on the aspect of social power, permeated into science and technology, that reproduces existing social inequalities and injustice? Scholars have highlighted how technoscientific knowledge and artifacts contribute to racial dynamics, gender categories, environmental injustice, and unequal health outcomes in society. Emerging literature further questions how innovative tools (such as artificial intelligence, automation system, and big data methods) might exacerbate techno-scientifically mediated social inequalities and injustice. By engaging with both core theories of STS and emerging social problems, we aim to create space for thinking about how theoretical and practical achievements in STS can be made in context of rapidly changing society. We invite various cases, methods, and theories in this discussion to narrow discrepancies within STS and to open up future discussions on varieties of assemblage of material and symbolic orders that result in distinctive social outcomes.

Participants:

The Quantification of Humanity and its Discontents: Cases from Self-driving technologies *Yu-cheng Liu, Nanhua University*

In dealing with the idea of artificial intelligence, the real questions will always be what human intelligence is, how it works, and why it works like that. The aim of artificial intelligence is quantifying human intelligence and the ways it operates, in every aspect. Comparing with what Sigmund Freud discussed in his famous book, Civilization and its Discontents, the paradoxical relation of human instincts to civilization, the oppression of the former contributes to the development of the latter, and in doing so, the emancipation of the former becomes an unavoidable fate for human beings to maintain, voluntarily or not, the idea of civilization. It can be observed that similarly, there is a paradoxical or dialectic relation between the idea of quantification and humanity. Although it is not clear if we can accept a future of everything that can be quantified, or re-/presented with algorithms, it happens now and seems to have tremendous effects upon the human world. This paper examines the idea of the quantification of humanity and its discontents with the cases from self-driving technologies. The author argues that the debate about the uniqueness of humanity founds itself on the idea of "double contingency", in terms of Luhmann, and the idea of artificial intelligence, which is a core technology of self-driving vehicles, aims to eliminate double contingency, by which means to make communications between human and machine from ABOUT to WITH, in the ways of pushing humans to the side of machines, instead of vice versa. In the cases of self-driving technologies, it may lead to a future of less humanity than increasing more of it. Following viewpoints of STS, especially Latour's humans and technical objects co-constituting social facts, and Katherine Hayles' "cognitive assemblages", and with perspectives from ethnomethodology and its potential contributions to the development of artificial intelligence, the author will provide an analysis of the quantification of humanity and its implications to a world of human-machines.

Technologies of work and the re-production of power asymmetries *Klara-Aylin Wenten, Munich Center for Technology in Society, Technical University of Munich*

This contribution focuses on power asymmetries in sociotechnical assemblages of labor organization. It is particularly the agile work model that has gained worldwide attention due to its potential of re-organizing work processes in software development and industrial production: among others, it is expected to flatten hierarchies and boost creativity in processes of innovation. Yet, various scholars have already pointed to the increased surveillance over the work processes amplified by new technologies of labor division. These studies often depict technologies at work as instruments for managerial control. However, with reference to theoretical approaches coming from Feminist STS, I demonstrate how power asymmetries do not merely lie in managerial control inscribed in technologies of work. Instead, by using the exemplary case of agile work in German industrial companies, I show how it is particularly the sociotechnical practices of deleting and relegating work tasks into the background that (re-) produce power asymmetries at the workplace.

Conceiving Machine Intelligence: Gender, Data and The Genesis of The "Geek Mystique" *Coleen Carrigan, California Polytechnic State University*

The potentialities of machine intelligence have captivated the imaginations of computer scientists who hope to create mechanized entities that generate new knowledge not derived from humans. The drive for unsupervised machine learning and its attendant "revolutionary" rhetoric are premised on a deficit-model of human intelligence and the obfuscation of labor relations and hidden abodes of surplus value both inside computing workplaces and in broader social domains dominated by pervasive computing. Drawing on feminist, postcolonial theories of care and consent, this ethnography maps the aspirational dimensions of machine learning and the "deletion" of certain labors in technoscience. I argue that gender ideologies and occupational prestige combine to generate technological tropes of religious proportions. I call this phenomenon the "Geek Mystique," norms and values in computing that reflect the power amassed by computer scientists, and, in turn, shape Big Tech— the institutions for which they work. Much like religious sects whose genesis myths invoke a male godhead who conceives and bears life, so too is the Geek Mystique characterized by elitism, gender segregation and the quest for male motherhood. I ask: Where are women in the "sacred" trope of machine intelligence? I aim to excavate and unsettle the power relations enabling Big Tech to coercively secure compliance in regards to inequitable gender relations and Human Behavior Data collection, without meaningful, enthusiastic consent. I envision a society in which

computer science institutions, its leaders and its machines are supervised by public mechanisms of accountability, with positive implications for social justice.

Citations as Infrastructure: Developing an Analytic Framework For The Politics of citations *Asura Enkhbayar, Simon Fraser Univeristy*

In this talk, I am presenting the initial results of my doctoral research project which investigates the politics of citations through the lens of infrastructure studies. By conceptualising citations as infrastructure, we can understand not only how citations and related practices are shaped by incentive structures, but also how the individual researchers brings about real-world change through citations, i.e., the performativity of citations. While Paul Wouters (2014) indicated this direction of research a few years ago, there have not yet been any extensive attempts to develop full theories of citations using critical infrastructure studies. More specifically, I am using the concept of thinking infrastructures developed by Kornberger et al. (2019) in order to develop an analytic framework which enables the investigation of citations embedded in the scholarly ecosystem. However, I extend the three analytic elements of thinking infrastructures that the authors introduce—namely tracing, valuing, and governing—by a fourth dimension: performance. Exploring the performativity of citations guided by the works of Judith Butler and John Austin provides a unique opportunity to study modern academic phenomena such as citational justice (https://areomagazine.com/2019/12/19/citational-justice-and-the-growth-of-knowledge/) and the agency of individuals within the neo-liberal academy. Kornberger, M., Bowker, G. C., Elyachar, J., Mennicken, A., Miller, P., Nucho, J. R., & Pollock, N. (2019). Thinking Infrastructures. Emerald Group Publishing. Wouters, P. (2014). The Citation: From Culture to Infrastructure. In Beyond bibliometrics: Harnessing multidimensional indicators of scholarly impact (p. 20).

Session Organizer:
June Jeon, University of Wisconsin-Madison
Chair:
June Jeon, University of Wisconsin-Madison

206. Speculative Futures and the Biopolitics of Populations: Session 2
3:00 to 4:40 pm
virPrague: VR 22
Participants:

The Speculative Turn in IVF: Reconstructing Fertility, Prediction and Power in the New Reproductive Bioeconomies *Lucy van de Wiel, University of Cambridge*

Against the backdrop of decreasing birth rates and increasing childbearing ages, the global IVF sector is rapidly expanding. This paper explores the relation between these phenomena by analysing how the production of demographic crises find their counterpoint in the creation of new reproductive demands and speculative fertilities. In the face of the global demographic changes projected for the 2020s, IVF is undergoing its own speculative turn, characterised by an increasing number of investments and interventions that are future-oriented and risk-focused in nature. This speculative turn is particularly pronounced in the widespread introduction of data-driven predictive reproductive technologies, which are heavily promoted by large fertility, biotech and pharmaceutical companies and have become an integral part of a new ethos of pro-active fertility management. Major IVF clinics use data analytics and genomics for fertility testing to offer personalised treatment plans and a growing number of start-ups specialise in data-driven technologies, which use reproductive health data and artificial intelligence to offer personalised estimations of embryos' and bodies' future reproductive chances. The speculative capital investments in the new reproductive futures enabled by these data-driven predictive technologies are both rationalised with reference to demographic changes in reproductive timing and rationalise a further expansion of the scope of reproductive risk. Drawing on qualitative interviews with fertility researchers, clinicians and entrepreneurs, this paper theorises the interrelated

demographic, diagnostic, financial and technological speculations that both are at the heart of the speculative turn in IVF and materialise a broader biopoliticisation of reproduction in the early 21st century.

Change with Time? Taiwanese Women's situatedness of being Single and Childless *LI-WEN SHIH, Taipei Medical University*

This paper attempts to explore the experience of single and childless Taiwanese women. Taiwan has recently become one among the ultra-low fertility rate countries, and many scholars have paid attention to Taiwan's issues with low birth rate. Both the present and previous president have taken this as a 'national crisis', and the government has tried to boost the fertility rate by developing policy aimed at improving conditions for families with children. However, the statistics and the academic literature seem to suggest that the main reason for Taiwan's low birth rate is that more and more women are unwilling to get married and consequently don't have children since having children without being married is rare in Taiwan. Many related studies have, however, pointed out that as extended education and labour participation have increased, individualistic values have become more significant, and the population of single and childless women has gone up. In addition to this, many women do get married, but at a later age than previously. While many values from the past still prevail today such as the idea that a woman must be married to have children, the life course of women in the child bearing age may be quite different from that of their mothers' and grandmothers' generations. This project aims at exploring how contemporary women experience this, and how they adjust to and engage in this social material practice of different paths of single or childless. Employing Donna Haraway's 'situated knowledges', this project will conduct interviews with women to explore their situatedness and experience of being single and childless. In the end, this project will contribute to science, technology and society, feminist studies and social science studies by discussing Taiwanese women's experience of, and situatedness in, this transitional reproduction path. Reproduction of the future should also include those who do not have children or are single.

Family Planning in Times of Climate Crises. A Norwegian Case-Study *Guro Korsnes Kristensen, Norwegian University of Science and Technology; Malin Noem Ravn, NTNU*

Population dynamics are claimed to constitute a major part of anthropogenic climate change. A solution often offered to relieve the planet in this regard is the stabilization of populations through population control and family planning programs in the so-called Global South. But what about population policies in the Global North? Is it productive – or even possible – to envisage family planning as part of a climate strategy in high-polluting countries where the fertility number is below replacement level and in some cases even defined as "ultra-low"? In this paper, we explore what has – until quite recently – been a politically and publicly tacit relation between national fertility rates and climate change, by way of analyzing Norwegian media debates from the last ten years. In the period from 2009 to 2019 the Norwegian fertility rate has dropped from 1,98 to 1,56, which has nurtured a wide range of debates on reproduction and family planning, as well as on family policies, immigration, ecological footprints and international solidarity. We regard the voices in these debates as articulations that constitute an emerging intersection of climate and reproduction, and we aim to provide an analysis of how the articulations (re)produce and elaborate on cultural and political imaginaries of gender and nation, as well as well-known dichotomies such as individual freedom versus state control.

Environmental Relations in Shaping Uncertain Biopolitical Futures: The Biology of Ageing under Climate Change *Mianna Meskus, Tampere University*

The biosciences of ageing have become a regime to investigate and, possibly, intervene in the uncertain futures of old age in welfare societies. As previous studies in STS have shown, research on the mechanisms of ageing has contributed to a shift from disease-centered thinking to a quest to know and manage ageing 'itself'. Providing critical analyses on the biology of ageing, these studies have theorized ageing as relational and

situated in multiple ways, extending beyond individual bodily biological markers and processes. While drawing from these studies, this paper focuses on how the idea of 'environment' is formulated and deployed in practical attempts to manage ageing. I ask, how ideas about environmental relations and material surrounds underlie biology of ageing and what kinds of visions of intervention are produced and advanced from the cellular to the population level. I address the biopolitical issue of old age across scales of environmental relations, beginning with stem cell research on ageing and moving on to demographic studies on population change and policymaking on healthy ageing. The paper argues that the iterative making of scientific knowledge on longevity and societal values on ways people are expected to age need to be rethought from the perspective of the ecological crisis.

Climate Crises and Reproductive Foreclosures: Young People, Speculative Futures, and Reproductive (Im)Possibility *Jade Sasser, University of California, Riverside*

This paper explores the ways environmental anxieties manifest as concerns about the possibilities and limitations of reproduction in the context of climate change. It looks at the ways climate crisis is framed in scientific reports and media as population crisis, and how young people draw on these discourses to question the possibility of reproducing in a warming climate. Drawing on dozens of interviews with youth, I investigate narratives that construct the future as a profoundly dystopian space for reproducing, both biologically and socially. Specifically, I look at the role of scientific literacy in producing these speculative dystopian reproductive futures among youth. Finally, I analyze how young environmentalists conceptualize climate justice activism as an opportunity for both sustainable planetary futures and their own future reproductive possibilities.

Session Organizers:
Ayo Wahlberg, University of Copenhagen
Mianna Meskus, Tampere University
Chair:
Ayo Wahlberg, University of Copenhagen

207. Special Session: Bernal Prize Lecture
4:40 to 6:00 pm
virPrague: VR 00
The 4S Bernal Prize winners Sharon Traweek and Langdon Winner will deliver their acceptance lectures.
Session Organizer:
Stephen Zehr, Univ. Southern Indiana
Chair:
María Belén Albornoz, FLACSO Latin American Social Studies Faculty
Discussants:
Sharon Traweek, UCLA
Langdon Winner

208. PLENARY with Ulrike Felt (EASST) and Joan Fujimura (4S)
6:00 to 7:40 pm
virPrague: VR 00
Ulrike Felt: Tenses and tensions: The politics of time in emerging technoscientific worlds Joan Fujimura: Interrogating Data, Algorithms, and Infrastructures After the plenary talks and debate we will screen three videos – get your drinks and stay tuned! Anna Daučíková, On Allomorphing (2017), 16min The trajectory of artist Anča Daučík/ová has moved from glass design and glass-making to the founding of radical journals to professor of art at the Prague Academy, as well as being a former member of the Soviet Artists' Union in Moscow and spokesperson for LGBT rights in Slovakia. On Allomorphing is an exploration of psychological and physical malleability. The title comes from the linguistic term Allomorph, "when a unit of meaning varies in sound without changing the meaning". Three-channel video projection deals with the idiosyncratic experience of the body. It asks how our mind works to reach beyond the widespread dialectics into triple- and poly-lectics, how the mental and the physical intertwine and effect each other to create new forms of reality. The language of poetry here accompanies the practices of morphing and becoming. The viewer is challenged to perform the visual exercise in synchronizing three visual fields with different styles of camera

work. Alexandr Hackenschmied, Aimless Walk (1930), 8min This Czech avant-garde film turns away from a purely celebratory approach to the city (Prague). The camera follows a detached protagonist on his wanderings as his highly subjective journey becomes a fragmented visualization of urban landscapes. He changed his name to Alexander Hammid when he became a citizen of the United States in 1942. He is best-known for his work in documentary film as director, cameraman and editor. Wes Shrum, How to make absinthe (Jan 2020), 5min Do you crave a Prague sensation during our virtual meeting? The conference organizing team recommends both Making and Doing a glass of absinthe, the anise-flavored botanical drink, favorite of 19th century poets and artists, once thought to drive them insane owing to hallucinogenic properties. Illegal for decades, its revival began in the 1990s with new EU laws and the recognition that alcohol was the only psychoactive drug involved! How to Make Absinthe features a senior bartender from the Absintherie in Prague. With fire and flair, Otto demonstrates the process of making absinthe in both Bohemian and French styles.

Session Organizer:
Tereza Stockelova, Institute of Sociology of the Czech Academy of Sciences
Chair:
A. Aneesh, University Of Wisconsin, Milwaukee
Speakers:
Ulrike Felt, University of Vienna, Department of Science and Technology Studies
Joan Fujimura, University Of Wisconsin-Madison

THURSDAY, AUGUST, 20

209. Science and Technology Studies on Traditional, Complementary and Alternative Medicine (TCAM). Session three, focus on translation of knowledge.
10:00 to 11:40 am
virPrague: VR 01
Biomedicine has been very successful in lengthening lives, curing diseases and enhancing the quality of life in numerous ways in contemporary societies. Yet, countless people across the globe choose to complement biomedicine with different non-evidence-based therapies, healing practices and technologies. Some people even use these as alternatives to biomedicine to go "back to nature", to resist medicalization and technologization by refusing vaccines and medications, or to simply express different lifestyles, worldviews and perceptions about good health. For STS scholars and sociologists of science, these practices and expressions do not only boil down to resistance or ignorance of medicine, but offer fruitful sites to analyse public understanding of science and biomedicine, to interpret relations between expert and lay knowledge(s), and to understand hidden and suppressed knowledges of subordinate groups such as women, migrants, Asian, South American and African traditional healers and practitioners in the postcolonial sense. The integration of traditional and complementary medicine into biomedical spheres, as therapies and objects of scientific study, also increasingly blurs boundaries between these domains and has led to new concerns around knowledge colonisation. This panel seeks contributions that explore traditional, complementary and alternative medicines (TCAM) and practices from STS perspectives. In particular we invite papers that target the role of STS theories and methods in studying TCAM. For example, how can we understand aspects of TCAM use, knowledge production, professionalization, standardization, ethics, globalization, and integration of TCAM – if focusing on material practices, hybridity, actor networks, or boundary work?
Participants:

Autheniticity: Five Paths of Ayurveda *Wesley Shrum, Louisiana State University*

Five thousand years ago in India, medicines were prepared with green plants, herbs, and minerals; ancient manuscripts were preserved on bark and stone. This was Ayurveda, the "knowledge for long life," the oldest healing system in the world. Yet throughout its history, practitioners have struggled to achieve "authentic" ayurvedic practice. Authenticity presents five institutions representing contemporary forms of treatment and philosophy. From a modern medical school, through tourist

resorts, spiritual centers, and panchakarma treatments, to the oldest center in the world, this film examines the multiplicity of practices in contemporary Kerala, providing audiences an overview of Ayurveda in the modern world. Authenticity may be realized in a multiplicity of ways.

"Riddle Down Underground Medicine" : Ethnography, Theory Building And Medical Research On CAM In The U.S.
Geoffroy Carpier, DySoLab Université de Rouen - DEPT/Triangle Université Jean Monnet

Drawing on a 3-year networked ethnography among federal agents, scientists and health professionals working on medical research on CAM in the U.S., this communication offers a grounded theoretical framework for the study of knowledge production in flux when CAM is differentially integrated to biomedical arenas and to modern scientific and bureaucratic activities. I will put into dialogue the ethnographic tools I used, the necessary adaptation of my abductive inquiry and situational analysis, and the bricolage of a plural analytical framework. To ground more precisely and characterise phenomenon often described as « hybrid » when CAM and biomedical worlds share porous and leaky, interlocking and intersecting frontiers, I suggest a transversal STS approach inspired by the three images developed by cultural anthropologist Emily Martin : the citadel, the rhizome and the string figure. Attentive to actors' practical mobilization and symbolic commitments in action, I delineate different group identities among federal agents, scientists and health professionals around both conflictual and consensual aspects of this mixed social space of medical research on CAM. I show how these groups and their related networks engage with different regimes of boundary work, craft many 'landscapes of meaning' around CAM, science and medicine and ultimately produce and share different moral economies related to making CAM amenable to federal scientific research. This framework allows me to analyse how CAM is negotiated among actors and their networks focusing on the plural and multi-faceted interactions that flow both into, out and through the boundaries of scientific, medical and bureaucratic activities. It finally provides a rich basis for reflexivity around tensions between emic and etic discourses and practices on CAM and science.

Between Omniscience and Objectivity: Situated "Reasoning" (yukti) and Boundary-making in Contemporary Ayurvedic Medicine *Lisa Allette Brooks, University of California Berkeley*

This paper examines the epistemological category of yukti ("reasoning") among Ayurvedic physicains in Kerala in relation to what Haraway calls, the "risky practice" of boundary making. When the topic of yukti arose in interviews and conversations I had with physicians about touch and diagnosis, it was employed to describe a subjectively situated reasoning employed as a means of valid knowledge. The concept of yukti was engaged by physicians to position and legitimate their practice of medicine in relation to two epistemological ideals: 1) textual authority and the classical Ayurvedic notion of an authoritative individual (āpta), whose omniscient perceptual abilities hinge upon a clear dispassionate mind, and 2) biomedical diagnostic technologies, understood to play—in Haraway's words—"the god trick of seeing everything from nowhere," a "myth" put "into ordinary practice" (Haraway 1988). Rather than positing one omniscient or objective view as constituting authoritative knowledge, the concept of yukti is engaged and reimagined to provide physicians with an epistemological basis for a dynamic but coherent convergence of their own multiple perspectives and subject positions. Based on two years of ethnographic research in India and translation of Ayurvedic Sanskrit treatises, this paper contributes to the development of decolonial STS methodologies through translation, bringing the Ayurvedic concept of yukti into conversation with STS and feminist science studies analytics, such as 'situated knowledges' and boundary work.

Session Organizer:
Jenny-Ann Brodin Danell, Umeå university, Department of Sociology

Chair:
Pia Vuolanto, University of Tampere Research Centre for Knowledge, Science, Technology and Innovation Studies

210. Negotiating independence in academic careers
10:00 to 11:40 am
virPrague: VR 02

Scientific communities expect their members to act as intellectually independent peers who autonomously formulate problems and contribute solutions to the community's knowledge. The realities of knowledge production often deviate widely from this fiction. Intellectual independence is gained and maintained by negotiating multiple interdependencies, and is unevenly distributed among collaborators and over the course of an academic career. Early career academics must gain independence from those who supervised them as doctoral students and postdocs, a process that often includes negotiations about ideas and research objects taken from one laboratory to the next. Researchers in many fields must negotiate their aims and later contributions with collaborators. Technicians and other collaborators in essential supporting roles may never gain the same independence as researchers. The negotiation of independence takes place in organisational settings that guarantee varying degrees of formal autonomy to researchers at different career stages and in different roles, which do not always translate into actual independence. Actual independence is also shaped by national science policies and modes of resource distribution as well as authority relations in international scientific communities. The independence academics want, need, and can achieve thus varies between researchers with different career goals and aspirations, between organisational environments, between national science systems, and between fields of research. Independence also varies strongly by gender and minority status, over time and by career stage. We invite colleagues addressing any aspect of negotiating independence during the academic career to speak in these sessions.

Participants:

How do different career systems enable researchers to become independent? *Grit Laudel, TU Berlin*

Scientific communities expect their early career researchers to become intellectually independent. In many fields, this includes developing an individual research programme in which researchers formulate plans for their research that exceed the time horizon of individual projects. Realising such a research programme requires a position that enables independent research. However, the formally guaranteed independence of many university positions says little about the actual independence researchers can achieve. This presentation reports results of a comparative study of the ways in which researchers in four national career systems (Germany, UK, USA, France) and in two science fields (experimental physics, theoretical chemistry) become independent. The study is based on data from semi-structured interviews with early career researchers on formally independent positions. The results show that a consistent pattern across all four research systems is the restriction of researchers' independence by their scientific community, which decides on external funding and on the researcher's future positions. This limits the innovations that are possible in this career phase. Researchers on fixed-term positions are further constrained by the time horizon in which they need to produce results in order to be able to continue their career. The resource situation of French researchers prevented many of them from conducting independent research at all, while their colleagues in lower-strata universities in the US and the UK were forced into niches in which competition is low, and their German colleagues were forced to negotiate their research with professors who controlled the infrastructure.

Scientific leadership and Research Evaluation. The Case of Chemistry University Departments in Spain *Carmen Corona, INGENIO (CSIC-UPV); Carolina Cañibano, Ingenio (CSIC-UPV) Universitat Politècnica de València*

Research evaluation practices are institutionalised and are therefore part of the academic culture in the Spanish research system. (Cañibano et al. 2018). The Spanish National Agency for the Evaluation of Quality and Accreditation establishes the criteria in all fields for obtaining a positive research evaluation to achieve individual career milestones (promotions, accreditations or economic rewards). Recently, the criteria have changed and incorporated new dimensions such as proven scientific leadership (RD 415/2015). According to the Agency, leadership is

demonstrated by being the principal investigator of a grant project. The criterion applies to all disciplines, having potential different effects and results according with disciplinary epistemic practices (Gläser et al. 2018). We explore the case of chemistry, in which achieving independence is particularly difficult, understanding independence as "being individually free to choose and pursue one's own research agenda and being trusted to manage the pattern of one's own working life and priorities" (Henkel 2005:169). We address whether leadership as understood by evaluators is compatible with "dependency" in academic careers in chemistry.   We use data from 23 in-depth narrative interviews conducted in two chemistry university departments in Spain. Interviewees stated that demonstrating leadership often involves starting an independent career. Nonetheless, this is difficult. The narratives show how the pressure exerted by the evaluation system to demonstrate leadership contrasts with the epistemic characteristics of the field and its inter-dependent structures (Whitley 2003), which has an impact in the development of individual careers.

'It Is My Project and I Am the Boss': power relationship and authorship in Chinese academic project teams *Lianghao Dai, University of Göttingen, Germany*

It has been widely discussed by Chinese media and inside Chinese academic communities that junior researchers, who are postdoctoral researchers and students in Chinese academic research teams, have very limited academic independence (Dai & Zhang, 2014). Yet limited research has drawn attention to the logic that senior researchers, who are always the juniors' supervisors as well as the team leaders, deploy to run his/her research team in an exploitive relationship (Goodyear & Johnston, 1992). This research investigates a dispute over authorship, citation and, in general, the issue of intellectual property, that emerges from an international publication plan initiated by Chinese and German academics. The dispute takes place between senior researchers and their former co-supervised master student (the junior researcher) over the issue of whether the intellectual property of a published thesis sponsored by the senior researcher's research project can be automatically transferred to the senior researcher, who acts as 'the boss', who 'owns' the research. By analyzing all written documents of the whole negotiation process, this research details reasons that seniors deploy as excuses to seize the junior's academic property and how the juniors defended on it by mobilizing different resources of academic standards. Out of these analyses, this paper maps out three different aspects of academic control against individual academic independence. In doing so, this research draws a glance at multiple layers of power inequality on intellectual property in research teams and propose potential reasons for further understand the construction of such inequality.

Gender Bias In Scientific Authorship? Evidence From Factorial Survey Experiments *Justus Maximilian Karl Rathmann, Universität Zürich; Antonia Velicu, Universität Zürich; David Johann, Universität Zürich; Heiko Rauhut, Universität Zürich*

Male scientists are disproportionately frequently assigned to the prestigious first and last author positions, studies show. This can hinder women in their career advancement in science and drive them out of science, as authorship of scientific publications provides access to third-party funding and permanent academic positions. The determinants behind this phenomenon, however, are yet to be studied. A bias against female authors could be rooted in social homophily, as individuals prefer individuals sharing social characteristics with them, such as e.g. gender or social status. Additionally, having less access to power structures in male-dominated scientific fields could hinder women's reach for prestigious author positions. We draw upon a newly-collected data set, based on a large-scale survey conducted among scientists in Austria, Germany and Switzerland. We implemented a factorial survey experiment in which respondents had to order three fictional authors on fictional scientific articles based on information about gender, academic status and contribution of the authors. These characteristics were randomly varied among the authors on the vignettes. The factorial design enables us to investigate whether scientists place female authors ceteris paribus on lower, less prestigious author positions. Instead of merely depicting potential gender bias in scientific author odering, this method allows us to explore the extent as well as social and professional determinants of the issue. Insights from our study will provide valuable insights on the perception of competitive science and will be able to suggest widespread implications on how scientists perceive authorship.

The 'problem children': What constrains Arts, Humanities and Social Sciences participation in inter- and transdisciplinary research? *Bianca Vienni Baptista, ETH Zürich; Isabel Fletcher, Science, Technology and Innovation Studies, The University of Edinburgh*

Arts, Humanities and Social Sciences (AHSS) are historically recognised as relevant contributors in knowledge production processes. Nevertheless, the roles these disciplines perform in interdisciplinary (IDR) and transdisciplinary research (TDR) are often mostly limited to instrumental and subordinate roles such as public engagement. Unequal participation of AHSS researchers in IDR and TDR causes their exclusion from scientific communities. While policy reports frequently highlight the contribution AHSS disciplines can potentially make to solving societal challenges, the academic literature suggests that humanities researchers are seen to have little to offer, and their contributions are thought difficult to integrate. This AHSS-STEM (Science, Technology, Engineering, and Mathematics) integration gap remains a significant challenge for many scientific communities. We present initial results from a H2020 project entitled «Shaping interdisciplinary practices in Europe» (SHAPE-ID) that addresses the problem of how to better integrate AHSS disciplines in IDR/TDR. We conducted a review of academic and grey literature on this topic. Using Grounded-Theory and content-analysis, we identified 25 factors that influence AHSS participation in IDR/TDR. We conclude that, despite the efforts of funding agencies, AHSS disciplines participation in IDR/TDR is limited and affects the type of inter- and transdisciplinary knowledge production processes that are driven. Some of the factors that restrict their inclusion are related to: assumptions and ignorance about their contribution, academic tribalism, the dominance of disciplinary-centered career paths, and inadequate funding for IDR/TDR. Based on these results we conclude with some recommendations about how to facilitate the participation of AHSS researchers in IDR/TDR.

Session Organizers:
Grit Laudel, TU Berlin
Ed Hackett, Brandeis University

Chair:
Grit Laudel, TU Berlin

211. Be(com)ing industrial: objects, scales, and power dynamics at play-1
10:00 to 11:40 am
virPrague: VR 03

Be(com)ing industrial: objects, scales, and power dynamics at play Benjamin Raimbault, Institute For Research and Innovation in Society; Mathieu Baudrin, CSI-Ecole Des Mines De Paris Since the organization of the sugar cane plantations, industrial processes have colonized not only the model of manufacturing production, but also logistics, bio-objects, and the digital world. The common statement describing the service and digital societies as post-industrial ones is weakened by the continuous expansion of industrial processes where the know-how to make things, people, processes, more scalable and more profitable. In the STS literature, industries have been much more discussed regarding their role in risk and pollution than regarding their specific regimes of constitution and perpetuation. This panel intends dealing with contemporary industrial processes through a twofold questioning: 1/ How scalability can be studied in the making? What kind of knowledge are produced to make things and tasks scalable? How do industrial processes articulate initial projects, international norms and cost evaluation? What does it do to the objects, to persons and spaces that are absorbed in those processes? 2/ How do industries define themselves across time? How economic interests emerge? How techno-industrial assemblages are reshaped through critical moments? Being an industry is not as obvious that it may be, it requires a process of

self-definition, collective identification, political representation, that can't be taken for granted. The ability to identify what are the core and might shift across time to preserve the industry facing controversies. This panel invites empirical and theoretical papers that document or help to answer to one or more of these questions.

Participants:

From Domestic to Industrial: Municipal Waste at Scale
Elizabeth Duncan, University of Sydney

Industrial processes are made through modes of (dis)assembling objects at scale. It is the logistics and practice of collection, disposal and transformation of matter at scale that makes the waste industry 'industrial'. This paper seeks to question what is lost and gained in the process of translation, both in a material and discursive sense, from domestic waste (matter that is discarded by individuals) to industrial waste (a volume of material discards requiring a coordinated response(ability) from a municipal council or a private waste company). Grounding the discussion in ethnographic research conducted in Sydney, Australia across different public and private waste operators, this paper will look at how the waste and resource recovery industry has evolved. As part of this process, attention will be given to the particular ways in which the industry is a patchwork of local and globalised industries, with an increasingly stratified mix of public and private operators. This paper will contribute to STS discussions relating to the ways in which matters of waste become translated through scale, and will question what it means to be response(able) for our material discards at an industrial scale.

Industrial ecological engineering: uprooting soils and soil biology. *Germain Meulemans, Aberdeen University/Universite de Liege*

In recent years, several strands of biological research have been reframed as means of developing synthetic materials or ecosystems, transforming the relationship between knowing and engineering nature, between science and industry. Soil ecology has taken part in these transformations by engaging in the construction of "synthetic soils" in order to restore or revegetate urban and post-industrial sites. The construction of these soils from various mineral and organic materials - usually waste generated by human activities - involves forming new alliances with soil beings (worms and bacteria), and became growingly described as a new disciplinary field of "ecological engineering". This presentation examines how forms of industrialization of ecological soil engineering are taking place today in Paris. I explore how, in a context of neo-liberalisation of public research, soil ecologists soon allied up with industry and start-ups in the field of waste management, while at the same time dissociating themselves from citizen and associative protagonists which were also developing numerous experiments in soil construction. I describe how the scalability of soil construction techniques was made possible within several soil construction experiments held in France since the early 2000s, where both processes and ways of collaborating were experimented and formalised. I explore how the coordination of different actors within these experiments participated in the redefinition of what is soil or waste, and the reformulation of professional fields at stake, where the ecologist becomes a consultant while the excavation worker becomes an ecological engineer.

The Follies of Scaling-up Processed Foods in India *Barkha Satish Kagliwal, Cornell University, Department of S&TS*

STS scholarship is concerned with economic assumptions within technologies and have theorized the role of models and accounting systems in performing 'the economy'. This literature focuses on processes that achieve economization. In this paper, I show that scalability is an important aspect of economic considerations both for industrial and state actors. I analyze a state led national (arguably) top-down initiative to scale-up the Indian food processing industry. I argue that scaling-up becomes the basis of forming economic and business visions, that are then prone to follies and 'challenges'. My empirical case is the 'Mega Food Park' initiative of the Indian national government. The state has approved 42 large industrial parks, envisioned as infrastructural hubs to transform the food industry. It is aimed at scaling-up the production of processed foods for circulation in national and inter-national markets. I ask, how do we characterize the limits of top-down attempts at scaling-up industrial production? How do practices of standardization through technological intervention achieve 'large-scale' status, and what are the limits of such practices? I discuss findings from 30 interviews with producers, management consultants and policy markers, to show that actors' visions of the industry inherently deal with the question of scale, especially when making cost v/s quality decisions. This interaction between economic considerations and technology reveals the follies/limits of larger scale food production. It generates challenges: a) for standardization of practices, b) in capturing the specificity of taste, and c) maintaining regional authenticity.

How to make a living being an industrial object: attempts to produce phagotherapy in France *Jessica Pourraz, Université de Bordeaux*

Phage therapy, i.e. the use of bacteriophage viruses (or phages) to treat human bacterial infections, was discovered in the 1920s but has been eclipsed by the massive rise of antibiotics from the 1940s onward. In the context of the rise in anti-microbial resistance, there is a renewed interest in France in phagotherapy, which is not without encountering a certain number of obstacles and difficulties in its development. Indeed, phages are highly specific: each bacterial infection requires particular phages, making phage therapy a tailor-made medicine difficult to scale-up. However, for nearly fifteen years, a French start-up has been trying to industrially produce phage therapy and to make viruses emerge as drugs, which has never before been achieved. Based on a multi-sited ethnography within the start-up and with researchers, doctors, pharmacists and representatives of regulatory agencies, this communication proposes to question the material and regulatory conditions necessary for the industrial production of phages. By looking at the difficulties encountered by the firm in making phages an umpteenth antibiotic and in rendering the production of phages scalable, this contribution aims to highlight the disruptive nature of the phage, which as a living entity is not easily domesticated. This is evidenced by continuous adaptations and adjustments that the industrial process requires on a daily basis to the staff, their tasks, spaces and location.

Laboratory Life Facing Health & Environmental Risks: The Case of 3D Metal Printing *Lise Cornilleau, Ecole Normale Supérieure Paris-Saclay*

3D metal printing is an emerging technology that promises to reduce wastes by fixing objects, and to use less material by printing more precise and lighter pieces. These applications lead its proponents to argue that it would be part of the solution to the environmental crisis. But the technology itself presents risks for users' health as for the environment, two issues which are currently under scrutiny by standards setting organizations. The fact that the technology is still expensive and not stabilized refrains big aeronautic and car industries from using it massively: they still work on how to improve the productivity of the process, both in their R&D departments and in their collaborations with academics. As a consequence, these research units are at the forefront of experiencing both 3D potentialities and its risks: researchers & technicians have to imagine "health safety and environment" practices in the context of an absence of clear risk characterization as well as any existing standard. I will present the results of an ethnographic study of laboratories facing the risks of 3D metal printing, showing how these risks become a topic of research leading to the invention of safety norms within the lab. This case suggests that laboratories are here at the forefront of the normalization of the risks of emergent technologies, thus reversing the more frequent perspective in STS studying the risks of the end product for consumers.

Session Organizer:

Benjamin Raimbault, Institute For Research and Innovation in Society

Chair:

Benjamin Raimbault, Institute For Research and Innovation in Society

212. Fossil Legacies – Projects, Protests and Promises of Phasing

Out Coal
10:00 to 11:40 am
virPrague: VR 04

The certainty of climate change and the availability of alternative pathways have not brought about post-fossil societies. In the Czech Republic, Australia, Germany and many other regions, coal is still continuously extracted. In this context, the prospect of a just energy transition is being disrupted by 'fossil egacies': Be it the technological cultures of fossil fuels, the populist distortion of worker interests, worker pride, or the corporatist alliances of democratic parties – these and other legacies jeopardize the economic livelihood of some, and the survival of others. In this panel we discuss the practices of disassociating industrial regions from the dependency on coal. We want to stress that STS contributions to energy research can appropriate a relational viewpoint to articulate the transformative and contested processes that the coal phase out engenders. What power dynamics unfold when a plethora of protests, projects and promises shapes the phasing-out process? How are infrastructures or socioecological spaces (re-)appropriated? How are practices of belonging and ownership re-negotiated? The contributions discuss the sociotechnical dependencies, the practices of (dis-)association and the affects of mourning, re-valuation and aspiration that emerge when actors replace the old with the new. The contributions in this session will historically trace, sociologically map, or philosophically question the notion of fossil legacies.

Participants:

E/valuations here/elsewhere: re-assembling worth in the coal phase-out *Susann Wagenknecht, TU Dresden*

In 2019 the German government decided to pull out of coal by 2038, a phase-out with immediate consequences for Lower Lusatia. To compensate for the loss of an economic sector, Lower Lusatia will receive several billions in federal compensation. But how will federal money help to manage Lower Lusatia's 'energy transition' in environmentally, economically, and socially sustainable ways? Will this money appease voters of right-wing extremism, will it support civic groups and civil society? These are pressing questions when massive funds are available--but mayors, municipal employees, and Lusatians are weary of being made Germany's real-world laboratory for fossil fuel phase-out. In fact, Lower Lusatia has been having its economic, cultural and political value continuously studied, compared, and evaluated for decades. This paper is based on an ethnography in the making. In this paper, I analyze my encounters in the ethnographic field with reference to neo-pragmatist sociologies of critique (Boltanski & Thévenot): I examine which measures of worth are mobilized and how they are mobilized in situated materialsemiotic arrangements of experimentation, consultancy, critique, protest, and complaint. I explore what precisely the objects of valuation, evaluation, and devaluation are and where they are placed. In so doing, I foreground the spatiality of valuation and trace topologies of critique (Schweitzer). My conjecture is that valuative and devaluative efforts, appraisal and invective map onto distinctions between here and elsewhere (Marcus). In this vein, I outline how value emerges and condenses on Lower Lusatia like water droplets on a window (to energy futures, Watts).

Restoring a broken landscape? A 'Pioneering Model' From The Ruhr Valley, A Former Coal Mining Hub *Stefan Laser, Ruhr University Bochum*

An energy transition is due. Fossil fuels must be replaced by renewable alternatives, accompanied by new, easy-to use infrastructures thus establishing more sustainable lifestyles. Based on the 2018 IPCC 1.5° report, a transformation should be quickly realised, using well-known technologies. One such approach is to reclaim former mining infrastructures. This paper presents exploratory ethnographic research that discusses a particular area set in the Ruhr Valley, West Germany. In the middle of the former coal mining hub, local actors explore various options of reusing industrial remnants. I will focus on a self-declared pioneering model where mining wasteland is to be rebuild, which includes the demolition or repurposing of coal mines and stocks. This is connected with multiple other adjoining areas that, taken together, are to be 'developed' afresh (going under the name "Freiheit Emscher"). The model deals with toxic legacies, but it first and foremost wants to establish new

shopping areas, leisure activities, industrial parks, and last but not least new renewable energy plants. To establish this setup is a challenge with many unknowns. There is a "Masterplan", but mines are still under supervisory authority and plenty of decisions have to be taken. This area is not your typical urban centre. I draw on Waste Studies and Energy Humanities to discuss old dependencies, new flows, and venues for STS collaborations. With this paper I especially reflect the toxic legacies of former mining practices, to ask how the (broken open) underground mountains from the carbon age and more-than-human activities alter the "pioneering model".

Regional exnovation. Structural change and sociotechnical imaginaries in Lusatia and the Ruhr area *Alexander Wentland, Technical University of Munich; Jeremias Herberg, Institute for Advance Sustainability Studies (IASS) Potsdam*

In this talk, we examine how coal mining regions re-articulate socio-technical imaginaries and historical trajectories in the course of politically and economically induced transformations. As examples, the Ruhr and Lusatia serve us as empirical crystallization points for the interplay of narratives, socio-material infrastructures and political practices. Like hardly any other place in Germany, both regions are challenged to reconcile their industrial and fossil past with a crisis-laden present and the outlook for a post-fossil future. Against this background, the emerging change in once prosperous regions of coal and heavy industries represents a conceptual challenge for both innovation policy and innovation research. The repeated failure to modernise so-called structurally weak areas has shown the limits of thinking about innovation in the form of quasi-universal models, ranging from under-complex theories of regional innovation systems to the mostly unsuccessful import of recipes for success from other regions such as Silicon Valley. Innovation as an economic policy paradigm even is one of the main causes of the massive global economic disparities, social upheavals and ecological emergencies of the present day. Only recently, political decision-makers are seeking to compensate for those legacies by phasing out fossil industries and by involving local communities wherever possible. We critically discuss the persistent weaknesses of both experts and policy makers to seriously incorporate local socio-economic traditions, unique political cultures and region-specific visions of the future into the dominant innovation paradigm.

Session Organizers:

Jeremias Herberg, Institute for Advance Sustainability Studies (IASS) Potsdam

Thomas Turnbull, Max Planck Institute For the History of Science

Chair:

Jeremias Herberg, Institute for Advance Sustainability Studies (IASS) Potsdam

213. Theorizing in STS
10:00 to 11:40 am
virPrague: VR 05

The conference call places reflexive engagements within STS at the center of its concern. In our panel, we would like to respond to that invitation with respect to practices of theorizing. In line with its interdisciplinary calling, STS encompasses a multitude of theoretical frameworks that interact with each other in many ways. One of the core preoccupations of STS has always been the analysis of various epistemologies and their consequences. Our panel is going to attempt an exercise in reflexivity by applying this analytical stance to STS themselves. In doing so, we try to engage theories not as static, self-contained entities. Rather, we would like to invite the participants to address practices of theorizing within STS, thereby placing an emphasis on theory-crafting as a fluid and contingent enterprise. Contributions may or may not address some of the following questions: What characterizes STS theory? How do we as STS scholars pursue the work of theorizing/working with theory? How do practices of theorizing reflect a sense of urgency in face of existential threats? How do we relate theories to our fields and vice versa? What alternative approaches of theory-building could be pursued? What place does theory hold in STS? How could/should its role shift? In raising those questions, we try to explore the potentials that STS theorizing holds regarding the instable and

shifting worlds that we all currently face. We would like to spark a discussion that tries to connect our scholarly practices to the challenges we are entangled in.

Participants:

Critical Theory Of Technology, Non-Knowledge And Algorithms: Conceptualising Power In The Digital Age
Konstantin Macher

The paper presents the approach to theory-building I engage with in my dissertation that is situated within Critical Security Studies and STS-IR. My research focuses on software opacity and security politics in the digital era. In my genealogy I embrace recent contributions to critical security methods that reject a linear and hierarchical approach to theory, methodology and methods but instead develops all of these in conversation with each other in a reflexive research process. International Relations scholars have increasingly embraced Science and Technology Studies to analyse the relationship between technology and politics, but the literature is yet to pay more attention to the (potential) contributions of non-knowledge studies to the field. While many authors have recognized the important role of algorithms in world politics and the difficulties to analyse these – due to limitations in the access to their source-code – the literature surprisingly lacks a detailed analysis of this opacity of algorithms itself and the effects it unfolds. Drawing from Critical Theory of Technology and and recent contributions to non-knowledge studies, the paper conceptualises the opacity of algorithms as an enactment of (non-)knowledge of their technological design through cryptography. This enactment is generative of power in contemporary world politics, hinders the democratization of technologies and creates new insecurities from which technology corporations gain more agency in world politics. I argue that power as conceptualised in the paper has become significant in the digital age and is likely to gain in relevance as society is more and more organized around digital technologies.

Research trajectories. When interdisciplinary collaboration tries to come a long way *Cornelius Schubert*

My presentation will draw on a long term collaborative research project set up within the 12-year time frame of Collaborative Research Centres funded by the German Research Foundation. The project is currently in its fifth year and awaiting inspection for extended funding. It brings together computer graphics and social science with the aim of developing novel visual representations for cooperative-diagnostic data in neurosurgery. Looking at this future oriented 'longue durée' of a complex research trajectory, conceptual work and case making can only be considered as an ongoing process that is in constant need of adjust-ment, reflexion, evaluation, legitimisation and justification while facing possible desertion of pro-ject partners, a significant turnover of interlocutors, inspections from the funding agency and un-foreseen technical advances or discontinuities. From the perspective of ethnographic research, the long-term collaborative engagements and in-teractions within this project are thus at least twofold: engaging with computer science in an effort to design a technical system and interacting with a domain of application where scarce resources of personnel and time are potentially limiting access to the field. In essence, this close collaboration enables the social scientists to perceive the social (i.e. cooperation on a neurosurgical ward) through the lens of the technical (i.e. software design) while it enables the computer scientists to make reverse observations by perceiving the technical through the lens of the social. This specific collaborative set-up indicates how long-term ethnographic research may be conceived and put to use in the emerging field of digitalSTS.

Where are the Missing Masses in the Missing Masses? Attending to the Centrality of Problems in Inquiry; a Lesson from Modern Cosmology *Adrien De Sutter, Goldsmiths, University of London*

Almost thirty years have passed since Bruno Latour asked, famously, where are the missing masses in sociology. Seemingly inspired by an analogous problem in contemporary physics, in his 1992 paper 'Where Are the Missing Masses? The Sociology of Few Mundane Artifacts', Latour argued that sociologists should also attend to nonhumans in their description and consider the ways in which the material world plays an active role in matters under investigation. During the past thirty years, which has seen the spread of Actor-Network Theory, rise of a 'new materialism' in STS and a material turn in social theory, it may be said that the missing masses of sociology have well and truly been found. However, something seems to remain missing in today's missing masses. By returning to the case-study that began Latour's paper - the problem of the missing masses in cosmological physics – and attending to the practices of cosmos-making of modern physicists, I argue that the time has come to account for the more-than-material: a return to thinking about the ideas, concepts and other immaterial beings that permeate the many worlds that researchers consider. Finally, it will be this paper's proposition that inquirers should attend to the centrality of the problems that animate the practices under consideration – that is, not merely as a conundrum that humans 'own', nor as setting the scene in which humans and nonhumans play out – but as themselves actors in mobilising humans and nonhumans, including both material and immaterial beings in their realisation and resolution.

Session Organizers:
Sebastian Dahm, Bielefeld University
Tim Seitz, Technical University Berlin

Chair:
Sebastian Dahm, Bielefeld University

214. Dilemmas for science and policy - Session 2
10:00 to 11:40 am
virPrague: VR 06

Participants:

The dilemmas of regulatory science in the case of the assessment of Health Claims *Noemi Sanz Merino, University of Balearic Islands; José Luis Luján, University of Balearic Islands; Oliver Todt, University of Balearic Islands*

In this contribution we analyse several factors, epistemic as well as non-epistemic, that play a role in expert advisory and decision making in the regulation of health claims. We consider the regulatory policies in the US, the European Union and Japan. First, we will show how the influence of different non-epistemic values results in different "epistemic policies" (i.e. methodological decisions to validate procedures of assessing scientific evidence) during the benefits assessment of health claims on foods; and how these more or less 'restrictive' epistemic policies lead to non-epistemic consequences, such as more or less 'technocratic' regulatory styles. Second, following the STS approach, we will present a number of dilemmas, both from an epistemic as well as a policy standpoint, that arise from the implementation of different regulatory styles. The epistemic policy that we identify as the "classical" model of health claim assessment correlates with technocratic styles of governance. Paradoxically, its emphasis on the highest possible epistemic standards in the assessments could have negative consequences both for the nutrition sciences, as well as for the important policy aim of improving public health. Although alternative epistemic policies are currently implemented in different countries, they imply different dilemmas. We argue that the usefulness of regulation diminishes in those cases where the epistemic policy is based on a kind of "constructive" model of assessment. Whereas in the case of epistemic policies inspired by deregulation, the very science base of the assessment is undermined, limiting the social and policy import of the contribution of expert advice

The regulative perspective of interactions among multiple Science-Policy Interfaces—a case study of wetland conservation in Taiwan *Chen-Guang Lee, National Taiwan University*

The interchanging roles and dynamic interactions of Science–Policy Interfaces (SPIs) on complex environmental issues bring scientific knowledge into the arenas of policymaking and decision making. In the hierarchical process of decision making, scientific information is constantly simplified by factors such as the limited mind capacity to process information, knowledge

contestation, and political power. This phenomenon is common. However, based on mutual interests, a science-policy coalition is frequently formed between specific scientists and decision-makers that may further narrow down the policy options. This paper found that interactions among multiple SPIs could widen the participation of scientists and policymakers and balance the influences of specific science-policy groups. This paper uses the method of participatory observation to study the process of legislation during the period of policy development from 2007 to 2015 in Taiwan. The provisional results show that the SPIs and functions of their interactions in the policy of wetland conservation are multiple and diverse. The diverse interactions of SPIs may challenge and further balance the impacts of specific science-policy groups. Broadening the participation of scientists and policymakers may adjust the bias of decision-making. This paper will contribute to STS regarding how scientific knowledge and decision-making interact in the context of multiple SPIs, and provide suggestions for institutionalising the interactions of multiple SPIs to adjust policy bias made by specific science-policy groups.

Changes In Formalisation And Separation Of Scientific Advice For Policy: The Case Of ICES *Kåre Nolde Nielsen, UiT - The Arctic University of Norway; Sebastian Linke, University of Gothenburg; Petter Holm, UiT - The Arctic University of Norway*

STS research has advanced the understanding of practices in scientific advisory organisations and their relationships with policy-making bodies. Recognising a need for further conceptualisation, Sundqvist and colleagues proposed the concepts "formalisation" and "separation" to capture two essential dimensions of these relationships. Formalization involves the procedures for assessing and summarizing research for policy. Separation concerns the boundary of science and policy and the affiliations, roles and mandates of those involved in advisory activities. In this article, we contribute to this research agenda with a longitudinal study of the changes in separation and formalisation within a single advisory organisation. Our research concerns the fisheries advice provided by the International Council for the Exploration of the Seas (ICES). We focus on changes in advisory practices that took place in ICES during the early 1980s, which the contemporary chair of the Advisory Committee on Fisheries Management characterized as a shift "from normative to exploratory advice". We characterize motives articulated in support of this change, and describe repercussions for the relationships between advice providers and advice clients. Our study reveals that ICES' advisory framework underwent a reduction in separation and a concurrent increase in formalisation. We interpret this trajectory in relation to features of ICES advice and its use in decision-making.

Making Science Relevant: Comparing Science Advisory Organisations in Climate and Marine Governance *Göran Sundqvist, Department of Sociology, University of Gothenburg; Sebastian Linke, University of Gothenburg*

This paper compares two science advisory organisations: the Intergovernmental Panel for Climate Change (IPCC) and the International Council for the Exploration of the Seas (ICES). Our analysis focuses on the interplay between the knowledge objects delivered by the respective advisory machineries and the policy system's uptake of that knowledge for decision-making purposes. How is science made relevant for policy and decision-making? This research question indicates a key general dilemma in advisory science, for which we aim to reveal challenges and opportunities via a comparative investigation to improve the understandings of climate and marine governance by learning from each other's experience. Both IPCC and ICES aim to be "policy-relevant, but not policy prescriptive", which is in line with a linear model or "evidence-first credo". The IPCC is argued to be a success concerning "agenda setting" but a failure concerning "climate action". Consensus-based science is put at the centre without supporting policy instruments for taking up scientific advice in decision-making. The connection between knowledge and action is hence not established in a clear way. ICES in contrast has strong supporting policy instruments:

fishing quotas fitting the scientific advice (maximum sustainable catch limits) like "hand in glove". However, despite this neat interplay of science and policy, available knowledge has not resulted in effective decisions for sustainable fisheries. Our comparative evaluation explores how these differences, i.e. the connection of science advice to an un/clear decision-making mechanism, enable or impede the use of knowledge for sustainable action in the fields of climate and marine governance.

"Close but not too close": experiences of bridging science and policy from three international advisory organizations *Matteo De Donà, University of Gothenburg; Sebastian Linke, University of Gothenburg*

The growing role of science for environmental decision-making calls for an improved understanding of how scientific advice can best inform policy for sustainable outcomes. In this respect, questions about institutional design become crucial: policy relevant science is trapped in the dilemma to be close to policy and politics while at the same time trying to not become too close to avoid overly politicization. In this paper we investigate this dilemma of advisory science – to be "close but not too close" to policy/politics. We focus on three international scientific advisory organizations: the International Council for the Exploration of the Sea (ICES), the Intergovernmental Panel for Climate Change (IPCC) and the Intergovernmental Platform on Biodiversity and Ecosystem Services (IPBES). Comparing the policy areas of marine, climate and biodiversity governance, we aim to elucidate how the interface between science and policy is understood and arranged in the institutional designs of these international bodies. While all three organizations are through their mandate policy relevant, they commonly aim to not be policy prescriptive and provide a neutral space for scientific work that is not, or as little as possible, impacted by political influence. Our analysis reveals key differences of science-policy interactions between IPCC, IPBES and ICES with regard to four issues: their mandate, the separation of science and policy, the politicization of advisory science and how non-scientific knowledge is used. We discuss how the four issues reveal different challenges connected to the dilemma of proximity vs. distance of science and policy in these organizations.

Session Organizer:
Sebastian Linke, University of Gothenburg
Chair:
Sebastian Linke, University of Gothenburg

215. **Borders in the Anthropocene: Transformations of Climates, Human and Nonhuman Mobility, and the Politics of the Earth**
10:00 to 11:40 am
virPrague: VR 07
Participants:

A posthumanist political ecology of Alpine migrant (im)mobility *Polly Pallister-Wilkins, University of Amsterdam*

This paper explores the many more-than-human actors involved in crafting migrant (im)mobility across the Alps. Using cycling and hiking as embodied and mobile methodologies of encounter it examines the entanglement of landscapes, terrains, gradients, weather, water, and forests alongside transport and tourist infrastructures: roads, railways, tunnels, bus routes, ski slopes, golf courses, hiking trails and cycling tracks in shaping how migrants encounter the Alpine Susa Valley/Hautes-Alpes border routes and how these ecologies are made political. Drawing on the work of Juanita Sundberg the paper makes the case for posthumanism in the study of borderscapes and migrant (im)mobility, while being sensitive to the nature/culture divide present in much posthumanist and political ecology scholarship. Therefore, while the paper makes space for the role of more-than-human actors in borderscapes it also highlights the racializing work of these more-than-human entanglements in the following ways: through perpetuating dualist ontologies of nature/culture or nature/human from which migrants are linked to the natural, read pre-modern, world; and through producing migrants as 'bodies out of place' in a political ecology that is concomitantly (re)produced as white.

Deadly border landscapes: Tracing back accountability in the Anthropocene *Estela Schindel, Europa-Universität Viadrina*

State borders, circulation and mobility are being increasingly conceived of as complex assemblages that are composed of more than just the material, but also of interrelations of technological systems and human politics. This tendency can be read in the frame of the new emphasis on the entanglements of the biological, the environmental and the material in the context of a 'post-human geopolitics'. Moreover, recent scholarship has put forward the relevance of non-human actors in geopolitical processes and, specifically, in the context of border enforcement. The role of more than human actors, like deserts, rivers, the weather and other environmental forces has been deemed crucial as part of the dissuasion strategies that push migrants to deadly routes. In an anthropocentric view, the allegedly neutral, extra-social and transhistorical character of such agents allows to displace and mask accountability for border related deaths. How can these deadly border landscapes be read from the perspective of the Anthropocene paradigm? If networks of humans, technologies and nature shape the terrain where border struggles unfold: How to account for the political character of such hybrids and trace agency and accountability back? Can the vocabulary of the Anthropocene and post-humanist critique, with its emphasis on multispecies solidarity, more than human alliances, and material-discursive intra-actions contribute to the (much too human?) problem of border related suffering?

Telling Multispecies Worlds: Traces of a Counter-Concept to Speciesism *Michelle Westerlaken*

Humans are far from the only species who make worlds, and thus make futures; 'Worlding' entails an active ontological process that is enacted and embodied by all living beings. It is only when we fully recognise these practices as influential to ecological vulnerability and biodiversity that we can take a less anthropocentric approach to future-making. The notion of "multispecies worlding" is coined by Donna Haraway as a practice of articulating the partial connections between all kinds of living entities; who relate, know, and tell stories with and through each other. Rather than telling multispecies worlds at all-encompassing scales, this paper argues (following Haraway) that multispecies futures are inscribed in more situated every-day ways in which living beings already negotiate futures with each other. The notion of 'multispecies' here is approached as a counter-concept to 'speciesism' and seeks to find traces of worlds that abandon animal oppression and explores the meaning of care in relation to living with other species. This paper offers a collection of these traces through presenting annotated illustrations created by the author during a three-year project. These illustrations present a kind of technique for knowing that does not come from standing at a distance and representing something, but rather providing initial different entries into what multispecies worlds can entail. In this practice, we must recognise that other species have been speaking to us all along and that we learn about them in worlding practices that are partly told by them.

Session Organizer:

Huub Dijstelbloem, University of Amsterdam

Chair:

Huub Dijstelbloem, University of Amsterdam

216. Affects, emotions, and feelings in data, analysis, and narrative

10:00 to 11:40 am

virPrague: VR 08

Since the 'affective turn' in social and cultural studies, affects, emotions, and feelings have equally gained dominance in Science & Technology Studies (STS). Some STS scholars argue that emotions underlie commitments to research, such as the 'joy of verification' or the peak experience of 'flow'. Others attribute commitment to affective relationships among colleagues, between scientists and their instruments or subjects. To interpret these relations scholars pay attention to bodily expressions. They turn their gaze inward to understand their positioning in the socio-affective fabric of a site or topic. More recently, attempts have been made to not only unpack the affective dimension of data generation, but also of data analysis and writing to identify the role of affects in knowledge production.

Approaches to capture the fleeting nature of emotive moments in research face similar difficulties: - How do we develop a language and theory to analyse affects, emotions, and feelings? How do we distinguish between these concepts in an analytically meaningful way? - How do we deal with affective experiences methodologically? How does attending to affects change how we relate to our study subjects? - How do affects travel between people, contexts, and times? - What are the ethics and politics of mobilising affects when doing and writing STS? What does (non-)emotive writing foreground and hide? We invite STS scholars to discuss how affects, emotions, and feelings are entangled with data, analysis, and narrative. We aim for an exchange that contributes to ongoing discussions on the methodological and analytical relevance of affects in STS.

Participants:

From Affect to Action: Choices in Attending to Disconcertment in Interdisciplinary Collaborations *Mareike Smolka, Faculty of Arts and Social Sciences, Maastricht University; Erik Fisher, Arizona State University; Alexandra Hausstein, Karlsruhe Institute of Technology*

The role of affect in interdisciplinary collaborations across socio-technical divides has long been neglected largely due to predominant images of science and scholarship as rational, cognitive endeavours. However, the tensions that emerge in such collaborations due to differences in values, agendas, and epistemologies are as much cognitive as they are bodily felt. We elucidate the role of affective disturbances in interdisciplinary collaborations by analysing what Helen Verran refers to as "disconcertment" in the empirical data of three Socio-Technical Integration Research (STIR) studies. For the analysis, we develop a heuristic that weaves together disconcertment, affective labour, and responsivity to provide a deeper insight in the role of the body in interdisciplinary collaborations. We draw out how bodies do affective labour in the process of generating responsivity between collaborators in moments of disconcertment. Responsive bodies can function as sensors, sources, and processors for disconcerting experiences of difference. We further show how paying attention to disconcertment can stimulate methodological choices to amplify, overcome, or recognise difference between collaborators. Although these choices vary considerably, they generate responsivity, facilitate interdisciplinary collaboration and collaborative knowledge production. With this analysis of disconcertment we contribute to emergent discussions within Science & Technology Studies on the relation between affect and collaborative action in interdisciplinary engagements.

Title: I don't have one. Writing affect out of (and back into?) writing *Cristian Ghergu, Department of Health, Ethics & Society, Research School for Public Health and Primary Care, Universi*

As researchers using participatory methodologies, we are in a privileged position to write knowledge claims about the appropriateness of health-improving technologies and users. Our legitimacy rests on epidemiological justifications, inhabiting credible (regulated) institutions, and claims to respect others' knowledges and wants, the latter usually espoused through sets of principles that guide research projects. From this position we write clean, linear and self-sufficient texts about our projects, in singular accounts coming from multidisciplinary teams of researchers. I want to bring to text the emergent, affective work of doing and actual writing of participatory research. I draw from concerns around legitimacy of a multidisciplinary participatory project in Bangalore, India, where memory of my lived-experiences fails to align with the clean published accounts it produced. For those looking for sensationalist stories of outrageous data falsification, or abuse, I must disappoint. My concerns belong to the realm of mundanity. Affects arise within participatory encounters. Uncomfortable feelings around the distribution of power, inequity, uncertainty and an overwhelming feeling that our research priorities and representations belong to worlds far removed from those of our participants. Streets, cities, days, precarity, homes, participants' and researchers' bodies and stories, parasites, pollution particles, smoke, food and flavours, joy, guilt, fear, uncertainty, incoherence – how do they travel, to reach definite texts? They accompany us and change as we write worlds into texts. In this paper, I look for ways of writing where

coherence makes space for incoherence, affectivity is rendered visible, voices contradict, writing is not written out of writing.

Affective spaces of doing sameness and difference together *Line Hillersdal, Department of Anthropology, University of Copenhagen; Birgitte Bruun, Copenhagen Academy for Medical Education and Simulation*

Organizing research as (temporary) interdisciplinary projects is a defining feature in how research is performed today. Projects constitute forms of social organization that organize various activities, people, technologies and matter in more or less centered ways towards some sort of goal. In our talk, we take as a starting point this contemporary collaborative space and focus on the affective tensions we experienced that arose in interdisciplinary collaborative situations and negotiational arenas involving different norms and paradigms of knowledge production. The term 'projectness' suggested by Law (2002) points to the temporal, practical and narrative structuring of many research projects as organized efforts modelled according to standards such as linearity, coherence, elegance etc. Norms that at the same time become defining for the way objects are imagined, created and investigated (Law 2002). As Strathern put it :"One cannot read from off a project what kind of social community it will in turn generate, and certainly one cannot assume that it is a 'communal' one" (Strathern, 2004). As we will argue the sociality and accordingly the objects produced is not to be inferred of a strategic claim or a design proposal - as social and technical arrangements, these do not have to be "communal" social organizations, or bound by an overarching structuring principle. The crucial point is that project realities rarely is the purportedly streamlined narrative that original designs and formulations put forward but are instead accomplished through affective work. Using our experience with working in several interdisciplinary projects we want to comment on the role of projects as affective spaces in driving and establishing goals of research collaboration.

Feeling Techniques: feelings done in practice, words and drawings *Ulrike Scholtes, UVA*

In this paper, I propose the concept of "feeling techniques" to study how feeling, rather than being a natural fatality, is actively done in socio-material practices. In his attempt to draw bodies into sociology, Mauss defined "body techniques" as: "ways in which from society to society [people] know how to use their bodies" (1973, p. 71). The present paper argues that feeling, though not a way of using bodies, may also be studied as dependent on techniques that are entangled with historical, cultural, social, and material specificities. This implies a shift away from a phenomenological understanding of feeling as a subjective way in which bodies experience themselves from the inside. Others argued for such a shift in such contexts as listening to music (Hennion, 2001) or tasting food (Vogel & Mol, 2014; Mann & Mol (2017). Here, I will use empirical materials from studies into body practices such as yoga, haptonomy and pilates. In these practices feeling is socially and materially situated and it is taught. This makes it accessible for social science research. To translate and transport the feeling techniques I observed in my research, I experiment with ways of wording and styles of drawing, that do not just represent, but also perform feelings. Hence, this paper blurs the dichotomies feeling-thinking, practice-theory and knowledge-skill both conceptually and methodologically. References: Hennion, A. (2001). Music Lovers. Taste as Performance. Theory, Culture & Society, 18 (5), 1-22 Mann, A. & Mol, A. (2019). Talking Pleasures, Writing Dialects. Outlining Research on Schmecka. Ethnos, 84, 5, 772-788 Mauss, M. (1973). Techniques of the body. Economy and Society, 2 (1), 70-88 Vogel, E. & Mol, A. (2014). Enjoy your food: on losing weight and taking pleasure. Sociology of Health & Illness, 36, 2, 305-317

So Fracking Emotional: Using Affective Practice to Explore the Politics of Emotion in a Sociotechnical Controversy *Stephen Hughes, Science and Technology Studies, University College London*

In this panel, I would like to discuss how I used Margaret Wetherell's affective practice concept to study community responses to fracking in Ireland. I will describe some of the methodological hurdles I faced investigating emotion within STS, outline how affective practice helped me to overcome them, and discuss how the method illuminated unique public meanings and opportunities for engaging with them. To begin, I will outline how emotions were everywhere in Love Leitrim's anti-fracking campaign and how unsatisfactory my arsenal of STS methods was at capturing them (given the limited theoretical and empirical attention to affect in the field). I will then discuss my encounter with affective practice, its methodological strengths, and its integration with STS: - Its ability to trace the stability of habits and routines as well as the contingency and spontaneity of sociomaterial action; - Materiality, bodies, space, and time play important roles; - Its sensitivity to politics – particularly in its capacity to illuminate the patterned and repetitive circulations of power; - Its return to the human in a way that captures the exigencies of contemporary technopolitics; - As a theory, it is neither too abstract and alienating nor too local and ethnocentric. I would then like to briefly discuss how I used affective practice within Sheila Jasanoff's sociotechnical imaginaries framework. I will show how affective practice can operate within multiple scales of meaning, illuminating unique modes of public engagement. I will conclude by outlining a few limitations of the method as well as its potential in STS.

Doing collaboration in societal innovations: Affects, positionalities, and affective labor *Gili Yaron, Health Services Research, Faculty of Health, Medicine and Life Sciences, University Maastricht*

The societal innovations many STS scholars study often involve close collaborations between public service organisations, (local) governments, entrepreneurs, funding agencies, knowledge institutions, and others. In such projects, traditional divisions between researchers and informants may blur. The former then become co-actors and co-producers rather than neutral observers, as the latter become active partners rather than passive respondents. All the while, the agendas of different actors may run parallel, cohere harmoniously, or clash. In this paper, I unravel some complexities associated with multi-stakeholder, crossdisciplinarity collaborations. To this end, I draw on my ethnographic study on Positive Health, an innovative though contested concept currently trending in the Dutch public sector. In particular, the paper zooms in on several instances in which affects such as wariness, shame, enthusiasm, confusion, or resentment arose during my fieldwork. These affects, I demonstrate, all point towards the boundaries that separate different actors, as well as the ties that bind them together. Carefully attending to the role of affects in collaboration, therefore, allows the researcher to trace the positions of all involved—including her own. This, I argue, sensitizes the researcher to the objectives, stakes, and loyalties invested in each position. Attending to affects also enables the researcher to become aware of the affective labor required to navigate the positionalities inherent in collaborative work. Foregrounding these affective dynamics in societal innovations, I conclude, provides methodological insights into what it means to do research-in-collaboration, while simultaneously shedding light on how collaborations are done in practice.

Session Organizers:
Mareike Smolka, Faculty of Arts and Social Sciences, Maastricht University
Ricky Janssen, Department of Health, Ethics & Society, CAPHRI, Maastricht University
Cristian Ghergu, Department of Health, Ethics & Society, Research School for Public Health and Primary Care, Universi
Chair:
Ricky Janssen, Department of Health, Ethics & Society, CAPHRI, Maastricht University
Discussant:
Christopher Coenen, KIT-ITAS

217. FLIPPED - The Discard Multiple
10:00 to 11:40 am
virPrague: VR 09
In this session, scholars will bring together research and perspectives on

discards that illustrate the categories dynamic and unstable qualities, as well as the ways in which discards can be said to have agency, influencing the ways in people relate to and live with discards

Participants:

Agbogbloshie: contribution to a sustainable circular economy or "the largest e-waste dump in the world"? *Maja van der Velden, University of Oslo; Christian Peter Medaas, University of Oslo, Dept. of Social Anthropology; Martin Oteng-Ababio, University of Ghana*

A small scrap metal yard in the Agbogbloshie district of Accra, Ghana, has assumed notoriety in discourses on waste, particularly electronic waste, and the so-called illegal dumping of electronics from Europe and North America. A quick online search of "Agbogbloshie + e-waste" reveals that Agbogbloshie is often described as the largest e-waste dump in the world, a depiction consistently reiterated on social media and in documentaries and articles. We argue that this depiction is inaccurate, and indignifies and renders invisible the work which is done in Agbogbloshie. Through our ethnographic research, we interrogate prevailing conceptions of Agbogbloshie, questioning 'Western' notions of waste as they occur in media and policy documents such as the EU's Waste Directive and WEEE Directive, as well as the meanings and values associated with the terms "dump" and "dumping". We suggest that Agbogbloshie defies common understandings of waste, for it is not primarily waste that is brought into the scrapyard by scavengers. Instead, we encountered people who recycle, repair, and create things in provisional workshops, whose potential role in furthering a sustainable circular economy has been overlooked. We explore these activities as part of what Adam Arvidsson has termed industrious economy, in reference to small-scale, commons-based, and market-oriented entrepreneurship. Our fieldwork enables us to challenge the myths of Agbogbloshie, and provides us with a deeper understanding of the notions of resource and waste and the potential role of informal scrap metal yards in transitions to sustainable circular economies.

Labelling and Living with Waste: How Terminology and Boundary Objects Shape Waste Reduction in the City of Sydney *Jarnae Leslie, Faculty of Transdisciplinary Innovation, University of Technology Sydney*

City Zero Waste goals without holistic approaches result in only partial success and by 2050, there will be more plastic than fish in the ocean. The 26km2 City of Sydney district council region with a population of 240, 229 generates 5,500 tonnes of waste daily. With a 2030 Zero Waste goal in the City of Sydney and a growing population, it is vital to understand "How is waste reduction in complex city ecosystems is labelled and understood" in this case study. Firstly, this paper will investigate terminology used to label and understand waste reduction using a Participant Action Research (PAR) method featuring the key descriptors 'Zero Waste' and 'Circular Economy', 'Zero' and 'Circular'. Collaborative and innovative problem solving in a social problem space through PAR will allow for the mapping of trends across participant's job role and sector in the system ('No Sector, 'Government Sector', 'Industry Sector', and 'Academic Sector') in regard to term use and learnings. Secondly, this work explores how different terminology shapes indicated the presence and role of any present Boundary Objects. These are physical or conceptual interpretations of artefacts held differently by individuals and that have an agreed understanding in a community.

Plastic time(s): Moralities of duration *Laura Bomm, University of Vienna, Department of Science and Technology Studies; Ulrike Felt, University of Vienna, Department of Science and Technology Studies*

The following is part of a paper with the title Plastic Time(s): Temporal choreographies of 'the' plastic problem in citizen's narratives (Bomm & Felt, 2020, in progress). The full paper elaborates on four temporal perspectives which together constitute what we call Plastic Time(s). Whilst knowing that these temporal perspectives are deeply entangled, we treat them as analytically separate to better understand how they function for people's sensemaking of plastics. The four perspectives range from (1) diagnostic narratives which address citizens' visions of contemporary society and its relation to plastics, over (2) the reflection of plastic as a slow disaster and (3) the moralities of duration, to end with (4) how citizens understand and re-negotiate their pasts, presents and futures with plastics. This present paper will focus on (3) the moralities of duration and elaborates in detail this perspective. Generally, our empirical analysis is based on five citizen discussion sessions conducted with the IMAGINE PLASTICS card-based discussion method. In our discussion groups, the topic of the balance between duration of use and afterlife, comes in three forms. First, citizens identify single-use plastic items, which they describe as morally justifiable as they serve a greater good. Second, they embed the use of plastics in a wider highly problematic culture of consumption, thus reframing plastic as part of a broader development and shifting blame to the market logics governing contemporary lives. In a third move, citizens discuss the balance of life and afterlife of plastics from three different angles. They do classificatory work struggling with defining an acceptable balance, they discuss questions of reuse, repair, repurpose and they reflect on plastics as waste and how to turn used plastics into a less problematic category through governing the after-live in an adequate manner. By means of the moralities of duration, we try to show how deeply the relation of the duration of life and afterlife of plastics is entangled with moral reasoning and justifications for using/not using plastics.

What do WEEE know? Knowledge production on e-waste flows in the EU *Mateusz Pietrzela, Leipzig University*

Over the last two decades the EU has targeted flows of discarded electronic and electrical equipment as a priority waste stream. In order to develop capacities to capture and manage e-waste, accounting systems to monitor the discard flows have been established. However, up to date they have been incapable to demonstrate what happens with most of the estimated waste resulting from electronic and electrical products. The missing quantities became the main subject of interest for public authorities, industry and research/consultancy. In this paper, I take another approach to focus on those very practices of knowledge production on e-waste flows and, drawing on geographies/sociology of waste and STS, I ask what qualifies as waste, as well as which material and spatial categories, practices and stakeholders are included and excluded in the knowledge production. I base the analysis on policy documents, publicly available statistical data, protocols of legislative negotiations and interviews with stakeholders in Belgium, Germany and Poland. The purpose is an open discussion on the nature of knowledge on waste, as what is made (un)known about (discarded) electrical and electronic appliances co-produces possible futures. Examining which materialities, spatialities, as well as environmental and social aspects are obscured through the knowledge production on e-waste within the institutional frames of the EU is necessary in order to understand to which extent that knowledge serves the currently arising environmental and social challenges, and to which extent it serves the economic interests of the EU and other stakeholders.

Session Organizers:

Samwel Moses Ntapanta, University of Oslo, Department of Social anthropology

Christian Peter Medaas, University of Oslo, Dept. of Social Anthropology

Chair:

Samwel Moses Ntapanta, University of Oslo, Department of Social anthropology

Discussant:

Thomas Hylland Eriksen, University of Oslo

218. Re-evaluating the high-tech and the low-tech: ideals and ideologies of the material
10:00 to 11:40 am
virPrague: VR 10

This panel invites participants to question how values of high- and low-tech become attached to and emerge from particular kinds of materialities. There is growing concern in STS research around topics that get labelled

'technoscience', such as CRISPR genetically-engineered babies and cyborg-esque uses of artificial intelligence. But here we want to trouble scholarly focus on the materialities that get labelled high-tech, by thinking about the "lowness" of low-tech (such as water supply, housing infrastructures etc). We question taken-for-granted urgencies created by the politics and ethics of the high-tech and point to stagnated material relations that perpetuate economic inequality. Building on new materialism's attention to the mundane as well as its often-neglected roots in historical materialism, this panel invites participants to think about how different kinds of materialities matter in particular spatiotemporal milieus. We encourage papers from different theoretical or ideological perspectives to ask: When and how should STS studies follow the biomedical endeavour to chase emerging worlds, and when should we pay more attention to the present, or even dare to imagine our own worlds? How should we as STS scholars collaborate or align ourselves with different kinds of materialities? And what are the effects of how medical practitioners, highly funded organisations, and STS scholars themselves, care for these different types of materialities?

Participants:

Health equity: mundane challenges and ambivalent alignments
Nele Jensen, King's College London

Over the past 40 years, health equity has consolidated as the raison d'être for a post-Westphalian global health enterprise: in a context of an increasingly transnational flow of people, pathogens, funds, and biomedical technologies it is the quest for health equity "among nations and for all people" that is said to undergird the need for a collective response to global suffering (Koplan et al. 2009: 1994). And yet, in the context of global health policy and programs, health equity is typically conceived to pertain to the equitable provision of biomedical technologies and healthcare services. This paper draws on my experience as an STS scholar attached to a large multi-sited biomedical research partnership that seeks to strengthen health systems in four sub-Saharan African countries, with a particular focus on my involvement with a research team focused on improving equitable surgical care in Sierra Leone. I discuss preliminary fieldwork data from Sierra Leone that highlights the mundane health system challenges that shape patients' ability to receive and providers' ability to provide equitable care, specifically the stratifying work performed by surgical fee 'exemption categories'; and the day-to-day challenges for surgical staff posed by understaffing and a shortage of basic material supplies. But I also reflect on the tensions and ambivalences of my own role as it has increasingly shifted from being a critical 'follower' of to being a pragmatic collaborator in a biomedical research project.

Demand the impossible! Creating utopias through participatory film with young people *Charlotte Kühlbrandt, King's College London; Hannah Cowan, King's College London*

In the face of climate emergencies, rising inequalities, and the spectre of privatised healthcare, it is wholly unclear how future generations can expect to be well. The imperative for medical research to speak to such overwhelming societal concerns has created a range of infrastructure geared towards citizen engagement and public involvement in science. Where they seek to influence health science research agendas and funding priorities, these infrastructures tend to privilege a narrow public and follow material constellations of existing research. How do we open up imaginations of future wellbeing that are less constrained by materialities of current research landscapes, which dare to demand the impossible and imagine new worlds? One possibility is to bring young people into the conversation, recognising that they "are the future". Academic conventions of knowledge production won't do. Utopian conversations call for more creative methods. Here, we present a range of short experimental films produced by young people in South London. Using everyday technology, they loosely structure their work around what it might mean to be well in the future. The presentation includes short visual extracts, alongside ethnographic observation of the production. The interactive nature of film making can reveal concerns stemming from young people's surrounding material worlds, and may be instructive for the setting of different kinds of funding priorities and health agendas. Although young people's imaginations are necessarily constrained by their lived experience, they may still help reduce

our over-valuation of high tech solutions to already defined problems.

Old Bodies, old Buildings: Tinkering with/in Countryside Architectures *Dara Ivanova, Erasmus School of Health Policy and Management; Iris Wallenburg, institute for Health Policy and Management; Roland Bal, Erasmus University Rotterdam; Jitse Schuurmans, Erasmus University Rotterdam; Nienke van Pijkeren, Erasmus University (Institute of Health Policy & Management)*

A nursing home resident in the psychogeriatric ward edges his foot slowly toward a black circle on the floor. He stops and moves slowly back. The circle is located at the entrance of the building, behind the front doors. Many of the residents here think of this painted black circle as a hole and dare not step over it. The vignette shows how materialities are used to guide dementia clients through the building, preventing them from going outside. In the Netherlands, such 'low tech' interventions are often found in rural nursing homes, where personnel are scarce, and infrastructures outdated. These are mundane alternatives to the widespread (policy) discourses of high-tech solutionism as a near-future panacea for all that ills healthcare. Diverse adjustments of material infrastructures, like adding color, using ropes or stickers on a door are used ad hoc and on temporary basis. Showcasing the mundane practices of caring in the countryside, this paper attempts to focus attention onto 'neglected things' (de la Bellacasa 2017) that come to matter when living and working with/in nursing home architectures. We ask what is/becomes at stake when old bodies inhabit old buildings in rural places and how adjustments of old buildings present challenges and opportunities of doing care in place. We argue that ideologies of elderly care are solidified through/in materialities, and that they must be 'unsettled' (Murphy 2015), since they reveal a politics of elderly care (reflected in 'low-tech' solutions), as well as the challenges of doing care in place.

Dilating Health, Healthcare, and Well-Being: A Case Study in Medical Device Design *Montita Sowapark, SOAS*

This paper presents an auto-ethnographic account of designing and prototyping a dilator for post-operative care following "gender-affirming" vaginoplasty. The process of design as well as the material composition of the prototype are imbued with aspects of both "high" and "low" forms of technology. Interviews with stakeholders, library research, and 3D computer-aided modelling were used in the design process. Nuts and bolts were ordered from commercial suppliers, while fused deposition modelling and stereolithography were used to rapidly prototype device components. Thus, I argue that the high/low tech binary flattens the procedural and material hybridity and the plural forms of knowledge that must work together to uphold/enact any form of technology. Furthermore, while the most contentious and contested ethical quandaries are often associated with high-tech, even a niche device that is not "cutting-edge" must confront ethical ambiguities, including, in this case, what is considered a desirable vagina, and what regimes of knowledge about gender, identity, and the body make such a device legible? How would this device look and operate differently in a world where states were completely dis-invested in regulating which citizens have which genitals and the forms of acceptable genitals? Furthermore, trans healthcare and gender in Thailand, the context of my fieldwork, cannot be divorced from the crypto-colonial binarization of Thai gender systems under 20th-century discourses of siwilai (being civilized). Getting on with the process of designing and prototyping a medical device within a specific context and set of technical specifications ultimately leaves more questions unresolved than otherwise.

Session Organizers:
Hannah Cowan, King's College London
Charlotte Kühlbrandt, King's College London
Natassia Brenman, The University of Cambridge
Chair:
Charlotte Kühlbrandt, King's College London
Discussants:
Hannah Cowan, King's College London

Natassia Brenman, The University of Cambridge

219. China, Technology, Planetary Futures: Lessons for a World in Crisis? 2) BRI, Infrastructure, Environment
10:00 to 11:40 am
virPrague: VR 11

Two issues are set to become increasingly central in coming decades. First and foremost, amidst the Anthropocene, are issues of environmental crisis at planetary scale, and what this means for a global economy and associated model of science and innovation premised upon ever-accelerating exploitation of natural resources. Secondly, and in comparison a highly neglected issue in mainstream (still largely Western) social science, is the rise of China. But how these two issues will come together and shape the 21st century receives even less attention, even as their conjunction is likely to prove increasingly influential. This is both an increasingly problematic oversight and a missed opportunity for insights that do not merely confirm relatively established, i.e. Euro-Atlanticist and short-termist, readings of the state of the 'world'. STS has much to contribute to the development of this missing analysis, not just because the construction of new environmental, infrastructural and technological (and, in particular, digital) innovations from and in China is already evident as a key dynamic. But also because of STS's capacity to draw on empirical exploration that does not take theoretical categories as given but pursues development of new illuminating concepts adequate to a constantly changing socio-technical landscape of uncertain futures. This panel thus invites contributions studying Chinese socio-technical projects (in China or overseas, e.g. via the Belt Road Initiative (BRI)) for insights into how these two 'mega-trends' may be coming together; and what may be learned from China, positively or negatively, to confront the current apparent impasse(s) regarding global crisis.

Participants:

Cyclical Crossings: Easternised Planetary Futures *Jamie Allen, Critical Media Lab*

Amongst the central tenets of capital flow in our contemporary age is that materials — raw, commodity, consumable — are much more "free" than are people. If we characterise freedom in part through the ability to move around, it is apparent that "free trade" means it is easier for a Walmart T-shirt made in China to move across borders than it is for the human labourers who made it to do the same. This is all explicitly enabled by infrastructures like the Belt and Road Initiative, a global development philosophy and infrastructure project being undertaken by the Chinese government, which involves development investments in 152 countries. Malta was the first European member state to sign a Belt & Road Memorandum of Understanding with China, precipitated by geography and congealing Malta's growing trade relationships with Ghana, and its North African and Eastern Mediterranean neighbors of Algeria, Tunisia, Egypt, Israel, Greece, Cyprus, Jordan, Lebanon, Syria and Turkey (all now in the Belt & Road club). Malta is well positioned as a gateway to the Mashreq and Maghreb countries around the Mediterranean and into Africa, where potential CDM opportunities exist. Research and discussion for this presentation centres on the effects that such migrations of materials will have on the migration of bodies (human and otherwise), and vice versa, from forensic data, field visits, and investigative tracing, visualization and cycles of storytelling undertaken in June 2020 on Maltese archipelago, in relation to globalising initiatives like the Belt and Road.

Research on Smart City as Engineering Imaginary *Cao May, University of Chinese Academy of Sciences*

Ontology is an important issue in philosophy, and engineering philosophy should have its own ontology. Based on the characteristics of Chinese philosophy and the overall development of Chinese School of engineering philosophy, this paper puts forward that "imaginary" is a way for us to grasp the world in the context of Chinese philosophy, introduces the ontology notion of "engineering imaginary", and conducts a preliminary metaphysical study of "engineering imaginary " (the imaginary can be divided into intention + imagination). The analysis process includes the foundation of the basic notion of engineering intention and the analysis of the elements from the engineering intention to the engineering imaginary. In the latter stage, imagination elements are divided into technical elements,

symbolic cultural elements and regional elements. As a case study, the evolution law of the smart city as engineering imaginary in Nanjing, a large city in China is analyzed. The final conclusions are as follows: 1) different from the traditional function-structure design paradigm, this paper proposes a new analysis tool, engineering imaginary, which can better fit the ontological development of Chinese philosophy of engineering school. As an analytical category tool, this new notion will help us to better understand engineering activities, how engineering and society co-production and develop, and better understand why China's engineering construction speed is so amazing. 2) In addition, if we can further develop and apply this notion, we can continue to conduct more in-depth research in the field of engineering philosophy.

The geo-sociotechnical imaginary of the Belt and Road *Andrew Chubb, Lancaster University*

What is the Belt and Road? Since its announcement in 2013, academics, policymakers and pundits inside and outside China have grappled with this question, offering answers ranging from "a community of common destiny for mankind", to an overflow of excess construction capacity, a regional hinterland development strategy, a grand strategy, an unstrategic outcome of sub-state bargaining, and a vacuous domestic propaganda campaign. This paper offers an integrative interdisciplinary perspective drawing from science and technology studies and geography. It contends that many of these disparate views can be integrated into an understanding of the BRI as a geo-sociotechnical imaginary, and demonstrates its analytic utility via a case study of its fraught relationship with the concept of ecological civilization. The concept of sociotechnical imaginaries — broadly understood as processes of collective imagining that shape societies' relationships to technologies — take imagination as a "cultural resource" and an "organized field of social practice" (Jasanoff and Kim 2009). This explains how the BRI can at once be a largely vacuous slogan and a domestic and international politico-economic strategy manifest in concrete material and digital technologies, which entails the rollout of technologies across a geographic scope extending far outside the national boundaries within which sociotechnical imaginaries are usually understood to exist. It invokes instead civilizational imaginings of the technosphere and the ecosphere that are riven with contradictions. In this imaginary, China is the techno-civilizational hub from which infrastructure, connectivity and development radiate. Yet the PRC's equally prominent propaganda construct of "ecological civilization" presents such technologies' incompatibilities with key ecological norms of that civilizational core.

Session Organizer:
David Tyfield, Lancaster University
Chair:
David Tyfield, Lancaster University

220. Why empowerment matters in co-creation of innovation
10:00 to 11:40 am
virPrague: VR 13

This session explores a more empirical account of how empowerment can be enabled through various material participatory practices. In addition to the complementary session that offers more concept and theoretical insights, the cases here present an opportunity to examine how material participation produces feelings (psychological) of empowerment. The insights from here can contribute to better practices in co-creation by acknowledging the role of power and providing a more normative, rather than procedural, account.

Participants:

De-centering the user. From empathy to accountability *Isabel Lafuente; Marcos Silbermann; Wilson Prata, SIDIA*

The rhetorics of co-creation has been widely adopted in current contexts of technological development and innovation. This goes hand-in-hand with the idea of tailoring developing processes to the needs, values, and political cultures of users. In this work we analyze the figure of the "user" in narratives of user-centred design and innovation as a new form of neoliberal subjectivation, understanding the term in the double sense of production of existence and subjection. The very notion of user naturalizes a

specific form of relationship - that assumed by a logic of use and consumption - erasing other aspects of relationships and individuals as subjects inserted in much more complex socio-political contexts. In this way, the figure of the user in the field of UX serves both to articulate a practice and to re-establish a certain conception of the world (Suchman 2005). Within the scope of STS, at least since the 1980s, the idea that the notions of users and technology are co-constructed in the processes of design and development has been widely explored. In this context, we raise the question of how to re-construct the political dimension of co-creation in the field of UX. To do so, we draw upon the concept of accountability as it has been developed by authors such as Suchman, Tunstall or Stengers, as a way of re-framing the question of designing for whom and for what, thus, challenging neoliberal mechanisms of subjectivation.

Empowering Users in the Debate about Google's Data Practices
Ivan Veul, ISiS, Radboud University

Google's collection and application of user data has been scrutinized by social scientists, NGOs, journalists and politicians alike. Some of the main issues concern the sheer amount of private data Google collects and how Google uses that data to directly modify the behavior of their user. While there is no lack of debate about Google's data practices, what has been missing is an active role in this debate for the everyday citizens who use Google, despite the fact that it is their data that is used and they are the ones impacted by its application. The overall aim of my PhD study is to find out how to involve users in this societal debate. What complicates this involvement though, is that it is often not visible for users what data is collected and how it is applied. As such, users will likely miss the conscious experiences necessary to have reflected on and developed opinions about Google's data practices.' In this paper I will present how I acted as an intermediary between Google and users, in order to deal with these challenges. First, through interviews with Google employees, I gained more insight into how users and societal issues are currently considered in Google's data practices. The insights from these interviews were then used, next to document analysis, to design and orchestrate deliberative workshops with users. I will show how the workshops empowered users to express their opinions and needs, and to what extent these confirm or deviate from existing debates.

Opening Tools For Opening Science: Lessons From Global Open Science Hardware Initiatives In Africa And Latin America *Julieta Arancio, Centro de Investigaciones para la Transformación (CENIT-UNSAM); Valeria Arza, Centro de Investigaciones para la Transformación (CENIT-UNSAM); Mariano Fressoli, Centro de Investigaciones para la Transformación (CENIT-UNSAM)*

Open science hardware (OSH) as a concept usually refers to artifacts, but also to a practice, a discipline and a collective of people pushing for open access to the design of science tools. Since 2016, the Global Open Science Hardware (GOSH) movement gathers actors from academia, education, the private sector and civic organisations to advocate for OSH to be ubiquitous by 2025. GOSH advocates claim OSH is a means for working more efficiently and accelerating innovation within academia. They also claim OSH carries benefits for "science and technology democratization" by providing both increased accessibility to knowledge production in low-resources contexts and also a platform for more diverse actors to pursue science and new research questions to emerge. Efficiency-related benefits of OSH are studied and supported. The aim of this paper is to understand how GOSH can contribute to democratizing the knowledge-production sociotechnical system, and what that means in this context. We frame the questions of who participates, how they participate and how participation is transformed into agency by combining concepts from design justice theory, domestication theory and the capabilities approach. We use qualitative analysis techniques to examine four OSH projects in the global south: OpenFlexure (Ghana), KossamTor (Cameroon), Gorgas tracker (Peru) and Vuela (Chile). We expect to provide insights on what 'science and technology democratization' means and how OSH can contribute to it, in particular in global-south contexts inside and outside

academia. We also expect to contribute to the methodological discussion on how to evaluate 'democratization' from an STS perspective.

Research on the Co-Creation of Innovation in Platform Ecosystems: A Multiple Case Study from the Empowerment Theory Perspective *Yaqi Liu, National Academy of Innovation Strategy, CAST*

Instead of confining innovation in individual firms, firms are now reconsidering their innovation processes and starting to take advantage of network externalities in platform ecosystems. Co-creation of innovation in platform ecosystems involves different actors, such as consumers, suppliers, designers and partners. However, existing literatures about empowerment in co-creation of innovation mostly focus on business-to-consumer empowerment. Research on business-to-business empowerment is still sparse, which leads to the insufficient exploration of empowerment in platform ecosystems. In order to find out the mechanisms of empowerment in co-creation of innovation, a multiple case study is conducted. The study first identifies the main actors in platform ecosystems. By analyzing the relationships and interactions between actors, this paper finds that empowerment in platform ecosystems has two dimensions, that is, instrumental empowerment consisting of access to information, opportunity and resource, as well as psychological empowerment such as self-efficacy, sense of control and influence. Both instrumental empowerment and psychological empowerment play an important part in the co-creation of innovation. On one hand, this paper responds to the call to clarify the meaning of empowerment in co-creation, and shed light on the mechanisms of empowerment in platform ecosystems consisted of various actors. On the other hand, the results provide some guidance to the entrepreneurs and firms as to how to empower other actors in co-creation of innovation.

Session Organizers:
Shelly Tsui, Eindhoven University of Technology
Erik Laes, Eindhoven University of Technology
Makoto Takahashi, Technical University Munich
Sophie Nyborg, Technical University of Denmark - DTU
Cian O'Donovan, University College London
Chair:
Shelly Tsui, Eindhoven University of Technology

221. Codifying Knowledge or Disembodying Work? Cases of Work Practice from India
10:00 to 11:40 am
virPrague: VR 14

The capitalist economic system is centered on treating human labour power as a commodity (Marx 1867). How this labour power can be leveraged most efficiently and be controlled most optimally has been a key concern in the design of work. Between the late 19th and early 20th centuries, the enormous growth of industries and significant growth in the size of enterprises, led to the evolution of Scientific Management theory (Braverman 1974). Which focussed on a systematic study of the relationship between workers and their performed tasks in order to increase efficiency (Taylor 1911). Scientific management theory proved instrumental in the codification of work processes by turning them into written rules and standard operating procedures and in the separation of conceptual and manual labour. The former provided a standard for training workers, while the latter created a distinct class of management within any enterprise. Not only has the codification of knowledge and automation of human tasks continued to forma significant chunk of the innovations shaping all kinds of work in private enterprise, it has grown to become the fundamental principle of organising work even beyond the private sector, to the public and non-profit sectors. However, because the codification of knowledge was formulated with the pointed agenda of increasing efficiency and eliminating human discretion, it has failed to capture the embodied and lived experience of work and also risks jettisoning the significance of tacit knowledge that people bring to their work (Polanyi 1966). Within this larger historical framework of codified work practices, in this panel, we present empirical cases of traditional and emerging work from the public, private and non-profit sectors in India highlighting the varied ongoing tensions between the codification of knowledge and the agency of workers in each. Using examples from data-entry, data-labelling, home services and empowerment work, the panel highlights how workers shape and react to

the codification of knowledge in their domains. Together, the papers on this panel illustrate the limits that the embodied and negotiated nature of work places on the codification of knowledge. They also challenge the simplistic divide between cognitive and physical labour. We see this panel as an intervention in ongoing debates within STS on the politics of automation and human identity.

Participants:

Workers' agency in a codified workplace: The case of a home service platform in Delhi, India *Urvashi Aneja, Tandem Research; Mawii Zothan, Tandem Research*

The mediation of work through on-demand platforms has had numerous consequences for workers, worker-employer relationships, and the nature of work itself. A direct result of digital interventions in work is the codification of certain work practices and their impact in re-shaping the workplace, work practices, and worker-employer relationships. This codification takes place at multiple levels - the service itself and the tasks involved through the standardisation of those tasks; worker-employer relationships which are now digitally mediated; worker-client relationships which are informed through opaque algorithms; and professional identity mediated. Based on fieldwork conducted in 2019 in Delhi, this paper will examine the impact of the codification of the workplace and work practices on worker agency on home service platforms. How do algorithmic management systems re-cast agency compared to older establishments? What does this mean for the development of workers' professional identity? How does the codification of home service work through digital intermediaries empower or disempower workers and the value of their services and skills?

The creativity of 'routine' work: The case of data labellers in Bangalore, India *Janaki Srinivasan, International Institute of Information Technology - Bangalore; Bidisha Chaudhuri, International Institute of Information Technology Bangalore*

Current imaginations of the Future of Work, whether in the context of on-demand platforms or AI-based automation, place an enormous value on data. This imagination of work perceives the increased availability of data as an opportunity to further improve the efficiency of service delivery and its codification. Despite the centrality of data in current understandings of work, the workers who perform this work often remain hidden, and the work, disembodied. In this paper, we foreground the embodied nature of one specific dimension of data creation and processing: its labelling. Machine learning based AI interventions rely greatly on labelled data to take their vision forward. But data labelling itself often remains hidden and when examine dat all, can often be described as "routine", "tedious" and "non-cognitive." Based on our ongoing research observing the work of data labellers in a market intelligence firm in Bangalore, we explore how the various steps and tools of data labelling are crafted, and by who. How and when are the practices of workers incorporated in these tools and how do workers then use these tools in the actual act of labelling? Our paper will discuss some of these questions to understand how and to what extent the knowledge of data labellers gets codified, and how the hidden nature of this worker shapes the process in this case.

The tacit dimension of data entry operators' work in a Public Work scheme in West Bengal, India *Dipanjan Saha, University of Liverpool*

The Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA) entitles every rural household in India whose adult members volunteer to do unskilled manual work, with at least 100 days of guaranteed wage employment in a financial year. Since the implementation of this Act in 2005 one of its key priorities has been the proper maintenance of records to ensure accountability and transparency. At the Gram Panchayat level, Data Entry Operators (DEO), are responsible for the digitization of records using an online Management Information System (MIS). Because the interface and the workflow of this MIS change frequently (Veeraraghavan, 2015), DEOs struggle to adapt to these changes. Finding the instructions provided in Government memos, or PowerPoint files unclear and inadequate. I found that DEOs use a closed Facebook group of DEOs from the state of West Bengal to discuss their technical challenges,

share video/textual tutorials to overcome those challenges and share programmable scripts to automate repetitive tasks in the MIS. Based on an online ethnography of this Facebook group, I show how DEOs reduce the repetitive work of their everyday practices into scripts. While these scripts and tutorials guide group members' actions, at times, their failure to understand these actions also cast doubts about their competency in using the online platform. I argue that tacit knowledge in this context emerges from the 'retrospective-prospective' effort of the DEOs to collectively interpret what explicit instructions of the Government circulars are 'saying' and the practical work of figuring out what remained 'unsaid' in those texts (Suchman, 2007; Lynch, 2013).

The Codification of Empowerment: The working of Gender Policies in Bihar and Karnataka, India *Niveditha Menon, Centre for Budget and Policy Studies, Bangalore; Jyotsna Jha, Centre for Budget and Policy Studies, Bangalore*

The creation of any public policy, especially one that engages with gender, is a political act. However, most gender policies do not take into consideration the political nature of the process; instead, they focus on the codification of the processes into activities that are supposed to automatically create 'empowerment' of women. By dealing with only the policy outcomes and not engaging with the philosophy, rationale, norms, processes and evidence, some gender policies are doomed to fail right at the conceptualisation stage, others do so at various times during the implementation process, often even working at cross purposes with the very philosophy from which it originated. To understand this in greater detail, we examine the Mahila Samakhya (MS) programme that was implemented in many states since 1986, to mobilise rural women to collectively identify, address, and resolve their individual and collective problems. During the impact evaluation of the programme that we conducted for three years in two Indian states (Bihar and Karnataka) – based on the personal interviews of women, focus group discussions with women, and the insights gained from participation-observation of the programme over three years in both the states - what became clear was that the codification of empowerment through the setting up of the processes, the procedures, and the methodology of implementation influenced the way in which the 'empowerment' was understood and recorded. The systematic coding of pre-set outcomes towards the desired objectives of the programme reduced the empowerment process into a series of steps that ignored the lived realities and needs of women, the oppressive structures that bound women to certain forms of redressal, and the social mores and cultures that continued to resist any empowerment processes initiated by the women.

Session Organizers:

Janaki Srinivasan, International Institute of Information Technology - Bangalore

Bidisha Chaudhuri, International Institute of Information Technology Bangalore

Soumyo Das, International Institute of Information Technology, Bangalore

Chair:

Janaki Srinivasan, International Institute of Information Technology - Bangalore

222. The Life of Numbers 1: Models, Qualculations and Futuring
10:00 to 11:40 am
virPrague: VR 15

Numbers are afforded life through their entanglements in situated practices. While numbers are often depicted as transcending contexts, this Panel appreciates numbers as relational beings. This orientates us towards exploring how and what numbers become, what they do, and the material effects they make through their implementations, appreciating enumerations as 'evidence-making interventions' (Rhodes & Lancaster, Social Science and Medicine, 2019). This Panel explores numbering practices as forms of anticipation and governance. Enumerations are afforded a power-of-acting through models, projections and targets which shape the present in relation to imagined futures. This is apparent in the field of global health, where mathematical models and numerical targets are shaping agendas, including as nations strive to achieve futures in which

diseases might be eliminated. Enumerations are also key to the making of futures in relation to science, technology, environmental management, and climate. Reflecting on how numbers do their work in different policy, science and implementation sites, this Panel asks how the governing work of numbers – especially through models and modes of projection – is made-up in practices, with particular affects, inviting speculative thinking on the possibilities that enumerations can afford as well as on the futures they might close down. (Please note: this panel runs across 3 sessions).

Participants:

Excitable models in the evidence-making of infection control
Tim Rhodes, Centre for Social Research in Health, UNSW; Kari Lancaster, University of New South Wales, Sydney

The field of infection control is replete with enumerated projections and quantifiable targets. We see this in the case of emergent infections and outbreaks, such as coronavirus, and in the case of viral elimination, such as hepatitis C and HIV. Mathematical models of projection and linked intervention targets play a key role in evidencing disease elimination futures. Drawing on ideas of enumerated entities as relational beings (Verran) and modelled projections as matters of qualculation (Callon), we take the projection and elimination of viral infections as a case for exploring enumerations as 'evidence-making interventions'. Using qualitative interview data with scientists and modellers, we focus primarily on the invention of 'treatment-as-prevention' in hepatitis C disease control, drawing attention to how models give life to new enumerated entities, which detach from their calculative origins and take flight in new ways. We trace how models of treatment-as-prevention transform, as excitable matter, through affects, into situated viral elimination concerns. We notice how modellers grapple with the ways their mathematical models take flight, apparently beyond reasonable calculus, through practices of 'holding-on', which re-constitute models as an 'evidence-based' science. Working with enumerated projections as excitable matter, which generate affects and surprises as enumerations are 'let go', we propose that another modelling science is possible, one more attuned to treating enumerated projections as relational beings of ontological intervention.

„I just want a number"– Science-Policy Interactions in Energy System Modelling *Leo Capari, Institute of Technology Assessment, Austrian Academy of Sciences; Anja Bauer, University of Klagenfurt; Daniela Fuchs, Institute of Technology Assessment of the Austrian Academy of Sciences (ITA-OeAW); Titus Udrea, Austrian Academy of Sciences, Inst. of Technology Assessment (ITA)*

Energy system modelling plays a crucial role in developing and implementing energy transitions. Models provide various orientations, inter alia, by exploring scenarios and pathways, illustrating trade-offs and highlighting economical and technological efficient and effective measures. Yet, as modellers frequently bemoan, policy-makers all too often are asking for "just a number", indicating their demand for seemingly unambiguous and easily to communicate results in light of the complex and potentially contested societal and political transformation to decarbonisation. In our presentation, we analyze and discuss the origin, use and authority of numbers in energy system modelling and respective science-policy interactions. With a qualitative analysis of twenty scientific articles, we trace the different functions and characteristics of numbers in the epistemic practice of modelling. Numbers play a central role in modelling, inter alia, as quantitative assumptions, data and results but also as uncertainty measures. We deepen our insights on the basis of two cases in which energy system modelling was used to inform energy policy making (UKs Clean Growth Strategy and the Portuguese Roadmap for Carbon Neutrality). We ask how numbers are negotiated, established and contested, how they are embedded in or contradict specific socio-political narratives and how they are used to legitimize policy actions. Our findings indicate that the authority of numbers manifests at different levels during the modelling process e.g. when modelling assumptions are negotiated or in phases in which the (preliminary) results are communicated to policy makers. Our contribution intends to clarify, why the answer is not simply 42.

Representing the Future as an Eternal Present: An Examination of Mortgage Credit Enumerations *Alexandra Ciocanel, University of Manchester*

In this presentation, I examine the enumerations inscribed in mortgage credit amortization schedules and how consumers react in front of the various numbers that they mobilise. Drawing on an ethnographic study in a mortgage broker company in Bucharest (Romania) and interviews with mortgagors and mortgage brokers, I analyse the numbering practices at play when making comparisons between different mortgage products and forming fictional expectations about the future based on present calculations. Putting a focus on the encounter between prospective clients, mortgage brokers and the mortgage credit amortization schedule and accompanying documents, I show how this reveals two different future orientations: an open and unknowable future and one that nonetheless can be tamed through various calculations, calendrics, and punctuations. I argue that despite the fact that the opacity of the unknowable future is recognised either through various written expressions in documents or verbal statements made by the mortgage brokers, the numerical forms used and their arrangement manage to represent the future as knowable in the form of a stretching of an eternal present that instils a sense of order and stability. I discuss how these mundane encounters are tied to recent political measures of changing the macro-economic index at the base of mortgage credit interest rates and law proposals intended to reduce the potentially bad effects of the uncertainty of the future. For a better grasp on how numbers work at these micro and macro levels, I mobilise the concept of qualculation (Cochoy 2002, Callon & Law 2005) to explore how particular calculations become feasible in specific spatio-temporal and historic frames.

The Persistence of Rational Action in Agent-Based Fisheries Modelling *Helge Peters, University of Oxford, School of Geography and the Environment*

The figure of the rational actor at the root of neoclassical economics has come under renewed scrutiny. Whereas STS analyses of technoscientific capitalism tend to document performances of rational calculation with regard to the valuation of nonhuman entities, this paper discusses an attempt by heterodox economists to perform more-than-rational human agents through agent-based modelling. Drawing on participant observation with an interdisciplinary team of scientists designing a socio-ecological fisheries model, I will illustrate how the attempt to model economic agents with increased behavioural realism contends with the legacy of rational action. The paper finds that normatively inflected commitments to the universality of economic knowledge and purposiveness of economic action are negotiated in interdisciplinary disputes about the formalisation of geographically situated, culturally specific, and non-maximising modalities of fishing behaviour. These disputes are resolved by making transepistemic appeals to the natural resource management practices which socio-ecological models are meant to support, thereby perpetuating the performance of fishing as utility maximisation. Relating this finding to the STS literature on economisation, I conclude by revisiting the gradual divestment of the concept of calculative agency from its normative legacy and briefly consider the implications of this elision for research into technoscientific capitalism.

Session Organizers:
Kari Lancaster, University of New South Wales, Sydney
Tim Rhodes, Centre for Social Research in Health, UNSW

Chair:
Tim Rhodes, Centre for Social Research in Health, UNSW

223. Engaging Health Activism, Sexual Politics and STS 3
10:00 to 11:40 am
virPrague: VR 16

The relationship between activism, biomedicine and sexual politics has been a focus in STS since Steven Epstein's 1996 book Impure Science: AIDS Activism and The Politics of Knowledge. In focusing on how patients, citizens and organisations mobilise to transform biomedicine and healthcare, STS has taken a particular focus on public/expert entanglements, such as how health advocacy groups collaborate with healthcare professionals and mobilise citizens' experiences to influence

health practice (Akrich et al. 2014). In this panel we want to combine this focus on health activism with recent calls to address the possibilities afforded by a greater attention to pleasure and to sexual bodies in STS (Race 2019). Here we also include an attention to the ways sex and sexuality are mobilised in political engagements with health and illness. As digital technologies open new possibilities for doing politics, sex and intimacy, and uncertain and turbulent times raise new problems for health programming and notions of expertise, we hope to explore the analytical generativity of doing STS research at the intersection of sex, sexuality, health and activism. We welcome contributions that engage with 'health activism and sexual politics' in various ways, and from a range of empirical areas. This might include: Public/expert entanglements Sexual bodies, affect and pleasure The enactment of 'biosexual citizenship' (Epstein 2018) in health activism Continuities and discontinuities: troubled pasts (Murphy 2012) and possible futures Health activism and LGBTQ movements (Roberts & Cronshaw 2017) Categorisations, standards, risk and politics of (sexual) inclusion Engagements with Queer Theory

Participants:

Beyond the prep user: engaging the figure of the non-user.
Adam Christianson

There is broad agreement among HIV prevention specialists and activists that PrEP is an important part of the HIV-prevention toolkit. Despite its substantial promise, use continues to disproportionately trail gains in awareness, acceptability and availability among MSM. Much has already been said about the problems which cause non-use, but what can non-use itself teach us?. Traditionally, sociologists have shied away from practices which constitute non-doing (Scott, 2018). This includes side-lining non-use as sociologically uninteresting unless it is in service of use. Indeed, the 'non-user' is often explained away by 'exclusion' or disregarded entirely (Wyatt, 2005). Yet, non-use is a central if understated point of contention in PrEP discourse, and continues to shape our understandings of who and how PrEP is expected to be used. This paper examines the ways PrEP non-use is problematized in service of a 'biopolitics of inclusion;' through which sexual identities are reinterpreted as problems of medical technique and refinement (Epstein, 2005; 2007). I reconceptualize the problematic of non-use in terms of congruent 'themes' of non-use. Through this transformation I demonstrate how the non-user poses irreconcilable problems to not only the use/non-use binary but also challenges longstanding alliances between MSM and HIV-activism.

WhatsApp, Who's Missing Out And Where's The Sex?: Cervical Cancer Activism On A Shoestring In Indonesia
Belinda Rina Marie Spagnoletti, The University Of Melbourne, Australia; Linda Rae Bennett, Nossal Institute for Global Health, University of Melbourne

Since the early 1990s technologies to prevent and detect cervical cancer (CC) have been deployed at the population level across Western Europe, the UK, Northern America and Australasia, markedly reducing the burden of CC in high-income countries. Researchers recently projected the elimination of CC in Australia by 2035 (1), and the possibility that CC could be quashed globally by 2100 (2). For Indonesia, a lower-middle income country with the world's fourth largest population, significant investment is required to achieve CC elimination; CC mortalities have virtually doubled, from 26 deaths daily in 2013 to 50 in 2018 (3). Despite the alarming surge in mortality, the Indonesian Government has failed to scale up cervical screening and HPV vaccination, which are fundamental to CC elimination. In this vacuum, CC health promotion in Indonesia is largely driven by health activists, who are predominantly upper-middle class and elite women. Drawing on a current ethnographic study, we describe how activists have leapfrogged digital technologies and used high profile ambassadors to raise awareness about CC in a society in which sexual and reproductive health (SRH) education is highly constrained. WhatsApp, Instagram, Twitter and Facebook are used to promote CC information seminars; free screening events and pay-by-instalment vaccination; share footage of celebrities receiving the HPV vaccine; and host live online clinics. We also highlight limitations in activist-led advocacy, by critiquing health promotion campaigns that: gloss over the fact that HPV is sexually transmitted; and rely heavily on smartphones, prohibiting access to off-the-grid Indonesians

and further perpetuating health inequities. References cited: 1. Hall MT, Simms KT, Lew J-B, Smith MA, Brotherton JM, Saville M, et al. The projected timeframe until cervical cancer elimination in Australia: a modelling study. The Lancet Public Health. 2019 Jan 1;4(1):e19–27. 2. Simms KT, Steinberg J, Caruana M, Smith MA, Lew J-B, Soerjomataram I, et al. Impact of scaled up human papillomavirus vaccination and cervical screening and the potential for global elimination of cervical cancer in 181 countries, 2020–99: a modelling study. The Lancet Oncology. 2019 Mar 1;20(3):394–407. 3. Bruni L, Albero G, Serrano B, Mena M, Gómez D, Muñoz J, et al. Human Papillomavirus and Related Diseases in Indonesia. Summary Report 17 June 2019. Barcelona: ICO/IARC Information Centre on HPV and Cancer (HPV Information Centre); 2019.

A Tale of Two Labs in the 1970s: Women, Junior Scientists, and Epistemic Justice in the Discovery of RNA Splicing.
Pnina Geraldine Abir-Am, Brandeis University

The discovery of RNA splicing in 1977, is widely seen as a major landmark in molecular biology. By revealing that eukaryotic messenger-RNAs are not co-linear with DNA but rather are the products of multiple splicings of non-contiguous segments of a primary transcript of the genome, the discovery led to a new paradigm of genetic regulation. First, this talk examines the contributions of women to this discovery, while focusing on those who served as first co-authors in two pertinent labs: at the Cold Spring Harbor Laboratory on Long Island, NY; the Cancer Research Center at MIT, Cambridge, MA. Second, the talk inquires into why neither women, nor junior scientists of both genders, who played a key role in this discovery, became part of its public memory. That memory centers on two lab directors turned Nobel Laureates, even though their place in the discovery cannot be separated from junior scientists, both women and men, who collaborated with them, but were relegated to the "deep South" and the Gulf of Mexico, and further excluded from any recognition. The talk concludes with reflections on the impact of historical research conducted by the speaker on restoring epistemic justice to these women and junior co-discoverers at the 40th anniversary of the discovery (2017, 1977) and its aftermath. The talk also raises the wider issue of the rationale for such institutionalized injustice in the public memory of science, as a new challenge for STS scholars. (more details in essay in History of Science Society Newsletter, April 2017)

Bodies and Space: Biotechs and relationship between gender, ethics and resistance in south *Maria da Costa, State University of Campinas*

This article discusses how relations between collective gender actions in the face of technologies based on biotechnology, highlighting some ethical, epistemic and political issues that allow the application of these technologies and their effects on women's lives. For this, we developed a parallel between biotechnologies in the biomedical ("red") and agro-industrial ("green") areas, discussing two cases that affect the collective resistance of women in Brazil: medicalization / natural childbirth and industrial / peasant agriculture. In this text, it extracts elements to think not only about negative implications, but mainly to understand new forms of resistance by women, mobilizing concepts from feminist epistemologies and social studies of science and technology, such as: situated studies and body-state, body - knowledge policy; and theoretical elements symbols for discussing issues related to ethics, legitimacy, partiality and decoloniality of technological knowledge. KEYWORDS: Biotechnologies. Genre. Health. Agriculture, Bodies, Territories, Social Movements

Session Organizers:

Lisa Lindén, Departement of Sociology and Work Science, University of Gothenburg

Emily Jay Nicholls, London School of Hygiene and Tropical Medicine

Chair:

Emily Jay Nicholls, London School of Hygiene and Tropical Medicine

224. Futures Past, Futures Present

10:00 to 11:40 am
virPrague: VR 17
Participants:

Comfort Is Paradise: Late Socialist and Neoliberal Sociotechnical Imaginaries in Czechoslovakia between Nature and Future *Martin Babicka, University Of Oxford*

Whereas historians have emphasized that Czechoslovak technocrats carried continuity over 1968/1989, continuities/ruptures in 'sociotechnical imaginaries' have remained neglected. So, I focus on ruptures that changed the horizon of a desirable future: the socialist belief in science and technology around 1968; and the socialist/market responses to reflections of human undesirable interaction with nature around 1989. I argue that the sociotechnical imaginary of the 1960s 'scientific-technological revolution' – the carrier of 'progress' and 'better future' – metamorphosed into an authoritative political discourse in which techno-science remained important on a performative level and a subject of a rather postmodern reflection of science and technology, stabilizing the society as conservative, yet technologically enhanced, but resigned on any qualitatively better future; and following the crumbling legitimacy in the late 1980s, reflections of civilizational risks remained mainly attached to the idea of a consumerist life, only to be later intertwined with capitalist optimism: rendering risk as opportunity, using nature as a market metaphor – growth being dictated by 'Darwinian nature' rather than 'historical necessity' – subsuming the environmental critique under the neoliberal programme, and otherwise adopting the socialist productivism. These ruptures have had grave implications: the first demobilized the techno-optimist vision of world of abundance without work; the second dismissed the degrowth economy while still utilizing the imaginary of nature. The paper is based on methods of cultural and intellectual history: analysing post-Stalinist, late socialist and postsocialist popular culture and technocratic thought; the Czechoslovak environmental movement, perestroika mass television journalism and the (audio)visual vocabulary of emerging capitalist enterprises during privatization.

Competent older adults: acknowledged health deficits are not at odds with clear future expectations *Ulrike Bechtold, Institute of Technology Assessment of the Austrian Academy of Sciences; Natalie Stauder, University of Vienna, Research Group Human ecology; Marcel Seifert, University of Vienna, Human Ecology Research Group; Martin Fieder, University of Vienna, Department for Evolutionary Anthropology; Harald Wilfing, University of Vienna, Human Ecology Research Group*

To decrease costs for an ageing society and develop new markets are the main arguments for Europe to make massive investments in the development, introduction and implementation of technologies to support older adults in their own homes ("active assisted living", AAL)1, while increasing freedom, autonomy, mobility and social integration and communication2,3,4. In a study conducted in Vienna in 2018/19 with older adults aged 61-84 years (n=245), living at their private homes. The three main foci of the survey encompassed socio-economic aspects, their actual (and desired) use of technology and the way they perceive their own life-course and their views on their own (and others) ageing.   Although individual problems, challenges and deficits are very clearly perceived, most of the questioned persons display a very positive attitude to their own ageing (e.g. subjective age, having plans and wishes for the future, importance of age) as well as a profound idea of what exactly they do (not) expect from technology support. This is contrary to frequently appearing stereotypes of aging in technology research and development of AAL4, 7. Further integration of older adults in technology development processes5 (in participatory settings with certain claim of democratisation6) or more upstream co-creation activities as to sensitise industry and market actors of social aspects within technology development in the light of RRI8, 9,10 are clearly indicated. More generally, a competent and highly differentiated picture of older adults may help rethinking care arrangements as older adults with medical conditions often reduced to their medical needs. 1. Neven, L.

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Fuzzy Futures?: Implementing Nuclear Waste Disposal in Finland *Marika Hietala*

In 2001 the Finnish parliament ratified the State Council's Decision-in-Principle that geological disposal of nuclear waste (GD) represents the 'overall good of society'. The most radioactive nuclear wastes stay hazardous for several millennia, and GD has been presented as the 'safest' available method for their management, but also as the 'end point' of nuclear waste management both in international and national level discussions. Despite the envisioned permanence of GD, the Decision-in-Principle on GD requires that retrievability, the possibility of retrieval of waste from the disposal facility in the future, is taken into account. Retrievability undercuts the imaginary of permanence, and this paper takes the tension between permanence and retrievability as its starting point. It examines how retrievability and permanence are enmeshed with and enabled by the materiality of nuclear waste, which helps to blur the boundaries between the permanent and the temporary, disposal and storage, thus giving space for alternative futures to emerge. Drawing on ethnographic fieldwork conducted in Finland, this paper, nonetheless, proposes that the Finnish nuclear waste community has utilised these blurry boundaries to render GD resilient and able to contain and consume potentially competing alternative futures. In this way, opening up the future of, and futures imagined through, GD has worked to cement the imaginary of GD as the best available method to generate and foster safe futures.

Justifying Mining Futures *Tobias Olofsson, Uppsala University*

This paper analyzes how mineral explorationists justify predictions of the economic and socio-environmental minability of future mining operations. As claims about the worth of an object or actor, justifications rely on references to some value or values that are taken to matter within the given context, and this paper asks how this is done in relation to predicted mining futures. In the paper, two different genres of justification are outlined and analyzed. The first of these forms are justifications based on claims related to values to do with accurate and precise mapping and modeling of mineralized deposits. In mineral exploration, projects are, to use explorationists' vocabulary, "de-risked" by investments in the quantity and quality of data and the de-risking process supports better predictions. The second form

of justification is justifications of the desirability of the futures outlined in predictions. The predictions made by explorationists do more than describe potential futures, they also seek to persuade others of the desirability of the future depicted in predictions. While the first form of justification is to do with the worth of a prediction as a correct description of the future, the second form is not only descriptive but also productive in how it justifies why this future should become the future present.

Session Organizer:
Marika Hietala

Chair:
Marika Hietala

225. Governing desired and undesired futures

10:00 to 11:40 am
virPrague: VR 18

This panel seek to cast new light on the ways in which contemporary societies imagine the future and attempt to govern it. It proceeds by analyzing anthropologically, sociologically, and geographically particular social technologies that have become prominent in planning for financial, security, and environmental future uncertainties. Two main technologies will be discussed in the panel. One will be scenarios across different sites. The aim is to to shed more light on a governmental technology that consists of two main components: on the one hand, future narrative building, and on the other, the identification of concrete implications for present practices and policies by either simulating, exercising, or rigorously thinking about them in order to improve planning for and understanding of unexpected future problems. A second technology discussed by the panel is insurance and the new digitalization of uncertainty. In recent years within the insurance industry it has been widely assumed that Big Data and Artificial Intelligence will change the intensity and extensity of insurance operations; the traditional ways of constituting, knowing and governing populations and their futures through insurance will be disrupted, and new forms of profiting from insurance will emerge. In this panel, we will look into what in insurance practice is in fact changing, if anything. By discussing the two technologies across different empirical cases we are interested in providing a careful analysis to the ways in which the future is translated into risk-based and uncertainty-based conceptions and the related governmental technologies emerge in response.

Participants:

Insurance and the new datafication of uncertainty *Turo-Kimmo Lehtonen, Tampere University*

At the core of modern insurance practice has always been the capability to datafy uncertainty. Using statistical information and actuarial calculations, insurance institutions have rendered the banal regularity of everyday life into something that can be seen from a scaled up perspective. Seemingly unpredictable singular incidents have been analysed en masse, in terms of populations and distribution of events within them, and in view of their monetary value. Thus it has become possible to develop insurantial scenarios of the future, with which to manage economies and people's everyday lives. In recent years within the insurance industry it has been widely assumed that Big Data and Artificial Intelligence will change the intensity and extensity of insurance operations. Yet, often the social scientific discourse on the theme has been based more on generalising assumptions than knowledge of actual changes in the field. This paper seeks to ameliorate the situation by giving an overview of some of the empirical work in progress and already done on the issue. A range of new tools of datafication are being tried out in fields such as self-tracking and health insurance, car insurance, cyber insurance, and reinsurance. Through analysing these concrete cases, the paper asks: Do the new forms of datafication in fact disrupt the ways in which populations are constituted and everyday lives are governed through insurance? And if yes, in which respects are the transformations important and in which not?

Incorporating long-term socio-ecological path-dependencies in urgent decision-making with simulation exercises *Janne I. Hukkinen, University Of Helsinki; Jussi T Eronen, University of Helsinki; Nina Janasik, University of Helsinki; Sakari Kuikka, University of Helsinki; Annukka Lehikoinen, University of Helsinki; Peter Lund, Aalto University; Helmi*

Räisänen, University of Helsinki; Mikko J Virtanen, Tampere University

The magnitude and speed of change in intertwined webs of human-environmental systems pose unprecedented challenges for decision-makers. On one hand, human-induced environmental changes have pushed Earth's socio-ecological systems into an era of chronic, complex and rapid disruptions, which call for quick decisions and effective implementation. Decisions are often made in an intuitive crisis mode within a brief window of opportunity. On the other hand, the complexity, interconnectedness, and long lead times of the problems at hand would require thoughtful weighing of evidence with ample time by experts from a broad range of professions and disciplines. Here we discuss contexts and processes of decision-making that could prevent decisions made under time pressure from paving the way to unwanted socio-ecological disruptions decades into the future. We aim to show that simulation exercises based on analogous application of decision principles from a high reliability control room, or the Policy Operations Room (POR) model, can help policymakers to consider the long-term path-dependence, be it desirable or not, in urgent decisions made during wicked socio-ecological disruptions. The POR exercise enables experimentation with different scenario techniques depending on the degree of the participants' knowledge of the risks and uncertainties of the situation. We hypothesize that in long-term strategic policymaking settings it is possible to benefit from the same operational procedures with which control room operators stabilize critical infrastructures and ensure reliable operations in the short term.

Social collapse and its ethics in public climate change scenarios *Christine Hentschel, Universität Hamburg*

Despite the increasingly pessimistic scientific forecasts about the destiny of the planet and its inhabitants, our relation to the future has largely been one of „cruel optimism": when "something we desire is actually an obstacle to our flourishing" (Berlant 2011). Recently, however, the radical global climate movement, and public intellectuals supporting their cause, have fostered a different imaginary, one that seems to sever these attachments by beginning with a pessimistic certainty. „What if we stopped pretending the climate apocalypse can be stopped", asked Jonathan Franzen (2019) in the New Yorker. Taking the reality of a likely social and political collapse „to heart", writes Jem Bendell (2018) in his widely debated „deep adaptation", is like a terminal diagnosis that we have received as a collective. Suddenly, these public intellectuals argue, we begin to think about what we really cherish, need, and value. In Bendell's words, it is about „what we are going to stand for even if we are going to sink." By following the imaginary and affective work in these narratives the paper seeks to distill the challenge that these thinkers confront us with: a collective ethics of collapse.

Uncertainty by Design: Imagining and Enacting the Future Through Scenarios *Limor Samimian-Darash, Hebrew University of Jerusalem*

Humankind has long struggled with the uncertainty of the future, and particularly with how to foresee the future, imagine alternatives, or prepare for and guard against undesirable eventualities. In this paper, addressing he problematization of the different ways in which people conceptualize and act on uncertain futures, I shed light on one particular technology for systematically thinking, envisioning, and preparing for future uncertainties, that of the scenario. The scenario emerged in recent decades to become a widespread means through which states, large corporations, and local organizations imagine and prepare for the future. Regardless of the different ways in which scenarios are created and used, various iterations of the scenario technology all share a common approach to thinking and practicing potential futures: they narrate imagined stories about the future that are intended to help people move beyond their 'mental blocks' to consider the 'unthinkable.' Drawing on a long-term fieldwork project conducted at one of the world's leading energy organizations, I describe how future "global scenarios" are created and implemented in the energy world. In this process, I argue not only new modalities of knowledge-making and practicing are shaped, but also new subjects and

modes of subjectivity are designed, and encouraged to accept the uncertainty of the future and work with it through the creation of a new language and new frameworks for addressing it.

Session Organizers:
Turo-Kimmo Lehtonen, Tampere University
Limor Samimian-Darash, Hebrew University of Jerusalem
Chair:
Turo-Kimmo Lehtonen, Tampere University

226. International Scientific Collaboration: Knowledge Infrastructures and the Role of STS Scholars

10:00 to 11:40 am
virPrague: VR 19

International scientific collaborations play an increasingly important role in efforts to address global challenges. This gives rise to numerous questions about the structures of international scientific collaborations, and about how these are changing scientific work. Which forms of international scientific collaboration can we for instance identify? And how are these collaborations situated within the broader context of scientific endeavour? What do we know about the social, organizational and political dynamics of international scientific collaborations? What kind of stakeholders are for example involved in these collaborations? And which organizational frameworks do they for instance employ to deal with specific coordination challenges tied to international scientific collaboration? What are scientists' practical experiences with international scientific collaboration? And how do these relate to the way their work is organized? How could the social, organizational and political dynamics of international scientific collaboration be studied best? Which methods should be employed? Last but not least: what might be ideas to improve knowledge infrastructures and international scientific collaboration? And what could and/or should be the role of STS scholars in a process of designing knowledge infrastructures and/or facilitating international scientific collaboration?

Participants:

Formal and Informal Infrastructures of Collaboration in the EU's Human Brain Project *Christine Aicardi, King's College London; Tara Mahfoud, University of Essex*

This paper builds on analytical insights gained through long-term engagement with the Human Brain Project (HBP), Future and Emerging Technology Flagship of the European Commission, to study the infrastructuring of collaborative work in a large-scale international scientific initiative. Commencing in 2013, the HBP is a ten-year multidisciplinary collaboration in neuroscience, medicine and computing, bringing together 500+ scientists from 100+ institutions in 20 European countries. It aims at building a pan-European cutting-edge research infrastructure that will allow scientific and industrial researchers to advance our knowledge in the fields of neuroscience, computing, and brain-related medicine. Using empirical material gathered through ethnographic fieldwork, action research and focused rounds of interviews, we show that while the HBP research infrastructure was designed to facilitate collaboration between scientists within and outside of the project, researchers (us included) have been collaborating using alternative means. While much of the literature on infrastructure focuses on 'top-down', formal infrastructural design, we pay attention to the informal, invisible infrastructural assemblage involved in large-scale interdisciplinary collaborations. We find that HBP researchers engaged in collaborations invisible to the project management and the EC, because they bypassed the formal infrastructure built to support, and account for, these same collaborations. Adapting conceptualisations of formality/informality from urban and planning theory to analyse the tensions between formal and informal infrastructures, we suggest that the formal infrastructures built to facilitate and structure collaboration within large scale interdisciplinary research initiatives can render informal infrastructuring and collaborations invisible. This has important implications for the governance and evaluation of such initiatives.

Time is Running Out…- Narrating a Global Infrastructure for Biodiversity Data *Henk Koerten, Vrij Universiteit*

This paper presents a narrative analysis of a conference, promoting that better biodiversity data leads to better science, and, ultimately, better solutions and policies to stop declining biodiversity. Biodiversity practitioners were presenting their contributions to a global infrastructure for biodiversity data and how they connect to the mission statement of this conference. It is generally assumed that to study the current state of declining biodiversity, information sources ranging from centuries-old communities of specimens-collecting naturalists up to genomic information based on artificial intelligence and big data have to be integrated. By studying contributions to this conference we attempt to construct a narrative of how experts seek to create a global biodiversity information facility. This paper is a contribution to the theoretical debate of information infrastructures using concepts of boundary objects, discourse and narrative analysis in order to shed light on how knowledge infrastructures emerge, how narratives of relevant stakeholders shape the narrative of such an information infrastructure. An international conference did bring together international organisations, research scientists, and policy makers in 2019 to discuss how biodiversity data could be "combined, linked and disseminated to everyone throughout the world" to make "rational and timely decisions to support a sustainable future." (https://biodiversitynext.org/). Track names like Science, Infrastructure, Standards and Policy & International Coordination represent relevant issues.

Knowledge Co-production in an International Consortium: The Role of STS in an Interdisciplinary Project *Anshu Ogra, King's College London; Amy Donovan, University of Cambridge; George Adamson, King's College London*

This paper explores how 'knowledge co-production' is interpreted in the UK NERC- and DFID-funded project LANDSLIP. This multi-partner and multinational consortium aims to develop a Landslide Early Warning System (LEWS) for two study sites in India. The project consortium consists of mainly physical scientists from the UK, India and Italy. Utilising a primarily positivistic epistemological approach, the project merges the efforts of meteorologists, who use weather models and data to arrive at rainfall triggers, with those of geologists, who use material details of the landscape to access the physical susceptibility of the region to landslides. The use of this epistemology is extended in project's approach towards co-production, ostensibly one of the project's key aims. This has the effect of reducing local stakeholders to data sets which need to be mapped and updated and homogenising physical scientists as "experts" despite being trained differently in different countries. As social scientists embedded in the project, we argue that production of this LEWS involves engaging with the different social and institutional context in which a) the "experts" in the consortium are embedded and b) the LEWS is expected to generate meaningful impact. Navigating on either side of science and society boundary in order to produce the LEWS requires, we argue, approaching co-production as it is envisaged by the consortium through the idiom of co-production theorised by Jasanoff. This study is based on ethnographic interviews carried out using open ended questions with consortium members and project stakeholders.

Transnational Collaborations: Inquiring Into the Epistemic Transitions and Dynamics. *Abhinav Tyagi, Indian Institute of Technology Bombay*

Most of the scientific narratives and the tone of modern scientific discourses were driven by the 'West'. 'Global South' or 'East' is either a recipient or a collaborator to scientific discourse, whose terms are set by the 'West'. This paper attempts to inquire into two transnational collaborations of the '70s in India. The first transnational collaborations were between Indian Institute of Technology Delhi (IITD) and Swiss Federal Institute of Technology (SFIT now ETH), Zurich and the second one was between Indian Institute of Science (IISc), Bangalore and University of Chicago (UoC), Chicago. IITD-SFIT, Indo-Swiss collaboration happened with a motive to work together for the development of biofuels, synthetic natural gas (SNG) and other biochemical technologies. While IISc-UoC, Indo-US collaboration was a capacity building program for the Indian scientists in the field of genetics, especially genetic sequencing and so on. By inquiring into the collaborations, the paper attempts to understand the epistemic translations and dynamics

between the two collaborations in shaping the trajectory of biotechnology in India. It further inquiries into the role of global scientific discourse, the Indian state, and international scientific organisations in shaping these dynamics in the country. It attempts to articulate the power dynamics and epistemic translations between the 'West' and the 'East.'

Session Organizer:
Richelle Boone, Leiden University

Chair:
Simcha Jong, Leiden University

227. Institutionalization and Social Appropriation of RRI: A Remaining Challenge? (1)

10:00 to 11:40 am
virPrague: VR 20

Since 2013, the EC has pushed a devoted strategy to foster the embracement of RRI across the whole Horizon 2020 FP. This effort has allowed to develop a generous body of knowledge, experiences and networks around the concept with the determination to promote a significant change in European R&D. However, with the conclusion of FP8 and the beginning of FP9 at the forefront, it´s time to reflect about how RRI has effectively permeated different institutions across the EU and outside of it. On the one hand, New HoRRIzon project has shown that the institutionalization of RRI in research organizations is still a challenge. On the other hand, other projects (e.g. RRI practice, RIconfigure) have indicated ways forward to mainstream RRI. That duality demands to explore what are the remaining challenges towards its full implementation. In this panel we would like to explore how RRI has been diffused all over the last 7 years in Europe with the help of questions such as: Which challenges face RRI throughout the EU territory   ? What characteristics have shaped RRI diffusion? What drivers can lead the RRI paradigm towards its institutionalization? Which best practices can be shared and transferred across the continent?   We welcome submissions from different fields of academia (political science, philosophy, sociology, social psychology, anthropology and STS of course) that want to share their findings about this timely policy episode. We also welcome papers from different stakeholders engaged in this topic such as research funders, policy makers, science communicators and citizen associations.

Participants:

B-RRI-Exit? Institutionalisation of RRI in the EU and the UK
Philip Inglesant, University of Oxford, Department of Computer Science; Jun Zhao, University of Oxford, Department of Computer Science; Marina Jirotka, University of Oxford, Department of Computer Science
The exit of the UK from the EU on 31st January, 2020 and still-uncertain relationship between the UK and the EU for future RTD Programmes presents an opportune moment for a comparative analysis of UK and EC approaches to RRI. Research and innovation in the UK already has a distinct flavour. The framing of RRI by the major UK funding organisation in science and technology, EPSRC, is designed to promote and institutionalise RRI across the research community and throughout its funded research programmes. However, the EPSRC style of RRI, sometimes distinguished as Responsible Innovation (RI), differs in focus and practice from the thematic actions of RRI as implemented in Horizon 2020. Our contribution is based on experiences of Human-Centred Computing and STS approaches to embed RRI in a number of major EPSRC-funded research programmes. Despite strong support from EPSRC, RRI is still not fully institutionalised in UK practice. RRI remains dependent on the support (or resistance) of research leaders, and a policy-level commitment to RRI does not always reach down from the leadership to the "lab face"; conversely, insights from "lab-face" researchers often lack a pathway to inform RRI actions across the programme. The challenges and successes of "UK style" R(R)I give practical insights into institutionalisation at the organisational and national research funding level. At the same time, UK and other national/local RRI frameworks can also learn from EU implementation of RRI, opening up a truly international vision of RRI.

Has responsible research and innovation disseminated across the Ethics Ecosystem? A case study of AI population health research in the UK and Canada *Gabby Samuel, King's College London /Lancaster University; Gemma Derrick, Lancaster University; Jenn Chubb, York University*
Responsible research and innovation (RRI) requires researchers to think about the societal impacts of their research with relation to potential ethical, social and regulatory concerns; this strategy relates to broader policies related to the impact agenda which recognise the embeddedness of societal impact in the research process. The objective of this paper is to explore how UK and Canadian artificial intelligence (AI) population health researchers and research institutions have adopted the principles of RRI into their own research agendas, specifically with regard to the relationship between the ethical practice of research and of societal impact/engagement. To do this, we mapped publications on artificial intelligence (AI) to explore the disciplinary characteristics of current AI research and conducted 18 interviews with researchers in the field. We highlight how researchers separated the ethical responsibility and practice of their research with that of their research impact (societal impacts); and that these findings align with our mapping exercise where societal partners and data providers were peripherally located to the research. This separation of research and societal engagement, and by proxy ethical reflexivity and societal impact, was seemingly influenced by the practices, enactment and perceived responsibility of ethics by 'other' actors within Samuel et al (2019)'s 'Ethics Ecosystem', such as research ethics committee members, funding bodies and journal Editors. We argue that the promotion of RRI will only be successful if its vision is shared and practiced amongst all actors of the 'Ethics Ecosystem'.

Organisational institutionalisation of responsible innovation
Phillip Macnaghten, Wageningen University; Richard Owen, Bristol University; Mario Pansera, Bristol University; Sally Randles, Manchester Metropolitan University
Drawing on insights from organisational institutionalisation, we describe and analyse the translation of the discourse of Responsible Innovation (RI) into practice at a large UK Research Council and those university research communities it funds between 2008 and 2018. After an initial, active phase of institutionalisation leading to formal RI policy development in 2013, subsequent translation both at the Council and in universities was found to be partial and limited in both scope and reach, notwithstanding instances of significant institutional entrepreneurship and experimentation. RI institutionalisation was reported to be encountering substantial ontological, epistemological and pedagogic barriers within universities, compounded by a lack of resources. Extant norms, cultures, institutional logics and practices, including those relating to incentive and evaluation regimes, all posed challenges for RI, in part legitimated by influential external policies relating to research and innovation. Responses suggestive of buttressing by incumbents were evident, including the decoupling of RI activities and the domestication and normalisation of RI within existing responsibility norms and practices.

Social labs as a cost-effective solution for mainstreaming RRI? The case of the University of Novi Sad *Raúl Tabarés, TECNALIA, Basque Research and Technology Alliance (BRTA); Ezekiela Arrizabalaga, Fundación TECNALIA Research & Innovation; Petar Vrgovic, University of Novi Sad; Mila Grahovac, University of Novi Sad*
As the RRI paradigm has been widely promoted by the EC throughout the Horizon 2020 FP, and mainly by the "Science with and for Society" WP, a great number of participatory methods, tools and action research dynamics have been developed in several H2020 funded projects during the last decade. One of these methods that have been delivered in the last years is the social lab methodology, which has been extensively employed in the New HoRRIzon project, covering the different 19 sub-sections of H2020. In this paper we would like to present the experience of one of these labs that has been dedicated to the "Spreading Excellence and Widening Participation", a WP oriented to low-performing countries of the "Innovation Union". We also make a focus in the case of the University of Novi Sad,

which has deployed several actions to embed RRI into its campus. Thanks to the involvement of several members of the institution into the lab, they have been able to adopt the RRI paradigm and to diffuse it with their colleagues, but also to confer it with new meanings regarding their cultural particularities and context specific needs. We argue that SL can be a cost-effective solution for disseminating the RRI concept, but we also warned about its weak points, mainly related with its flexibility and voluntary basis. To this extent, we also recap some indications for strengthening this approach based on the empirical fieldwork conducted during several workshops hosted into the project.

Session Organizers:

Raúl Tabarés, TECNALIA, Basque Research and Technology Alliance (BRTA)

Vincent Blok, Wageningen University & Research

Mika Nieminen, VTT Technical Research Centre of Finland

Robert Braun, Institut für Höhere Studien Vienna

Chair:

Robert Braun, Institut für Höhere Studien Vienna

228. (Transnational) research infrastructures as sites of technopolitical transformations I

10:00 to 11:40 am
virPrague: VR 21

As large-scale collaboration in research and the shared use of data and machinery continue to expand, (transnational) research infrastructures grows increasingly significant for scientific practice and research policy alike. Next to scientific relevance, research infrastructures have long articulated broader political visions of progress and collaboration. Research infrastructures therefore provide a key site for STS to study sociotechnical transformations and related political imaginations across space and time. For this open session, we invite contributions that conceptualize (transnational) research infrastructures as simultaneously epistemic and political spaces that mutually shape one another. Papers may discuss research infrastructures that include, but are not limited to, large machinery, shared databases and institutional networks. The material and institutional configuration of such infrastructures can range from large-scale, centralized laboratories to distributed networks enabling the circulation of bodies, materials and data. We invite contributions that consider a wide range of research infrastructures from disciplines as diverse as physics, biology, social sciences and humanities, as well as other fields. We are particularly interested in perspectives on the relations between, on the one hand, the perceived need to coordinate scientific facilities, infrastructures, resources and governance, and, on the other hand, questions of participation, rights and responsibilities, public legitimacy and anticipated public benefits. In what ways are research infrastructures not only expected to enhance scientific knowledge production, but also to produce, consolidate or advance political visions and social orders?

Participants:

Exploring the Outer Space – Infrastructuring Europe: the ESA case *Zinaida Vasilyeva, MCTS, TU München*

European Space Agency was founded in 1975 with the main goal to advance the European research in space. This goal resonated with the post-WWII bipolar geopolitical order and the Cold War discourse of competition; and yet, it explicitly proposed an alternative framework: the one of cooperation. While putting Europe as a new actor on the international map of space exploration, the ESA itself was imagined by its designers as an instrument of the European integration and a platform for the transnational cooperation. Using the theoretical framework of co-production (Jasanoff), I will show in my paper how the development of the ESA research programs went hand in hand with the evolution of the European integration processes. Thus, I approach the European way of governing the Outer Space as a mean to infrastructure the socio-technical political order down here, on the planet Earth. While looking through a half-century long history of the ESA I will identify a number of competing and conflicting imaginaries on space and Europe and demonstrate how these imaginaries produced (or are currently producing) particular socio-technical political orders. I argue that the analysis of infrastructures – complex assemblages of material, institutional, and ideological elements – allows to better understand how space and Europe are ordered and, therefore,

governed not so much by individual actors, such as nation states or private individuals, but rather through soft and flexible instruments of transnational politics. The paper is based on the ongoing empirical research of the ESA as an example of the European research infrastructure.

Imaginaries as Infrastructures at CERN *Kamiel Mobach, University of Vienna*

Infrastructures have been theorized as enabling flows of goods, ideas and people over space. Whereas usual examples of this are material or institutional networks, the construction, expansion and stabilization of such networks are, conversely, also enabled by shared visions, values and related identities. This paper aims to go beyond the implicit categorization of infrastructures as material or institutional by focusing on these other dimensions, using the European Organization for Nuclear Research (CERN) as a case study. By means of a document analysis of CERN's annual reports and a first set of interviews with institutional actors, this paper reflects on different dimensions of visions and values present in CERN's self-narration. The analysis shows how these visions and values come together as an institutional sociotechnical imaginary that changes over the decades. Of special interest is a shift from an emphasis on consolidation of (Western) Europe with respect to the USA and USSR, to competition and remaining at the forefront, to an emphasis on being the place in Europe where worldwide collaboration can happen. These shifts tie into the development of future directions of the laboratory and justify its expansion over geopolitical space. Hereby, visions, values and justifications performed through CERN's imaginary can be seen as infrastructural. At the same time, shifts in CERN's imaginaries are grounded in its material and institutional dimensions. This makes the relation between different infrastructural domains – material and visionary – a dynamic process.

Making MYRRHA: a techno-political history at SCK CEN 1995-2020 *Hein Brookhuis, KU Leuven, Cultural History; SCK CEN*

With definitive approval from the Belgian government in 2018, the Belgian Nuclear Research Center (SCK CEN) is currently starting the construction of a GEN-IV nuclear research reactor named MYRRHA. Presented as a multi-purpose reactor it aims to reduce (toxic) nuclear waste and also produce medical radio-isotopes. As the plans for this new infrastructure have been in the making since 1995, MYRRHA offers a unique opportunity to analyze recent developments of techno-political aspects of Big Science. Recent scholarship has identified an increasing focus on economic and societal returns in legitimization of Big Science from 1980 till 2020. As a national research center, SCK CEN embodies many characteristics of these developments. In the early 1990's, SCK CEN claimed to have undergone a significant transformation that would reshape its relation to the state, society, and the industrial market. As the initial plans for MYRRHA were conceived shortly after this transformation, this paper will analyze how a proposed large-scale research infrastructure deals with these dynamics, and how it both answers to new demands, and as well shapes new expectations. In this paper, I propose to locate the history of MYRRHA as a techno-political enterprise within the growing historiographical literature on 'New Big Science', which addresses the ongoing transformation of Post War Big Science research facilities and their position in current science policy. By analyzing the expectations and organization of MYRRHA in this framework, this paper aims to enhance our view on the legitimization and coordination of Big Science in the current science policy regime.

Between infrastructuration and projectification: The case of Laserlab Europe *Oguz Özkan, MCTS Technical University Munich*

Laserlab Europe (LLE) was established primarily by the western European laser research laboratories in 1999 as a collaboration platform to build "a world-class virtual laser research infrastructure". Importantly it came into existence in a timely response to the changing European research infrastructures (RI) policy regime where attention has turned towards seeking synergies among the already existing national facilities instead of building further large-scale infrastructures. Throughout the two

decades of its operations, LLE has grown semi-formal collaborations among laser research groups partly geared towards overcoming the uneven distribution of such facilities across Europe. LLE addressed this challenge by providing free access to its facilities, joint research and networking. LLE has also undergone significant transformation by embracing the enlargement countries as new members and redefining itself via emphasis on its societal and economic relevance. However, during the six rounds of EC funding, LLE has not been able to transform itself into a recognized entity with self-sustaining capabilities, as initially envisaged by the EC and the network members. This implied a usual risk of discontinuation for LLE, coupled with doubts over the benefits of membership. In my paper, I will trace the sites of co-production of new scientific and social orders in the European research and the LLE to situate the above story in its context. The emphasis will be on the defining moments, institutions and discourses of the new European RI policy paradigm and on actor constellations and justifications that were at the forefront within laser research landscape and LLE during these moments.

What Are European Research Infrastructures (For)? Calibrating Scale And Purpose In The Biobanking Network BBMRI-ERIC. *Erik Aarden, University of Vienna*

The European Union has taken on an increasingly proactive role in research policy over the last three decades. Its involvement has expanded from funding research projects to facilitating the establishment, governance and operation of 'research infrastructures'. The involvement of the EU in these infrastructures has taken shape in various configurations that reflect the contentious nature of transnational European collaboration more broadly. As a result, research infrastructures need to come to grip with questions about scale and purpose in European collaboration. In other words; what is a transnational European research infrastructure, and what is it for? I address that question through an exploration of the governance and operation of BBMRI-ERIC, a distributed network of medical research repositories that forms one of the largest and earliest infrastructures under the legal format of the European Research Infrastructure Consortium (ERIC). I trace how BBMRI-ERIC seeks to navigate operation and governance across the scales of individual biobanks, nation states, European institutions and the (global) medical research community. This navigation requires continuous consideration of where and how data, regulations, standards and other elements of research collections can and cannot travel. These considerations intersect with conflicting visions of the purpose of a research infrastructure, along a spectrum from active research performing institutions to service provider and facilitator. As one of several ERICs in the highly prioritized area of medical research, the contested nature of BBMRI-ERIC thereby provides insight into how the formation of research infrastructures as standardized technological zones requires ongoing (re)calibration of epistemic and political priorities.

Session Organizer:

Erik Aarden, University of Vienna

Chair:

Erik Aarden, University of Vienna

229. Logics of Food Consumption, Choice and Politics on Digital Media

10:00 to 11:40 am
virPrague: VR 22
Participants:

Social Media and Emerging Patterns of Food Taste. *Maria Giovanna Onorati, UNIVERSITY OF GASTRONOMIC SCIENCES IN POLLENZ*

The coalition between food and new media is one of the main factors laying behind the transformations occurring in food taste and gastronomy standards. The centrality gained by social media in the communication of food experience has brought about new priorities and standards in taste and in the definition of quality, relying less on proper gastronomic expertise than on media dynamics and 'metamorphosis' of social distinction in these

times of cultural omnivorousness. On the basis of a two-year research conducted on the restaurants reviews shared on the platform "TripAdvisor", the proposal looks into emerging taste patterns, outlined by the widespread practice of sharing restaurant reviews on travel social media. It addresses both eating out, and social media as an open set of social practices that speak for collective and socially organized patterns of food-related behaviors, so as to become entry points to better grasp the logics of digitalisation, datafication and platformisation of food (Panel 54), with its emerging socialities and new priorities in gastronomy and food consumption.

Platforming pickiness: The digitally mediated enactment of childhood eating *Joe Deville, University of Lancaster*

Steve Woolgar has argued that STS is 'a prime place for studying the relationship between children and consumption' (2012: 37). Partly this is because of its ability to shed new light on essentialisms such as 'children', or 'decision', or, he notes, 'healthy food'. Despite this, children remain a near invisible category within STS. Responding to this absence, this paper explores a specific encounter: between so-called 'picky eating' and a varied range of digital platforms that have emerged that seek to provide parents with support. Picky eating labels a practice of restricted eating, characterised by a limited range of foods consumed, and an unwillingness to try new foods. It can generate intense frustration among parents, as they encounter the limits of their own agency – and the surprising force of their children's – in the face of a child that will not eat in ways parents wish them to. It is also a site of scientific controversy: between a dominant behaviouralist approach, centring on rewarding children for trying new foods, and a newer child-centred model, in which parents are provided with strategies for redistributing socio-technical agencies around eating. This paper examines how varied digital platforms see this controversy being played out in practice, involving sometimes fraught articulations between experts, parents, the absent presences of their children, and the platforms themselves. The paper shows how this involves ontological experiments with food, children and daily life, that in some ways parallel those associated with forms of digital food activism (Schneider et al., 2018), while opening up new perspectives on ontologies of digitally mediated care.

Emerging logics of digital eating: choice, care, or careful choice? *Karin Eli, University of Warwick; Jeremy Brice, London School of Economics and Political Science; Tanja Schneider, University of St Gallen*

In this conceptual paper, we interrogate logics that underlie emerging practices of digital eating. Digitalisation is increasingly affecting how food is produced, prepared, distributed and consumed. Operating through large networks of people, foodstuffs, software and digital devices, digital eating practices are laden with multiple, sometimes-conflicting values. From speed to sustainability, taste to transparency, individual convenience to sharing and sociality, the values carried and performed by digital eating are underpinned by logics that speak to wider processes and networks of digitalisation. To unpack these logics, we explore how food is ontologically respecified in the entanglements of diverse human and non-human actors, including digital technologies, platforms and devices. Drawing on Mol (2008), we divide these entanglements into two broad groups: one informed by logics of choice and another informed by logics of care. Using case studies from our research on digital food activism, we investigate how these logics operate in digital eating practices, and propose a third category in which the two logics overlap to create a logic of careful choice. We conclude by exploring the implications that a logic of careful choice might have for the constitution of publics, issues and expertise in/through practices of digital eating. Reference: Mol, A. (2008). The logic of care: Health and the problem of patient choice. Routledge.

Session Organizers:

Jeremy Brice, London School of Economics and Political Science

Karin Eli, University of Warwick

Tanja Schneider, University of St Gallen

Chairs:

Jeremy Brice, London School of Economics and Political Science

Tanja Schneider, University of St Gallen

230. Making & Doing - Thursday show

10:00 to 9:40 pm

virPrague: VR M&D

Lineup of meetups: 13:00-13:20 Soundchain - Blockchain Music 14:00-15:00 Algorithm inventarium "method-athon" 15:20-16:20 It's A Comic Life For Me: The Use Of Comics And Storytelling In The Teaching Of Risk And Resilience 16:20-17:00 Recombinant Bodies 17:00-18:20 Embroidering the Times of Listening: Testimonial Digital Textiles for Reconciliation in Colombia See https://4sonline.org/md20 for details of the meetups. And don't forget to engage with the fascinating digital objects in the gallery which are available during the whole conference and after: *For Novelty Use Only: DIY Methods of Assessing Sexual Health Microbiomes *Crash Theory *"Making and Doing TopEndSTS – on country… and online?" *Crafting Medicine: A Sensory Exhibit of Three Medical Schools *Is Another World Possible? Imagining a Post-Automobility Future Through an Anti-Motor Show *Exploring Ethical Decision Making in Video Games *Robocops, flowers and stones: technologies and arts of repression, resistance and protest *Giving birth as a struggle between bodily experience and medical practice

Participants:

It's A Comic Life For Me: The Use Of Comics And Storytelling In The Teaching Of Risk And Resilience *Denis Fischbacher-Smith, University of Glasgow*

Recombinant Bodies *Andrea Ford, The University of Edinburgh; Giulia De Togni, University of Edinburgh; Sonja Erikainen, University of Edinburgh*

Embroidering the Times of Listening: Testimonial Digital Textiles for Reconciliation in Colombia *Jaime Patarroyo, Universidad de Los Andes; Nasif Rincón, Universidad de Los Andes; Camila Padilla, Universidad de Los Andes; Laura Cortés-Rico, Universidad Militar Nueva Granada; Tania Pérez-Bustos, National University of Colombia*

Algorithm inventarium "method-athon" *Enric Senabre Hidalgo, Austrian Academy of Sciences; Eveline Wandl-Vogt, Austrian Academy of Sciences; Matthew Battles Battles, Harvard's Berkman-Klein Center for Internet and Society*

Soundchain - Blockchain Music *Pedro Jacobetty, The University of Edinburgh*

Chair:

Ludek Broz, Institue of Ethnology of the Czech Academy of Sciences

231. 'What Is The Worth Of A Nature-Paper When The Climate Is In Crisis?'

12:00 to 1:40 pm

virPrague: VR 01

Researchers across the world increasingly feel the need to engage with the current climate crisis and change the practices of science. For instance communities gradually move to more web-based forms of conferencing to reduce co2-emission. Also, there is increasing critical scrutiny of the growing carbon footprints of big data centers worldwide. Scholars increasingly ask, is what we do worth it in the current climate crisis? But how do these new practices relate to dominant forms of organization and valuation in science? How, when and under which conditions do new forms of knowledge production become possible? Do mission-oriented funding programs allow researchers to engage differently with their work and have broader impact? Or is much work funded just "mainstream as usual" with a rhetoric bow to climate relevance? Can interdisciplinary approaches speak better to the climate crisis? And if so, how do they fare in current structures of valuing scientific outputs and careers? This panel asks how the climate crisis reconfigures (the governance of) science, when eventually not only fields that address current environmental challenges, but all research communities will be affected by it. We invite studies of these reconfigurations and the new frictions that emerge when the earth is given increasingly more agency to determine whether certain decisions (choosing a research question, booking a flight, submitting a research proposal) are

warranted. Potential subthemes include, but are not limited to, effects on valuation practices (what is valued in and about research) and academic subjectivities (what kind of researcher should one be).

Participants:

FluidKnowledge: Exploring evaluation at the science-society interface in light of climate crisis *Jacqueline Ashkin, Center for Science and Technology Studies, Leiden University, the Netherlands; Sarah Rose Bieszczad, Centre for Science & Technology Studies (CWTS), Leiden University; Guus Dix, Center for Science and Technology Studies, Leiden University, the Netherlands; Sonia Mena Jara, Centre for Science and Technology Studies (CWTS), Leiden University; Sarah de Rijcke, Centre for Science and Technology Studies (CWTS); Judit Varga, Centre for Science & Technology Studies (CWTS), Leiden University*

The oceans have undergone dramatic changes since the onset of the Anthropocene. The health of our oceans and our climate are deeply intertwined. While declarations of a climate in crisis abound, scientists all over the world are called upon to provide solutions. Ocean scientists are exceptionally well-positioned to address this crisis, but how well equipped are academic structures to aid them in this critical work? What (possibly hindering) factors are involved in the constitution of contemporary research agendas within the discipline? We understand evaluative practices to have a constitutive role in knowledge production (see: Dahler-Larsen 2012, de Rijcke et al. 2016). Do these practices prevent or promote particular lines of inquiry? How do researchers respond to a multitude of simultaneous pressures, amongst them the need to be academically excellent whilst producing climate-relevant knowledge amidst a looming catastrophe? These are some of the questions we investigate in the European Research Council-funded project FluidKnowledge. The present paper (work in progress) explores how scientists and policy makers negotiate the classification of cod as a threatened species. Combining scientometric and document analysis, we chart the knowledge infrastructures in which cod figures as 'object of accountability' for nationalism, excellence, climate breakdown, or economic growth. We also consider the epistemic and ontological effects that may result from the conflicting regimes of worth at play.

Big Problems, Small Experiments? How Researchers Deal with Complexities in Research Practices in Environmental Sciences *Lisa Sigl, Research Platform Responsible Research and Innovation in Academic Practice, University of Vienna; Maximilian Fochler, University Of Vienna*

Current socio-environmental challenges such as climate change and food security for a growing world population pose questions of great complexity. Often called "wicked problems", such global challenges have led to calls for inter- and transdisciplinary cooperation, but also to concerns over whether and how far the current organisation and (e)valuation of scientific research fosters attempts to produce knowledge that is relevant to such questions. For example, the contemporary funding and publication landscape may dis-incentivize the investigation of complex problems and of questions characterised by high uncertainty. This paper aims to contribute to a discussion of what epistemic forms of dealing with complexities are best suited for addressing such questions and how institutional conditions could support this. It builds on a participatory study with three research groups from the fields of crop and soil sciences whose research has relevance for food security under conditions of climate change. Their research often deals with complex interactions (e.g. between environmental/climate conditions, plants, microbes and soil composition). Our paper looks into which kinds of complexity researchers consider in their work, how they deal with them and which challenges they face in doing so. In doing so, we pay particular attention to how, why and when they experience a need to consider specific complexities or, respectively, reduce complexity in their work. We also explore in how far institutional contexts – such as (e)valuations, funding structures, time structures – shape the ways in which researchers deal with complexities and shift between complexity and reduction.

Decarbonising Research Mobility in an Era of Climate Crisis: Challenges and Opportunities *Clare Shelley-Egan*

There is growing recognition of the considerable carbon emissions of the research community. Researchers, research organisations, and research policy-makers are engaged in a carbon-intensive working mode, fuelled by increasing expectations of international research cooperation and cheap air travel. Optimising air travel is one of the quickest means of reducing carbon emissions. However, reduced air travel is a challenge for the research sector, as researchers are motivated and incentivised to be mobile and visible by the neoliberalist structures of the system they inhabit. At the same time, we live in an era of hyper-connectedness and enormous opportunities for researchers with respect to the opportunities offered by information and communications technology (ICT) and digitalisation. However, the uptake of such alternatives in research is hampered by a perception that they are substandard or cannot replicate the conference or networking experience. In addition to environmental impact, there are other impacts of the demand for mobility such as unequal opportunity due to gender, career stage, caring responsibilities and geography. This paper engages with and interrogates the following challenges. First, how can we go about reconciling the need for climate action with the individual, institutional, and systemic demands and expectations surrounding mobility – and, especially air travel – for research? Second, are there opportunities to make the research system not only more sustainable but also more equitable and fair? Insights from mobilities research, tourism research, sustainability studies and geography will be brought to bear on the governance and organisation of research practice.

'Good' Science in the Anthropocene: Environmental Activism and Epistemic Capitalism *Thomas Franssen, Centre for Science & Technology Studies (CWTS), Leiden University*

There is an increasing awareness among scientists, in climate science and associated fields as well as those in other domains, of planetary environmental processes such as climate change, atmospheric aerosol loading and ocean acidification that threaten the current condition of the earth system (Steffen et al., 2015; Ripple et al., 2019). This has propelled many scientists to speak up and become active in environmental movements such as Scientists for Future. It has also started to influence scientific knowledge production practices, in particular the organization of international conferences in efforts to reduce their environmental impact. There is, however, little research on how other aspects of knowledge production, such as research topics, research process and publication and outreach practices change due to 'anthropocenic concerns' of academics. This exploratory study aims to analyze the ways in which anthropocenic concerns are integrated in scientific knowledge production and publication practices through a case study of activist scholars in organization studies and climate science. In particular, this paper explores the tensions that emerge when academics change publication and outreach practices in ways that do not necessarily fit with the dominant regime of worth of 'academic excellence' and the associated bibliometric infrastructure (Fochler, 2016; Rushforth, Franssen and De Rijcke, 2019). I aim to document shifting notions of what 'good' science might be in the Anthropocene as well as ways in which scientists activist engagement alters strategies of, or possibilities for, capital accumulation in contemporary academia.

Session Organizers:

Thomas Franssen, Centre for Science & Technology Studies (CWTS), Leiden University

Kristin Asdal, TIK, Centre for Technology, Innovation and Culture

Maximilian Fochler, University Of Vienna

Sarah de Rijcke, Centre for Science and Technology Studies (CWTS)

Lisa Sigl, Research Platform Responsible Research and Innovation in Academic Practice, University of Vienna

Ruth Falkenberg, University of Vienna

Chair:

Thomas Franssen, Centre for Science & Technology Studies

(CWTS), Leiden University

Discussant:

Kristin Asdal, TIK, Centre for Technology, Innovation and Culture

232. **Experimenting With Inclusive Technologies: Saying No By Saying Let's I**
12:00 to 1:40 pm
virPrague: VR 02

The role of technologies in producing exclusions has long been a topic for scholarship in STS. Rather than merely studying successful technologies – through what Leigh Star called the 'executive model' of ANT – shifting the focus to their exclusions has given rise to critical scholarship of the marginalisations produced ('saying no' to exclusions), but also to feminist attempts to develop inclusive alternatives ('saying no by saying yes'). Inspired by such work, this session focuses on the experimental involvement of STS scholars in the development of inclusive technologies. We aim to combine the optimistic search for inclusive technologies (as a way to combat the 'powerlessness' mentioned in the program theme) with an experimental and speculative approach, sensitive to the complexities of doing inclusion (our balancing antidote to the 'feelings of urgency' the theme mentions). We call this experimental involvement in the production of inclusive technologies 'saying no by saying let's'. We welcome contributions on – but not limited to – the development of technologies for disability inclusive employment, for digital inclusion of vulnerable groups in digitizing societies, for reconfiguring gender norms, and for technologically enhancing participatory methods themselves (participatory vlogs, data-driven participation, etc.). Questions can relate to: How is technological inclusion enacted? What does inclusion thereby become? And which novel exclusions result from – or even become necessary for – this version of inclusive technology? Contributions on inspiring, as well as failed or ambiguous attempts at developing inclusive technologies are equally welcome.

Participants:

Fun, Engaging, And Easily Shareable? Exploring The Value Of Co-creating Vlogs With Citizens From Disadvantaged Neighbourhoods *Nicole Sylvia Goedhart, Athena Institute, VU University, Amsterdam; Eva Lems, Athena Institute, Vrije Universiteit, Amsterdam; Teun Zuiderent-Jerak, Athena Institute, VU Amsterdam; Carina A.C.M. Pittens, Athena Institute, Vrije Universiteit, Amsterdam; Jacqueline E.W. Broerse, Athena Institute, VU Amsterdam; Christine Dedding, Metamedica, Amsterdam UMC-location VUmc*

The use of vlogs is promising in participatory action research (PAR) that aims to enhance the health and well-being of citizens in disadvantaged circumstances. Vlogs have the potential to reach a wide audience, transcending the local scale of PAR. This paper aims to explore the value of vlogs that were co-created in a project combining feminist STS scholarship on ICT and marginalization (Rommes, Bath & Maass, 2012) with transformation-oriented interventions (Zuiderent-Jerak, 2015). We present two exploratory studies involving, respectively, adolescents and women from two disadvantaged neighbourhoods in Amsterdam. We developed and reflected on the vlog co-creation with community members and professionals. While we learned that co-creating vlogs enabled the successful engagement of citizens in vulnerable circumstances, and promoted shared learning, community members not involved in the vlog-creation were critical about the quality of the vlogs for wide dissemination. Interestingly, watching the vlogs together did stimulate much discussion and reflection between adolescents and women, and showing the vlogs to policymakers gave them a much deeper insight into the difficulties women with limited digital skills face in navigating digitizing societies. Where the enthusiasm of using vlogs as participatory tools for 'easily' reaching wider communities proved to be a chimera, dissemination of vlogs in a controlled setting turned out to be more impactful. Despite the popularity of vlogs, we, therefore, argue that their role in participatory research needs to be carefully considered.

The gender digital gap in Argentina: inclusion means more than bootcamps *Solange Martinez Demarco, International Centre for Ethics in the Sciences and Humanities (IZEW)*

The digital gender divide is understood as the economic, social and cultural obstacles that prevent or limit women's access to, use of, and benefit from the ICT. Bridging this gap has been considered, since beginning of the XXI century, an integral element of the women's empowerment and gender equality discourses. In a context where the economic aspect of bringing women to ICT is the main focus, international and national initiatives, and private and non-governmental options have developed. In Argentina, due to the absence of public policies, non-profit and private organisations have been providing training in programming and soft skills, as well as mentorship, leadership, and entrepreneurship opportunities. Nevertheless, women's digital empowerment undertakings in the country have not been exempt from ambiguity, backing gender equality but reinforcing current economic, social, and geographical divides, discriminating gender non-conforming people and exacerbating stereotypes. In contrast to these bootcamps, this presentation focuses on a number of women and non-binary communities offering free non-formal education, professional and affective support to foster the inclusion of women and other minorities in the digital labour force. Through an analysis of the testimonies provided by organisers and participants in meetups, workshops, technical events, and conferences, this paper sheds light into the unpaid care work that many volunteers are committed to as well as the feminist perspective that guides their activities. The objective is to present how these informal groups and communities provide non-material and emotional assistance to offset those shortcomings and make ICT truly diverse.

Reflecting on STS in Action: Micro-credentialing as collaborative epistemo-political work *Michaela Spencer, Charles Darwin University*

In this paper I tell stories of collaborative design work, developing micro-credentials to be awarded to Indigenous community-based researchers working in their home communities in North East Arnhem Land, Australia. The credentials recognise various levels of attainment of skills in collective community research. These credentials are coming to life within growing micro-entrepreneurial economies that are beginning to take root within Aboriginal communities in northern Australia just as they are becoming embedded in new forms of social life everywhere else. While there is significant critique of these forms of economy and the socio-technical infrastructures through which they extend, here I set my inquiry down amidst the mundane practices of community research services design, and identify particular moments or 'turning points' in the emerging life of these technologies. The work of bringing these credentials to life has involved a distributed array of participants: teams of community based Indigenous researchers working on-country; a local Indigenous research organisation that supports the work of these researchers; university collaborators, such as our research team; a group of IT experts; government and other funding agencies and many other involved actors. It also engaged, and somewhat rearranged, university interests around marketing novel educational services products, and the workings of a national economy that seeks to address disadvantage by drawing underprivileged or excluded people into market relations. By mobilising Verran's notion of relational empiricism, I now inquire into the knowledge and culture work of the collective inquiries through which the credentials came to life as concepts circulating in northern Australia. And proposing that collective work as 'STS in action' I reflect on this form of STS empirics.

Session Organizer:

Teun Zuiderent-Jerak, Athena Institute, VU Amsterdam

Chair:

Teun Zuiderent-Jerak, Athena Institute, VU Amsterdam

233. Be(com)ing industrial: objects, scales, and power dynamics at play-2

12:00 to 1:40 pm
virPrague: VR 03

Since the organization of the sugar cane plantations, industrial processes have colonized not only the model of manufacturing production, but also logistics, bio-objects, and the digital world. The common statement describing the service and digital societies as post-industrial ones is weakened by the continuous expansion of industrial processes where the know-how to make things, people, processes, more scalable and more profitable. In the STS literature, industries have been much more discussed regarding their role in risk and pollution than regarding their specific regimes of constitution and perpetuation. This panel intends dealing with contemporary industrial processes through a twofold questioning: 1/ How scalability can be studied in the making? What kind of knowledge are produced to make things and tasks scalable? How do industrial processes articulate initial projects, international norms and cost evaluation? What does it do to the objects, to persons and spaces that are absorbed in those processes? 2/ How do industries define themselves across time? How economic interests emerge? How techno-industrial assemblages are reshaped through critical moments? Being an industry is not as obvious that it may be, it requires a process of self-definition, collective identification, political representation, that can't be taken for granted. The ability to identify what are the core and might shift across time to preserve the industry facing controversies. This panel invites empirical and theoretical papers that document or help to answer to one or more of these questions. Contact: raimbault.benjamin6@gmail.com Keywords: Scalability-industrial processes-extension and maintenance of techno-industrial assemblage Categories: Engineering and Infrastructure Economics, Markets, Value/Valuation

Participants:

Industrial Identity Shifts: The E-Cigarette's Rebranding of Nicotine *Caroline Clark, James Madison University*

This paper examines the ways in which stakeholders of the tobacco industry have rebranded the use of nicotine through the advent and marketing of electronic nicotine delivery systems. Originally advertised as sleek, new alternatives to the traditional, combustible cigarette, e-cigarettes have appealed to a younger market that previously did not significantly contribute to the tobacco industry's consumer base. The result is a multi-billion dollar international industry centered on products whose health impacts are still not known. Furthermore, reactionary measures to regulate e-cigarettes were taken only after concerns began to arise about their popularity among teenagers. Even so, the industry had already established a substantial consumer base with a younger population that otherwise might not have used nicotine products in the first place. Despite the lack of evidence regarding the health impacts of e-cigarettes, they are continuously presented as the "healthier" substitution to combustible cigarettes, and their reputation as a suitable method of tobacco harm reduction has continued to grow. Drawing on analysis of shifts in marketing campaigns alongside key moments in the political economic trajectory of e-cigarettes, this work-in-progress will highlight the tobacco industry's efforts to redefine their product as an aid for smoking cessation, illustrating how a techno-industrial assemblage gets reconstituted through the critical moments and controversies it may face.

Preparing for the Future of Energy Systems. The Production of Expectations in a "Power–to-gas" Demonstration Project *Jean-Baptiste Chambon, Centre de Sociologie de l'Innovation-i3 – Mines Paristech PSL University; Madeleine Akrich, Centre de Sociologie de l'Innovation-i3 – Mines Paristech PSL University; Alexandre Mallard, Centre de Sociologie de l'Innovation-i3 – Mines Paristech PSL University*

During the last twenty years, demonstration projects have become a key instrument in energy transition policy. They bring together industrialists, research centres and public bodies around a given technological system that they assemble and test at the industrial scale. In the literature, demonstration projects are mainly conceptualised as an organisational setting which fosters a linear progression of a technology from the stage of a laboratory prototype to that of a fully marketable industrial system. In this paper, we aim to show that the turning of "green" concepts into industrial solutions is not a purely technical matter but relies crucially on the production of collective expectations about the future of the energy system and of its industrial branches. Based on a monograph of a "power-to-gas" demonstration project in France, we argue that what is at stake in such sociotechnical devices is not solely the on-site realization of the technological system, but also the negotiation of

sociotechnical futures. In the first part of our paper we will show how the material grounding of the demonstration project serves to enlist the relevant spokespersons for what could be a future power-to-gas industrial branch. We will then explore the different modalities through which expectations about the economic and strategic viability of this branch are produced, discussed and negotiated. In doing so, we hope to enrich the STS literature on innovation processes and the formation of expectations while addressing the understudied topic of how scalability is established in an energy transition context.

The sun 'reaches' the earth: materials, knowledge and funding in the European PV industry *Efi Nakopoulou, National and Kapodistrian University of Athens; Stathis Arapostathis, National and Kapodistrian University of Athens*

The paper examines the case of the photovoltaic cells, from 1975 to 1998. Our analysis focuses on the European research programmes and the respective techno-scientific and industrial networks that emerged, whilst making comparisons with Janan and the USA. The paper showcases that the selection and prioritisation of different materials for the cells was the result of knowledge making and transfer from the industrial sector of microelectronics. By examining critical moments (energy crises: 1973,1979; material crises: 1980s, late-1990s) we trace the re-shaping of the research-networks in the making, whilst providing direct links to specific cell research prioritisations and how they translated into actual technological applications and markets. We argue that industrial and material politics, with national and international dimensions, configured the design and the technical choices for the cells. Knowledge-transfer in relation to cell performance, properties and manufacturing processes from the fields of microelectronics and optoelectronics to that of PV had a determinant role in the making of the research conducted for the PV industry and the respective EU research priorities. The selection of the cell material becomes all the more important when examining the involved industrial actors whose interests and priorities configured the European research agenda. The paper aims in contributing an STS analysis of the research politics by linking it with the industrial and material politics of the period under study. The paper draws from archival sources such as: science conference proceedings, European research reports, EU DG XII archives, corporate publications, and selected interviews with scientists and key-bureaucrats.

STS Theory for Engineers: Technologies of Entanglement *Robin Ann Downey, Bilkent University; Emine Onculer Yayalar, Bilkent University*

One of the major problems faced in higher education is how to undertake the shift from representationalist understanding of knowledge to one embedded in materialities of practice. We argue that a foundation in Science and Technology Studies (STS) theories enables students to be more attentive to the embeddedness of engineering practices in sociocultural localities. This presentation will focus on the role of STS theory in training engineers. We will examine feedback from over 90 engineering students who participated in a field site project at Bilkent University in Ankara, Turkey. Students engaged in a variety of topics through their field site visits, including artificial intelligence, medical technology, nanotechnolouy, 3D printing and virtual reality and were encouraged to critically reflect on innovation contexts. We conceptualize the applied project as a boundary object and reflect on how it enables a pedagogical environment conducive to sharing, translating and transferring knowledge. We highlight how students use STS theories and concepts, including Social Construction of Technology and Responsible Innovation, to explain their experience with the field site visits. Students indicate that stakeholder interactions can be complex and, in some cases, used strategically by innovators. For example, students reflect on how theory helps to reveal how user concerns and values can be integrated into innovation practices. We suggest that an active engagement with engineering practices through the lens of STS theories can give rise to new forms of entanglements and ambivalences in the sociotechnical imaginaries of engineering students.

Session Organizer:
Benjamin Raimbault, Institute For Research and Innovation in Society

Chair:
Benjamin Raimbault, Institute For Research and Innovation in Society

234. Building Digital Public Sector: Collaboration and public-private partnership
12:00 to 1:40 pm
virPrague: VR 04
Participants:

Notes on the Political Economy of Welfare AI *Gernot Rieder, Universität Hamburg; Catharina Rudschies, University of Hamburg*

In late 2019, Philip Alston, the United Nations Special Rapporteur on extreme poverty and human rights, published a much-discussed report on the worldwide emergence of digital welfare states where "digital data and technologies are used to automate, predict, identify, surveil, detect, target and punish" (UN OHCHR, 2019). Outlining a number of related societal risks – from privacy violations to the reinforcement or exacerbation of existing inequalities – the report warns of the dangers of "stumbling zombie-like into a digital welfare dystopia", a human-rights free zone that is "especially problematic when the private sector is taking a leading role in designing, constructing, and even operating significant parts of the digital welfare state" (ibid.). Against this background, and given that the political push for "automating society" (AlgorithmWatch, 2019) is clearly gaining momentum, this paper takes a closer look at the political economy of welfare AI, with particular attention to the expanding role of the private sector in either supporting or delivering public services. More specifically, we wish to shed some light on the business behind welfare tech, the types of corporations involved, and the nature of the emerging public-private partnerships in some of the most sensitive areas of government operation. Drawing on examples from EU member states, the paper thus seeks to contribute to current discussions around the datafication and industrialization of the public sector (see, e.g., Dencik et al., 2019) and the changing power relations these processes initiate, raising questions of ownership, control, accountability, and democratic legitimacy.

Data System as a Boundary Object: Interprofessional Collaboration in Building Data-Driven Public Healthcare in Finland *Marta Choroszewicz, University of Eastern Finland; Marja Alastalo, University of Eastern Finland*

Nordic countries are internationally considered as leaders in producing combinable data on their citizens' encounters with public institutions as well as in the digitalization of public services. Public sector professionals increasingly engage in collaboration with ICT-companies in developing data systems that assist them in "efficient" usage of patient data for predictive analytics. This presentation discusses the collaboration between experts of public sector and private ICT companies in the development and implementation of a data system in one Finnish hospital district. Our empirical data consists of interviews and observations conducted in 2019-2020 as a part of project "Data-Driven Society in the Making". In our presentation, we combine perspectives of STS and sociology of professions to situate research on data systems within a broader context of professional work. We apply Bowler and Star's (1999) concept of "boundary object" to examine a data system as an example of such an object–a shared interest and outcome–that creates conditions for collaboration among different groups of experts. Additionally, we use Abbott's (1988) ecological perspective on professions to examine the ways in which a "boundary object", i.e. a data system, can also involve power struggles among experts who attempt to establish and guard their authority to influence and tailor work on a data system towards their own visions, interests and needs. The presentation contributes to the conceptual debate on interprofessional collaborations and technology-informed professional practice within the broader strive for data-driven public healthcare in Finland and beyond.

When to Collect Demographically Identifiable Information? Framework for Balancing Human Rights in the AI Era *Anna*

Lenhart, University Of Maryland College Park

The right to freedom from discrimination is an internationally recognized human right, outlined in the Universal Declaration of Human Rights (UDHR) and enacted through a series of international human rights laws (United Nations, 1948). The recent pervasiveness of Automated Decision Systems (ADS), or algorithms, in nearly every sector of society has put pressure on governing bodies to ensure "fair" systems that do not discriminate based on protected attributes such as those outlined by Article 2 of the UDHR including "race, color, sex, language, religion, political or other opinion, national or social origin, property, birth or other status" (United Nations, 1948). Many of the ADS bias mitigation techniques developed to date require the collection of demographically identifiable information (DII) or social category data. The collection of DII can lead to increased risks associated with the loss of privacy, a protection outlined in UDHR Article 12 (United Nations, 1948). I propose the creation of a framework to help data scientists and designers in collaboration with community members determine when to collect DII. I will argue that the trade-off between protecting individuals from discrimination in ADS and protecting individuals from privacy violations is substantial and a blanket "always collect" vs. "never collect" stance is too simplistic. This issue should be approached in a context-specific manner which considers 1) algorithmic audit feasibility 2) to what extent the data-subject can be in-the-loop and 3)whether a clear fairness metric exists.

Session Organizer:

Marja Alastalo, University of Eastern Finland

Chair:

Marja Alastalo, University of Eastern Finland

235. (Re)Producing Power in Co-creation
12:00 to 1:40 pm
virPrague: VR 05

This session explores how issues of power and agency are more relevant than ever in the co-creation of innovation. Given the collaborative sphere and the diversity of stakeholders that are trying to achieve a mutual outcome, this raises many obvious asymmetries among them. From knowledge to material resources, these need to be more critically reflected upon not only for procedural reasons, but for answering to the question of justice and fairness in how stakeholders are treated in co-creation. The papers here analyze how power is produced and reproduced by the socio-material infrastructure in which the stakeholders take place in. STS has done much work in uncovering how practices and technology can enable and disable power, and the empirical papers here can shed light on this specifically in co-creation.

Participants:

Co-creation As Potential Practice Of Infrastructuring (Dis)Empowerment *Susanne Oechsner, University of Vienna*

In this paper we will discuss insights and issues from the first phase of a complex co-creation process, which we are involved in as STS researchers. The large-scale Horizon 2020 project Smart4Health (Grant number: 826117) aims to develop an interoperable data platform prototype for citizens to handle (collect, store, access and share) a diverse set of health (care)-related data and providing them, if wanted, for health-related research. The project proposal puts forward a strong benefit narrative, empowering citizens through being able to manage their own health (data). In line with this thinking, co-creation is seen as prerequisite for empowerment, given its potential to support the production of a mutually valued outcome, i.e. a health data platform prototype meeting the user requirements and being well-suited to future user's health-related data practices. In our contribution we would like to attend to the power-infrastructure nexus of co-creation practices. We suggest conceptualizing the development of this health data infrastructure as a practice of infrastructuring. What does co-creation mean in the context in which health and information practices of a broad set of actors have to be brought into one socio-technical network, one that works across many different national/cultural contexts? What are the distributed practices of infrastructuring and how do they support whose empowerment? Whose visions, promises and values (do not) find their way into the realization? And, where

are co-creative points/spaces of necessary intervention to not produce an infrastructure of disempowerment?

Low Powering: Challenges In The Co-Creation Of Local Community Radio Stations *Roberto Cibin, Madeira Interactive Technologies Institute (M-ITI); Mariacristina Sciannamblo, Sapienza University of Rome; Nicola J. Bidwell, University College Cork; Maurizio Teli, Aalborg University*

Co-creation and collaborative forms of design are usually advocated as an effective method to involve people into shaping their technological future. At the same time, the term 'co-creation' is increasingly informing institutional discourses and rhetorics that, while aiming at fostering collective interventions to address societal challenges, tend to overlook situated positions of vulnerability and invisibility determined by power differentials that characterize any sociotechnical infrastructure and way of living. In this paper, we focus on infrastructures that impede collective processes of empowerment. To do that, we introduce Grassroots Radio, a European project that supports creating low-cost and low-power FM community radio stations that do not need studios. We sought to engage people living in isolated rural areas in setting up radio stations and shaping Rootio's development. On the one hand, places and "community-owned" technology interact within communities. A physical studio can provide a 'third place' to interact with community members face-to-face, but centralised sites also tend to be typified by "geeky" and gendered identities and are often inaccessible to people whose mobility is constrained physically, economically and/or by social norms. Thus a station-less radio may contribute to inclusion and diversifying the configuration of relations. On the other hand, the institutional frameworks of European radio regulation and innovation projects inscribe particular roles, spaces and processes that can limit inclusion in the stations. We show how empowerment is not just a matter of local participatory practices, but about identifying sociomaterial infrastructures that support developing collaborative practices across different spaces and time.

Who Cares for Co-Creation? On Invisibilized Work and Forms of Empowerment at Workplaces of Technology Development *Alev Coban, Goethe University Frankfurt; Klara-Aylin Wenten, Munich Center for Technology in Society, Technical University of Munich*

Co-creation at workplaces of technology development has become a pressing matter of concern: Various actors are intensively studying how the integration of user feedback and co-working approaches could be best accomplished in innovation and prototyping processes. It is particularly the agile model that has become one of the "must-have" elements for fulfilling the co-creation of technologies. However, the implementation of agile work comes along with strong presumptions: often, it is regarded as an inevitable tool that can be universally implemented into different workplaces while having the same outcome of flexibility and employee empowerment everywhere. This paper challenges such essentializing assumptions by turning agile work and its imperative to co-create into "matters of care" (Puig de la Bellacasa 2011). Drawing on concepts from Feminist STS and ethnographic research at agile workplaces of technology development in Germany and Kenya, we examine what work it takes to actually keep up with the imperative of co-creation. The analysis brings the invisibilized care practices of the involved human and nonhuman actors to the fore that are necessary to enact and stabilize the promises of flexibilization, co-working and user-centered prototyping. By revealing these caring sociotechnical relationships, we show that they own the potential of empowerment that, nevertheless, is fragile, situated and, thus, never universal.

Session Organizers:

Shelly Tsui, Eindhoven University of Technology
Erik Laes, Eindhoven University of Technology
Makoto Takahashi, Technical University Munich
Sophie Nyborg, Technical University of Denmark - DTU
Cian O'Donovan, University College London

Chair:

Shelly Tsui, Eindhoven University of Technology

236. Value in Biomedicine: Value in Health Care Systems
12:00 to 1:40 pm
virPrague: VR 06

This session looks at different conceptualisations and operationalisations of value as they pertain to questions of health care insurance and coverage. By focusing on definitions of value in different health care systems, it provides comparative insights for practitioners, policymakers and researchers interested in the creation and meanings of value in their health systems.

Participants:

Anti-capitalist and Economic Value embedded in Post-Soeharto Indonesian Health Insurance *Daiki Ayuha, The University of Tokyo*

Social insurance is one of the main instruments of modern governmentality in many counties, and many Foucauldian scholars have conducted studies on social insurance assuming that social insurance is strongly associated with European values such as social rights, social membership, and liberalism. Nevertheless, they paid little attention to how social insurance states varies between countries. This paper argues national insurance does not accord to one value, but it is more of an arena of different values, by exploring how national health insurance in Indonesia works especially at its primary healthcare level. Indonesian has adopted social insurance after the fall of Soeharto autocrat. At the national health insurance in liberal Indonesia, there exist two driving values: economic driven value and anti-capitalist one. On one hand, liberal governance derived from insurance reasoning evaluates and incentivizes the healthcare providers, which used to be public health administrator during the authoritarian regime. On the other hand, economic and liberal governmentality is carefully hidden from the insured. At the discourse level, avoiding the term premium hides the individual aspect of insurance and puts forward the collective aspect. Also, to monitor geriatric and infant health status as a part of preventive measures, primary healthcare providers work with community organizations called "RT / RW", which has utilized for mobilizing residents during the authoritarian Soeharto regime. Such dual faced nature of Indonesian health insurance indicates the different values embedded in governmental practices with a seemingly same technological and institutional array.

Articulating Value: Value as Enacted in European Value-based Healthcare Discourse *Siemen Vanstreels, Centre for Sociological Research, KU Leuven; Gert Meyers, KU Leuven; Lander Vermeerbergen, KU Leuven; Geert Van Hootegeml, KU Leuven; ine van hoyweghen, University Leuven*

'Value' holds a salient position in contemporary debates on the (re-)organization of healthcare, especially since healthcare is increasingly interpreted through a market logic and questions keep arising on what 'counts' in healthcare provision. The emerging concept of 'Value-based Healthcare' (VBHC) has recently made value explicitly visible in healthcare and stimulated further reflections on this topic. In short, VBHC – a redevising strategy which is predominantly framed as indispensable to tackle healthcare's (cost-)efficiency and quality struggles – stresses the need to organize healthcare provision around value instead of volume. With healthcare being a 'concerned market' where multiple actors with varying interests come together (Geiger, et al., 2015), one can expect different enactments of value through VBHC. By exploring the hype on and enactment of VBHC, this study examines the articulations of 'value as enacted' in VBHC, building on insights from Valuation Studies and Science and Technology Studies (STS). The exploration and analysis of the discursive practices of different involved actors (e.g. academics, policymakers, insurers, consultancy firms, civil society) in articulating value in VBHC within a Belgian-European healthcare context is based on qualitative research methods such as interviews, document analyses and ethnographic observations. VBHC's originators (Porter & Teisberg, 2006) conceive the central notion of value in a marketized way, placing outcomes relative to monetized inputs. Other actors directly contest this market-based interpretation (e.g.

European Commission, 2019). This study further examines the (competing) (re-)articulations of value in healthcare and shows how these enactments of value(s) and VBHC redefine and reconfigure (value in) healthcare.

Broadening the Concept of Value: A Scoping Review on the Option Value of Medical Technologies *Giulia Fornaro, Bocconi University - SDA Bocconi School of Management; Carlo Federici, SDA Bocconi School of Management; Carla Rognoni, SDA Bocconi School of Management; Oriana Ciani, SDA Bocconi School of Management; College of Medicine & Health, University of Exeter*

Objectives: A recent debate in Health Economics and Outcomes Research community identified option value as one of the elements that warrant consideration in the assessment of medical technologies. Option value is commonly intended as the benefit of surviving to the next innovation and is usually advocated in disease areas with high rates of technological innovation, such as oncology. We undertook a scoping review of different definitions of option value in healthcare sector, and the methods used to incorporate it in standard economic evaluations. Methods: We identified articles from Web of Science, published up to Oct 22, 2019. Studies were included either if they provided either a theoretical definition, or conceptual exploration of the notion of option value; or an empirical application of option value within economic evaluations of healthcare technologies. Studies focusing on option value as a managerial tool to prioritize R&D projects were excluded. After initial screening, we collected and analyzed data on the proposed definitions of option value, the theoretical implications of its use in the context of economic evaluations, and the methods used to estimate it. Results: Our search yielded 4,445 articles of which 26 were deemed eligible. They were economic evaluations of healthcare technologies (n=16), mathematical modelling studies (n=4), literature reviews (n=3), or commentaries (n=3). Three main definitions of option value were reported: i) utility of knowing that one has access to a healthcare service should one need it; ii) possibility of deferring a decision until some later time, when better information regarding costs and benefits may become available; iii) additional benefit that a therapy provides to patients by enabling them to survive to the next life-extending innovation. The most relevant theoretical implications raised by the included studies concern the characterization of the settings where option value would be relevant, and the need to update cost-effectiveness thresholds should option value be included in cost-effectiveness analyses for coverage and reimbursement purposes. Overall, 6 main methods to quantitatively estimate the option value were identified including dynamic programming and Lee-Carter method, in 17 empirical applications across 13 therapeutic areas. Discussion: Option value has been indicated as one of the elements that contribute to the value assessment of medical technologies. Our scoping review highlighted different definitions proposed beyond the commonly used one and several estimation methods used in empirical studies. There is currently no consensus on whether and how to incorporate option value within economic evaluations of healthcare interventions and our study certainly informs this debate.

Session Organizer:
Katharina Kieslich, University of Vienna
Chair:
Katharina Kieslich, University of Vienna

237. Taking Data Into Account 1
12:00 to 1:40 pm
virPrague: VR 07

As ubiquitous data technologies seep into public services, news feeds, schools, workplaces, political campaigns, and urban living around the world, the effort to hold them accountable has become a topic of public concern. From computational audits to citizen activism, from public shaming of companies to policy proposals, activists, academics, journalists, technologists, and lawmakers have been trying to account for these emergent systems that appear to be inscrutable. Using the analytical tools of STS, this panel offers empirical and theoretical analyses of how these automated, data-driven technologies become "accountabilia – objects mobilized to enact relations of accountability" (Sugden 2010; Ziewitz

2011), and in what ways accountability is forged and put in practice in a range of fields that are now driven by data.

Participants:

The Uncounted: Politics of Data in Global Health *Sara L.M. Davis, Graduate Institute of International and Development Studies, Geneva*

In the global race to reach the end of AIDS, why is the world slipping off track? The answer has to do with stigma, money, and data. Global funding for the AIDS response is declining. Tough choices must be made: some people will win and some will lose. Global aid agencies and governments use health data to make these choices. While aid agencies prioritize a shrinking list of countries, many governments deny that sex workers, men who have sex with men, drug users, and transgender people exist. Since no data is gathered about their needs, life-saving services are not funded, and the lack of data reinforces the denial. At the same time, pressure from health donors to show "impact" is increasing the use of intrusive new technologies, such as biometrics, by aid-dependent governments. This study explores the data paradoxes and politics that shape invisibility and resistance to it in global health finance. It draws on a case study of resistance to biometrics by criminalized "key populations' in Kenya, and a participatory action research study involving community activists in the Eastern Caribbean. Drawing on interviews with global health leaders and activists, ethnographic research, analysis of gaps in mathematical models, and anthropological/human rights critique of indicators as tools of global governance, it explores what is counted, what is not, and why shifting power relationships in aid accountability have emerged as a flashpoint in the global HIV response.

Functional versus epistemic *Linda Sīle, University of Antwerp*

Within the broader wave of datafication of the social realm, the recent decade has witnessed a tremendous growth in the number of bibliographic databases for research output that are used for research monitoring and evaluation. These databases at first glance seem no different from digital library catalogues; often searchable through a user interface, they store bibliographic records of publications and other artifacts created by researchers. Drawing on materials of twelve such databases currently operational in Europe, I show that these databases carry two distinct conceptualisations of the content of these databases. In the first case, the content—bibliographic records referring to research output—is seen as a tool that helps to identify and access digital or physical artifact that is located elsewhere. In the second case, the content as a whole is seen as information about research (performance, activities, achievements, etc.). The meaning of the content is epistemic not functional. With examples of this, I discuss the implications that the two differing conceptualisations have for the understanding and, further, for the governance of research.

"Data" Science on the Run: Studying practices upon database technologies as an infrastructural inversion *Yoehan Oh, Rensselaer Polytechnic Institute*

This paper complements the typification of two facets of STS discussions regarding the "social problems associated with data" (Ribes 2019): one concerned about "the downstream [social] consequences of novel computational capacities and data analytics for privacy, access, or equity", and the other about the "new kinds of transverse domain relationship" arguably across the sciences, industry and state. This dichotomy, however, runs the risk of serving the locally defined needs of such areas as North America, Western Europe, or China, beyond which social concerns in global areas related to data can be neither immediately felt nor apparently academical rigorous. This paper proposes the third approach: to investigate the commercial actors', open source contributors', and engineers' practices onto database technologies, whether globally or locally influencing, ranging from the development of those technologies, to the import, deployment, adjustment of them to the various data-driven projects at any scales. Taking an infrastructural inversion approach (Bowker 1994), this paper sees database technologies as an infrastructural layer that has been commercially-driven as well as practitioners-oriented, having enabled-cum-facilitated data-intensive machine intelligence systems in specific manners

(e.g. Stevens 2016). To demonstrate the relevance of this proposal to global STS researchers' topics, it briefly examines three cases in the U.S., South Korea, and Czech Republic, where database technologies either were blurrily located between commercial and open source, or between being totally outsourced to the foreign architecture or partially integrated into the existing one, posing questions of who benefits at whose cost as new associations with data take forms. # REFERENCES * Bowker, Geoffrey C., Science on the run: Information management and industrial geophysics at Schlumberger, 1920-1940. MIT press, 1994. * Stevens, Hallam. "Hadooping the genome: The impact of big data tools on biology." BioSocieties 11, no. 3 (2016): 352-371. * Ribes, David. "STS, meet data science, once again." Science, Technology, & Human Values 44, no. 3 (2019): 514-539.

Session Organizer:

Burcu Baykurt, University of Massachusetts Amherst

Chair:

Burcu Baykurt, University of Massachusetts Amherst

238. Commercial and Temporal Logics of Digital Food

12:00 to 1:40 pm
virPrague: VR 08

Participants:

Authentic Food from the Others' Kitchen: Immigrant Women Small-Scale Entrepreneurs Working in the Growing Nordic Platform Economy *Qian Zhang, Stockholm University; Natasha A. Webster, Stockholm University*

Previous social and cultural studies suggest food is an important site where ethnicity, gender and social relations work in complex ways to construct discourse and material reality. Yet little is known about food provisioning, preparation and consumption as it becomes digitally mediated in the gig economy. The rapidly growing gig literature suggests women and immigrants constitute a significant share of gig labour force and gigs are especially associated with home-based work. This may not be surprising as women historically worked most at home; immigrants find it challenging to find a conventional job; and home is often where small entrepreneurs start, yet the confluence of practices is currently not well understood. This empirical study inserts an intersectional perspective into these discussions by examining narratives produced through provisioning and preparation of 'authentic' foreign food. The study follows the operations of a food app 'Yummy' that links home-based chefs (primarily new immigrant women small-scale entrepreneurs) to public consumers in a large Swedish city. Through in-depth interviews with chefs, the app management team and participatory observations at firm training sessions and food festivals, we explore the tensions behind the narratives of authentic foreign food - how it is prepared, presented and marketed in offline spaces as well as via online social media. The study shows when food becomes digitally mediated, it (re)produces sites where ethnicity, gender and other identities intersect to shape public discourse, and private practices in hidden and complicated manners. The study calls for further research on intersectionality and the gig economy.

Food Delivery Apps as Hunger Saviours: Constructing Neoliberal Temporalities in Urban India *Pallavi Laxmikanth, The University of Adelaide; Megan Warin, University of Adelaide*

As an ontological and embodied state, hunger is a complex marker of time, tied to sensual, affective and relational registers. Until recently, the care work of women in Indian households sought to make invisible the everyday, temporal experiences of hunger. Increased inter-region migration, prompted by the Indian IT industry and the movement of individuals away from their families - and their mothers – has elevated hunger from gendered spaces and made it a visible, felt aspect of urban life. Since 2012, Hyderabad has seen the rapid growth of venture funded app-based food delivery services such as Swiggy and Zomato, which construct hunger as a neoliberal condition that can be 'saved'. 'Saving hunger' creates complexities; hunger is commodified, 'convenience' is re-defined and relationships are reconfigured.

When services fail to save, hunger as time, is mobilized by customers to seek compensation. This paper explores how, through witty phone prompts around mealtimes, images of lusciously plated food, humorous memes on hunger and nostalgia for 'home-cooked' meals, the spatio-temporal, embodied experiences of hunger are being transformed. Using primary data from ethnographic fieldwork and secondary data from the social media presences of food delivery apps, I employ Bourdieu's notion of illusio and lusiones, to examine how apps co-produce the 'anticipation' of hunger, foregrounding and changing one's lived relationship to time. I discuss the impact of these technology-based services on discourses of acceleration that underpin urban life and gender dynamics within Indian households.

Work and embodied vulnerabilities: An exploration to the platformization of food and the (in)formal-digital economy in Bogotá. *Derly Sanchez, Derly Sánchez*

This paper explores the socio-technical assemblages and the embodied experiences of work and consumption enabled by the food delivery platform 'Rappi' in Bogotá, Colombia. Rappi is an on-demand delivery startup active in Argentina, Brazil, Chile, Colombia, Mexico, Perú, and Uruguay. It has 1500 direct employees and more than 25.000 associated entrepreneurs (Rappi, 2019). Following Dale and Latham (2015), we are concerned with the ethical implications of the entanglement of embodiment and non-human materialities that these platforms make possible. Rappi provides a way of understanding digital economy and food platforms in the Global South were particularities such as income inequality, migration, urban population density, precarious transport and new digital infrastructure have provided the adequate ecosystem for the development of a business model centered on the informality of working relations and digital surveillance on workers and consumers. Our main objective is to trace new configurations of contemporary capitalism, by following their materialisation in the workers and consumers embodied experience of work and food consumption and its consequences in terms of risk and vulnerability.

Curating (Un)fairness and (Ir)responsibility: Digital Food Marketplaces and their Regulatory Logics *Jeremy Brice, London School of Economics and Political Science*

Digital marketplace platforms, from Deliveroo to Farmdrop, articulate a growing range of food practices, circulations and encounters. These platforms provide digital infrastructures which broker and facilitate encounters and exchanges between sellers and purchasers of food. Yet they also lay down requirements that vendors must fulfil, and specify forms of conduct which they must practice, if they are to be included among the carefully curated selection of sellers permitted to trade within digital food markets. This paper will draw on interviews both with operators of digital marketplaces and with businesses and individuals which sell food within them to explore what logics of (dis)qualification, valuation and conduct govern who is (and who is not) permitted to trade via these platforms. Building on accounts of digital platforms as multi-sided markets, it will examine the contrasting conceptions of what constitutes ethical and responsible behaviour towards consumers and towards vendor-customers which animate different digital marketplace operators' approaches to the approval and curation of their selection of food sellers. In so doing it will identify contrasting logics of regulation and valuation which underpin different platforms' efforts to govern their vendors and examine how they enable certain encounters between foodstuffs and eaters (and between vendors and consumers) while precluding others. In thus disentangling some of the processes through which the logics of digital marketplace platforms are reshaping the landscape of food commerce it will contribute to ongoing STS debates over the role of platform logics in revaluing and transforming contemporary cultures, practices and economies.

Session Organizers:
Jeremy Brice, London School of Economics and Political Science
Karin Eli, University of Warwick
Tanja Schneider, University of St Gallen

Chairs:
Karin Eli, University of Warwick
Tanja Schneider, University of St Gallen

239. FLIPPED - Waste Encounters in Blasted Landscapes
12:00 to 1:40 pm
virPrague: VR 09
In this session, scholars will attend to the many ways in which human lives intertwine with the discards - radioactive waste, mining effluents, electronic wastes - that characterize and constitute what has been called "the ruins of capitalism", looking at the ways in which people relate with their own and others' discards - including ways that combine or transgress the purely ameliorative, restorative, or economic.
Participants:

Collecting Waste: Negotiating Dirt and Danger in M-dong
James Jang, The University of Queensland
This research reports on nine months of ethnographic engagement based in M-dong, a neighbourhood in the city of Seoul, South Korea. The focus is on the particularities of the collecting practices of residents of M-dong who negotiate spaces of danger in order to extract value from recyclable things. I will focus on how waste-things as agents (Latour, 1993; Gell, 1998) enable the production of shifting conditions in their movements from waste-piles to private domestic collections that accrue at the homes of residents of M-dong. I will discuss how these collection practices are responses to the availability of masses of waste. They require that collectors who extract recyclable things that accumulate on the street negotiate the dangers of waste as dirt (Douglas, 1996). These waste-things are converted into domesticated collections that move in and out of household potentialities as collections and as a source of income when a portion of the collection is taken to the local recycling facility.

Off- Grid Wastewater practices: tinkering with global and local dichotomies in a more than human world. *Fenna Smits, University of Amsterdam; Rebeca Ibáñez Martín, Humanities Cluster, Dutch Academy of Science (KNAW)*
This paper is concerned with experimental ways of dealing with wastewater. It worries about the ecological consequences of handling waste water. But it is also concerned with the very notions of the local and global that seem to belong so clearly with either one of these: local as close and controllable and the global as all-encompassing and far. Through situating 'the local' in off-grid wastewater treatment practices we urge to reflect on how wastewater experimentation may transgress our established dualistic conceptualisations of space in terms of local/ global. Drawing on two ethnographic field sites in the Netherlands, we juxtapose different ways of folding the global in local wastewater treatment practices. The first case assesses wastewater treatment practices in an ecovillage. Villagers' desire to treat wastewater off-grid entices learning to collaborate with global actors such as researchers, governmental institutions, global fish, microalgae and polluted oceans. Through caring for 'their own shit', the villagers enact a 'local' that mitigates the negative effects of a 'global' Anthropocene. The second case examines wastewater treatment practices in a sustainable urban development project for which a local infrastructure of wastewater has to be organized off-grid by individual households. Instead of folding the 'global' in off-grid wastewater practices, opening up divisions of global/local water, the 'local', here, emerges as a contained flow, demarcating the boundary between wastes that circulates in households and backyards from global water flows and oceanic pollution. How does wastewater practices are made 'local'? What are the boundaries on water and waste flows?

Re-Valuing E-waste: Material Appropriation, Circularity, and Temporal Negotiations in Dar es Salaam, Tanzania. *Samwel Moses Ntapanta, University of Oslo, Department of Social anthropology*
The number of tones of electric and electronic waste increases tremendously every single year. Mechanisms, infrastructures and policies are slow to respond with the growing size of the problem. The global focus on addressing the fast-growing problem is on high-technological solutions. However, these ambitious solutions are expensive and slow to tackle the speed of

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e-waste productions worldwide. In developing countries, like Tanzania, people encounter and interact with e-waste in very ingenious and innovative ways. Currently, there is little recognition or acceptance of their contribution to e-waste solutions. Instead, the focus has been on the detrimental effects of toxins embedded in e-waste on human health and the environment. Nevertheless, scattered, uncoordinated e-waste practices offer coherence and networks of e-waste-human entanglements that produce new ways of value and life. This paper explores the ingenuity of practices (repairing, repurposing and mining) of e-waste in the Dar es salaam barrios that exploit value from defunct electronic materials. To do so, I present my journey tracking e-waste in Dar es Salaam city's landscapes and the innovative practices surround the ways value is extracted. Moving from households through scavenging heaps, I describe the methods through which hand workers repair, repurpose and mining precious metals embedded in e-waste, and how, through their use, these items emerge innovative cultural and economic forms in urban Tanzania. In doing so, I link these socio-material transformations and the innovative practices through which they emerge to consider how the temporality of e-waste is negotiated and re-articulated to create new forms of value

The waste multiple: The socio-technical enactment of radioactive wastes *Robbe Geysmans, SCK-CEN; Marika Hietala*

Radioactive waste management (RWM) can be seen as one of the grand challenges facing contemporary society. The difficulty of implementing long-term RWM solutions has often been framed through public opposition/acceptance, as is reflected in many studies which focus on questions of waste governance. At the same time, however, radioactive waste, as an ontological entity, has attracted less attention. This paper proposes that tracing how radioactive waste becomes and unbecomes, is made and unmade, can contribute to a better understanding of some of the challenges related to its long-term management, and also illustrate the complex positions it occupies in the contemporary world. Building on experiences from different research projects on RWM, this paper presents radioactive waste as ontologically ambiguous. Reflecting on the ontological politics that enact radioactive waste in particular ways, the paper follows waste through different decision points where its status (e.g. waste or asset, acceptable for disposal or not) is debated. It thus takes us on a journey to parliaments, laboratories, sites of waste characterization, and storage and disposal facilities. Through this journey, we trace how different enactments can allow for new sociotechnical networks and alternative futures to emerge, for example related to energy matrices and disposal projects, but also how they give rise to questions about who and what gets to define what counts as waste, and with what consequences.

Waste Ecologies: Finding Life within Extraction in Chile *Patricio Flores, University of Warwick, UK; Sebastian Ureta, Universidad Alberto Hurtado*

The Carén river is a narrow water stream from central Chile. The river might be completely irrelevant were it not for one thing: it carries a significant amount of water throughout the year. Surprisingly, this availability of water has an unexpected origin: mining wastes. In the upper section of the river basin lies the Carén impoundment, the waste depository of El Teniente, the largest underground mine in the world. Along with crushed rock and chemical reagents, the material filling up the impoundment contains a fair amount of water, which allows for the existence of lively ecologies downstream. This outcome reveals that waste facilities are not just sources of pollution and destruction; they can be, at the same time, sources of life. Hence, complexes like the Carén impoundment cannot be solely seen as an extractivist endeavour, but also as a source of multiple and unexpected waste ecologies. Through ethnographic vignettes, this paper will present waste ecologies as formed by a heterogeneous array of entities, from human beings and chemical compounds to local animal and vegetal populations; they are precarious and impure, usually mixing elements that nurture life with others that aim to destroy it; they are the consequence of human practices, but also always possess inner dynamics that escape from human control. Waste ecologies are, in sum, an imprint of the Anthropocene, a

key manifestation of humanity's new Earth-shaping capacities.

Session Organizers:
Samwel Moses Ntapanta, University of Oslo, Department of Social anthropology
Christian Peter Medaas, University of Oslo, Dept. of Social Anthropology
Chair:
Christian Peter Medaas, University of Oslo, Dept. of Social Anthropology
Discussant:
Thomas Hylland Eriksen, University of Oslo

240. **Situating Co-creation: Innovation between Local Specificity and Scalable Standardization**
12:00 to 1:40 pm
virPrague: VR 10
Co-creative practices, bringing together diverse actors in the innovation process to achieve mutually beneficial outcomes, seem to be flourishing across academia, industry and society. Prospective users are increasingly engaged upstream, invoking the fundamental value-proposition of co-creation, namely to tailor innovation processes to the needs, values, and political cultures of user-communities with the hope that these will lead to more legitimate and sustainable outcomes. However, co-creation faces challenges such as the scalability of context-specific solutions as well as the definition of the user-community problems to address or the imagined user-communities as such. In this panel, we are interested in exploring the situated nature of co-creation by looking at the particular shape it takes in specific social, cultural and institutional contexts. We invite contributions that address questions such as: - How do conceptualizations of 'the local' shape innovation processes and outcomes? - How can situatedness be theorized in the context of co-creative innovation practice? - If effective and desirable innovations are context-specific, how can we harness their benefits for other settings without losing their socio-cultural embeddedness? - When and how could co-creation be standardized and scaled-up? Are there specific domains or fields where context matters less than in others and where co-creation can be homogenized and deployed at scale? - How are co-creation practices stabilized in specific contexts and when are these exercises deemed fit to travel towards other socio-cultural contexts and/or technological domains?

Participants:

Co-Creation Of City Futures In Three Policy Labs In Berlin, Dortmund And Munich *Luise M Ruge, TU München*

City administrations in Germany see a need for innovation based on emancipatory and technological impulses for participation as well as efficiency. In this vein arises the question: How do German municipalities re-imagine common welfare through co-creation? I answer this question through the case studies of three German city labs in Berlin, Dortmund, and Munich. While in Berlin's City Lab emphasizes an on open-ended experimental co-creation by the general public, in Dortmund's KoSI-LAB the co-creation equals a means to address social unbalances by those concerned, while in Munich's Urban Colab co-creation by startups is a proxy for scaling smart city solutions from the lab throughout the city. I show how every municipality tackles differently the limbo between local specificity and scalable solutions in culturally, socially, and politically specific ways. Arguing from the standpoint of co-productionist STS, and a culturally sensitive approach towards innovation studies I suggest the concept of regional innovation cultures to conceptualize how "the local" and the "scalable" is re-imagined along with the purpose, meaning, and limits of innovation - revealing the idiosyncratic ways of making sense of innovation. This concept is based on the idea that the notion of "innovation" itself is co-produced with locally specific diagnoses of a societal deficiency and equally specific understandings of acceptable remedies. The research consists of a comparative case study design executed through expert interviews, ethnographic research, as well as media and literature research.

From Co-creation to Participation: Fostering a Community Information Platform through Meshing *Petra Zist, Madeira Interactive Technologies Institute (M-ITI); Chris Csíkszentmihályi, Madeira Interactive Technologies Institute*

(M-ITI)

The paper discusses the co-creation of a communication platform for civic participation and information sharing in four small, isolated, and rural communities in the island of Santo Antão, Cape Verde. The platform is based on RootIO, a free/open software and hardware stack that combines analogous and digital technologies. RootIO supports the creation of low cost community radio stations that do not need a physical studio. The technology was conceived, transformed and partly co-created in different places and different contexts previously. However, the local specificities of Cabo Verdean places play a significant role in the configuration and appropriation of the technology. We describe a process of technology co-creation made through anthropological and ethnographic engagements with the community members, field research, group discussions, co-design workshops, and trainings that identify the needs and interests of the community and initiate further participation of the community members in civic deliberation and radio creation. Participation and use can shift and change the technology through local appropriation. This platform aims to engage people only in a very small local area, but in several localities at the same time. Scaling here is understood in terms of connecting different localities. Here we find the concept of meshing (Light and Miskelly 2019) particularly useful for the discussion. We show that in order to foster technologies that can be used in different settings without losing their socio-cultural embeddedness, it is important to foster appropriation through practices of meshing.

Sharing Situatedness and Scaling-up: The Case of the Community of Practice « Strategies for Sustainable Gender Equality » in the ACT Project *Anne-Sophie Godfroy, République des savoirs (CNRS, École Normale Supérieure, Collège de France); Areti Damala, ENS*

Funded by the Horizon 2020 programme from 2019 to 2021, the ACT project has set up seven communities of practices to enhance gender equality in research and academia. The paper presents the case the CoP « strategies for sustainable gender equality » and facilitated by the CNRS. Each CoP has a specific focus, either disciplinary or geographical or thematic. At the same time, the ambition is to share some common tools as the GEAM Tool (Gender Equality Audit and Monitoring Tool) based on the experience of HE Advance and Athena Swan in the UK. The paper discusses the tensions around the GEAM tool in the Strategies CoP. The study is based on the data collected through workshops with CoPs participants : a focus group in April 2019 around the opportunity to translate the GEAM tool in French, and two workshops in December 2019 and March 2020. The focus of the March workshop was audit, monitoring and evaluation. The paper analyses the opinions of the CoP members about the opportunity of translating and using the GEAM tool. In a second part, we analyze reactions to the presentations of various options for auditing and measuring equality. Participants were invited to discuss their own evaluation practices in context and how they could import in their own contexts ideas shared during the presentations. Our focus is the tension between the search for a common tool and a common methodology, which allow comparisons and commensuration, and the situatedness of the experiences of the participants.

Session Organizers:

Anja Kathrin Ruess, Munich Center for Technology in Society, Technical University of Munich

Federica Pepponi, MCTS - Munich Center for Technology in Society (TUM)

Kyriaki Papageorgiou, ESADE Business & Law School

Ruth Müller, MCTS TU München

Benjamin Lipp, Technical University Munich

Carlos Cuevas-Garcia, Technical University of Munich

Chair:

Anja Kathrin Ruess, Munich Center for Technology in Society, Technical University of Munich

241. Organizing Technoscientific Capitalism: Assets, Rents, and Values - 1

12:00 to 1:40 pm
virPrague: VR 11

Technoscientific capitalism is organized through the configuration of technological products, platforms, and data, as well as the configuration of capitalist practices like accounting, corporate governance, and valuation logics. As a result, technoscientific capitalism entails organizational dynamics and inter-organizational relationships that often get obscured within STS debates about the supposed 'neoliberalization' of society and science. In this panel, we want to explore how assets, rents, and values are made through this configuration of technoscience and capitalism. There are many possible analytical and empirical avenues and questions to explore here: How do managerial practices and collaborations underpin the transformation of things into assets? How do organizational epistemologies and resources manifest as different forms of rentiership? And how do public-private logics and frameworks produce specific forms of socio-economic values? Overall, we are concerned with examining how diverse processes of assetization, rentiership, and valuation open up and/or close down alternative futures and political possibilities.

Participants:

Cutting Jobs With Molecular Scissors – Understanding Labor Implications of CRISPR *Koen Beumer, Copernicus Institute of Sustainable Development, Utrecht University*

This paper focuses on the agricultural labor implications of gene editing technologies like CRISPR/Cas9. These so-called 'molecular scissors' allow genetic material in crops to be altered in ways that are faster, cheaper, and more precise than existing technologies, and offer a prime example of techno-solutionism in the realm of agriculture and food. While a debate has emerged over the ethical and societal implications of gene editing, including health risks and ownership (Jasanoff et al. 2015; Nuffield 2016), potential labor implications are entirely absent from this discussion. Yet there are concrete indications that also gene editing may have uneven distributional consequences in terms of labor, for example by enabling crops to be modified to make them more suitable for automated harvesting or to make labor-intensive processes of hand pollination redundant (Scorza 2015; Xiong et al. 2015). This paper seeks to elucidate labor implications – a topic scarcely explored in STS – and explain how particular practices of valuation in agrobiotechnology research make such labor implications invisible. As I will show, the common emphasis on yield maximalization, efficiency, and cost reduction that underpin the configuration of technoscience and capitalism in agrobiotechnology, effectively hides detrimental labor implications from view, rendering them un-valuable. Drawing upon a systematic literature review and several dozen interviews with gene editing experts, I will furthermore, for the first time, conceptualize the various possible agricultural labor implications of gene editing, so as to render them visible and open up alternative futures for the application of gene editing.

Public Private Partnerships and the Provision of Healthcare in Australia *John Grant Gardner, Monash University, Australia*

In many OECD countries, the public hospital embodies widely-shared values relating to universal and free healthcare. Contemporary public hospitals, however, are facing a challenging and changing socio-economic context. Aging populations and increasing levels of chronic illness, combined with the need to prepare for anticipated major technological developments (such as precision medicine) are placing considerable strain on public healthcare services, and hospitals are often poorly prepared and in need of expensive upgrading. In Australia, governments have been turning to contentious public-private partnership (PPPs) arrangements to design, build, maintain, and in some cases operate public hospitals. Public hospitals are, in effect, turned into assets. This presentation will examine the political and institutional dynamics that are transforming essential health services into assets in Australia, and it will highlight the tensions that emerge as potentially conflicting socio-economic values are enacted in the process. It will be argued that, despite a considerable appetite for PPPs among some stakeholders, the impact of financialization processes on Australia's public health sector is still far from certain.

The formal Market *José Ossandón, Copenhagen Business*

School; Christian Frankel, Copenhagen Business School
Normally, when social scientists pay attention to markets, their focus is on how markets affect other areas. What markets do to or how markets transform other things. For instance, there is plenty of research about 'commoditization' (how things are turned into objects of commercial exchange), about 'marketization' (how the organization of situations as markets make agents calculative and things calculable)-, or, about 'neoliberalism' (how individuals and populations are made subjects of market-forms of governmentality). Way less interest has been devoted to the study of how markets are affected by other processes. The object of analysis in this paper is the "Harmonized Electricity Market Role Model", an instrument developed in the context of the ongoing technical standardization of the European electricity market. Based on interviews with practitioners and analysis of technical documents, we ask what does the Harmonized Electricity Market Role Model do to the European electricity market? To answer this question, we coin the concept of the 'formal market'. The argument, in short, is that, as the organization became formal organization about a century ago with the work of the engineers of the scientific management movement, markets- like the electricity market in Europe-, are becoming 'formal markets' with the contemporary work of engineers. Besides analyzing the case study, we conceptually develop the idea of formalizing, and explain how the concept of formal market could help future STS research on market design more generally.

Session Organizers:
Jane Bjørn Vedel, Copenhagen Business School
Kean Birch, York University
John Grant Gardner, Monash University, Australia
Chair:
Jane Bjørn Vedel, Copenhagen Business School

242. Flows and overflows of personal data S3
12:00 to 1:40 pm
virPrague: VR 12
Participants:

When Is Data? The Enablement Of A National Research Population *Francisca Nordfalk, University of Copenhagen*
A recurring question discussed by researchers and policymakers is "what is data?". With the growing global collection of data on the people of our world, focus has been on questioning how we are to understand "data" and how it can be identified, produced and circulated. However, I find it equally important follow the strains of STS and ask, "When is data?" When does something, or someone, become data? And when is data research data? I find these questions particularly essential for health sciences, where the dynamic between personal information and impersonal research data is as promising as it is threatening. In this paper, I will present my findings from a study where I followed the flows of Danish newborn dried blood spots on their journey from being blood in a newborn child to becoming research-friendly data. I have approached this idea with a qualitative exploration of the complex sociotechnical infrastructure around the newborn dried blood spots and the policy framework that makes it permissible. Further, I have studied how this infrastructure, and the flows it entails, influences the possibilities for the actors involved. The newborn children (and their mothers) as data subjects, the health professionals as data workers, and the researchers as data users. Here, I will demonstrate how this infrastructure is done through the enablement of care, screening and research, where each translation of the samples is made possible because of what it enables for the actor. While ultimately enabling the emergence of data.

Detecting value(s): moral economies of digital innovation in early disease detection *Alessia Costa; Richard Milne, University of Cambridge*
The explosion of mobile technologies and increasing circulation of personal data have given rise to what have been described as both a 'datafication' and 'lifestylisation' of health (Ruckestein and Schull 2017, Lucivero and Prainsack 2015). Dementia research is an area that has seen a proliferation of initiatives aimed at harnessing the potential of these 'expanding ecosystems of health data' (Sharon and Lucivero 2019) for the early detection of cognitive decline. Signals from multiple data points, and growing funding opportunities in the private sector, promise to transform the diagnosis and future treatment of dementia. These developments introduce novel configurations of technologies, bodies and space associated with health and disease that present ethical and regulatory challenges around flows of data, the limits of what constitutes personal health data, and the clinical, moral and economic value of 'early detection'. Drawing on interviews and preliminary ethnographic work with actors in this field, including older people, academics and private companies, we map the construction of value(s) within the political and moral economies of early disease detection. Inspired by empirical work in the sociology of bioethics (Cribb 2019, Petersen 2013), we ask how different actors orient themselves in defining what is good, acceptable and worthwhile, how the socio-material organisations of their work crystallise possibilities for action while foreclosing others and what contribution STS can make to the conceptualisation and regulation of ever-expanding flows of data.

Digital Health Data as a Global Public Good? *Julian Eckl, University of St. Gallen*
The international provision of health data was long considered the responsibility of the World Health Organization (WHO). Recently, there has been a proliferation of actors who produce heath data. The increasingly articulated idea that this data could serve as a global public good (GPG) is intriguing and inspiring. It highlights common interests and the great potential that data has for global health. However, the paper will argue that there are multiple ways in which the idea could be understood and that it runs the risk of portraying GPGs as static end points at which positive results have been achieved. Embracing a broader understanding, the paper will propose that the idea is at its best if it is interpreted as an analytic approach and if (digital) health data is analysed through the lens of the contemporary scholarly literature on GPGs. Such an analysis must also take into consideration in what broader societal context (digital) health data will be embedded. In the present case, this includes discussions regarding the contemporary digital or data economy since any data that is made public will presumably be available in a digital format and become part of this (political) economy. This alerts us to issues such as the big data divide and contemporary business models with their inherent drive towards monopolization, which is often based on network effects and made possible because goods are provided as GPGs, which makes it difficult for competitors to emerge while consumers pay by means other than money.

The Tyranny of the 'Civic' in data sharing? Reciprocation, Frustration and Creativity in Data-as-Gift Relations *Tamar Sharon, iHub, Radboud University Nijmegen; Lotje Siffels, Radboud University Nijmegen; Andrew Staver Hoffman, iHub, Radboud University Nijmegen*
In recent decades, STS scholarship has done much to characterize shifting relationships between experts and non-experts in what many call a 'participatory (re)turn' in science and medicine, as evidenced by the popularization of notions like 'citizen science' and 'patient empowerment.' In the context of medical research and healthcare in particular, this shift can be seen as a move from paternalistic to more democratic/collaborative relations between medical experts and laypersons, or what Boltanski and Thévenot (2006) might otherwise characterize as a move from a domestic to a civic order of worth. This paper addresses one such case where such a change is occurring: a large, prospective, longitudinal cohort study on Parkinson's disease whose aim is the creation of a comprehensive dataset comprised of clinical, environmental and lifestyle data that study participants generously "give" over a period of three years. Drawing on interviews with medical researchers, coordinators and assessors involved in this study, we show that these actors reflexively acknowledge a persistent concern about their need to reciprocate, and their grappling with what they should "give back" to the community of study participants. And yet it is not always clear to these actors how they can fulfill the requirements of reciprocity to their research participants, presupposed as they are by the civic

order and by the triad that gift-relations imply. We argue that this burden – or tyranny of the civic order of worth – results in quite some dissonance on the part of the medical team, while simultaneously engendering creative avenues for reciprocation.

Session Organizer:

Tamar Sharon, iHub, Radboud University Nijmegen

Chair:

Tamar Sharon, iHub, Radboud University Nijmegen

243. Locating & Timing Governance in STS and Universities II: Gender issues

12:00 to 1:40 pm
virPrague: VR 13

For generations universities have been institutions of higher education and research. Now they are expected to contribute to local and global economies by commercializing research and spurring innovation, while addressing grand social challenges like climate mitigation and social disparities. They also must engage successfully in mass higher education and outreach with a variety of publics. This means that universities now occupy a strategic place in re/shaping society by circulating research and knowledge through teaching and professional expertise. Meanwhile universities have become subject to increased auditing practices and austerity policies, locally and globally. Universities turn to experts in branding and commodification for strategies in defining and representing their work as successful. STS provides resources for understanding such dis/continuities in the making and circulation of knowledge while the study of universities in dynamic ecologies is vital to addressing unexamined assumptions in STS about the relationship between research, teaching, and society, as well as the governance of that relationship.

Participants:

The Sole Engineering Geni(e)us: Changing University Culture
Kai Lo Andersson, Chalmers University of Technology

What happens when an engineers' problem-solving attitude is applied to gender equality? In this paper I posit that the 'Sole engineering genius' identity causes friction (Tsing 2011) in critical equality and diversity work. Their struggle towards equality and structural change offers important insight on engineering narratives regarding (in)equality work for those in the STS field. In my role I have unique access to the project, observing and learning how a gender equality project by and for (especially) STEM faculty operates and what problems arise. The Genie project (Gender Initiative for Excellence) at Chalmers University of Technology is a project with two goals 'remove all structural and cultural obstacles that hamper women's careers' and increasing the percentage of female professors and faculty to 40 % in 10 years (18 % female professors and 22 % female faculty in 2019). With 300 million Swedish crowns a project of this magnitude and structure is unheard-of. This paper uses' actor generated documents, participant observation and interviews to analyze the knowledges and practices established in the first year of the project. From the practices and knowledges invoked in the project I use the 'Sole engineering genius' imaginary, an individualistic construct of STEM researchers, seeing itself transcending culture and society. In this case applying their innovative skills onto gender equality work at a university of science and technology. This causes friction with more 'bureaucratic' forces within the university already doing gender equality work, risking fractions and being one of many failed equality projects, causing further resistance.

A comparative study of co-productions of gender and gender balance work on local levels *Ivana Suboticki, Norwegian University of Science and Technology; Vivian Anette Lagesen, NTNU*

Universities are increasingly pressured to produce new knowledge and innovations that can serve the public good by solving grand social challenges and improving economies. Building excellent and world leading research communities is one strategy aimed at fulfilling such demands. At the same time, universities are expected to be both models of and models for society, especially in respect to diversity and gender balance. Many universities have therefore set in place gender mainstreaming measures for improving gender balance. However, such measures cannot work uniformly across

universities nor within universities. Our study shows how we need to understand both disciplinary and departmental diversity with respect to achieve efficient means for improving gender balance. In this paper we investigate how gender balance (and gender balance work) is framed within and co-produced by different departmental settings. We build our analysis on interviews with department leaders, and focus group discussions with full time and temporary employees at different departments at the largest university in Norway. We explore how departments with different gender composition, histories of gender disparities, gender balance strategies and leadership, and diverse epistemic cultures, work with and understand gender balance. Through a comparative analysis of these departments, we find a few diverging framings of gender balance work and their situatedness within specific disciplinary and organizations settings. In conclusion, we discuss the reasons for and potentials of diverse framings of gender balance.

Performing passion: Affective aesthetics in computer science education *Samantha Breslin, University of Copenhagen*

Officially, computer science is the study of both the theory and practice of computing. Based on ethnographic fieldwork in an undergraduate computer science program in Singapore, this paper explores the discipline's hidden curriculum. In particular, I explore how learning to become a computer scientist also entails learning how to perform passion. Many I spoke with agreed on the importance of passion for doing "good" computer science. At the same time, few could explain what precisely it means, but would nonetheless point to members of the student hacker group as examples of those who were clearly passionate (even if not all members saw themselves as such). I show how, for students, demonstrating passion worked as a system of self-discipline where they were summoned to (re)make themselves to display their passion. For educators, employers, and policy makers, passion functioned as a system of judgement where those in power would evaluate appropriate and sufficient displays. In either case, recognizable forms of passion were also shaped by transnational actors including from Silicon Valley, as well as research on and global rankings of qualities such as creativity and innovation. Taken together, the hidden curriculum thus fosters an image of the ideal passionate computer scientist as a person dedicated to neoliberal techno-preneurialism and competition. However, I also show how intersections of disciplinary norms, gender, and citizenship shape what displays of passion are valued and by whom.

Knowledge in demand? University and industry debating, resisting or developing collaborative teaching practices *Helen Josok Gansmo, STS/NTNU*

Related to the many major shifts in our world that create feelings of urgency and "calls to act now", the practices of universities are also challenged, for instance towards producing more robust and sustainable knowledge. Even though the sociotechnical infrastructures related to knowledge production and application have been constantly changing, the (technological) development of teaching so far displays few and only minor revolutionary changes, in contrast to many other areas of the knowledge society. Studies of innovation have highlighted the importance of collaboration between universities and industry, as described by for instance Modus 2 (Gibbons, Nowotny et al.), Triple Helix (Etzkowitz & Leydesdorffer), recent challenges towards democracy and expertise (Jasanoff, Latour, Nelkin, Stenger, Yearly), and responsible research and innovation (RRI) (Åm). The production of the skills needed in the (future) labor market is under stress as seen in changes related to the autonomy and accountability of universities partly related to a debate regarding the work life relevance of education (OECD 2018), all pointing towards a need for dialogue and meeting places between universities and work life. Based on reviews of the portfolio of studies offered at the Norwegian University of Science and Technology and qualitative interviews with teaching and administrative staff as well as collaborating industry partners this paper will discuss how demands for rapid intellectual, social, and economic contributions to society shape the intersectional issues in knowledge making, teaching and outreach at the university - in terms of debating, resisting or developing (new forms of) collaborative university teaching practices.

Feminizing innovation: Challenges in STS *Gabriele Griffin, Uppsala University*

This paper explores why innovation, conventionally associated with the masculine (e.g. Andersson, 2012, Lindberg et al 2012), might be also be framed as feminine, indeed on occasion feminist. It does so via an exploration of the embedding of new academic disciplines, in this instance Digital Humanities, in existing higher education institutions in the Nordic countries. Drawing on qualitative research conducted in 2017-18 with Digital Humanities practitioners in Sweden, Finland and Norway, the paper argues that the feminization of innovation in higher education institutions leads to the material and symbolic marginalization of those disciplines, with specific consequences both for their practitioners and for those disciplines. As part of this, the paper analyses how innovation can be considered both desirable and disruptive (innovation as such constitutes a disruptive technology), and utilizes Fiona Mackay's (2014) notions of 'embedded newness' and the 'liability of newness' to explore the gendered implications of the feminizing of innovation.

Session Organizers:

Knut H Sørensen, NTNU Norwegian University of Science and Technology

Sharon Traweek, UCLA

Chair:

Knut H Sørensen, NTNU Norwegian University of Science and Technology

244. How Can STS Support A Multiplicity Of Practices In Citizen Science?

12:00 to 1:40 pm
virPrague: VR 14

Citizen Science is a field of growing interest for governments and social science researchers. The current situation of increased EU funding means Citizen Science is being put under pressure to professionalise, add quality and evaluation criteria. Furthermore, there is an increasing pressure to define what is Citizen Science and what it is not. One effect of this might be the exclusion of practices based around activism, art and situated knowledge that have previously been the core of citizen-led practices, and yet are being pushed to the fringes in this move to professionalisation. STS has often uncritically supported this technocratic logic of utility and empowerment via Citizen Science. The logic of utility aims to make science cheaper by outsourcing scientific labour to the public, while at the same time claiming scientific involvement creates empowered citizens. Yet there are few actual empirical studies of impacts of this utilitarian logic on participants or what empowerment might mean in practice. This panel asks: What activism, art and situated knowledge practices should be seen as citizen science and how can they benefit from being framed as Citizen Science? How can STS researchers actively support a multiplicity of Citizen Science practices? What STS approaches can be used to expand the scope of citizen science?

Participants:

The "next level" of participation: can the professionalization of Citizen Science be used creatively? *Andreas Wenninger, bidt*

In recent years, national and international platforms and Citizen Science associations have emerged. CS funding lines have been created and CS activities are increasingly establishing themselves at classical academic institutions. This leads on the one hand to an expansion and diversification of CS, but also to its centralisation and standardisation. In this context, increasing efforts to define and improve Citizen Science can be observed. The driving force behind this is the aim to make the results of CS projects more compatible with professional-academic contexts or to give them more weight in political decision-making processes. The presentation compares the handling of scientific quality standards in different CS projects that were investigated in the context of a research project funded by the German Research Foundation. The tendency is that the more intensive citizens are involved in the research process, the more difficult it is to frame the projects as genuinely "scientific" projects. The stronger the scrutiny of the professional scientists and the greater the possibility to mechanize the research process, the easier it is to assume that the projects are "scientific". The article draws a

conclusion with practical and theoretical considerations as to whether and to what extent the underlying tension between scientific quality assurance and the empowerment of participants can be used creatively. Are different quality standards necessary to cope with the diversity of CS types (contributory, collaborative, co-created)? Or is more creative translation work needed to make epistemological-methodological quality criteria applicable to different types of CS?

Over-identification as Ethnographic approach for challenging the contradictions of Citizen Science *Christian Nold, University of the Arts London*

This paper describes an approach for STS researchers to challenge the contradictions of institutionally supported Citizen Science. Over-identification has been used within artistic contexts to disrupt easy readings or identifications and has been most famously used by the music group Laibach who combine ideological elements of partisan and authoritarian and liberal imagery to excavate authoritarian histories. Over-identification has been described as "taking the stated norms of a given system or arrangement of power more seriously than the system that proclaims them itself" (Shukaitis 2010). The paper presents a case study of adopting this approach to both facilitate and ethnographically evaluate a prestigious EU funded citizen science project. The approach over-performed the ideological imperatives of Citizen Science such as ensuring the mass recruitment and participation of citizens. At the same time this approach allowed the project participants to articulate their frustrations with these ideological imperatives. The paper suggests over-identification as a creative and performative method for building intellectual autonomy and a critical stance within the proscribed context of funded Citizen Science. Shukaitis, S. (2010), "Overidentification and/or bust ?", Variant, No. 37, pp. 26–29.

Bottom-up Meets Top-Down: Mapping Grassroots Citizen Science Trajectories in Environmental Pollution Monitoring *Michiel Van Oudheusden, University of Cambridge; Yasuhito Abe, Komazawa University*

Grassroots, bottom-up citizen science is a burgeoning form of public engagement with science, in which citizens mobilize scientific data to address real-world problems. Contrary to contributory (top-down) citizen science projects in which citizens collect data for experts, these grassroots initiatives typically unfold in do-it-ourselves fashion alongside conventional approaches and channels, thereby challenging formally-sanctioned, expert-centric citizen science approaches. This paper illustrates these points through a comparative analysis of two potentially paradigmatic sites for environmental grassroots citizen science: Safecast (radiation pollution / Japan) and CuriousNoses (air pollution / Flanders, Belgium). Adopting a constructivist and relational account of grassroots citizen science as co-produced and shaped through collective practices, the paper draws out key features (defining moments, key actors, discourses, devices) in the constitution of these networks as credible actors in affairs of environmental governance beyond the formally credentialed. The paper's findings open onto a reflection on how to imagine citizen engagements in citizen science and the roles social scientists assume as theorists, facilitators, and 'interveners' in these processes.

The social life of citizen science: Citizen Social Science as a reflexive practice in participatory STS *Alexandra Albert, UCL*

Critical reflections on developments in the field of citizen science offer a sense of the 'many modes of citizen science' (Kaspwerowski and Kullenberg, 2019). Such reflections help to reassess what can be included under the banner of citizen science, and to problematise the technocratic logic of utility often associated with the term. This paper considers citizen social science (CSS) as one such multiplicity of practice, that allows for greater levels of reflexivity about the undertaking of participatory social research. CSS raises important questions about the methods of participation and data collection in STS. This paper draws on literature on the social life of methods (Savage, 2013; Law et al., 2011) that sees questions of method as 'raising fundamental theoretical questions about the limits of knowledge

itself, and to reflect on new ways of understanding the relationship between the cultural, social, and material (Savage, 2013, p.18). Such a position allows for a focus on the affordances and capacities of CSS, which are mobilised in and through methods themselves. The paper argues that CSS appreciates a bottom up social inquiry that acknowledges experiential knowledge, and can help to trigger an 'inquiring society'. CSS values the everyday, mundane social inquiry, which has the potential to scaffold it to come together as a 'bottom up' social science.

Civic Engineering At The Grid Edge: Infrastructures, Social Movements And The Politics of Expertification *Hanno Moegenburg, University of Konstanz*

Against the backdrop of the South Africa's prolonged energy crisis, residents of the marginalized parts of Johannesburg are organising in a material struggle for just and working infrastructural service delivery. While I give ethnographic examples of their efforts to "study" infrastructural developments in different areas to modify their techniques of manipulating, extending, and adapting public infrastructure, I discuss these interventions as a form of self-emancipatory citizen science, in a sense of mundane civic engineering, wherein residents conduct public technological experiments. Further, I will elaborate on how the involvement of community activist organisations in this local knowledge production speaks of a growing pressure for activists to professionalise and ally with substantial technological and scientific expertise on different levels, to endure within the contested economy of activism in South Africa today. Not only need they to be technically skilled for their practical work on the ground, but also acquire in-depth knowledge on scientific discourses concerning climate change, energy production, citizenship, human rights and energy justice discourses, as they are debated by prominent NGO's and financially powerful umbrella organisations. Activists need to be transversally engaged in and translate between these two spheres and thereby engage in a form of boundary work, that conceptually challenges and blurs established notions of expertise, sovereignty and knowledge. Applying a neopragmatist critique, I offer an understanding of citizen-led and non-academic STS and contrast it with (activist)scholar interventions in people's struggle for (re)negotiating South Africa's postapartheid order.

Session Organizers:
Christian Nold, University of the Arts London
Alexandra Albert, UCL
Chair:
Alexandra Albert, UCL

245. The Life of Numbers 2: Targets, Promises, Policies
12:00 to 1:40 pm
virPrague: VR 15

Numbers are afforded life through their entanglements in situated practices. While numbers are often depicted as transcending contexts, this Panel appreciates numbers as relational beings. This orientates us towards exploring how and what numbers become, what they do, and the material effects they make through their implementations, appreciating enumerations as 'evidence-making interventions' (Rhodes & Lancaster, Social Science and Medicine, 2019). This Panel explores numbering practices as forms of anticipation and governance. Enumerations are afforded a power-of-acting through models, projections and targets which shape the present in relation to imagined futures. This is apparent in the field of global health, where mathematical models and numerical targets are shaping agendas, including as nations strive to achieve futures in which diseases might be eliminated. Enumerations are also key to the making of futures in relation to science, technology, environmental management, and climate. Reflecting on how numbers do their work in different policy, science and implementation sites, this Panel asks how the governing work of numbers – especially through models and modes of projection – is made-up in practices, with particular affects, inviting speculative thinking on the possibilities that enumerations can afford as well as on the futures they might close down. (Please note: this panel runs across 3 sessions).

Participants:

90-90-90 and the 'End of AIDS': How Targets and Enumerations Afford Viral Eliminations *Kari Lancaster,*

University of New South Wales, Sydney; Tim Rhodes, Centre for Social Research in Health, UNSW

In 2014 UNAIDS established a new target for HIV treatment scale-up globally. In what was at the time called a "final, ambitious, but achievable target", it was declared that by 2020 90% of all people living with HIV would know their HIV status, 90% of all people with diagnosed with HIV infection would receive sustained antiretroviral therapy, and 90% of all people receiving antiretroviral therapy would have viral suppression. As the anticipated future of 2020 imagined in the 90-90-90 target becomes the past, we seek to momentarily slowdown in the race to 'the end of AIDS' and consider the performative work that the 90-90-90 target has done as it has been put-to-use and travelled from global strategy and into local implementation, policy and scientific practices. Drawing on STS scholarship which emphasises the performativity of numbering practices, and the sociology of attachment, we examine how global viral elimination targets produce a range of effects. We consider how biomedical promise is enacted through models of viral elimination projection, the making of treatment-as-prevention as a governing discourse, and the performative effects of related quantifiable targets. We notice how enumerated global viral elimination targets do their governing in practice, in messy and unanticipated ways, how targets participate relationally as an actor in global health assemblages, and the collateral realities they make. Through this analysis, we aim to generate critical discussion about the performance of enumerations as matters of concern, with a view to considering how targets might be enacted in a different mode.

Counting Towards the 'End of AIDS': The Speculative Futures of the UNAIDS' 90-90-90 Targets *Tony Sandset, University of Oslo*

In 2016 UNAIDS adopted the 'Political Declaration on HIV and AIDS'. The Declaration builds on the UNAIDS' 90-90-90 targets. These state that if '90% of people living with HIV know their HIV status; 90% of people who know their status receive treatment; and 90% of people on HIV treatment have a suppressed viral load' this would lead to the 'end of AIDS' within 2030. UNAIDS expects that "When this three-part target is achieved, at least 73% of all people living with HIV worldwide will be virally suppressed. This paper argues that the 90-90-90 targets creates specific 'lines of sights' that focuses on a specific set of biomedical treatment and prevention issues. Yet, the 90-90-90 targets foreclose certain lines of sights, limiting our ability to envision a different 'end to AIDS'. One example would be that the model itself anticipates its own limits. The targets themselves acknowledges that we won't be able to get 10% tested, 19% will not receive treatment, and 27% will live with a high viral load – making them far more likely to pass the virus on to others. The paper thinks through what it means to speculate on alternative HIV futures through the limitations of the 90-90-90 targets, and through questions of who will be left behind, where will the end of AIDS come as seen through these metrics and what lines of sights come to the fore and which are foreclosed by the 90-90-90 targets in a turn from 'epidemic control' to a discourse of 'eradication'.

Enumerating the Temporal Politics of Leprosy Elimination Campaigns *Laura A. Meek, University of Hong Kong*

The World Health Organization has declared leprosy eliminated as a public health problem in Africa, with "elimination" defined as a prevalence rate of less than one case per 10,000 people. Subsequently, most planning, training, and service provision for leprosy ceased, as did funding for new research despite ongoing uncertainty over how the disease is spread or how to deal with multi-drug resistance. I draw upon archival research, ethnographic fieldwork in Tanzania, and scientific debates to demonstrate the material-semiotic effects of numbers in this "elimination". I argue that practices of enumeration in leprosy elimination campaigns enact a temporal structure that anticipates leprosy's immanent disappearance and therefore justifies a whole set of medical, institutional, and political practices built around this expectation. These concerns are explicit for scientists who debate what counts and how to count it: for instance, in a series of correspondences in the Lancet, researchers working for

Novartis enumerated an always-immanent elimination, while field researchers in Brazil drew on other arithmetics to caution against the potential problems of this approach. Finally, I discuss the experience of Luka, one of my interlocuters with leprosy in Tanzania, whose existence became a (numerical) problem for his doctors, one that they ultimately resolved by fabricating negative test results in order to record what they already knew: leprosy has been eliminated. I conclude by asking if leprosy elimination campaigns—and the temporal politics enumerating them—may have dire consequences for people with leprosy today, impeding rather than enabling the disappearance of the disease.

Guided by Numbers. The Domestication of Quantitative Information by Norwegian Climate and Energy Policymakers *susanne jørgensen, Department Of Interdisciplinary Studies Of Culture, Norwegian University Of Science And Technology,; Knut H Sørensen, NTNU Norwegian University of Science and Technology; Marianne Ryghaug, Norwegian University of Science & Technology (NTNU)*

Concepts like 'the metric society' and 'the tyranny of metrics' suggests that increasingly, policy and governance are shaped and steered by quantitative information. This paper engages critically with such assumptions by using domestication theory to analyse how actors in the Norwegian climate and energy policy field make sense of and employ numbers. Previous research suggests a widespread trust in numbers, that quantitatively embedded cultures, like climate and energy policymaking, have shared goals and use numerical information in the same way by means of performing a collective domestication process. In this paper, we reveal a more complex set of practices related to the way quantitative metrics are used in energy policymaking. Through analysis of interviews with politicians and civil servants working with climate and energy issues in Norway, we identified four main narratives of domesticating quantitative information: pragmatism, policy work as quantitative, ambivalence, and numeric goals as a source of inspiration. Rather than enthusiastically embracing numbers, these users of quantitative information emphasised more careful and reflective approaches. They are guided by numbers, but they do not necessarily trust them.

Numbering Microsimulation Models for Future Social Policies *Isalyne Stassart, Université de Liège / Institut Wallon de l'évaluation, de la prospective et de la statistique*

Throughout the belgian federalization process, federated entities (communities and regions) have been anticipating the reception of social policies in dramatically asymetrical fashions, ranging from evaluation regarding poverty reducing indicators to overarching pursuit of future budgetary equilibrium. Following these ex ante evaluation (or anticipation) processes for the definition of child benefits policies, one can see that microsimulation models are broadly used. Our observations, based on in-depth interviews and an ethnographic stay in one of the two central research centers specialized in microsimulation in Belgium, show that these models are shaping both social policies and relations between political elite decision-makers, administrations and university research centers, through a common use of enumerations. Moreover, it appears that these strengthening knowledge networks have been largely shaped by the fact that scholars and governmental agents have been involved with the use EUROMOD, an european microsimulation model. This paper intends to « open » this EUROMOD model and shows how the numbering of this model, now acting as an infrastracture restricting forecastings to a specific set of indicators – in other words, governing imaginaries – has been thought and how it allows governments to produce and adjust their own datasets.

Session Organizers:
Kari Lancaster, University of New South Wales, Sydney
Tim Rhodes, Centre for Social Research in Health, UNSW
Chair:
Kari Lancaster, University of New South Wales, Sydney

246. Digital Technologies in Policing and Security - Session 1

12:00 to 1:40 pm
virPrague: VR 16
Participants:

"Part Man, Part Machine, All Cop": Automation in Policing *Angelika Adensamer, Vienna Centre for Societal Security; Lukas Daniel Klausner, St. Pölten University of Applied Sciences*

Since the late 20th century, digitisation has hit policing with full force. From predictive policing methods through recidivism prediction to automated biometric identification at the border, more and more aspects of policing are employing automation. For example, in 2018, the EU's PNR Directive (681/2016) has made it compulsory for airlines to transmit Passenger Name Records (PNR) of all passengers to police authorities. The result is a very large database (over 12 million entries in Austria alone) which is algorithmically sifted to detect "suspicious" people and behaviour. Due to its predictive and explorative nature, the PNR system constitutes an example for the problematic technique of predictive policing. Automatically generated suspicion is legally contested, as the new data protection regime included in the Data Protection Directive for Police and Criminal Justice Authorities (Directive 2016/680, Art 11) explicitly restricts automated decisions. The PNR Directive in particular has been claimed to violate fundamental rights and cases against it are being litigated in Austria, Belgium and Germany, two of which are currently being considered by the European Court of Justice. Moreover, automation also is an issue from a workers' rights perspective, since it raises questions of autonomy and personal responsibility for the people ultimately tasked with enforcing the law. In our contribution, we will consider automation in policing (in particular, the PNR system) from the viewpoint of fundamental rights and data protection law as well as workers' rights. We will analyse the legal situation and address accountability and transparency in predictive policing systems.

(Re-)Defining swarm ontologies in military technological thinking *Goetz Herrmann, Paderborn University; Jutta Weber, Paderborn University*

Swarm intelligence has been at the core of recent discourses on military technology. Ever since John Arquillas and David F. Ronfeldts 2001 predicton that "swarming may become the key mode of conflict in the information age", scientists, military planners and critics alike, are imagining a future "warfare in the Age of Robotics" (Work and Brimley 2014: 36) waged by networks of intelligent unmanned "self-synchronized war fighting units that can act as complex adaptive systems" (John Sauter) in complex environments. The main focus of critique has been on the loss of meaningful human control over crucial (life and death) decisions. Other works draw inspiration from latest debates in STS and new materialism, by pointing out that the deployment of weaponized autonomous drone swarms would indeed not just bear the potential for new forms of warfare, but redefine the ontological conditions for our world. In vein of this analysis, the paper aims to explain the rising popularity of swarming with an ontological shift in military technological thinking (Coeckelbergh 2011), in which atomistic ontologies are being replaced by thinking in terms of systems, networks and swarms resulting in very peculiar concepts of "the spatio-temporal distribution of things and people" (Pelizza / Aradau) in warfare.   In our paper we explore the ontological presumptions for weaponized drone swarms in current military technological thought. Therefore, we trace back the rise of the concept of swarming in relevant policy papers of US-military planning and contextualize it with genealogical precursors in much older discourses on complex adaptive systems.

Sociotechnical practices and the formation of online markets for illicit goods *Meropi Tzanetakis, University of Vienna, Department of Political Science*

Cryptomarkets, digital platforms combining for the first time anonymising software such as TOR with decentralised virtual currencies such as Bitcoin serve the supply and demand of illicit drugs. This 'transformative criminal innovation' (Aldridge & Décary-Hétu, 2014) enables users to conceal their identity and physical location and, hence, allows for low-threshold access and

increased security. However, the other side of the coin is increased complication for law enforcement interventions. Cryptomarkets are proliferating and lead to the paradoxical situation where technologically enabled anonymity facilitates the exchange of high-quality illicit products and minimises the risk of law enforcement intervention at the same time. This paper aims to increase our understanding of how new market relationships emerge from the interaction of social actors with digital technologies. Based on a multi-sited digital ethnography conducted on a series of cryptomarkets and associated discussion forums, the paper follows socio-economic practices of cryptomarket users. On the one hand, I examine how digital technologies are developed, introduced and integrated in the online sale of illicit drugs. On the other hand, I trace how technological tools play an active role in the emergence and support of social practices and new possibilities of interaction and, then, information infrastructures like the Internet or the TOR network enable new forms of infrastructural relationships between users and technology at a distance over time. The sociotechnical concept of information infrastructures has, to my knowledge, not received any attention in the study of digital drug markets.

Session Organizer:
Simon Egbert, Technische Universität Berlin
Chair:
Nikolaus Pöchhacker, University of Graz

247. Guidelines, Effects and Determinants of Recruitment
12:00 to 1:40 pm
virPrague: VR 17
Participants:

Institutional Regulation and Evaluation Practices in Chilean Academy *Claudio Ramos Zincke, Universidad Alberto Hurtado*

In the last two decades, there has been a significant change in the practices of selection and evaluation of scholars in Chilean universities. Behind this result is a peculiar alignment among the evaluation criteria of the main source of research funding (Conicyt, a state institution); the accreditation standards for programs and universities, applied by a National Commission and the criteria applied in universities to select and assess professors' performance. Such alignment has occurred around the use of international mainstream publications, primarily WoS and Scopus, as a crucial criterion for the evaluation, in all disciplines, including social sciences and humanities. It has influenced publication strategies, profiles of new professors, and publication practices. Besides, it has had defined effects at the aggregate level, which are manifested in a marked increase in the country's publications with such mainstream indexation, during the last ten years, much higher than in other Latin American countries. A particular regulation device (or way of governance), with an international orientation, has been set up that has effectively driven the behavior of the actors, at different levels, in that direction. It is very different, for instance, to the institutional regulation in Argentina. The results of this presentation are based on a national survey of scholars, an analysis of the criteria used by the Conicyt Evaluation Groups, and secondary data. It is part of a study carried out, together with Chile, in Argentina and Brazil. This research contributes to the study and discussion of processes of valuation and performativity.

The perseverance of traditional recruitment procedures in the German Geisteswissenschaften *Lena M. Zimmer, Deutsches Zentrum für Hochschul- und Wissenschaftsforschung, Hannover*

My contribution raises the question how the traditional German Geisteswissenschaften respond to the politically motivated introduction of new requirements in the training of early career researchers (ECR). These new requirements were encapsulated by the implementation of the junior professorship as a new career path in 2001. The political intention behind this fundamental reform was to attune career paths for ECRs to international – i.e., especially Anglo-American – recruitment procedures and to supersede the traditional German habilitation model. With its

focus on early independence in research and teaching, academic output indicators like the number of publications or thirdparty funding, and the international visibility of its holders, the logic of the junior professorship complies directly with the Anglo-American logic of the natural sciences. Against this background the contribution examines how these new framework conditions of recruitment procedures are integrated in the German Geisteswissenschaften, a group of disciplines much more related to the traditional – and: national – system of training ECRs. The Habilitation has still an enormous significance in the German Geisteswissenschaften. In addition, the training usually takes place in a strict hierarchically master-student relationship, which is contrary to the new aim of early independence. On the basis of survey data collected among current and former junior professors, the contribution can show how the German Geisteswissenschaften amalgamante new global requirements for ECRs while simultaneously adhering to the traditional, national logic of academic careers.

The Valuation of Docent Merits in Swedish Academia *Erik Joelsson, University of Borås; Gustaf Nelhans, University of Borås*

One way to dignify academic recognition and visibility for the researcher and the higher education institutions (HEIs) is through the award of the Docent title, lending its holder the right to independently conduct research and supervise doctoral students. The Docent (associate professor) title is an important step in the academic career in several countries, yet there are - at least in Sweden - no national guidelines for Docent evaluation. Instead at the faculty level, each HEI has its own regulations and guidelines. Based on guidelines for docent promotion, we developed a taxonomy of evaluation criteria, identifying author position, specimen, publication channel, impact, and volume as important factors in the assessment of publication merits (Joelsson, Nelhans & Helgesson, 2020). The assessment of merits for the Docent title generally includes the applicants' research, teaching, and third stream activities, where the research dimension is awarded the highest merit value. In this research, we contribute to the understanding of the national tradition of evaluation criteria for the docent title by focusing on different disciplinary domains on the one hand, and different types of HEIs, on the other. A comparison between broad-based (comprehensive) established universities, specialised universities, new universities, and university colleges will be performed. 74 guidelines from Swedish higher education institutions were collected and subjected to qualitative data analysis with the aid of the computer software ATLAS.ti.

Session Organizers:
Marie Sautier, University of Lausanne/Sciences Po Paris
Julian Hamann, Leibniz Center for Science and Society
Chair:
Marie Sautier, University of Lausanne/Sciences Po Paris

248. Making Chemical Kin part 1
12:00 to 1:40 pm
virPrague: VR 18
Participants:

Carbon kin *Karolina Sobecka, fhnw*

In Marvelous Clouds, John Durham Peters argues for a philosophy of "elemental media," one that accounts for environments and their material elements as containers and vehicles through which our being is communicable. In Cyclonopedia Reza Negarestani calls oil the supreme 'narration lube,' which tells its story itself, creeping through all modern societies, according to a logic that does not belong to us. In a series of artistic research projects we ask what is the 'hidden writing' of carbon's new materialities, densities, metaphors and logics, as it is being transformed and mobilized by different actors and agendas in the climate crisis. If carbon is media, what are its modes of communication? If carbon flows are singular vectors of flow between life and nonlife, human and nonhuman, what kinship does it narrate? If oil is the narration lube of technocapitalism, then its atmospheric dispersion is the proliferation of information that never arrives at a commonly-agreed form, the dismantling of understanding. If oil is a

lubricant that eases narration, it is destined to become a dissolvant, a mode of communication that makes us foreign to ourselves, a post-truth proliferation of data, spectacles and stories. Calls for carbon management through 'carbon capture' or 'carbon sequestration' are calls to engineer the return to a condensation, unification of carbon matter, to visible materiality and tangible density achieved through various means - from farming practices to reforestation to chemical extraction of carbon from emission sources.

Chemical Childhoods *Veronica Pacini-Ketchabaw, Western University; Mindy Blaise, Edith Cowan University*

This paper tells stories about toxic childhoods in early childhood education. Drawing on an ethnographic project that uses common worlds methods (Taylor, 2017), we attend to the tensions and complexities of young children's chemical lives in Australia and Canada. In particular, we narrate the kinships that young children and chemicals are achieving in their everydayness as well as the geo-historical accounts that show how public health and educational practices are complicit in early childhood toxic presents. Theoretically, these stories emphasize the making and uncertainties of chemical childhood kinships, and their facilitation of capital and colonial expansion. Inspired by the scholarship of Michelle Murphy (2017) and Max Liboiron and colleagues (2018), the stories about chemical childhood kinships lead us to experiment with the creation of chemical pedagogies for possible new futures. Liboiron, M., Tironi, M., & Calvillo, N. (2018). Toxic politics: Acting in a permanently polluted world. Social Studies of Science, 48(3), 331–349. Murphy, M (2017) Alterlife and decolonial chemical relations. Cultural Anthropology 32(4), 494–503. Taylor, A. (2017). Beyond stewardship: common world pedagogies for the Anthropocene. Environmental Education Research, 23(10), 1448–1461.

Compassionate Metabolism: Art, Jellyfish, and Chemical Kin-making in Polluted Worlds *Susanne Pratt, University of Technology, Sydney*

This paper shall begin with an invitation to smell and taste jellyfish and their plastic relations—for those inclined. In this paper jellyfish are brought into the room as an ancient and contemporary critter for thinking with, and through, chemical kin-making across varying times and scales. This is not an argument for a return to a time prior to plastic pollution. Nor are narratives and metrics that simply focus on damaged bodies and ecologies considered helpful because of the one-dimensional perspective on the impacts of toxic exposure that these narratives take. Instead, we need different ways of telling the story to account for what is happening to polluted bodies, communities and multi-species kin, and ways in which these are co-constituted. To help tell alternative stories Hannah Landecker's work on metabolism is brought into conversation with Mel Y. Chen's suggestion of "sympathetic ingestion," and Agard-Jones' scholarship on "chemical kinesthesia" to explore metabolism, toxicants and chemical kin-making. Through an exploration of contemporary artworks, alongside emerging metabolic science, "compassionate metabolism" is offered as a process of sensitising ourselves to both appreciate the personal body transformed by pollutants and other bodies and times. It is a metabolic means of sensing and becoming aware of the movement of toxics (such as plastics) in and across bodies and ecologies, creating affinities among those exposed, holding the responsible ones accountable, and evading damage-centred narratives. It highlights the pleasures and burdens of smelling and tasting with intoxicated more-than-human kin, and the odd relations this makes.

Drugged kin: The art of living with/out drugs *Fay Dennis, Goldsmiths, University of London*

This paper tells a different kind of story of late industrial chemical exposure, one of drug use. It seeks to take seriously people's relationships with drugs. Illicit drugs, in particular, heroin and crack cocaine, are thought about as bad and toxic (to the individual and society). And yet people speak about these relationships as friend-like. Drugs highlight the dual nature of chemical kin as pleasurable and painful, health-giving and harmful, capacitating and incapacitating. Working with artists and people with lived experiences of drug/alcohol dependency,

the project that this paper draws on uses a body-mapping method to think ecologically with bodies in their connection with chemicals. By mapping bodies as a way of also making bodies in arts-based workshops (Marres et al., 2018), the project depicts and amplifies these hard-to-verbalise attachments – their habits and routines – and the traces they leave behind in trying to live without them. The artworks ask us to pay attention to the temporality, fragility and interwoven nature of drugs and bodies, and the precarity of a life once lived with these chemicals, which needs constantly 'guarding'. Developing these 'maps' into an installation for public engagement, that is, to take up art as a STS method for acting in the present (Salter et al., 2017; Sormani et al., 2019), the project intends to further ask questions of and extend these connections as an ethico-political staging of care (Lezaun et al., 2017; Puig de la Bellacasa, 2017).

Session Organizers:
Angeliki Balayannis, University of Exeter
Emma Garnett, King's College London

Chair:
Emma Garnett, King's College London

Discussant:
Michelle Murphy, University of Toronto

249. Charismatic Technology 1

12:00 to 1:40 pm
virPrague: VR 19

Participants:

AI and the mystique of super-knowers in healthcare *Annamaria Carusi, Inter//change Research and University College of London; Peter Winter, The University of Sheffield*

Artificial Intelligence (AI) technologies to enable faster, more accurate diagnosis are prominent promise bearers in current healthcare discourse. Will we see AI push aside the mystique of the super-knowing doctor, in whose abilities patients entrust their lives? Claims for AI outperforming doctors are supported by comparisons between the performance of AI and medical practitioners. This paper probes how such comparisons are formed, how they come to be accepted, and the AI algorithms trusted as the new 'super-knowers' in the diagnostic process. We focus on three AI applications being concurrently developed, all of which aim to improve diagnosis in a rare disease, Pulmonary Hypertension. Drawing on interviews, we show how the development process embeds clinicians in the work practices of computer scientists, so that criteria for tests and the terms of comparison are negotiated during these interactions. These clinicians play several roles in the development process: epistemic, technical, and social. They establish the background against which AI is iteratively developed, the criteria whereby it is tested, and act as social ambassadors for it among their peers. They bring their skills as 'super knowers' into the technology; and AI as a technology in turn actively forms the skills of those who interact with it in clinical contexts. Rather than a transfer of knowing from one kind of agency to another, there is a redistribution and reconfiguration of knowing and what counts as knowing. This paper contributes to the ongoing discussion regarding validation, trust practices and effects of collaboration in AI development.

Magical Analytics: Performativity and Social Power of Data in Analytics Companies *Salla-Maaria Laaksonen, University of Helsinki*

Data, as well as various algorithms to process it, have become central features of our everyday from personal life to organizations (e.g., Kitchin, 2014; Iliadis & Russo, 2016). The availability of massive datasets and the need to develop methods to analyze them is a prominent technological change affecting organizations and society, and a development that lives parallel to the awe, magic and charisma related to technology. This paper conceptualizes data as part of the technological unconscious (Thrift, 2005) and argues that data do not only represent and abstract social action, but also play a performative role in the organizational field of data analytics. By bridging critical data studies, STS and the sociomateriality literature in organization studies, this study explores the ways in which

material/technological factors interact with the human/social factors in the context of social media data analytics. The paper builds on ethnographic field notes and thematic interviews collected during participatory observation periods in four social media analytics companies. The setting allowed for observing and tracing the social media data assemblages (Kitchin & Lauriault, 2018) as the data travel through the organization. In this process, the data transforms from a matter of concern to a matter of authority (Vásquez et al., 2017): digital environments generate expectations for preciseness, traceability and never-ending knowledge; and the data itself, metrics and visualizations become means to achieve exactness and credibility. In addition, data works to institutionalize data analytics practices across organizations and reproduces data assemblage formations that support the infrastructural power of platform companies.

The Emerging Quantum Divide: How the Digital Divide is Translating into the Quantum Technologies Era and Its Expected Social Impacts *Zeki Seskir, Middle East Technical University*

The concept of 'Digital Divide' has been used for the uneven access and use of information and communication technologies on different levels; global divide between countries, the social divide between different socioeconomic sections of a nation, and the democratic divide between modes of internet usage in regards to political engagement. This term has been utilized for the last quarter of a century to identify where differences in ICT usage, either reinforces or reproduces inequalities. With the emergence of quantum technologies (the so-called second quantum revolution), ICTs are going to evolve into an even more complex set of technologies, and the global quantum divide can already be seen from the numbers and distribution of users accessing IBM's quantum computers globally. In this study, we focus on three aspects of the emerging quantum divide; global quantum divide, expected social quantum divide, and their relation to already existing digital divide. We use three indicators to argue for the existence of the global quantum divide; distribution of the number of firms, the number of academic articles published, and users of IBM Q Experience (open online quantum computing service). For the expected social quantum divide, we use existing literature and semi-structured interview outcomes. Finally, we compare the current situation in quantum technologies with the early era of ICT to draw similarities and argue how the existing digital divide is translating itself into a new set of technologies, reproducing the inequalities between the global north and south. References: -Antonio Acín et al. The quantum technologies roadmap: a European community view. New J. Phys. 20 080201(2018) -DiVincenzo, D.P. Scientists and citizens: getting to quantum technologies. Ethics Inf Technol 19, 247–251 (2017). https://doi.org/10.1007/s10676-017-9435-3 -Hargittai, E. The Digital Divide and What to Do About It (2003). New Economy Handbook, p. 824 -Vermaas, P.E. The societal impact of the emerging quantum technologies: a renewed urgency to make quantum theory understandable. Ethics Inf Technol (2017) 19: 241. https://doi.org/10.1007/s10676-017-9429-1 -de Wolf, R. The potential impact of quantum computers on society. Ethics Inf Technol 19, 271–276 (2017). https://doi.org/10.1007/s10676-017-9439-z

Using Technology To Settle Controversy? The Case Of Protesters Counting In France *Emile Provendier, LISIS, UPEM*

Counting protesters has always been a difficult rather necessary task. Whether people need to organise a movement or show the support they get, knowing the number of participants is essential. Hence, we always observed huge differences of estimates between protest organisers and police services due to the political stakes (Mann, 1974; Biggs, 2018). Despite the existence of many different statistical techniques to estimate the number of people (McPhail and McCarty, 2004), the belief in the rise of computer vision technologies to definitely settle the controversies on numbers grows strong (Yip et al, 2009). In France, since 2017, an independant group named Occurrence has been mandated by different media to take the counting into their own hands using technological tools. The company base its credibility on two arguments : an impartial position regarding the protests and the

"objectivity of technology" (Daston and Galison, 2007). Despite the promises behind those tools, the controversy is not yet settled and even more vigourous for a few months. By analysing the case of the company Occurrence and the way they mobilised technology to try to convince of it's efficacity, our paper seeks to understand what fragilises the trust put in technological tools. We realised a serie of interviews with different actors from this specific controversy and conducted an ethnographic observation of the counting process to understand what makes a technology trustworthy. We show that a technology is never fully neutral and its apparent objectivity is not sufficient to ensure credibility.

Session Organizer:
Francis Lim
Chair:
Annamaria Carusi, Inter//change Research and University College of London

250. Institutionalization and Social Appropriation of RRI: A Remaining Challenge? (2)
12:00 to 1:40 pm
virPrague: VR 20

Since 2013, the EC has pushed a devoted strategy to foster the embracement of RRI across the whole Horizon 2020 FP. This effort has allowed to develop a generous body of knowledge, experiences and networks around the concept with the determination to promote a significant change in European R&D. However, with the conclusion of FP8 and the beginning of FP9 at the forefront, it´s time to reflect about how RRI has effectively permeated different institutions across the EU and outside of it. On the one hand, New HoRRIzon project has shown that the institutionalization of RRI in research organizations is still a challenge. On the other hand, other projects (e.g. RRI practice, RIconfigure) have indicated ways forward to mainstream RRI. That duality demands to explore what are the remaining challenges towards its full implementation. In this panel we would like to explore how RRI has been diffused all over the last 7 years in Europe with the help of questions such as: Which challenges face RRI throughout the EU territory   ? What characteristics have shaped RRI diffusion? What drivers can lead the RRI paradigm towards its institutionalization? Which best practices can be shared and transferred across the continent?   We welcome submissions from different fields of academia (political science, philosophy, sociology, social psychology, anthropology and STS of course) that want to share their findings about this timely policy episode. We also welcome papers from different stakeholders engaged in this topic such as research funders, policy makers, science communicators and citizen associations.

Participants:

The drama of Responsible Research and Innovation (RRI): the ups and downs of a funding policy *Robert Braun, Institut für Höhere Studien Vienna; Erich Griessler, Institute for Advanced Studies; Magdalena Wicher, IHS (Institute for Advanced Studies, Vienna); Merve Yorulmaz, Fraunhofer ISI*

Despite the EU's repeated strong normative political position on responsibility in research and innovation (R&I), there is a history of struggle and fragility in European RRI research funding. We ask why RRI did not emerge as an influential funding instrument, despite two decades of addressing science-society interrelations with EC funding. Interviews, document- and literature analysis and Sabatier's advocacy coalition framework (1988) serve to argue that several elements are responsible for this fragility: (1) division within the RRI advocacy coalition about the definition and strategy how to promote RRI and (2) emerging concurring concepts in R&I (e.g., "de-facto RRI"). As a consequence, and (3) given a strong opposing advocacy coalition (4) no unified and strong 'policy brokers' advanced to promote the embedding of RRI in EC funding. Some of these factors not necessarily hinder an institution or instrument to gain solid foothold as a strong policy instrument. We contrast the drama of RRI with the institutionalization of the ERC as a successful implementation on several levels: (1) funding programme/budget; (2) dedicated organizational unit; (3) strong cross-cutting policy instrumentalization. We claim that, should RRI advocates develop a strong and unified policy message (instead of a 'definition'), find key policy brokers in and outside the EC and effectively connect RRI to current changes in socioeconomic conditions (sustainability, responsibility, mistrust in science etc.)

RRI can transform into an integral element of European R&I funding.

Towards Mainstreaming RRI In Education And Research - Experiences From A Dutch University *Kornelia Konrad, University of Twente; Verena Schulze Greiving, Saxion Hogeschool, University of Twente*

Mainstreaming of RRI may happen as a result of formal institutionalization in a top-down manner and in a more bottom-up process via diffusion and gradual normalization of certain RRI practices. Interaction of both is possible as well, when pressure of institutional rules leads to the development of practices that are gradually taking shape. Since a couple of years, the University of Twente has made an effort to institutionalize elements of RRI in their educational programmes by integrating obligatory courses (10 EC) aimed at 'reflection on science, technology and society' in all bachelor programmes. Some master programmes contain similar elements. The specific content and approach of these courses has been defined and evolved in negotiation and discussion between the programmes and the team providing this education (mainly philosophers, STS researchers, historians). Courses include diverse elements reaching from reflexive capacities, STS education, ethics, philosophy and history of science and technology etc., to technical students identifying and studying societal and ethical questions related to their bachelor and master research projects. In this frame we have developed analytical and practical tools that support in particular anticipation, inclusion and reflexiveness. Additionally, these tools have been applied by junior and senior researchers to various R&D projects in a bottom-up manner. In our presentation we will report and reflect on our experiences with applying the mentioned tools, to what extent we observe a mainstreaming of RRI in the organization with regard to education, research and innovation, and the role of top-down institutionalization and bottom-up normalization of practices.

Making a difference?! Nanotechnology and the quest for Responsible Innovation *Bart Walhout*

What difference has been made by Responsible Innovation? And how to advance the quest for it? While recent evaluations have lamented the failure to become structural, new policy concerns, like open science, mission oriented innovation policies or transformative change, are taking over. What does it take for (STS) scholars to engage with such 'policy fashions' and how to 'make' that difference? By drawing on more than a decade of research and participation in the governance of nanotechnologies and the discourse about Responsible Innovation, it is not difficult to show that Responsible Innovation did allow for continuing business as usual, as much as it did become part of the business. However, I will also argue that the constructed and situated nature of Responsible Innovation can be accounted for in such a way that discussions about its governance can be advanced beyond reification or reproduction and shifted towards the key challenge of institutional transformation. Acknowledging that what 'is' Responsible Innovation is always contested and that practicing 'it' never starts from scratch, allows for the appreciation of Responsible Innovation as both a quest and a social innovation. Such a dual perspective enables to better discern between Responsible Innovation as an organizing frame, responsible innovation as an objective to be realized and the (de facto) organization of responsibilities to that end. I will discuss the analytical implications of linking STS and political sciences involved in this approach and illustrate its contribution to institutional learning by practical lessons for the governance of emerging technologies.

Session Organizers:
Raúl Tabarés, TECNALIA, Basque Research and Technology Alliance (BRTA)
Vincent Blok, Wageningen University & Research
Mika Nieminen, VTT Technical Research Centre of Finland
Robert Braun, Institut für Höhere Studien Vienna
Chair:
Raúl Tabarés, TECNALIA, Basque Research and Technology Alliance (BRTA)

251. (Transnational) research infrastructures as sites of technopolitical transformations II

12:00 to 1:40 pm
virPrague: VR 21

As large-scale collaboration in research and the shared use of data and machinery continue to expand, (transnational) research infrastructures grows increasingly significant for scientific practice and research policy alike. Next to scientific relevance, research infrastructures have long articulated broader political visions of progress and collaboration. Research infrastructures therefore provide a key site for STS to study sociotechnical transformations and related political imaginations across space and time. For this open session, we invite contributions that conceptualize (transnational) research infrastructures as simultaneously epistemic and political spaces that mutually shape one another. Papers may discuss research infrastructures that include, but are not limited to, large machinery, shared databases and institutional networks. The material and institutional configuration of such infrastructures can range from large-scale, centralized laboratories to distributed networks enabling the circulation of bodies, materials and data. We invite contributions that consider a wide range of research infrastructures from disciplines as diverse as physics, biology, social sciences and humanities, as well as other fields. We are particularly interested in perspectives on the relations between, on the one hand, the perceived need to coordinate scientific facilities, infrastructures, resources and governance, and, on the other hand, questions of participation, rights and responsibilities, public legitimacy and anticipated public benefits. In what ways are research infrastructures not only expected to enhance scientific knowledge production, but also to produce, consolidate or advance political visions and social orders?

Participants:

Openness, identity, and hybridity: Evolving imaginaries of 'openness' in Europe's Knowledge and Innovation Communities (KICs), 2005-2020 *Kyriaki Papageorgiou, ESADE Business & Law School; Sebastian Michael Pfotenhauer, Technical University Munich*

Open organizations that combine heterogeneous actors, logics and forms have received increasing scholarly attention in the management literature -- partly because of their potential to generate innovative solutions through more fluid approaches, partly because of the governance challenges this openness creates. Using the European Institute for Innovation and Technology (EIT) and its network of "Knowledge and Innovation Communities" (KICs) as an in-depth case study, this paper aims to put STS analysis into conversation with management theory by extending the existing management literature on openness through two contributions. First, we how openness is a contested and dynamic phenomenon that follows shifting political rationales, actor constellations, and organizational arrangements. In particular, KICs strategically manage contested understandings of openness between public vs. private good aspects, industrial vs. academic cultures, centralized vs. decentralized structures, and national vs. multi-national borders. What is more, openness never one-dimensional, but straddles multiple, partly competing dimensions and degrees of openness, including on governance, membership, various institutional logics, accountability and participation, leading to further political contestations. Second, we link the management literature on open organizations to literature on sociotechnical imaginaries, providing additional explanatory resources for how and why certain visions and configurations of openness emerge and stabilize. We trace how a persistent narrative of openness evolved in European over time -- from the Lisbon Agenda's focus on linking universities to the market, to an integrative "Innovation Union" that maintains cohesion, to "Open Innovation, Open Science, Open to the World". This evolving narrative of openness performatively shaped the specific configuration EIT and, conversely, made EIT a reference point for the European imaginary of 'openness'. Throughout three distinct phases of the EIT initiative, the specific balances struck vary, responding to shifting visions of European innovation and integration.

Building Responsible Research and Innovation into Transnational Research Infrastructures: Opportunities and Challenges *Inga Ulnicane, De Montfort University; Simisola*

Akintoye, De Montfort University; Damian Eke, De Montfort University; William Knight, De Montfort University; George Ogoh, De Montfort University; Achim Rosemann, University of Warwick, UK; Bernd Carsten Stahl, De Montfort University

How can one build Responsible Research and Innovation (RRI) approach into transnational research infrastructure to ensure that they address the needs of diverse societies? What are associated social, political, legal, financial, and technological opportunities and challenges? This paper will explore these questions by looking at an ongoing case of the transnational research infrastructure building, namely - a shared digital infrastructure of data and services for brain research EBRAINS (European Brain ReseArch INfrastructureS). EBRAINS is developed as a successor of the EU Future and Emerging Technologies Flagship - the Human Brain Project (HBP), a large-scale 10-year (2013-2023) interdisciplinary initiative in the fields of neuroscience, computing and brain-related medicine that brings together some 500 researchers in more than 100 universities and research institutes in 20 countries. The HBP has a dedicated Ethics and Society Sub-Project which has applied RRI approach for anticipation, reflection, engagement and action across a number of ethical and societal issues such as data governance and protection, dual use and Artificial Intelligence. The authors of this paper are researchers, who are embedded in this Sub-Project, have contributed to the application of RRI approach in the HBP and are currently involved on developing good practices and policies for EBRAINS. To do that, we combine research and practice as well as interdisciplinary collaborations with neuroscientists, computer scientists and engineers within and beyond EBRAINS. By reflecting on practices developed and challenges encountered we aim to contribute to STS scholarship on political, ethical, organizational and legal aspects transnational research infrastructures, international scientific collaborations and RRI.

Connected histories: the inequality politics of "sustainability/ies" in transcontinental palm oil and soy infrastructures *Evelien de Hoop; Erik van der Vleuten, Eindhoven University of Technology*

Palm oil and soy, both major global agro-commodities that can be considered 'extractivist', have become associated with highly contested socio-ecological challenges. This paper explores and brings into conversation the histories of "(un)sustainability politics" in research seeking to understand and address these challenges at (1) palm oil production in Indonesia/Malaysia and consumption as biofuel in Europe, and (2) soy production in Brazil's Amazon and consumption by European pigs. These histories are entangled through the circulation of material agricultural commodities and knowledge. We zoom in on the multiple meanings that have come to be attributed to concept of "sustainability" and related knowledge production at and about these four localities: how do these studies conceptualize these localities' sustainability problems? What is included and left out of view through these conceptualizations? How do these conceptualizations inform the solutions proposed in the research papers analyzed? At the same time, we analyze the production of an imaginary of "sustainability" as a universal, singular concept that precludes the use of other, perhaps more appropriate and just, concepts in transnational attempts to govern these trade flows (e.g. through certification). Finally, we investigate the repercussions of such an imaginary for localities' sovereignty in addressing its socio-ecological challenges. The paper is therefore at once a contemporary history of connected sustainability and of transnational science, and specifically geared towards a topological inquiry of knowledge-making practices and sovereignty in the context of scientific and trade infrastructures.

Session Organizer:
Erik Aarden, University of Vienna
Chair:
Erik Aarden, University of Vienna

252. Non-Human Vision
12:00 to 1:40 pm
virPrague: VR 22

Participants:

Visions of Justice: Competing Perspectives in the Visual Documentation of Police-Citizen Encounters *Jessica Chapman, Carleton University*

In July 2018, the Chicago Police Department (CPD) released body cam footage following the fatal shooting of Harith Augustus, framing it as the official record of the event and suggesting, "the video speaks for itself" in depicting the officers' innocence (Lutz, 2019). These claims are consistent with the current marketing strategies employed by leading body cam manufacturers such as Axon, which uses tag lines like, "The truth from your vantage point." Axon in particular markets its products specifically to law enforcement agencies and highlights their cameras as able to 'capture truth' and, paradoxically, ensure that 'truth' is the officer's (Axon, 2020). Claims like these represent a tacit acknowledgement that rather than acting as a neutral observer, the camera takes a perspective. Competing camera visions became clear in the Augustus case when The Invisible Institute and Forensic Architecture slowed down dashcam footage of the altercation, presenting the event from a new point-of-view and undermining the official CPD narrative. Police cameras, and body cams in particular, are frequently positioned as official witnesses in instances of misconduct, suggesting their vision is more complete and reliable than their citizen counterpart – the smartphone. However, as visual criminologists have made clear, video footage tells one of many possible stories, providing a document to be replayed and dissected (Silbey, 2010). This paper argues that recognizing cameras as actors that capture particular slices of reality is fundamental to understanding the ongoing police 'war on cameras' (Wall & Linnemann, 2014) that is, at its core, a struggle between technologized visions.

Images and invisualities of (the) arXiv *Anna Munster, University of New South Wales; Adrian Mackenzie, Australian National University*

Established in 1991 and now holding over 1.6million papers, arXiv is the largest open source repository of electronic pre-print articles from the quantitative sciences, providing a platform to immediately share research. Some data methods research has been performed on its text content but the millions of images scattered across its articles have received no attention. This paper presents our current project, Re-imaging the empirical, where we created a large dataset of 10million images appearing in arXiv e-prints on the subject of machine learning. We have developed and deployed nonrepresentational and nonhuman observation techniques demanded by the scale and heterogeneity of the image set. Using machine learning methods, we open arXiv to its invisualities; that is, to transductions and transformations that operate through its images but are not of the order of the (human) visual. This paper calls for new ways of 'seeing' images both as they are operationalised by machine learning assemblages supporting AI but also by operating critically in consort with machine learning techniques. Rather than a grand theory of machine vision, it suggests how situated practices of engaging with machine learning might begin to detect how and where, in a complex machinic assemblage, novel vectors and operations are at work in nonhuman modes of 'seeing'. The paper contributes to ongoing debates in STS about the function and roles of scientific images. However, it also suggests that machine learning images, as well as images operating across machine learning assemblages and platforms, cannot be grasped via paradigms of scientific 'representation'.

Drone Vision and the Nonhuman Witnessing of War *Michael Richardson, University of New South Wales*

Drone warfare collapses the time and space of war, rendering violence at once sudden in execution and dependent on globalized networks of multi-spectrum, persistent surveillance. Its violence is largely invisible to citizens of the states that wage it, particularly in its Anglo-American form, but also depends on a different kind of invisibility to be effective. Drone warfare thus resists being witnessed, even as militarised drones equipped with a variety of sensors are themselves assemblages for witnessing. This paper argues that conceiving of witnessing as bound up with nonhuman entities can provide new and potentially transformative modes of responding to the tendency of

contemporary warfare to elude public engagement and political critique in the West. It draws on cultural, media and international relations theory to critically investigate the drone warfare apparatus via close readings of military documents, technical specifications, and artistic interventions. It argues that nonhuman vision constitutes an essential component of the drone's capacity for witnessing, as well as surveilling, knowing and killing. As such, the paper contributes a deeper conceptual and critical framework for understanding the socio-technical understanding of the drone imaginary, in conversation with new interdisciplinary research on war, media and technology by Antoine Bousquet (2019), Lisa Parks (2018), Lauren Wilcox (2017) and others. The paper closes by proposing for discussion a set of operative principles for witnessing in the context of remote war.

Vegetal Images. An experimental media archaeology of nonhuman vision *Abelardo Gil-Fournier, FAMU, Prague; Jussi Parikka, University of Southampton and FAMU, Prague*

In this paper we discuss our work-in-progress research on "vegetal images" as an entry point to both an alternative history of visual culture and photography and as an experimental media archaeology of nonhuman vision. While contemporary machine vision and AI technologies and discourses have the potential to challenge anthropocentric modes of vision and sensing, we address a longer genealogy of informational, energetic and material forms of "seeing" that emerge in contexts of plant research since approximately 1850s. Hence, besides important work on alternative perceptual capacities of animal life, we turn to plants but not only in the broader philosophical sense of last years of discussions (see e.g. Marder 2013; Coccia 2018; Aloi 2019) but as they emerge in contexts of research in modern history of sciences, experimental practices and modelling. Hence, from end-of-19th century plant physiologists such as Julius Wiesner to contemporary precision farming in agriculture, we argue that the agricultural and the photosynthetic contexts of perception and capture of light lead into important links between media and technology considering also current forms of modelling of growth and evolution (e.g. in AI technologies). Hence, mobilizing work from Giuliana Bruno's (2014) conceptualisation of the "surface" of the image to for example the work on the notion of the invisual by Mackenzie and Munster (2019) we aim to elaborate the key ideas from the research that sits as part of the Operational Images and Visual Culture: Media Archaeological Investigations project (Czech Science Foundation project 19-26865X, at FAMU, Academy of Performing Arts, Prague).

Keeping Autonomous Driving Alive: An Ethnography of Visions, Masculinity & Fragility *Goede Both, HU Berlin*

My ethnography (Both 2020, in Press) studies the relationships between roboticists and computationally enhanced cars enmeshed with contested visions. Between June 2012 and November 2015, I conducted fieldwork in a University based research project in Germany. My book demonstrates that care, narrative, and masculinity constitute often overlooked but crucial dimensions of autonomous driving. Situated within studies of maintenance (e.g. Orr 1996; Cohn 2013; Mellström 2013; Jackson 2014) and studies of science communication (Davies/Horst 2015), I analyze how autonomous driving is maintained both symbolically and materially and how masculinity is implicated both as a resource and a practice. In the hands of roboticists invested in autonomous driving, the ambivalence and fragility of technological visions, video demonstrations, and street trials becomes salient. In my contribution to the panel, I focus on the position of the "safety driver" by analyzing the narratives and practices of taking care of a so-called self-driving car in everyday city traffic.

Session Organizer:
Adam Fish, University of New South Wales
Chair:
Adam Fish, University of New South Wales

253. Latin America meet East Asia: future initiatives
1:40 to 3:00 pm
virPrague: VR 01

In this session, the editorial teams of East Asian Science, Technology and Society and of Tapuya: Latin American Science, Technology and Society will meet to discuss further collaboration between these journals and their scholarly communities. Academics interested in suggesting projects to bridge these regions and their scholars are welcome.
Session Organizer:
Leandro Rodriguez Medina, Universidad de las Americas Puebla
Chair:
Wen-Hua Kuo, National Yang-Ming University

254. Publishing a book - a guide for ECRs - Exhibits Thurs A
1:40 to 3:00 pm
virPrague: VR 03
Stop by the Emerald stand to hear from Jen McCall, Senior Publisher responsible for book commissioning. With experience working for a range academic publishers Jen will give a short presentation aimed at those new to book publishing including: things to think about when approaching publishers; how a book should differ from your PhD thesis; top tips for completing a publisher's proposal form, and an overview of the process of a book from proposal to publication.
Session Organizer:
Jen McCall, Emerald Publishing Ltd
Chair:
Jen McCall, Emerald Publishing Ltd

255. Journal editors' meeting: Science & Technology Studies
1:40 to 3:00 pm
virPrague: VR 04
This meeting is for the editors of Science & Technology Studies journal.
Session Organizer:
Salla Sariola, University of Helsinki
Chair:
Heta Tarkkala, University of Eastern Finland

256. STS-MIGTEC network meeting
1:40 to 3:00 pm
virPrague: VR 05
Join the STS-MIGTEC network, an independent network of scholars at the intersection of STS and critical migration, security and border studies! It seeks to bring researchers from different disciplines and around the world together and to initiate scientific exchange for relevant knowledge production. The meeting is open to all conference participants and serves the purposes to introduce the network's vision, activities and organization of the network, and to share news such as recent publications and projects.
Session Organizers:
Nina Amelung
Silvan Pollozek, MCTS, Technical University of Munich
Chair:
Nina Amelung

257. Affects, emotions, and feelings in data, analysis, and narrative - follow-up discussion
1:40 to 3:00 pm
virPrague: VR 08
This discussion will include speakers from the session under the same title: Title: I don't have one. Writing affect out of (and back into?) writing *Cristian Ghergu (Department of Health, Ethics & Society, Research School for Public Health and Primary Care, Universi - c.ghergu@maastrichtuniversity.nl) Affective spaces of doing sameness and difference together *Line Hillersdal (Department of Anthropology, University of Copenhagen - line.hillersdal@anthro.ku.dk), Birgitte Bruun (Copenhagen Academy for Medical Education and Simulation - birgitte.bruun@regionh.dk) Feeling Techniques: feelings done in practice, words and drawings *Ulrike Scholtes (UVA - u.scholtes@uva.nl) So Fracking Emotional: Using Affective Practice to Explore the Politics of Emotion in a Sociotechnical Controversy *Stephen Hughes (Science and Technology Studies, University College London - stephen.hughes@ucl.ac.uk) Doing collaboration in societal innovations: Affects, positionalities, and affective labor *Gili Yaron (Health Services Research, Faculty of Health, Medicine and Life Sciences, University Maastricht - g.yaron@maastrichtuniversity.nl)

Session Organizer:

Mareike Smolka, Faculty of Arts and Social Sciences, Maastricht University

Chair:

Mareike Smolka, Faculty of Arts and Social Sciences, Maastricht University

258. Bristol University Press Pre-launch Webinar: Slow Computing: Why We Need Balanced Digital Lives

1:40 to 3:00 pm
virPrague: VR 23

Meet Bristol University Press author Rob Kitchin ahead of the publication of his book, Slow Computing, which is co-authored by Alistair Fraser. Drawing on the ideas of the 'slow movement', Slow Computing sets out numerous practical and political means to take back control and counter the more pernicious effects of living digital lives, especially during the COVID-19 pandemic times. Pre-order Slow Computing with 50% discount during the 4S EASST. Use code EASST4S at the check-out at: bristoluniversitypress.co.uk/slow-computing

Session Organizers:

Bahar Muller, Bristol University Press
Alistair Fraser, Maynooth University

Chair:

Rob Kitchin, Maynooth University

259. stsing - doing STS in the German research landscape

1:40 to 3:00 pm
virPrague: VR 24

We wanna meet! STS is growing in Germany. A range of dispersed networks and organisations contributes to infrastructuring conversations between scholars doing STS research and teaching within or on Germany. We invite you to a conversation about how to further design our mutual engagement. We expect a range of harmonies, alliances and frictions to be voiced and recognised. That might offer generative food for thought and discussion to intensify relations. Looking forward to meeting you!

Session Organizer:

Ingmar Lippert, IT University of Copenhagen

Chairs:

Catharina Lueder, Ludwig-Maximilians-Universität Munich
Estrid Sørensen, Ruhr University Bochum

260. SUBPLENARY: The temporal fabric of technoscientific worlds

3:00 to 4:40 pm
virPrague: VR 00

Timing matters! A seemingly straight forward assertion. Yes, for sure, timing matters! But how do we/should we understand the very notion of timing. Once we move beyond the dominant understanding of time as expressed through calendars and clock-time, we start to encounter time in bewildering diverse forms – as tempo, rhythm, duration, acceleration, waiting, sequence, synchronicity and many more. Time is neither given, nor universal or invariable. Time is enacted in a variety of ways; it is performed through practices. It is the entanglement of all these diverse forms of time that together make up the temporal fabric of contemporary technoscientific worlds and of our lives within them. This draws our attention to the practices of weaving different times and temporal orders together, and sensitizes us to the fact that specific temporal (non)alignments can create collateral damages while each and any single form of time might to a certain degree seem reasonable and acceptable. But how to capture these multiple, invisible forms of time, these processes that take place below the surface and can have massive repercussions? We thus will have to ask who has the power to do time in specific ways and not in others. Where are the places where time gets done and how does it manage to spill over to other places? Who can control whose temporal resources? For whom does time matter and in which ways? These are but a few questions we will address in this panel. This panel will move into three very different areas to explore how timing matters – to the world where information and communication technologies are important actors in making time, to the pandemic and how time matters in multiple ways and, finally, to academia itself.

Session Organizer:

Tereza Stockelova, Institute of Sociology of the Czech

Academy of Sciences

Chair:

Ulrike Felt, University of Vienna, Department of Science and Technology Studies

Discussants:

Carlo Caduff, King's College London
Filip Vostal, Institute of Philosophy of the Czech Academy of Sciences
Judy Wajcman, LSE

261. Global Imaginaries of Precision Science 1: Diversity, Inclusion and Justice

3:00 to 4:40 pm
virPrague: VR 01

Precision science focuses on individual and group differences as a path towards greater accuracy, efficacy and efficiency. This panel focuses on the sociotechnical imaginaries of the promise of precision that fuel the increasingly global infrastructure for collecting personal data and biospecimens. This promise has been motivated by, and operationalized as, the quest for greater inclusion and diversity in precision medicine research. Precision science has extended to other domains such as the genetics of socio-behavioral traits, such as criminality and educational attainment. This panel calls for papers that interrogate the constituent concepts, practices, and discourses of precision science - its actors, institutions, networks, values and cultures - and its applications and uptake in a wide range of domains, including medicine, criminal justice, and social policy. We are interested in papers that examine forms of knowledge and practices in precision science, their impacts on emerging subjectivities and data-driven publics, and the development of frameworks on justice, ethics and inclusion.

Participants:

Precision in practice: Negotiating diversity and inclusion in precision medicine research *Sandra Soo-Jin Lee, Columbia University; Emily Vasquez, Columbia University; Melanie Jeske, University of California, San Francisco; Michael Bentz, Columbia University; Stephanie Malia Fullerton, University of Washington; Aliya Saperstein, Stanford University; Janet K. Shim, University of California, San Francisco*

The promise of 'precision' in biomedical research drives and is reinforced by a now widely recognized need to enhance diversity in research participation. That is, precision is seen as both cause and consequence — a critical rationale for pursuing diversity in biomedical research, and an outcome of that pursuit. This paper describes findings from our multi-sited study of U.S.-based precision medicine research (PMR) efforts that seek to include individuals from groups underrepresented in biomedical research. Drawing on data from ethnographic observation of PMR study activities, in-depth interviews with investigators, and a review of funding announcements and other documents, this paper seeks to unpack how understandings of "precision" are negotiated in the context of specific research practices aimed at increasing diversity and implementing inclusion in recruitment, data collection, and data sharing, analysis and interpretation. In tension with the fundamental promise of precision medicine, our findings indicate key aspects of imprecision emerging in practice, linked in particular to the interpretive flexibility and multivalent nature of "diversity" itself. We discuss the ways in which PMR stakeholders at times work to define and implement specific meanings of diversity that are scientifically and socially significant to them, and at other times, leave those definitions of diversity conceptually indeterminate and open to interpretation. We also show how interpretations of diversity can shift over the life-course of studies and discuss how investigators balance inclusion goals alongside other research priorities. Notions of precision are negotiated and flexed as they encounter on-the-ground realities of uncertainty and imprecision.

Categories of Diversity in Precision Medicine and Epidemiology – Contrasting Germany and the US *Andrea zur Nieden, Institute of Sociology, University of Freiburg, Germany; Isabelle Bartram, Institut of Sociology, University of Freiburg, Germany*

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The proposed paper explores how the quest for greater inclusion and diversity of historically underrepresented groups in precision medicine research is implemented differently in different national contexts. Drawing on fieldwork in Germany, it will especially focus on the differences between clinical/epidemiological research and health politics in the US and Germany: in the US, political efforts to even out racial/ethnic (and gender) health inequalities have e.g. led to the inclusion of "all relevant groups" in clinical and epidemiological studies, with the underlying notion that these social identities correspond to relatively distinct kinds of biological bodies (Epstein). The US "All of Us" Research Program is an example for such tendencies, when looking for links between disease and ethnic/population genetic variation. In Germany, a renaissance of medical and epidemiological (and other life science) research into human diversity is only in the beginning, but an emerging field. But different from the US and partly because of the NS history, we find an "absent presence" of race (M'charek et al): instead of 'race' or 'ethnicity', categories that seem less politically problematic are used, such as "Migrationshintergrund" (migrant background), that still imply aspects of race. How are precision medicine diversity knowledge and practices produced in these nationally diverse ways?

"SweGen" – Ethno-national fantasies of Genomic Medicine Sweden *Anna Bredström, Linköping University, Institute for Research on Migration, Ethnicity and Society; Shai Mulinari, Lund University*

"Paving the way for improved diagnostics, care and treatment", Genomic Medicine Sweden, launched in 2019, is a national enterprise that gathers key actors including health care, patient organizations, clinical research and life-science industry. Its aim is to implement precision medicine into clinical settings, an ambition to which, proponents argue, Sweden is particularly well suited as it has a solid infrastructure with a well-developed patient registry and a comprehensive health care system. Correspondingly, the goal for the Swedish government is that Sweden should be a leading country in the development of precision medicine. Our paper explores the discourse and practice of precision medicine from a critical vantage point, focusing in particular on how national and ethnic boundaries are conceived and put into practice. Our analysis focuses on two cases: First, we analyze how genomic ancestry, nation and ethnicity is enacted in the whole genome data resource, "SweGen", published in 2017. Second, we analyze to what extent, and in what ways, genomic ancestry, nation and ethnicity is articulated within the Genomic Medicine Sweden-initiative. By comparing the two we seek to trace the national and ethnic boundaries of precision medicine and relate our findings to the ongoing discussion within STS on how race/ ethnicity is being reconfigured in contemporary biomedicine.

The Uses of Diversity: Managing Race and Representation in Law, Politics, and the Biosciences. *Jonathan Kahn, Northeastern University*

There is a deep tension at the heart of modern genomic research and practice. One the one hand, with the completion of the Human Genome Project came the promise that scientific advancement had now proven that there is only one race, the human race. One the other hand, grounded in the Human Genome Diversity Project of the 1990s, is an enduring concern with genetic variation that might correlate with racial and ethnic categories. This tension shapes how we conceptualize the nature of race, approach very real problems of health disparities, and formulate related regulatory directives. Recently, this tension has become manifest in the shift from "personalized" to "precision" medicine and the inauguration of the massive "All of Us" initiative from the NIH aiming to enroll one million people into a genomic data base. This paper will explore the dynamics of how this shift occurred and explore the broader ethical, legal, and social implications of reintroducing race (now as a "subpopulation") at the forefront of biomedical advancement. In the move from "personal" to "precision" medicine, race is being hard-wired into massive data bases as a basic and enduring category for structuring biomedical research and practice. Though clearly a well-intentioned effort to address issues of racial equity and representation in genomics, such practices run the risk of reinvigorating dangerous and inaccurate conceptions of race as biological in a manner that could both undermine attempts to address persistent race-based health disparities and fuel pernicious racist ideologies

Session Organizers:
  Sandra Soo-Jin Lee, Columbia University
  Janet K. Shim, University of California, San Francisco
Chair:
  Janet K. Shim, University of California, San Francisco

262. Experimenting With Inclusive Technologies: Saying No By Saying Let's II
3:00 to 4:40 pm
virPrague: VR 02

The role of technologies in producing exclusions has long been a topic for scholarship in STS. Rather than merely studying successful technologies – through what Leigh Star called the 'executive model' of ANT – shifting the focus to their exclusions has given rise to critical scholarship of the marginalisations produced ('saying no' to exclusions), but also to feminist attempts to develop inclusive alternatives ('saying no by saying yes'). Inspired by such work, this session focuses on the experimental involvement of STS scholars in the development of inclusive technologies. We aim to combine the optimistic search for inclusive technologies (as a way to combat the 'powerlessness' mentioned in the program theme) with an experimental and speculative approach, sensitive to the complexities of doing inclusion (our balancing antidote to the 'feelings of urgency' the theme mentions). We call this experimental involvement in the production of inclusive technologies 'saying no by saying let's'. We welcome contributions on – but not limited to – the development of technologies for disability inclusive employment, for digital inclusion of vulnerable groups in digitizing societies, for reconfiguring gender norms, and for technologically enhancing participatory methods themselves (participatory vlogs, data-driven participation, etc.). Questions can relate to: How is technological inclusion enacted? What does inclusion thereby become? And which novel exclusions result from – or even become necessary for – this version of inclusive technology? Contributions on inspiring, as well as failed or ambiguous attempts at developing inclusive technologies are equally welcome.

Participants:

Scripting Inclusive Technologies *Mike Grijseels, Athena Institute, VU University, Amsterdam; Teun Zuiderent-Jerak, Athena Institute, VU Amsterdam; Barbara Regeer*

How can technology contribute to inclusive employment for people with disabilities? We explore this question in 3 experimental pilots; one speech-to-text transcription technology for deaf employees, one image database app for people with mental- or cognitive disabilities and one exoskeleton for people with low back pain and mental disabilities. How inclusion is done in these pilots varies from inclusion as a prosthetic, a fix, to inclusion as transformative. Each human/non-human configuration produces different inclusions and exclusions. In a transdisciplinary, participatory 'learning evaluation' based on the reflexive monitoring in action approach, we revive the notion of scripts (Akrich 1992) to explore how we become part of the de- and re-scripting of technologies for inclusive employment. We find that technology as prosthetic can end up being more transformative than envisioned; laying bare existing exclusions, then acting as a starting place for conversations on inclusivity and ending up creating a more inclusive workplace and - technology. Technology that is mobilized as transformative, by contrast, meets more resistance at the workplace, opening up a discussion on general workplace culture instead of inclusivity for people with disabilities. Our study thereby illustrates how scripted technologies do disability differently under different circumstances and how prosthetic scripts, defied by disability studies, and transformative scripts, are perhaps best judged by their consequences.   This research contributes to debates on inclusion or exclusion through technologies, inclusion in participatory methods and the non-prosthetic relation between technology and disability. It also explores the possibilities of using ANT approaches to transform diversity and inclusion.

Linking Citizens and Social Workers: a Case study of a Digital

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Platform for Work inclusion *Anne Wullum Aasback, Norwegian University of Science and Technology (NTNU)*

The Norwegian Labor and welfare administration (Nav) consist of the state Labor and Welfare Service as well as the municipal welfare agencies. Over the last decade there has been a rapid development of digital services to relieve employees of bureaucratic chores related to case management. Automated solutions try to prioritize clients labeled by the systems algorithms to need more thoroughly guidance and support to be accepted into the labor marked. Digital application processes and case management systems are developed to promote effectiveness. The primary argument for digitalization is to strengthen the function of activation and work inclusion of vulnerable and marginalized groups into the labor market. The digital activity plan (DAP) is one of these efforts. It's a platform that facilitate communication between clients and their designated caseworker. By setting individual goals and defining activities necessary to achieve the goal DAP aims to promote empowerment and assist the client towards inclusion into the labor marked. In the presentation findings from ethnographic observations at NAV offices together with interviews of different stakeholders will be presented. The primary focus is DAP and how the platform both emphasizes the political intentions, and changes the practices of the street-level-bureaucracy in ways not easily predicted. Important questions to be discussed are; How does it affect the roles of the professional and the client? What impact does it have on the power relations? Which new forms of knowledge and discretionary considerations are called for due to the new technology?

Makeathons As Research Method: Experimenting With 3D-Printing In Prosthetics *David Seibt, Technical University of Berlin*

In this paper I present participatory Makeathons as an experimental method for studying, as well as intervening in, the development of inclusive technologies, such as prosthetic limbs. Makeathons, as operationalized here, are experimental in that they are conducted under controlled conditions, for example in terms of participants, methodology, and tools, while yielding open-ended results in forms including documented interactions, drawings, and material prototypes. Makeathons are sites of inclusive technology development insofar as they bring together the diverse actors of a given industry within the same setting and moderate their interaction based on user centered design principles. Theoretically, the approach weaves together concepts from participatory design (Simonsen and Robertson, 2012) and STS studies of the co-construction of users and technology (Hyysalo et al., 2016). Empirically, the paper is based on insights from organizing, conducting, and analyzing two Makeathons in the field of artificial limbs. These four-day events operationalized the methodical ideas presented here by bringing together users, engineers, prosthetists, and 3D-printing experts, with STS and design researchers in four-day attempts at prototyping prosthetic technology. Based on these initial trials I will argue that Makeathons add to the existing STS toolkit in at least two ways. First, they combine the idea of well-structured data collection with the idea of experimental intervention based on STS and design theory. Second, they do not only provide a new tool for STS scholars, but actually produce rewarding results for all actors involved, which range from research papers, to prototypes, to subsequent collaborations between users and industry.

Rethinking personhood and inclusive technologies: Biomusic as relational effect *Rossio Motta-Ochoa, McGill University; Matthew Sample, Institut de recherches cliniques de Montréal; Annette Leibing, University of Montreal; Eric Racine, Institut De Recherches Cliniques De Montréal; Stefanie Blain-Moraes, McGill University*

Many STS scholars study technologies and materiality as 'relational effect'. We argue that more attention needs to be paid to technologies as a mediating device for human-human becoming. Intercorporeality through technologies will be discussed in this talk by exploring the intersections of biomusic and personhood in individuals with advanced dementia and their carers. Biomusic is an emerging technology that translates emotionally-salient physiological signals into sound/musical outputs. Previous studies have shown that by providing audible evidence of changing physiological states, biomusic has the potential to reveal personhood in individuals with minimal communicative abilities (Blain & McKeever, 2011; Blain-Moraes et al. 2013), fostering their inclusion. The present study was conducted in the context of participatory design of assistive technology, which provided individuals with dementia and their carers with biomusic devices. We conducted a 12-month ethnography in a community-based organization of a Canadian city wherein we traced the assemblages that affect and reveal social/embodied features of individuals with dementia. We conducted interviews and participant observations in 5 assemblages of care (Lopez, 2015) constituted by the individuals with dementia, their proximal and distal carers, and other actors (e.g. friends, clinical staff, institutions, medical technologies). Our preliminary results showed that in most assemblages, biomusic enabled a relational effect that generated moments in which caregivers and friends attributed personhood to individuals with dementia. This pushes us to rethink personhood of people with dementia as a condition that, far from being individual and continuous in time, is constituted by intermittent moments of interrelatedness between these persons and other humans, which can be mediated by inclusive technologies.

Session Organizer:

Teun Zuiderent-Jerak, Athena Institute, VU Amsterdam

Chair:

Teun Zuiderent-Jerak, Athena Institute, VU Amsterdam

263. Windows of Opportunity?: Critical Understanding of ELSI/ELSA at Different Moments

3:00 to 4:40 pm
virPrague: VR 03

This panel explores how differently the idea of ethical, legal and social implications/aspects (ELSI/ELSA) is conceived at different moments and how this difference shapes the way in which scholars of social sciences and humanities collaborate with scientists and policymakers. While the mode of engaging with ELSI/ELSA of science and technology, that was put forward as part of the Human Genome Project, has been criticized, its legacy is still alive within some science and science policy communities, and in some instances it presents scholars of social sciences and humanities with an opportunity to work closely with scientists and policymakers. The challenge associated with taking up such an opportunity, however, is that the nature or the rule of collaboration tends to be defined by the scientists and policymakers, although it may be negotiated once the collaboration begins and through scholars of social sciences and humanities moving between different roles and 'playing the Chameleon' (Balmer et al. 2015). This session consists of four papers, each of which examines different modes of ELSI/ELSA engagement by social scientists across different areas of science and technology in Japan. As the government places increased emphasis on 'ELSI' concerns in its science policy recently, it is important for us to cross-examine the modes of ELSI engagement we observed and/or are involved. We hope to have discussion particularly on the limit of engagement enabled by the term ELSI and about whether a newer concept like RRI opens up an opportunity for more promising social scientific engagement with science and technology.

Participants:

The transition of governmental ethical regulations on genome research in Japan *Jusaku Minari, Kyoto University*

Many countries including the UK, US, and Japan are promoting national genomic medicine initiatives. Genome-wide association analysis and genome-wide sequencing analysis have improved the understanding and enabled the application of individual genomic information in health and medical care in a more precise manner. Along with this scientific progress, ethical and legal frameworks have been carefully considered, set, and, if needed, modified in each country. Japan set two ethical regulations governing human genome research in the past. One is the 2000 Fundamental Principles of Research on the Human Genome set by the Bioethics Committee of the Council for Science and Technology. The other is specific governmental guidelines, named as the Ethical Guidelines for Human Genome/Gene Analysis Research set by three ministries, which was originally established based on the fundamental principles. Currently, the guidelines are being significantly reviewed to accommodate and

merge them with other medical research guidelines. This study shows the key ethical aspects of the current revision process. These revisions involve the use of online consent, reconsideration of ethical review systems, and handling of individual research results for research participants such as patients and healthy individuals. The study also mentions the nature of public involvement in revising the guidelines. Given the remarkable advancements in genome research and genomic medicine, considering the transition of ethical and legal regulations in each country can be useful for exploring internationally harmonized research regulations and governance models.

Not Ready Yet: A New Model of Public Dis-Engagement?
Koichi Mikami, Keio University

There was a time when the discrepancy between opinions of so-called experts and views of the public was explained away by the lack of scientific literacy on the side of the public and the effort was made to enable the public to think like experts through science education. This kind of attitude to belittle public voices has been criticized as 'the deficit model,' and it is now increasingly accepted that how publics understand science and technology is just as important as how experts explain what they are in making societal decision about their governance. I argue, however, that another model which warrants scientific experts and policymakers not listening to public voices in discussing about the governance of science and technology is emerging recently. I call this model 'the immaturity model' and explain it using the case of human germline genome editing in this paper. A notable feature of this new model is that it discredits the current state of science and technology and defers the discussion on their ethical, legal and social aspects, rather than blaming for the public's lack of knowledge required to partake in such a discussion. The problem is not only that the model rests on the assumed separation of the ethical, legal and social aspects from technical ones but also that it narrows down the window of opportunity that scholars of social sciences and humanities can collaborate with scientists and policymakers.

Collaborative Development of Responsible AI Governance
Arisa Ema

Discussions of the ethical, legal and social implications of artificial intelligence (AI) are taking place in the government, industry, academia, and in public in Japan as well as abroad. Leading figures in the field who engage in such discussions attempt to build 'ideal' partnerships on AI. However, such collaborative schemes require close investigation with respect to the sectors and countries involved. The collaboration style is various according to the countries. In this study, I will mainly focus on the cases in Japan that pushed the discussion on AI ethics and governance with a comparison with other countries. Japan started a discussion on AI governance and ethics quite early since 2016. The Ministry of Internal Affairs and Communications (MIC) organized a committee, to develop the AI R&D Guidelines culminating in the Social Principles of Human-Centric AI released by the Cabinet Secretariat in February 2019. Along with this governmental initiative, the industries in Japan also begun discussion on AI governance and also, two incidents in 2019 caught the public attention to AI fairness issues. In response to these incidents, three machine learning academic communities released the "Statement on Machine Learning and Fairness." In the discussion, I would like to raise how SSH researchers and AI multistakeholder's communities interacted and the unique perspective of Japan compared to other countries.

Practice for RRI: a case of Real-Time Technology Assessment of emerging science *Ryuma Shineha, Osaka Univerisity; Ken Kawamura, Osaka Univerisity; Daisuke Yoshinaga, Waseda University; Go Yoshizawa, Oslo Metropolitan University; Mikihito Tanaka, Waseda University*

This paper will show the new analytical approach c to extract agendas and discuss for Ethical, Legal, and Social Implications (ELSI) and Responsible Research & Innovation (RRI) concerning emerging science and technology. This approach was constructed by three steps. The first is to extract agendas through systematic analysis combined with media analysis and horizon scanning. The second is to construct communication platforms for RRI agendas extracted from first steps. This step includes dialogues practice between various actors such as scientists, STS Scholars, policy makers, journalist, and the public. In addition, new communication trials for RRI of emerging science and technology -subject of discussion co-creation platform (NutShell)- will be discusssed. Through examination of our trials, we would like to formulate a "Real-Time Technology Assessment (RTTA)" system to swiftly focus social discussions in the relevant field. Regarding such formulation of subjects of discussion using the RTTA system, by extracting the subjects of discussion from actual practice a new agenda building process concerning ELSI and how feedback of the knowledge to the researchers at field sites will be consideration.

A high school curriculum on the ethics of AI *Renato Russo*

The new, networked world requires an education that enables not only the production of tech devices and software but also guidance through new ethical dilemmas that come with them. To address this problem, public schools need curricula that prepare students to place human values as a central piece while developing technological artifacts and to appreciate their role as tech producers. This paper reports on the process of constructing a pilot curriculum for 9th and 10th grades at a public school district in California, USA. This curriculum works as the ethics-driven half of a two-folded, 4-week-long program of study that also includes a introduction to basic AI and machine learning development. The curriculum follows John Dewey's ideas of education as an "experience continuum," therefore, it prompts students to reflect on their personal exposure to technology both as consumers and creators. It also acknowledges the empacipatory role of education. First, students examine existing AI codes of conduct and juxtapose them with case studies. Next, the class reflects on their first AI project and elaborates its code of conduct, which will guide its second AI project. Finally, students apply their code of conduct to analyze peers' projects. By the end of the unit, students are expected to develop an understanding (i) of the broader societal effects of AI and Machine Learning by reflecting on their own experiences; (ii) that software designers and developers have a role in preventing the misuse of technology; and (iii) how machine learning can affect people's lives.

Session Organizer:
Koichi Mikami, Keio University
Chair:
Koichi Mikami, Keio University
Discussants:
Samuel A Weiss Evans
Robert David Jonathan Smith, University of Edinburgh

264. Resources for renewable energies
3:00 to 4:40 pm
virPrague: VR 04

FLIPPED Session This panel brings together international scholars whose work addresses technologies, practices, and forms of knowledge related to the Earth's subsurface. The topics of the panel link in manifold ways to the conference theme, notably to questions of continuities and discontinuities and material legacies that built into sociotechnical infrastructures and those of processes of localizing geopolitical, economic and epistemic globalization. The papers within this session focus on questions related to the renewable energy-mineral nexus. Technologies for renewable energy—such as wind and solar electricity, storage systems, and electric vehicles—require a diversity of minerals, raising questions for STS scholars about ongoing and potentially intensified dependence on extractive industries.

Participants:

Equilibrium States and the Lithium Fix *Andrea Marston, Rutgers University, New Brunswick*

Lithium is a soft silvery element found primarily in salty compounds left behind by ancient oceans and briny lake bottoms. Since the 1800s, lithium has been used to stabilize the moods of people suffering from bipolar disorder and schizophrenia – or hysteria, as these apparently inexplicable (and highly gendered) mental conditions were known. Lithium is still used to treat such conditions, though no one knows how, exactly, it works. More

recently, lithium has been framed as the solution to stabilizing a climate thrown out of equilibrium by greenhouse gas emissions. Packed into lithium batteries, this unassuming mineral promises to supply the energy necessary to transition away from fossil fuels. In South America, this promise is fueling an extractive frenzy in the "lithium triangle," at the borders between Bolivia, Chile, and Argentina, as each country tries to avoid the pitfalls of unequal global exchange. This paper focuses on the material qualities of lithium and the notion of equilibrium – mental, environmental, and economic. Lithium's physical and chemical properties make it a potential "fix" for many kinds of instability. By charting the movement of lithium in the earth, through the body, and around the world, this paper explores how the ideal of equilibrium – as a state of being that can be achieved through geo-biological engineering – has long been used to discipline both unruly bodies and extractive frontiers. It concludes by reflecting on the very real dangers of miscalculated dosages, when both patients and places become sacrifices to the equilibrium gods.

Extracting Lithium: In and on the Uyuni Salt Flat with Bolivian Scientists *Jonas Köppel, The Graduate Institute Geneva*

In this paper I will present ethnographic research with scientists developing industrial scale processes to extract lithium from the Uyuni salt flat in Bolivia. Lithium is in growing global demand due to proliferating batteries that increasingly power anything from bikes to buses for a future beyond fossil fuel. Much of the cheaply extractable lithium on earth is found in salt flats, closed basins where a plethora of minerals has accumulated over millennia through water flows and solar evaporation. Today, these mineral riches are found in brine, aqueous solutions hidden from sight under the surface of desert-like landscapes. People living nearby have long relied on the Uyuni salt flat to provide a livelihood, but only recently have other people begun to use the salt flat's subsurface. Doing so requires a different set of knowledge and technologies, raising unprecedented challenges and causing unpredictable outcomes. This paper will take a close look at those who are commissioned to resolve these challenges and whose practices enable these outcomes. They are mainly Bolivian chemists, chemical engineers, and metallurgists who bring to bear their knowledge and skills, acquired in different areas, on this novel territory of expertise. How do they adapt to this territory? How do they grasp its complexity, while breaking it down using the tools of science? How do their imagination and practice change the salt flat's place in Bolivian society? Answering these questions, I argue, is crucial to comprehend to intricate political, ecological, and ethical challenges of global lithium extraction and use.

Extracting The Light: Sensing Lithium Through Landsat Imagery In Bolivia's Salar De Uyuni, 1972 - 1980 *Caroline Celeste White-Nockleby, Massachusetts Institute for Technology (MIT)*

The histories of lithium and remote sensing are intertwined. Once an element without legible economic value, in the past two decades the metal has become a principle protagonist in sustainability plans worldwide. Today, NASA satellites image a bird's-eye timeline of a national effort to commercialize lithium in Bolivia's Uyuni Salt Flat, where an estimated fifteen percent of global reserves remain dissolved in the semi-subterranean brine [1]. But nearly fifty years ago, it was analysis of imagery from the newly-launched Landsat satellite, a Cold War-era project in "planetary" apprehension, that first sensed Uyuni's lithium [2]. This discovery initiated multilateral negotiations regarding control of the computing mechanisms needed to sort, standardize, and commodify brine – and to reposition Uyuni as an "extractive frontier" [3]. In this paper, I use archival materials to detail the "processes of translation" that occurred as satellite technologies moved between Bolivian remote sensing initiatives, U.S. agencies, and other organizations [4]. Situating lithium as a "multiplicity", I trace its dialectical relationship with the lenses that mediate it from a distance [5]. [1] NASA, "Lithium Harvesting at Salar de Uyuni," April 26, 2019, https://earthobservatory.nasa.gov/images/144976/lithium-harvesting-at-salar-de-uyuni. [2] For "planetary" modalities, see, e.g., Joseph Masco, "Bad Weather: On Planetary Crisis," Social

Studies of Science 40, no. 1 (2010): 7–40. [3] E.g. Anna Lowenhaupt Tsing, "Natural Resources and Capitalist Frontiers," Economic and Political Weekly, 2003, 5100–5106. [4] E.g. Fabian Prieto-Nanez, "Postcolonial Histories of Computing," IEEE Annals of the History of Computing 38, no. 2 (2016): 2–4. [5] E.g. Annemarie Mol, The Body Multiple: Ontology in Medical Practice (Duke University Press, 2002).

Session Organizers:
Alena Bleicher, Helmholtz Centre for Environmental Research - UFZ, GmbH
Roopali Phadke, Macalester College
Abby Kinchy, Rensselaer Polytechnic Institute

Chair:
Roopali Phadke, Macalester College

265. STS for a post-truth age: comparative dialogues on reflexivity (I)
3:00 to 4:40 pm
virPrague: VR 05
Participants:

Living in (post)Truth in the Anthropocene *Michael J Kilburn, Endicott College*

In his first New Year's address as president of postCommunist Czechoslovakia, Vaclav Havel recounted the view from his plane the presidential plane of a ruined environmental and cultural landscape, an analogue to the "contaminated moral atmosphere" bequeathed by decades of misguided Communist technocracy. Ecological metaphors abound in his work, functioning to counterpose the organic "aims of life" with the alienating, destructive, and untethered "aims of the system." The post-totalitarian regimes of East central Europe were, he wrote, "the avant-garde of a global crisis of civilization." Indeed, the democratic movement that brought Havel to power in 1989 had ecological roots. In "The Power of the Powerless," he had proposed that resistance to the regime be reflexively grounded in a moral posture of "Living in Truth," and that Truth itself was embodied in nature. Nothing illustrates his theoretical construct of the "pre-political lifeworld" more intimately than the biosphere, and it is no coincidence that the first protests against the Communist regime were driven by desperate environmental conditions in northern Bohemia. 30 years after the dawn of democratic politics in Czechoslovakia, as the conditions of the Anthropocene advance and reveal ever more clearly the contradictions and consequences of the "automatism of the system," this paper revisits Havel's writing for clues about the political implications of the current ecological crisis. The location and timing of the 2020 EASST4S conference matter in reframing the relationship between environmental and human rights, and the thin line between the post-totalitarian and the post-apocalyptic.

Challenging Disinformation in the Platform Age *Erkan Saka, İstanbul Bilgi University*

This presentation is an attempt to rethink the ways how STS scholars can be part of a struggle against widespread disinformation during the age of platforms. By platforms, I basically mean major social media networks like Facebook. The crucial issue is that these platforms are engagement-driven; their business models are mostly based on this very fact. Thus despite their high-level administrators' discourse against disinformation, they seem to be hesitant to act radically to curb "fake news", "trolls" and other related phenomena. However, this is not the only source and even if they move against these agents, the scenery will be more complex and it will be harder to find what truth or objectivity is. In the presentation, I would like to lay down what kinds of socio-technical attempts are made, to demonstrate how complicated the outcomes may be and to speculate how STS scholarship can help to alleviate some of the hardships in the struggle against disinformation

Science as a gatekeeper for trust and collective responsibility in the post-truth era *João Estevens, ICS Ulisboa; Ana Delicado, Instituto de Ciencias Sociais, ULisboa; Jussara Rowland, ICS Ulisboa*

Alternative facts and fake news emerge every day, feeding

narratives that may put into question scientific expertise. At the same time, growing demands for democratizing knowledge foster new strategies from scientists and science communicators to increase public engagement. Notwithstanding, it is challenging for the public to deal with today's accelerated ways of knowledge circulation and to assess the reliability of the sources. In this communication, we will address how science is perceived by the public in relation to conceptions of truth, evidence and objectivity. In particular, we will analyse the collective representations of science produced by the public to (i) understand the circumstances that make the public reach out for science when looking for information, (ii) identify the challenges they face when looking for evidence within scientific outputs, and (iii) assess the reliability they award to different sources of information. We aim also to ascertain whether there is indeed a growing mistrust of science and whether this (mis)trust varies according to gender, age, education, and place of origin . Unpacking monolithic representations of science, we will focus on two specific scientific topics, particularly susceptible to post-truth narratives: vaccines and alternative medicines. This presentation relies on a qualitative analysis of citizen discussions within public consultations held in five European countries on the opinions and beliefs of citizens about science communication. CONCISE is an EU funded project in which research teams from Spain, Portugal, Italy, Poland and Slovakia participate.

Session Organizers:
Melike Sahinol, Orient-Institut Istanbul
Emine Onculer Yayalar, Bilkent University
Chair:
Emine Onculer Yayalar, Bilkent University

266. Modes of Futuring between Care and Control: Engaging with the Conservation of Endangered More-Than-Human Life I

3:00 to 4:40 pm
virPrague: VR 06

The accelerating loss of biodiversity is one of the central contemporary ecological crises that challenge the foundations and conditions of current forms of life on Earth. In the wake of this development and the associated threats, projects of environmental conservation that seek to care for the ongoingness of life have gained momentum. Exploring these from an STS perspective, we contribute to an important discourse about and intervention in the technoscientific politics of life and death in times of ecological crises. We want to discuss how practices and technologies of conservation engage with endangered more-than-human life and what future worlds they bring to matter; how they account for the entanglement of fatal ecological developments with extractive naturalcultural forms of (human) life. In this context, we are interested in the notion of care: Who are the recipients of conservational care? What is the relation between care and control? How are conservation practices directed at the sustainability of more-than-human life embedded in power relations? We specifically want to discuss dis/continuities to humanist forms of controlling nature in conservational practices of care. Finally, we want to explore modes of futuring in conservational care. How does the temporality of urgency of ecological crises affect practices and politics of conservation and more-than-human forms of life? What could it mean for practices of conservation to (re)think ecological vulnerability and precarity, maybe even extinction, as part of (techno)ecological processes of worlding? How can a notion of living and dying well together help us craft new modes of caring?

Participants:

Caring For Wilder Futures *Edda Starck*

Can we retrace our ecological steps to find a better, healthier future? Who and what do we allow to travel into this future with us? Rewilding, as a practice of environmental transformation, ties together past and future visions and experiences of more-than-human nature: traces of past ecologies become sources of inspiration, referenced when imagining possible futures. Yet, which and whose traces are followed, how far and with what aim can be source of much friction. Based on ethnographic research in Scotland, I examine notions of "native" and "invasive" biota, interrogating how different species are assigned qualities of usefulness and desirability. Rewilding generally aims at restoring environmental health to creative "self-sufficient" ecosystems, which do not depend on human intervention. Yet, due to the

extirpation of large predators from Scotland, past stabile ecosystems are not achievable without human management. In this paper I discuss the ethics and politics of species reintroduction and population control – who gets to live, and at whose expense. Rewilding facilitates a reimagining of our entanglements in more-than-human worlds. As such, I explore its potential to foster multispecies conviviality and survival within times of clashing ecological temporalities.

Between Disappearance And Invasion: Trajectories Of Insect Control And Loss *Uli Beisel, University of Bayreuth; Carsten Wergin, Heidelberg University*

Aedes albopictus, the Asian Tiger mosquito, is slowly but surely establishing a habitat in Southern Germany along the motorway A5 from the border with Switzerland northwards along the Rhine. Over the last years it has been hitching rides in trucks coming from Italy and Switzerland, and Aedes albopictus are by now known to locals in the Rhine-Maine metropole area as particularly aggressive biters in gardens and allotments. Crucially, the Aedes mosquito is a vector of quite a suite of diseases formerly uncommon in Germany. Aedes albopictus is capable of transmitting Dengue, Zika, Chinkunguya, as well as West Nile Fever, of which Germany has seen its first locally transmitted cases in 2019. So called invasive mosquitoes are thus a new object of concern and control. On the other hand, a study by an entomological volunteer organisation in Krefeld (Germany) published in late 2017 has brought world-wide attention to a stark 75% decline of biomass of flying insects over the last 27 years in German nature reserves. It seems then that not only humans need to be cared for in times of rapid climate change. But how to bring control and care, living and dying in closer conversation across the sectors of biomedicine and environmental conservation? How can we coexist with mosquitoes in ways that acknowledge our shared complex existence and do not redraw modern binary lines between naturecultures, but still keeps humans, insects and environments alive and flourishing?

"Nature Divided, Scientists United": Emerging Multispecies Futures in the U.S.-Mexico Borderlands *Meg Perret, Harvard University*

In this talk, I describe an emerging alliance of immigrants, scientists, conservationists, and artists who imagine the futures of human migrant groups as inextricable from the preservation of biodiversity in the U.S.-Mexico borderlands. A 2018 Bioscience article ("Nature Divided, Scientists United"), finding that a border wall would doom over 94 endangered species and arguing against borderland militarization, has nearly 3,000 signatories of scientists in Mexico, the United States and elsewhere. I illuminate the rhetoric, metaphors, and images shared among such scientific publications, collections of conservation photography (such as Krista Schyler's Continental Divide); protest art (such as JessxSnow's "Migration is Natural" series); and film (such as Alejandro Iñárritu's virtual reality film "Carne y Arena"). Contrary to narratively overdetermined construction of the borderlands as a militarized wasteland, these scientific and cultural representations overflow with new narratives about the tenacity, inventiveness, and mutual interdependence of borderland inhabitants. These discourses entwine the environmental, scientific, and political futures of U.S.-Mexico borderlands and open up possibilities for new identities, relationships, and ultimately new multispecies worlds. Using queer of color critique and Chicana feminist theory, I argue that this emergent coalition of immigrants, scientists, conservationists, and artists provides conceptual tools needed to enact new environmental futures in which human, animal, and plant borderlands inhabitants flourish together beyond the historical wounds of borders and binaries. This talk contributes to debates in border studies, critical race theory, environmental humanities, feminist STS, climate justice, and decolonial feminisms.

Animals locked in time, or how to speculatively design futures for a more-than-human world *clemens driessen, Wageningen University*

Concerns regarding animals tend to focus on space rather than time: the size of their enclosures, the spaces they are allowed to

roam. Animals however are held captive not just behind barbed wire fences and metal bars, but are also held in captivity by being denied modes of temporal being, by being enclosed in certain reductive, linear conceptions of time that they may be assumed to be naturally stuck in. This paper thinks through a number of situations, around the more-than-human infrastructures of migrating and nesting birds, to trace the ways in which animal temporalities are either ignored, cut short and erased from the subjectivities granted to them, or sometimes allowed or even actively made to emerge and differentiate. Exploring the temporalities produced in the material environments that have been created for or that we otherwise share with animals, this paper will argue as being crucial for morethanhuman design. Taking a lead from Stengers' reading of Whitehead and drawing on the writings of Montaigne on animals, it proposes a speculative approach to designing for and with animals.

The thickening of futures *Li Jönsson, Malmö University; un/making studio, Malmö University / Linneaus University*

As a series of recent reports clarify, many of our current plants and species are running the risk of becoming extinct. The future worlds that these reports, observations, predictions and speculations bring to matter can be understood as rather limiting and thin. A thin future is literally one where we have lost pollinators - and, along with that, plenty of present times fruits, vegetables, berries and more. How can polarized responses of game over and techno-fixes be disturbed, altered and opened up? Or, differently put, what practices and technologies of conservation can thicken the present (Haraway 2016) and craft new modes of caring? With the aim to stage and gather around this urgent matter; to explore modes of futuring in conservational care, this paper describes designerly attempts to craft and tell thick stories of particular plant-pollinator-relationships at stake. This is exemplified by trying to draw on existing and emerging pollination practices that stages both care and control through inviting participants to, in different ways, experience, discuss and debate the issue in a series of design interventions – taking on experiential, visual and discursive formats. In other words, the design interventions do not necessarily solve the issue of pollination, but rather they generate frictions and offer a plurality of ideas and possibilities that allow us to imagine what is to come. They somehow thicken futures, by disrupting and staging both what seems like naive optimism and more gritty hopes. The project is situated within the field of STS-design (Jönsson 2014, Lindström and Ståhl 2020), and draws on methods and approaches from participatory and speculative design.

Session Organizers:

Franziska von Verschuer, Goethe University Frankfurt/Main
Franziska Dahlmeier, Hamburg University

Chair:

Markus Rudolfi, Institute for Sociology, Goethe University, Frankfurt

267. FLIPPED | Transnational STS: Theories, Practices, and Pedagogies (II)

3:00 to 4:40 pm
virPrague: VR 07

*You can access all presentations on the STS Infrastructures Platform (https://stsinfrastructures.org/content/open-panel-4seasst-2020-transnational-sts-theories-practices-and-pedagogies/essay) STS scholarship has flourished in diverse regions and institutional spaces, creating a deeply transnational, interdisciplinary research field. Further, STS scholars in diverse places often study global circuits of ideas, technologies, experts, development models, and so on. Transnational STS thus has many facets and potentials. Building on continuing dialogue about transnational STS in recent years (especially since the 2018 4S conference in Sydney, where TRANSnational STS was the conference theme), this panel will bring together presenters working to conceptualize, practice and extend Transnational STS in different ways. In conversation with STS scholarship that focuses on the constitution of modern technoscience across and between nation-states, this panel seeks to reflect on the transnational character of STS at theoretical, methodological and empirical levels from a comparative perspective. Rather than approaching "transnational" as an ideal temporal-spatial universalism to be achieved, this panel particularly

aims to elaborate on and question STS praxis that centers on the analytic of the "nation-state" in studying technoscientific developments as well as reflecting on the uncritical utilization of STS concepts/theories across different contexts. Through opening a self-reflexive space about methodological nationalism and neocolonial orientations in our praxis at this very moment when we witness the haunt of the far-right movements, authoritarian states, post-truth politics, and intentional denial of socio-ecological crises across the world, we invite contributions that reflect on theoretical and methodological capacities of STS to imagine and reclaim for science(s) otherwise. Contributions may address, among others, the following questions: What makes STS transnational? How can we think about "transnational STS" in juxtaposition to other concepts, e.g., international, multinational, postnational, supra-national, anti-national, global, cosmopolitan, universal, imperial, and translocal? What becomes visible when nation-state as the only analytic breaks down? What is the role of the nation-state with regard to education, research activities and the regulation of technologies in the contemporary period? How do STS theories and concepts travel, get used and modified around the world? Are the directions of the flux of theories and concepts changing? To what extent do STS theories and concepts reflect on the inadequacies of existing categories -e.g., "East and West" ; "center and periphery"; "developing and developed"? What can we learn from South-South dialogues in STS? How are transnational research networks formed and organized? How do these networks set research agendas? What infrastructures can support transnational STS formations? What are the methods and methodologies used to foster transnational knowledge production in a collaborative manner? How would transnational STS add to the interdisciplinary and transdisciplinary character of the field? What are exemplary cases that demonstrate transnational STS sensibilities? How can transnational STS contribute to STS teaching? How can transnational STS add to local efforts in engaging with multiple publics, decision-makers, scientists, activists, and other related actors? How can transnational STS contribute to the future of the field? What are the limitations of doing transnational STS?

Participants:

Challenges for Inter-Asia STS in the Collaboration between Victim's Advocacy Group in the Samsung Leukemia Case in South Korea and the RCA Case in Taiwan *Hsin-Hsing Chen, Shih-Hsin University Graduate Institute for Social Transformation Studies*

Since the calls for "Inter-Asia" approach in cultural studies in the early 2000s, comparison between different Asian societies, or societies outside Western Europe and North America, has been a fruitful method in what Kuang-Hsing Chn calls "deimperilaized" knowledge production. The constant collaboration between workers' health advocacy campaigns in the past decade--the Samsung Leukemia Case in South Korea and the RCA Case in Taiwan--is one such example, except the mutual learning has developed in much more layers: from STS scholarship to the mutual inspiration among the organized victim-activists. The case of contemporary South Korea and Taiwan is interesting in that despite close multi-faceted ties, including shared colonial and Cold-War history and parallel democratization process, their common working language today is largely English, which can only be imperfectly translated into Korean and Chinese in many contexts such as legal terminology or intimate emotions. This article traces the practical experience of how people negotiate the barriers toward closer collaboration between different roles in these two campaigns--STSers, lawyers, scientists, organizers and cultural activists, and the victims—and examines the usefulness of "deimperialization" in such cross-border collaborations and its implication for transnational STS.

Are we eating the cannibal? Provincializing STS from Latin America *Pablo Kreimer, CONICET*

Some approaches, speaking about "postcolonial STS" are discovering the "failures" of the broad constructivist model (ANT, coproductionists, Third wave proponents, etc.) that became practically dominant since the 70s: stating that studies must be "located", they selected only a part of the world ("Euroamerica") and assumed that all technosciences could operate under more or less similar precepts, assuming that "the world" responds to the same patterns that the most developed countries. The perspectives most used in the study of "Euro-American" science were useful theoretical-methodological tools, but insufficient for the social study of technoscience in other

regions. By the way, some Latin American scholars apply those paradigms stricto sensu, without questioning their validity. Those who seek to "provincialize CTS" (Law and Li, 2015), or those who sustain postcolonial perspectives (Anderson, 2012, Harding, 2008 and 2016, among others), promote a real and important advance, since they question the hegemonic model of STS and intend to broaden their agendas to account for and understand the dynamics of technosciences in the "other contexts". It is not a question of finding "new localities" in different "provinces", but rather that the processes of techno-scientific development -both in central and peripheral contexts- are crossed by the complex and heterogeneous societies, where we find, for example, perfectly internationalized scientific elites, generally trained in "central" laboratories, coexisting with a multiplicity of other actors, some of them seeking to reproduce the internationalized canons, others questioning them, while a last group is only oriented by local dimensions.

Transnational Community: A buzzword or a keyword for STS? *Duygu Kasdogan, İzmir Katip Çelebi University*

Transnational as an analytic concept has been circulating in social sciences with multiple disciplinary reflections on its various definitions since the late 1950s. This concept has also become visible in the field of STS in recent years, especially in the conferences of Society for Social Studies of Science (4S). We witness increasing participation in 4S conferences from different parts of the world, discussions about new regional STS formations "outside" Europe and North America, and exhibitions that reflect on the differences and similarities of STS works in various localities. What makes STS transnational and/or what it means to do Transnational STS is still open to discussion. In this presentation, I will propose "transnational" as a keyword for STS to produce meaningful and response-able knowledge in the present world. Transnational, as an adjective, reveals a particular way of doing STS. It is about doing STS as a community beyond the intent of praising collaboration across borders; it is about unlearning and learning how to learn together to produce knowledge in a world centered on power asymmetries. Transnational STS is, therefore, a condition of possibility for STS to craft new ways of knowledge production while responding to urgent socio-ecological problems that cross, and also do not cross, multiple borders. In my presentation, I will provide a story of Transnational STS Working Group while reflecting on why transnational is a keyword but not a buzzword for the present and future of "our" field. STS as a transnational community has more to contribute building a just and sustainable world beyond reproducing an arithmetic of "East" + "West" / "South" + "North."

Transnationalizing Critical Drug Studies *Nancy D. Campbell, Rensselaer Polytechnic Institute*

Few objects and subjects of knowledge present the embedded dilemmas of nationalism and colonialism than do "drugs," which have typically been extracted from plant-based materials grown in the global South, yet refined, distributed, and consumed in the global North. Yet "drugs" and drug crises are readily invoked as justifications for authoritarian policing and incarceration. A global circuitry has been held in place by a drug policy regime heavily influenced by the US and the UK for more than a century. In order to counter the impoverished knowledge base, those who study drugs—both licit and illicit—have more recently cultivated a flourishing interdisciplinary knowledge formation. This paper examines what might be called the growth of "critical drug studies" by tracing the conceptual dilemmas and methodological openings encountered in such scholarship for STS scholars and practitioners.

Session Organizers:
Kim Fortun, University of California Irvine
Noela Invernizzi, Universidade Federal do Parana
Duygu Kasdogan, İzmir Katip Çelebi University
Aalok Khandekar, Indian Institute of Technology Hyderabad
Angela Okune, University of California - Irvine
Chair:
Angela Okune, University of California - Irvine

268. Scientific fields and communities in (re-)formation I

3:00 to 4:40 pm
virPrague: VR 08
Participants:

Surviving Neoliberal Academia: The Non-Death of UK Heterodox Economics *Regina Kolbe, University of Cambridge*

The aim of this paper is to investigate how the epistemic community of heterodox economics survives within—and thereby continues to (trans)form—the contemporary economics discipline. Drawing on extant accounts of why the heterodox community allegedly fails to do so (e.g. Lee, 2009), Fligstein and McAdam's theory of strategic action fields (2012) and Frickel & Gross's theory of scientific/intellectual movements (SIMs) (2005), this research examines which and how contextual and agential factors contribute to the survival of heterodox economics in the UK. To do so, the study draws on both semi-structured interviews with ten self-identified heterodox economists and quantitative data on the demographic and financial composition of the UK Higher Education (HE) landscape. First, it is argued that in increasingly marketised UK economics departments, 'REFability', grant acquisition and student satisfaction are major factors of career advancement, and that heterodox economists manage to succeed in all three of them. Second, it is shown how heterodox economists successfully mobilise a new generation of practitioners by using existing organisational infrastructures of the UK economics discipline in subversive manners and by building their own, informal 'counter-infrastructures'. This paper contributes to STS debates on the formation and development of scientific fields and epistemic communities. More specifically, it develops a 'collective action approach' to field survival and advancement, thereby synthesising and extending both Fligstein & McAdam's (2012) theorisation of how conscious collective action may shift the power relations within social fields and Frickel & Gross's thus far structurally biased SIM theory (2005).

Ecological Economics: Scientific Journals and the Identity of Environmentalist Fields *Jakob Lundgren, University of Gothenburg, Dpt of Philosophy, Linguistics& Theory of Science*

Despite calls for alternative forms of publication, dissemination, and evaluation of research, publishing in peer-reviewed academic journals remains the standard measure of scientific achievement. Thus, journals are an important object of study in the process of knowledge production. This is especially so in fields that lack many of the other institutions typical of traditional disciplines (internationally recognized PhD-programs, departments at universities etc.). This paper uses a journal as the focus of an investigation into the dynamics of an interdisciplinary environmentalist field. Ecological Economics, started in 1989, is an early attempt at an interdisciplinary environmentalist journal. It was founded because of disillusion with the mainstream economic treatment of environmental issues. The founders of the journal and field set out to synthesize economic and ecological knowledge, while still maintaining methodological pluralism. It still upholds a good reputation and high metrics in its area. However, there are internal tensions within the larger field of ecological economics between those that are adamant about the theoretical foundation as a critique of mainstream economic theory and those that take a stauncher pluralist position less reluctant to include the mainstream. Based on in-depth semi-structured interviews with editors, associate editors, and members of the editorial board of Ecological Economics, I investigate how different perspectives on the identity of the field and journal are tied up with the core features of the journal; its editorship, metrics, and history. I explicate three such perspectives and show how they have established mechanics of reproduction.

How to understand a field through its research materials? The case of Historical Climatology *Kris Decker, Zurich University of the Arts*

Histories of scientific fields are commonly narrated with an eye on the evolution of concepts, practices, grand protagonists, institutions, disciplinary conventions, or groundbreaking insights.

Yet, there is another layer of historicity rarely taken into account: the research materials that circulate within a field and are handed down from one generation of researchers to another. My contribution deals with this material dimension in the formation of a rather small branch of climate science, historical climatology, which draws on archival materials of all sorts—weather diaries, harvest records, chronicles, notes of amateur observers of the skies—to study climatic changes prior to standardized instrumental measurements. Their reliance on written historical accounts—unconventional in the natural sciences—is a crucial element of identity among historical climatologists who have amassed a unique body of materials, along with a repertoire of tools and infrastructures, for reconstructing the climate's past. I suggest that, first, the upkeep and uptake of research materials over time has been as consequential in the process of historical climatology's stabilization and rearrangement as more classical elements of scientific practice. Second, debates over the validity, reliability and proper handling of research materials can be identified as pivotal in the coming into being of this scientific field.

Studying advanced life sciences. The fluid matrix of co-produced practices *Christine Hauskeller, University of Exeter; Anja Pichl, Berlin Brandenburg Academy of Sciences and Humanities*

In this presentation we discuss an interdisciplinary pluralist approach for the study of co-production in established life sciences, using stem cell research as a case study. Jasanoff writes that accounts of co-production "take on the normative concerns of political theory and moral philosophy by revealing unsuspected dimensions of ethics, values, lawfulness and power within epistemic, material and social formations that constitute science and technology." (2004, 4) This presupposes that the "field" to be studied has evolved in practice and can be demarcated. In our work on stem cell research, we have observed two changes, following a phase of a relative coherent field identity and growth, which had been negotiated and established by science, regulators and ethics. Firstly, the field metaphor becomes increasingly inapplicable, and second, the communities that drive developments into various directions multiply. We will give an example illustrating that multi-disciplinary perspectives on problems need to be brought together in order to explore the gestalt that develops when a previously new scientific entity has frizzled out; when it has become deeply entrenched or "normalized", woven into a wide range of socio-cultural practices beyond laboratory and regulatory institutions. Multi-disciplinary work enables the identification of situations in which power, knowledge and values interrelate in a matrix of sites of tensions or contradiction. Doing justice to such normalized research requires cooperation across disciplines, interdisciplinary communities of research in the social sciences, humanities and the life sciences themselves.

Session Organizers:

Michael Penkler, Technical University of Munich
Sarah Maria Schönbauer, Munich Center for Technology in Society, Technical University of Munich

Chair:

Sarah Maria Schönbauer, Munich Center for Technology in Society, Technical University of Munich

269. Hacker Cultures Session 1: Objects of Hacking
3:00 to 4:40 pm
virPrague: VR 09

The spiralling changes around how we experience our social and physical world have stemmed from the massive amount of digital technologies that are ubiquitously used in all parts of our society today. These infrastructures are constructed by a wide range of "hackers" – a slippery term generally applied to anybody building or maintaining software or hardware. They (or we?) go by a wide range of labels such as programmers, developers (or "devs"), designers, analysts, data scientists, coders, sysadmins, dev/ops, or sometimes simply tech. This session will more widely focus on the tools, tricks and objects that hackers use, work with and engage in. We will discuss how they use these tools to create, build, break, fix, and secure our digital worlds.

Participants:

"I didn't sign up for this": The Invisible Work of Maintaining Free/Open-Source Software Communities *R. Stuart Geiger, University of California, San Diego; Dorothy Rose Howard, UC San Diego Department of Communication & Design Lab; Lilly Irani, University of California, San Diego*

We present findings about the work of maintaining community-based free and/or open-source software (F/OSS) projects, focusing on invisible and infrastructural work. Many F/OSS projects have become foundational across academia, industry, government, journalism, and activism. Although F/OSS projects provide immense benefits for society, they are often created and sustained by volunteer labor. Their maintainers often struggle with how to sustain and support their projects, particularly for projects lower down the stack like software libraries, operating systems, or kernels, which become adopted as infrastructure. Some growing projects transition into non-profit foundations, startups, or corporate patronage, while others stand against more traditional organizational models and align with more decentralized, cooperative, or 'hacker' cultures. As we have seen in our ongoing interview and ethnographic research studying a range of F/OSS projects, the software engineering skills necessary to start a successful project are not the same skills required to maintain it --- either as code or as a community. Project leaders and maintainers resolve conflicts, perform community outreach, review others' code, mentor newcomers, coordinate with other projects, and more. This can demand extroverted sensibilities in a stereotypically introverted field; some leaders of major F/OSS projects have even become kinds of celebrities. Many F/OSS project leaders and maintainers have publicly discussed the effects of burnout as they find themselves in roles they did not entirely sign up for. In examining the work and life behind F/OSS projects, we gain a nuanced view of the tensions maintainers face as they manage accountabilities to various groups.

Computing Libraries: Knowing Interfaces, Ignoring Operations -- Theano's Mediations Between Neural Networks and Graphical Processors *Jeremy Grosman*

The paper aims at sketching Theano's history, a python library developed at the Université de Montréal between 2007 and 2017, which had a considerable influence on recent developments in machine learning – at the core of what is often dubbed 'deep learning'. In a nutshell, Theano played a central role in the organising the encounter between rather old neural network architectures, developed in the late 80's, and rather novel graphical processing units to encounter, developed in the early 00's. It provided effective tools for engineers with limited knowledge in linear algebra and processor architectures. The present research – exploiting the wealth of Theano presentations, papers and codes made available over the years – seeks to account for some of the ways in which the library has transformed the ways its users and designers have thought about neural networks and handled algebraic computations, as well as developed of learning systems and designed successive libraries (Star 1999). More generally, the case study is also a means of investigating the ways in which libraries – these neatly "packaged" source codes, destined to travel and provide engineers with "standard" implementations of computing techniques (Fujimura 1992) – structure computing practices. First, I hope to document some of the possibilities libraries offer (Ericksson 2017). The success of libraries largely depends on their ability to bring engineers to know only about the algorithms' interfaces and to safely ignore the technicalities of the algorithms' implementations. Second, I hope to show how libraries sometimes mingle software and hardware (Rasmussen 1999). The success of otherwise abstract algorithms significantly depends on their being actual concrete computers able to process them in an efficient manner.

Hacker Culture and Practices in the Development of Internet Protocols *Stephane Couture, Université de Montréal*

Referring to previous work done on hacker culture and free and open source software, this presentation will look at the cultures, practices, and power dynamics of the Internet Engineering Task Force (IETF) and its sister and peripheral organization, the Internet Research Task Force (IRTF). IETF is the main

organization building Internet protocols, namely the formal specifications and standards that specify the rules and forms of computer communication on the Internet. Examples of such Internet protocols are the Hypertext Transfer Protocol (HTTP) and email header standards (the fields 'from', 'to', 'subject'). IETF (and IRTF) has long been cited in histories of the Internet (Castells), and more contemporary publications by authors such as DeNardis, Ten Oever or Cath have approached this object from an STS perspective. Contributing to this effort, I propose to look at protocol development from the perspective of hacker cultures and practices described by authors such as Coleman and Kelty. Indeed, while the 'protocol' artifact is different than the software 'code' of hackers, many aspects of its development are reminiscent of hacker culture. For instance, collaboration is mostly done online using mailing lists, IRC channels, and software versioning platforms like GitHub. Cultural norms, such as the importance of transparency and the rule of "rough consensus and running code", also echo the hacker ethos. Based on research observations and interviews I conducted in the past year, I propose to look at such aspects to better analyze the day to day collaborative practices and cultures of protocol development.

Hacking infrastructures: understanding capabilities of OT security workers *Ola Michalec, University of Bristol; Sveta Milyaeva, Goldsmiths, University of London; Dirk Van Der Linden, The University of Bristol; Awais Rashid, The University of Bristol*

Facilities like power plants, water pipes and railway stations underpin contemporary living standards across the world. For decades, they have been operated by Operational Technologies (OT), basic (yet sturdy!) computers without Internet access. People working in OT facilities are traditionally manual workers or engineers with training in safety. The promises of improved monitoring, asset management and resource efficiencies led to a step-change in the design and operation of these infrastructures, with OT and IT dubbed to be "blending". Despite these apparent benefits, modernisation brings about exposure to cyber security threats. To protect critical facilities from cyber attacks, the European Parliament proposed the Network and Information Systems Security (NIS) Directive. As cyber security is becoming a legal requirement rather than an option, policymakers, infrastructure operators, lawyers and consultants are coproducing the shared understandings of "appropriate and proportionate" response. While OT systems are nothing new, the concept of OT security is still "in the making". Due to the lack of established career trajectories and specialist degrees, we ought to follow how the pressure for policy response shapes OT security advice. This paper traces how practitioners involved in NIS implementation coproduce OT security expertise. We present results of a qualitative study conducted between November 2019-January 2020, where we interviewed 30 UK-based security practitioners with expertise in critical infrastructures. Our analysis is concerned with the following questions: How do security practitioners define (in)security? How do they evidence it? What capabilities make a good OT security worker?

Securing by hacking: maintenance regimes around an end-to-end encryption standard *Sylvain Besençon, University of Fribourg*

Internet standards are elementary and powerful bricks of the Internet infrastructure: they define how the Internet should work and help developers to code their pieces of software accordingly. However, regularly, there are some voices or hacks that destabilize them and open the door to radical uncertainties about the reliability of the software we use, especially when crucial information is at stake. Based on digital ethnography as well as interviews and observations at international conferences, this paper takes as departure point the disclosure process of a series of vulnerabilities that affects an end-to-end email encryption standard called OpenPGP, used mostly by computer engineers, activists and journalists. These vulnerabilities, found by an academic team and publicly disclosed in May 2018, not only compromised the confidentiality of encrypted emails, but also sharpened a 20-year controversy about the usability of the standard. By following the spark that shook the routine of maintenance work on the standard and its implementations, this paper aims to grasp the powers, agencies, and constraints that shape the maintenance regimes of such standards. Analyzing the political, cultural and ethical norms and values that underlie the technical discussions, I argue that the controversy that ensued from the disclosure process is emblematic of the diversity of actors involved in the building, scrutinizing, breaking, and fixing of the implementations of OpenPGP, from cryptographers and coders to activists and journalists. This papers offers thus a glance at some mostly invisible and surely underinvestigated aspects of the social fabric of information security.

Session Organizers:
Paula Bialski, Leuphana University Luneburg
Mace Ojala, IT University of Copenhagen
Chair:
Paula Bialski, Leuphana University Luneburg

270. Moralizing the data economy: Contesting and moralizing data economies
3:00 to 4:40 pm
virPrague: VR 10
Participants:

Coding cultures: The poetics and politics of Big Data *Martin Tremcinsky, Charles University In Prague*

The recent scandals concerning ab/use of personal data by providers of ubiquitous digital platforms such as Facebook or Google sparks new discussion on how to ethically construct, collect and analyze datasets in cyberspace and what is the impact of such datasets in the "real" world. By following the argument of Patricia Ticineto Clough et. al. that the current "datalogical turn" is deeply rooted in classical sociological unconscious, this paper argues that Big data – in its individualizing and performative nature – resonate with ethnographic practices. Alike ethnographers, also Big data-collecting agents follow their objects of inquiry into their daily routines on a minute level, interact with them and directly participate in construction of their reality while transcending varying ontologies – those of the researcher-agents and those of the interlocutors. The authority of these new non-human ethnographers must be constructed around their ability to translate the lived experience of their interlocutors/users into a language understandable by their human and non-human readers. Nevertheless, the users are usually disqualified from reading as well as reflecting on these texts; in response to this exclusion Couldry and Mejias speak of "data colonialism". In such case then the paper further argues for the critique of Big data to be put into comparison with post-modern and post-colonial critiques of ethnographic representations. By mobilizing the self-reflexive discussions concerning ethnographers' moral, scientific and individual responsibilities within/towards their own field, anthropology could therefore significantly contribute to the current debate concerning similar issues on the border between the cyber-space and the "real" world.

Scaling Influence: Exploring How Influencer Marketing Platforms Moralize the Data Economy *Thomas W.L. MacDonald, Queen's University*

In recent years, influencer marketing platforms have started to tout the possibilities of big data and artificial intelligence to streamline influencer marketing. These intermediaries claim that their algorithmic tools and metrics are useful for brands to scale up and automate influencer marketing campaigns. However, to accomplish this, these platforms intensify and obscure the commensuration and evaluation of influencers and their work practices. In this paper I draw on pragmatic sociology and STS literature to explore the moralizing discourses of these influencer marketing platforms. What orders of worth are mobilized in their bid to deliver scalability and automation in influencer marketing? How do these justify the extractive data practices of influencer marketing platforms? How are moral values embedded in the sociotechnical devices which commensurate and evaluate influencers? To answer these questions, I combine platform walkthroughs and analysis of platform resources to understand how influencer marketing platforms present their vision and operation to potential clients and influencers. By exploring these

platforms, I seek to contribute empirical detail on how online work platforms justify extractive data relations as moral, and the potential implications for how online work is valued and structured.

Algorithmic allocation: untangling rival conceptions of fairness in data-driven research management *Guus Dix, Center for Science and Technology Studies, Leiden University, the Netherlands*

Data practices have become engrained in academic life over the past decades. Research data are a valuable resource for publishing companies, media outlets and scientometric consultancy firms. Universities are held accountable by such data but equally use them to manage scientific processes. And researchers are evaluated on the basis of quantitative output criteria but simultaneously draw on data to signal the value of their products – and of themselves. The increasing trust in numbers has led to a proliferation of devices that measure, induce, benchmark and rank academic performance. As an instantiation of that trend, this paper focuses on the moral contestation of 'algorithmic allocation' at a Dutch University Medical Center. Algorithmic allocation is a form of data-driven automated reasoning that enables university administrators to calculate the research budget of a department without engaging in a detailed qualitative assessment of the current content and future potential of its research activities. Drawing on semi-structured interviews, focus groups and document analysis, the paper contrasts the attempt to build a rationale for algorithmic allocation – evoking unfair advantage, competition, incentives and exchange – with the attempt to challenge that rationale on the basis of existing epistemic differences between departments. Such considerations of epistemic- and market fairness show that moral notions matter in the push for data-driven research governance as well as its problematization. With regard to the open panel, the paper speaks to the general theme of the new economy of data and in particular to changes inside organizations and justifications surrounding the economization of data.

Moralising music data economy: how to remunerate fairly in the music data maze *Hyojung Sun, Ulster University*

This article investigates how a moral economy could ensure fair remuneration in the data-driven digital music business. Despite the increasing growth of the music revenue reported in the industry, music creators do not feel they are fairly remunerated. Central to this claim is the lack of transparency and efficiency in the distribution of music revenue in the streaming era. Although digitalisation has the potential to facilitate fair and fast revenue distribution through automated process, many stumbling blocks remain, skewing the distribution of revenue towards the top echelons of superstars and major market powers in the industry. Some of the major problems include a power imbalance and general politics amongst key players which pose serious challenges to overcome. Despite diverse measures ranging from legal interventions to new technological initiatives, the market-led approach has created tension and hierarchy, increasingly fragmenting the market. Most crucially, a lack of trust is widespread, creating a belief that major players are incentivised not to improve the data management because they benefit from unattributed income, also known as black-box money. This article argues that the music data economy requires measures that ensure collaboration, trust, interoperability and interconnectivity and explores how a moral economy could be a way to move forward. The study will draw upon insights from moral economy (Fourcade and Healy 2007, Elder-Vass 2018) and more specific accounts of creative industries and moral economy (Hesmondhalgh 2015) and re-contextualise the qualitative data of 50 interviews with key industry stakeholders. This will serve as an empirical study of how a moral economy could enhance and add value to the data economy.

Data Economy Interfaces: Mediating Relations in Fluid Assemblages *Heather Wiltse, Umeå Institute of Design, Umeå University*

Everyday connected things have become key sites for the production of behavioral data about people's lives, enabling corporate actors to predict and control behavior in service of enormous profit under the economic model of surveillance capitalism. This production of data and nudging have come to be primary functions of digital networked technologies. However, when it comes to the design of these things and the ways in which they are presented to end users, it is the utility and experience that are in focus. These other functions of things typically do not come to presence at the level of the interface during use. There has come to be a rift between the way things come to presence and what they actually are, between appearance and function, when it comes to everyday things that are fluid assemblages. This paper will consider conditions needed for a moral economy of data at the level of the interface and interaction, through looking at how they play out (or not) in a series of cases. This opens up the larger question of what is acceptable, which also gets to the core issue of the kinds of relations that are mediated by these kinds of things. The paper ends by considering possible alternatives that can point toward ways of intervening to tune industrial systems and surveillance capitalism toward possible postindustrial futures in which data technologies are used for good of the many rather than profit for the few.

Session Organizer:
Kevin Mellet, Orange Labs
Chair:
Mary Ebeling, Drexel University

271. Organizing Technoscientific Capitalism: Assets, Rents, and Values - 2
3:00 to 4:40 pm
virPrague: VR 11

Technoscientific capitalism is organized through the configuration of technological products, platforms, and data, as well as the configuration of capitalist practices like accounting, corporate governance, and valuation logics. As a result, technoscientific capitalism entails organizational dynamics and inter-organizational relationships that often get obscured within STS debates about the supposed 'neoliberalization' of society and science. In this panel, we want to explore how assets, rents, and values are made through this configuration of technoscience and capitalism. There are many possible analytical and empirical avenues and questions to explore here: How do managerial practices and collaborations underpin the transformation of things into assets? How do organizational epistemologies and resources manifest as different forms of rentiership? And how do public-private logics and frameworks produce specific forms of socio-economic values? Overall, we are concerned with examining how diverse processes of assetization, rentiership, and valuation open up and/or close down alternative futures and political possibilities.

Participants:

When Citizen Science is Public Relations: Unpacking the Value of Participatory Research for Polluting Industries *Sarah Blacker, York University, Toronto; Abby Kinchy, Rensselaer Polytechnic Institute; Aya Hirata Kimura, University of Hawaii*

Citizen science (CS) is increasingly being used as public relations by corporations that have been accused of environmental harm. Examples of such "public relations citizen science" (PRCS) include projects initiated and/or supported by the cruise, agricultural biotechnology, and oil and gas industries. In this paper, we 1) examine how CS produces value for environmentally destructive firms and industries and 2) critique the way the PRCS constitutes publics. Conceptually, this research brings a political economic analysis of the production of value for industry into conversation with critical cultural studies of science communication. In this presentation, we focus on the example of PRCS projects developed through collaborations between prestigious oceanography research institutes in the US, Antarctic cruise ship companies, and their passengers, who work as citizen scientists. In examining these collaborations, we recognize that the benefits of CS to oceanography research are not negligible, particularly in the context of ongoing cuts to funding for environmental science. However, significant benefits also accrue to the cruise industry, which are using CS as a way to produce an image of sustainability and scientific integrity. This is a striking contrast to other commercial uses of CS—in the biomedical industry, for instance—which aim to extract data that can be commodified. Here, we find that wealthy tourists are

constructed as "ambassadors" for nature rather than consumers of environmentally destructive tours. The case study has broad implications for how we conceptualize 1) the valuation of techno-scientific practices and 2) the function of science communication as corporate PR.

Assetizing Flexibility: Mobilizing Capital for a New Electric Power System *Daniel Breslau, Virginia Tech*

The transition to a system based on renewable sources calls for a fundamental reorganization of agency in the electric power system and its markets. It requires a transition from a system where production must constantly adjust to match a stochastically-varying demand, to a system where demand must adjust to the constantly-varying supply from intermittent power source. This reallocation of agency, known in the industry as "flexibility," is the object of intense efforts to assetize the technologies and techniques that provide this needed service, so that revenue streams can be directed at sources of flexibility, and investment capital can be mobilized. But the question of how the technologies and techniques of flexibility are to be valued and assetized, so that they can be the objects of financial calculations and investment decisions, is subject to intense debate and struggle. Consumers, equipment manufacturers, energy developers, utilities, financial institutions, state regulators all have a stake in how flexibility is to be defined and compensated. The paper analyzes hundreds of filings in U.S. state and federal regulatory proceedings over changes to market rules to allow for the participation of flexibility resources, and electricity storage in particular. These documents allow the observation of the full range of participants in the struggle to define this asset and the terms of its participation in markets. The struggle involves metrics and frameworks of valuation, such as the bid parameters that frame how flexibility can be offered into the market. It involves establishing boundaries as to what can qualify as an asset of this kind, to participate in markets, and what should be excluded. And it generates a conflict between the public policy objective of encouraging the entry of flexibility-enhancing technologies and the principle of technological neutrality.

Temporal tensions of dynamic capabilities: The integration of external resources and the implications of assetization for non-profit hybrid organizations *Jane Bjørn Vedel, Copenhagen Business School; Kean Birch, York University*

The literature on dynamic capabilities takes assets as givens, leaving the processes through which organizational assets are created or integrated unexplored. In this paper, we argue that the contingent socio-material practices of diverse organizational actors are implicated in the transformation of external resources into organizational assets – defined as a process of assetization. Based on an extensive, qualitative study of Danish research grant funding to universities, we show that researchers – as organizational actors – frame external resources as assets in pursuit of career-related goals. In so doing, they adopt an investee logic that configures the organization of universities in potentially problematic ways, reshaping the concentration of organizational assets. Following from this, we show that the organizing of resources and assets engenders a range of temporal tensions, in particular associated with temporariness of research funding resources. This raises the issue of whether organizational assets are becoming increasingly temporary and uncertain. These findings advance our theoretical understanding of dynamic capabilities by emphasizing the temporal tensions inherent to the management of resources and assets.

Digital Infrastructures as Rent Infrastructures: Understanding New Pathways of Capital Accumulation and Structural Transformation within Contemporary Digital Capitalism(s) *Laura Mann, London School of Economics*

Within neo-classical and new institutional economics, 'rents' have been viewed as unproductive distortions within efficient markets. Yet to a range of more heterodox thinkers including Karl Marx, Karl Polanyi, Robert Brenner and Mushtaq Khan, rents (and the manipulation of property rights that generate them) played a central role in the emergence of capitalism and the evolution of political struggles over state power. This paper considers how digital infrastructures are shifting the centre of rent-generation within capitalism(s). By virtue of their powerful network effects, and their tendency to concentrate both knowledge and capital, digital platforms represent formidable sources of potential resource mobilisation and structural transformation. I consider how ideologies and politics are shaping the way different societies in the world are responding to the developmental opportunities and threats posed by them. I consider transformations along four axis: 1) domestic resource mobilisation and innovation, 2) skills and wages, 3) social policy and solidarity, and 4) epistemic understandings of our economy. One could say that global competition in the digital economy will be fought over which societies are able-through whichever means they deem adequate- to re-invest digital rents back into shared learning, innovation and productive infrastructures. Whether or not each society can do so will depend on the ideological orientation of the public authority, on the relative power and institutional capacity of market actors and on the perceptions of ordinary workers, tax payers and political movements.

The Derivativization of Everyday Life, or the Moral Worlds of Informal Financial Markets *Kirk Fiereck, Independent Scholar, formerly University of Pennsylvania*

This paper explores the economistic, semiotic, and ethical values produced by the derivativization (distinct from the commodification) of everyday life through the global proliferation of the derivative value form. Derivatives are legally binding contracts that derive their value from the price fluctuation data of their underlying commodities—such as currency swaps, Facebook user agreements, or long-term housing leases assetized as short-term arbitrage opportunities on platforms like Airbnb. Critically, derivative assets can be traded without trading their underlying commodities such as currencies, humans, and long-term leases, respectively. Derivatives create more economistic value than all commodities: stock markets, debt, real estate, etc. While STS, philosophy, and other social science scholars have examined the financialization of commodity- and asset-based rentiership, they have yet to examine how derivative value forms organize capitalisms via big data. I refer to these processes as "biofinance," which critiques the political economies of risk and "big data-as-capital" through analysis of a global, multi-sited ethnography of everyday financialized practices. Surveillance and platform capitalist processes are structured by the logic of derivativization that produces—but could also redress—grossly unequal financialized societies that are dominated by the predations of monopoly capitalist entities such as Airbnb and Facebook, who effectively capture all big data rendered as private gifts or commodities. Without widespread recognition of the derivative nature of big data, it is not legally legible as intellectual property. This undermines democracies when Cambridge-Analytica culls Facebook users data to fuel cyberwarfare against individuals and societies in elections (e.g., Brexit).

Session Organizers:
Jane Bjørn Vedel, Copenhagen Business School
Kean Birch, York University
John Grant Gardner, Monash University, Australia
Chair:
John Grant Gardner, Monash University, Australia

272. Interventions with, through and in ethnography
3:00 to 4:40 pm
virPrague: VR 12
Participants:

Designing medical visualisations through ethnographic interventions *Julia Kurz, Universität Siegen; Cornelius Schubert*

We report from an interdisciplinary project in which sociologists, computer scientists and neurosurgeons collaboratively develop novel modes of visualising cooperative-diagnostic medical data. In our presentation, we will reflect on the benefits and drawbacks of ethnographic research for simultaneously intervening in technology development and cooperative work practices. Our ethnographic research thus has three distinct audiences: first, our academic peers, second, our colleagues form computer graphics, and third, the doctors and nurses on the ward. For the

presentation, we will focus on two interrelated questions: 1) how does ethnographic research impact technical design and 2) how does technical design impact ethnographic research? To answer the first question, we will discuss the ways in which ethnographic research may be enabling and constraining certain design choices as the messiness of social realities often come in conflict with the reductions and abstractions of technical development. Furthermore, we will especially analyse the special contribution that only ethnographic approaches may offer for the development of technical systems. Ethnographies of technologies in the making thus become a central concern. To answer the second question, we will reflect our own research practices vis-a-vis technical design. Participating in technical design processes in a way "channels" or "orients" ethnographic research, making some aspects of social realties more relevant than others. The repercussions on ethnographic research are twofold: with respect to the social realities in the hospital, we remain in the comfortable position of participant observers, with respect to technical design, we must shift into a more experimental mode of observing participants.

"Seeing music": Discovering material practices of music production through visual ethnography *Katja Sara Pape de Neergaard, Katja de Neergaard*

Throughout the past five decades, technological innovations have drastically altered the way music is produced. As new instruments and technologies emerge, artists continually explore and re-define their usage, which in turn influences the processes and practice of music production. This paper explores these processes, as well as the interdependencies between musicians and their devices, through visual ethnography. By combining interviews and filmed recording sessions with five Copenhagen-based electronic musicians, I argue that the use of visual ethnography in the recording studio enables insights into the creative potentials and restraints of the human-technology relationship. In this paper, visual methods serve as a key facilitator of observations on material practices with technology. Analytically, this opens of for thinking of inspiration as a result of mediated experiences, insights on musical subjectivity as well as the conflicts around expertise in the field. Reflecting on this approach, I consider how seeing through the lens of a visual device can change the observational mode of the researcher, including how visual methods work when informants struggle to articulate material experiences, or when practices contradict oral statements. In addition, I reflect on the potential of this approach to create occasions and possibilities of collaborations – playing and/or filming together can and did prompt a variety of crucial insights in this project. I use this empirical work to discuss the ways in which visual ethnography can be employed by researchers, handled in analysis, and engaged with by participants, and serve as a medium for communicating results.

Ethnographic Interventions with, through and in Visual STS *Maxime Harvey, Université du Québec à Montréal (UQAM)*

In 2014, Peter Galison proposed a distinction between two orders of what he called "Visual STS": a first order of studies that focused on visuals in scientific practice, thus considering visual materials as research objects; and a second order of studies that produced visual materials in research methods (Galison, 2014). His paper's embeddedness in ethnography is obvious, as he introduced "locality" as one of the main concepts in STS and used Jean Rouch's films, Margaret Mead's photographs and David MacDougall's arguments to demonstrate the possibilities of the second order of Visual STS. Galison's proposal to use and produce visual materials in research has been followed by a practical review (Yaneva, 2014) and critic (Beaulieu, 2014), but its relationship with ethnography remains unnoticed. In this presentation, I would like to address the specificity of intervening with, trough and in Visual STS with ethnography's methods. Uses of visual materials in methods of research in STS would benefit from a systematic review of visual methods in ethnography. I will use Pink's practical perspective on visual ethnography (2013) and Pauwels' integrated framework of visual methods in social sciences (2015) to defend my statement. This paper will thus contribute to STS by developing Galison's second order of Visual STS while exploring its relationship with ethnography. Beaulieu, A. (2014). If Visual STS Is the Answer, What Is the Question? Dans A. Carusi, A. S. Hoel, T. Webmoor et S. Woolgar (dir.), Visualization in the Age of Computerization (p. 237-242). New York : Routledge. Galison, P. (2014). Visual STS. Dans A. Carusi, A. S. Hoel, T. Webmoor et S. Woolgar (dir.), Visualization in the Age of Computerization (p. 197-225). New York : Routledge. Pauwels, L. (2015). Reframing visual social science: towards a more visual sociology and anthropology. Cambridge, United Kingdom : Cambridge University Press. Pink, S. (2013). Doing visual ethnography (3rd edition). Los Angeles : SAGE. Yaneva, A. (2014). Mapping Networks - Learning From the Epistemology of the "Natives". Dans A. Carusi, A. S. Hoel, T. Webmoor et S. Woolgar (dir.), Visualization in the Age of Computerization (p. 231-236). New York : Routledge.

Reflexive Methodology: Ethnographic Research based Intervention in a Collaborative Research Centre *Antje Kahl, FU Berlin*

This presentation is based on my work in a method lab of an interdisciplinary Collaborative Research Centre (CRC). The task of my experimental position is two folded: As the so-called project nomad in the CRC I do not belong directly to any of the CRC's subprojects. Instead, I am moving constantly between all the subprojects and observe the research practices of the scientists at the CRC with a special focus on methodological approaches. In doing so I participate for example at the meetings of subprojects, during the development of interview guidelines, attend discussions of criteria for the selection of data, their sighting and analysis as well as theoretical debates of interdisciplinary working groups. Based on this ethnographical gaze the second, interventionist task of my work is to encourage methodological reflection, to advise, to gather applications, techniques, methods, conceptualizations and methodological challenges and to communicate back to the CRC. In doing so I support the exchange about methods across projects and about collected data and material across the whole CRC in order to help shape the practical cooperation and method development. Starting from the description of my work, which is thus both ethnographic research and practical intervention, the second part of the talk will reflect on the potentials, challenges and problems of my role. These are both social and methodological in nature: in particular, questions of positionality, proximity-distance relationships, or the balancing of impartial observation and active contribution will be addressed.

Session Organizers:
Kathrin Eitel, Goethe-University Frankfurt, Germany
Laura Otto, Goethe University, Frankfurt
Martina Klausner, Goethe University Frankfurt
Chair:
Martina Klausner, Goethe University Frankfurt

273. Prototyping Urban Futures 1
3:00 to 4:40 pm
virPrague: VR 13
Participants:

Automating Urban Futures: From Prototypes To Practice? *Meri Jalonen, Aalto University School of Business; Sari Yli-Kauhaluoma, Aalto University, School of Business*

Automation promises to free humans from heavy work and to provide new kinds of services. To materialize these promises, prototypes of automated devices are tested in real-world settings to learn about their functioning and interactions with other actants, rendering urban settings to test-beds. Our study explores experiments with devices whose development has expanded from automated guided vehicles in industrial storehouses to public libraries and even taken robot buses to the street. We have followed these developments with ethnographic observation and interviews across several urban test sites. Our study demonstrates that testing prototypes in urban settings may successfully generate novel public-private partnerships and enable continuous testing but prototyping does not guarantee the materialization of automated futures. Library is a familiar and successful setting for logistics robots which carry book cases, allowing librarians more time to encounter clients and thereby support active citizenship.

The robot buses with technology originally developed for closed settings struggle to cope with various actants and weather conditions in street trials. Their promise of sustainable future transportation is hampered by the well-functioning public transport in urban areas; their advocates are desperately looking for mobility needs for the buses to fulfil. We associate these struggles with the non-collaborative (even exploitative) relationships between private manufacturers and public testers of the vehicles as well as with the prototyping practices that limit the engagement of citizens to mere spectators in design processes. This inhibits the elaboration of alternative visions for urban futures since the devices do not invite participation as epistemic things.

Democratic Legitimation or Naturalized Evolution? How Prototyping Urban Futures Risks Democratic Participation of Urban Stakeholders *Anitra Baliga, London School of Economics and Political Science; Maximilian Roßmann, Karlsruhe Institute of Technology (KIT)/ ITAS*

Prototyping urban futures promises to open up urban planning to a wider audience and anticipate potential socio-political conflicts through phased testing. However, in order to fulfil these purposes, prototyping must inevitably reduce the complexity of stakes and stakeholder relations to a manageable level, in the guise of openness and 'naturalized idea evolution'. Furthermore, improving the design of urban futures is limited to only those sociotechnical issues that are materially represented in the prototype and the sociotechnical testing environment, such as property boundaries, infrastructure or objective aesthetics. These limits of socio-technical representations and the path dependency by the first draft must be critically reflected because prototyping, as we propose, generates legitimacy by entangling stakeholders' contributions in a role-playing game (see Luhmann, 2013). Prototyping as a critical practice, however, has the potential to address and mediate critical urban problems of inequality and individual class perception among urban inhabitants in the design process. But for this, one must not ignore the legitimatory function and constraints of sociotechnical representations. In order to make prototyping a means for democratizing urban futures and not a social technique 'colonizing' the colorful and diverse lifeworlds, we examine how the exclusion of issues and stakeholders in the process could be materially addressed in the process, much like how deliberative procedures reflect their conditions of possibility (see Habermas & Luhmann, 1971).

Prototyping alternative urban futures in collaborative housing in Vienna *Andrea Schikowitz, TUM*

In Vienna, like in other cities around the globe, a new wave of self-initiated groups who realise collaborative housing (so-called Baugruppen) has recently emerged. (Lang & Stoeger, 2018; Mullins & Moore, 2018; Tummers, 2015, 2016). Most of them describe themselves as creating and experimenting with alternative ways of housing and living: They want to create different or alternative spaces, and they want to create space differently – they strive for self-management, collective ownership, different kinds of architectures and different distributions of space between private and collective use, housing, working and public space, etc. In this context, Baugruppen can be regarded as prototyping alternative urban futures. At the same time, institutional actors - such as the city administration - regard Baugruppen as prototypes to learn from. Hereby, the aim is to enable the upscaling of certain social or technological innovations emerging from the participants' specific practices. Yet, the urban futures that Baugruppen themselves and the city administration respectively envision, might differ or conflict. In this paper, I aim to investigate how Baugruppen in Vienna are involved in processes of prototyping urban futures in different ways, which tensions between multiple urban futures might emerge and how they are negotiated and coped with by different actors. Therefore, I draw on Mol's understanding of enactment and multiplicity and assemblage urbanism (Blok, 2013; Blok & Farías, 2016; Mol, 2002). The empirical material consists of documents, media articles, interviews and ethnographic observation of public and internal events of Baugruppen in Vienna. For data analysis, I apply qualitative mapping approaches (Clarke, 2005; Whatmore, 2009).

Prototyping The Resilient City *Sabrina Huizenga, Erasmus University Rotterdam; Lieke Oldenhof, Erasmus University, Institute of Health Policy and Management; Hester van de Bovenkamp, Erasmus University Rotterdam; Roland Bal, Erasmus University Rotterdam*

While the notion of the prototype typically refers to material objects or arrangements such as self-driving cars or urban water management systems, this article puts forward a socio-physical prototype: Resilient Botu, a city district that operates as an epistemic object for 'the resilient city'. Resilience thinking is increasingly popular, imbued with meanings ranging from an individual capacity to cope with set-backs to collective mentalities of communities in bouncing back or forward after crises and shocks (Walklate et al. 2013) and appears to offer flexible and instrumental solutions for urban governance, ranging from climate crisis to the revitalization of deprived neighborhoods. This experimental set-up of prototyping resilience is regarded a new governance technique aimed at a resilient urban future, meaning that the urban present is increasingly defined by a, either more hopeful or darker, urban future. We conducted an ethnographic study within Resilient BoTu, a district in Rotterdam - the second largest city of the Netherlands – that joined the one hundred resilient cities network pioneered by the Rockefeller Foundation in 2016. This specific district -one of the poorest areas within the Netherlands - is an exemplary case of test-bed urbanism (Halpern et al. 2013), prototyping the resilient city. With this empirical study, we give insight into the question whether and how prototyping resilience might entail a space for creativity and action. On the one hand it enables a more hopeful progressive urban politics by being more responsive, reflective and inclusive instead of top-down urban governance. Simultaneously however, we see this prototype as a governing technique aimed at empowering subjects without problematizing the wider political context in which resilience seems to be the answer, thereby normalizing precarity (Lorey 2015) as a form of cruel optimism (Berlant 2011).

When innovation goes down the drain: Co-creating robot prototypes for sewer inspection and maintenance *Carlos Cuevas-Garcia, Technical University of Munich; Federica Pepponi, MCTS - Munich Center for Technology in Society (TUM)*

In this paper we examine the story of an innovation policy initiative oriented to co-create robotic prototypes for the inspection and maintenance of urban infrastructures. The initiative brought together and experimented with two main visions of the future that intended to address the needs of very different actors. First, the possibility to ease the heavy, dirty, and dangerous work of sewer inspection brigades, and second, the tentative engagement of public entities in creating new markets for robotic applications by taking more central roles in innovation processes. To bring these imagined future closer to reality, the coordinators of a €19M EU-funded project transformed the city infrastructure of Barcelona, and arguably a municipality department itself, into a testbed. This case tells the story of an autonomous aerial drone and a terrestrial autonomous vehicle, of the hybrid academic-entrepreneurial consortia that worked in their development, and of the organizations that could have launched these technologies, but didn't. In the paper we provide different interpretations of the mixed results produced by the introduction of sewer inspection robots, we examine the role of the co-creation instrument itself - a particular version of Pre-Commercial Procurement of Innovation -, and scrutinize on the particular circumstances in which robotic prototypes for inspection and maintenance could thrive and scale-up, or go down the drain under the current innovation policy regime. In this paper we thus provide an empirically and theoretically grounded account of a prototyping exercise that facilitated the interaction between innovation, public administration, mundane labor, and decaying urban infrastructures.

Session Organizer:
Sascha Dickel, Johannes Gutenberg-Universität Mainz
Chair:
Marcel Woznica, Johannes Gutenberg-Universität Mainz |

Institut für Soziologie

Discussants:
Andrea Schikowitz, TUM
Kevin Weller, MCTS Technical University Munich

274. Making Futures by Freezing Life I

3:00 to 4:40 pm
virPrague: VR 14

First session of the panel "Making Futures by Freezing Life"

Participants:

Thinking about the Future: Social Egg Freezing, Anticipation and Power Relations *Michiel De Proost, RHEA/HARP; Gily Coene, Vrije Universiteit Brussel*

The ethics of social egg freezing is a debated topic but there is still limited empirical evidence to make sense of the complexities around the use of this novel assisted reproductive technology. Moreover, very little is known about how politics of temporality are influencing the decision-making around social egg freezing. Based on theories of anticipation, the concept of intersectionality, and in-depth interviews with 15 women who are considering social egg freezing, we explore in this paper how different relations of power (i.e. class, gender, race and religion) influence women's temporal choice in the context of this technology. As part of this investigation we also want to better contextualize the broader normative questions raised by this technology in relation to reproductive autonomy. Our findings show that the timing of egg freezing had been shaped by the confluence of a variety of life trajectories including partnership, career and medical norms. We also found different forms of planning agency that were mingled with ideas of commodification, fate and waiting. Our findings further indicate that women often manipulated their understanding of time to create moral space to think about important future scenarios. We argue that this anticipatory disposition increases proportionally when various forms of power intersect and illuminate the need for more critical reflection of this within theories of autonomy and the future self.

Vitrification as a game changer in an oocyte-fuelled bioeconomy within a context of reproductive (un)certainties *Sara Lafuente-Funes, Institute for Sociology, Goethe University, Frankfurt*

The Spanish reproductive bioeconomy is highly dependent on the reproductive capacity of oocytes, particularly from younger women. Spain is a leading reproductive economy and performs half of the treatments using third party oocytes in Europe (de Geyter et al. 2018). Vitrification, which has made possible to freeze eggs earlier in life and use them at any point, stands as a game changer in the expansion of this bioeconomy. This study draws on qualitative work around how vitrification is changing the Spanish ARTs landscape, and how it speaks about and to its wider reproductive context. Whereas embryos and sperm were routinely frozen with slow-freezing techniques for decades, only with advancements in vitrification have eggs achieved similar success rates. Vitrification of eggs makes possible an exponential growth of "social freezing" and important shifts within treatments with third party eggs. The vitrification of eggs from younger women facilitates its use by either themselves later in life or by other (mainly older) women through the transference of their reproductive capacity into their bodies. Thus, it functions as a technological tool to address later access to reproduction. This is part of a broader context of reproductive (un)certainties which has been lately addressed as a generational "reproductive crisis" in Spain. This research follows the ways in which this "crisis" is being framed and the ways in which professionals and users of vitrification technologies (and practices attached to them) to extend their reproductive lifespan think about reproductive choice over time, reproductive (un)certainties and life (in)sustainability.

Bumpy Valorizations, or What Happens When 'Frozen' Matter Does Not Quite Come to Matter *Ruzana Liburkina, Goethe University Frankfurt*

Cryobiological practices tend to facilitate the objectification and commodification of cells and tissues. They give rise to a proliferation of alliances and infrastructures that turn samples of organic matter into economic goods and assets (Waldby 2019). But what happens when speculating on the economic potentiality of cryopreserved matter does not result in expected results? While valorization is often conceptualized as a rather smooth 'one-way road', this paper draws on the example of umbilical cord blood (UCB) banking in Germany in order to shed light on how 'frozen' bio-objects fail to become harnessed and valuated in envisioned ways. First established in the late 1980s, cord blood banking still seizes to become part of biomedical clinical and innovation regimes. Since UCB transplantations are comparatively rare, the storage of altruistic donations is disproportionally costly for public biobanks (Magalon et al. 2015). Meanwhile, private cord blood banks struggle with the uncertainties entailed by the promise of regenerative medicine. Hence, the translation of the "molecular heroism" (Fortun 1998, 214) of UCB stem cells "to a molar scale" (ibid.) fails. Nonetheless, UCB collections persist; in fact, they often grow and always demand continuous efforts. Drawing on interviews and participant observation around the cryopreservation of cord blood, the paper provides insights into tactics of sustaining and re-inventing the potentiality of these depots (Strathern 1996; Taussig et al. 2013; Hoyer 2017). Turning analytical attention to such ambiguities of bio-objectification and cryo-banking is meant to challenge the performative effects of accounts that emphasize the encroaching, uncontestable nature of economization processes.

Varieties of Freezing in Breast Milk Preservation *Pablo Santoro, Universidad Complutense de Madrid; Carmen Romero-Bachiller, University Complutense of Madrid (Spain)*

Cold is indispensable when preserving expressed breast milk for later use in ordinary breastfeeding practices and, besides other technologies such as the breast pump, domestic fridges and freezers have been essential in making human milk a mobile biosubstance that can endure in time and space beyond the immediate breastfeeding situation (Boyer, 2010). But freezing technologies become even more important when donated breast milk has to be preserved for the feeding of hospitalized babies or when it enters the realm of scientific research. Based on our research on breast milk donation practices in Spain (Romero-Bachiller and Santoro, 2019), we will present three instances where different technologies of cold are employed to preserve human milk or its components: informal donation practices between women that make use of personal freezers and DIY cold-chain utensils; human milk banks, where freezing technologies are combined with pasteurization techniques to ensure the safety of milk supply; and probiotics research labs that employ cryopreservation technologies to suspend the life of the bacterial colonies they derive from samples of breast milk. Each of these cases resorts to different technologies and relationships with freezing, generating distinct "assemblages of cold". And, considering the potentialities of caring at distance embodied in donated breast milk, each of these examples enables diverse geographies, temporalities and promises of care.

Frozen Assets: Egg Freezing, Sperm Banks and the (Re)Negotiation of Future Motherhood *Zeynep Gurtin, UCL*

A greater number of women than ever before are entering their late 30s without children, contrary, in most cases, to their own stated past expectations. While both childfree living and myriad forms of non-traditional family forms are gaining greater acceptance in societies across Western Europe, for such women, who had always assumed that they would be in heterosexual marriages or partnerships with children "by this point" in their lives, singledom and childlessness can still feel extremely isolating, stigmatising, and even devastating. Cryopreservation technologies offer these women (- if they can afford to access them) hope for (re)negotiating future motherhood, and a variety of options for responding to their reproductive disappointments, including: freezing their eggs for future use; freezing embryos after fertilizing their eggs with donor sperm; or using frozen donor sperm obtained through large sperm banks to pursue solo motherhood. Based on multiple qualitative interviews with forty single women attending a London fertility clinic, this paper interrogates these women's understanding and contextualisation

of cryopreservation options, reports their narratives surrounding their life-course and present situation; and examines how they grapple with novel reproductive choices and dilemmas in their decision-making. In many cases, women not only reference, their past expectations or assumptions around reproduction and family-making, but also conjure a variety of possible desirable and undesirable futures, as a means to make sense of their present circumstances, to orientate themselves, and to determine their best course of action.

Session Organizer:

Veit Moritz Braun, Goethe University Frankfurt/Main

Chair:

Veit Moritz Braun, Goethe University Frankfurt/Main

275. Digital Technologies in Policing and Security - Session 2

3:00 to 4:40 pm
virPrague: VR 16
Participants:

Ethnographic Simulation Modelling in Policing: From Agent to Action *vanessa dirksen, Open University of the Netherlands; Martin Neumann, Johannes Gutenberg University Mainz; Ulf Lotzmann, University of Koblenz-Landau*

This paper explores the integration of agent-based simulation modelling (ABM) with traditional qualitative research and the prospective benefits is may have for police research. As we are highly critical of the application of conventional agent-based modelling methods in policing and security, generating numbers and time series, we instead propose a methodology for simulation modelling where both the input as well as the output is qualitative in nature. To be precise, our approach to qualitative simulation modelling enables microscopic conditional in silico experimentation with narrative scenarios and is referred to as ethnographic social simulation. To develop the method of ethnographic social simulation, this paper departs from an explorative study (June 2018 – July 2019) on the ways in which trading relations in the distributive trade of cocaine are established and maintained in the Netherlands. On the basis of the key findings of this study, relating to reputation building mechanisms in an increasingly supply driven market for cocaine, the paper describes the compatibility as well as the complementarity of the formal languages of the research traditions of ethnography and agent based simulation. For example, the ethnographic approach to social simulation specifies the 'what-if' relations of conventional ABM modelling into 'condition-action' sequences. As we contend, it is exactly this more micro level of condition-action sequences that is required so as to facilitate thick descriptions and to have ABM move from an agent (i.e., offender) to an action orientation. The integration of ethnography and ABM, subsequently, enables a focus on actors' doings and knowings rather than their superficial traits. This is especially important for the context of policing as such a focus on group-level organizing principles helps in overcoming the dangers of bias and stereotyping.

Ontologies Enacting Alterity *Wouter Van Rossem, University of Twente; Annalisa Pelizza, University of Bologna and University of Twente*

Database schemas, interfaces and ontologies can enact actors in politically sensitive ways. This manifests clearly when such formal knowledge representations are used to establish intended identities of non-citizens. As part of the ERC-funded "Processing Citizenship" project, we present results from our semantic and computational analysis of ontologies of information systems used to identify and register migrants in Europe. By launching the "hotspot approach" in 2015, the European Commission has identified the use of information systems as an important element to de facto achieve a joint migration policy and to gain knowledge on non-EU citizens. However, differences (and similarities) exist among members states' systems, as well as between member states' and Europe-wide systems. At European level this is especially relevant as information systems are undergoing major changes following several proposals to make them semantically interoperable, and make their data more usable for EU policy-making. How then are migrants enacted by

information systems designed for different purposes by different institutional actors? And what consequences are entailed by their ongoing integration? We present our method to extract ontologies for non-citizens identities from technical, legislative, and other types of documents. This allows us to process ontologies using novel visualization methods. Such visualizations can foreground topological relationships between actors and highlight otherwise less visible work of knowledge production. We introduce results from our comparative analysis of operational information systems used at EU hotspots. The results from this analysis will contribute to STS scholarship with a new method based on the empirical analysis of ontologies.

Predictive Analytics and the Defuturization of Insecure Futures: Combining STS and Time Studies *Simon Egbert, Technische Universität Berlin*

Security-related attempts to create knowledge about the future and to make it usable for practices in the present exist for a long time – especially since 9/11. However, with recent advances in predictive analytics, approaches of predicting the future for optimizing strategies and actions in the present once again become more relevant, culminating in assumptions that we will soon live in a "predictive society" (Davenport 2016: xix). Although this might be an undue over-generalization, the fact is that predictive analytics have a significant impact on present societies – and will have an even greater impact on future societies. And this is especially true for the security domain. Although most of current prediction methods share the common approach of creating foreknowledge already known from the history of mankind – the search for patterns and regularities in past events and actions to extrapolate future developments from these experiences (Adam/Groves 2007: 5; Kaufmann et al. 2019), the growing computational power and increasing sophistication of machine learning models signal an epistemic shift in practices of foreknowledge creation and, hence, another societal relation to the future. Although still relying on the past, these techniques promise to find genuinely new connections between the (past-related) data, resting on correlational-associative logics, which differ significantly from conventional probabilistic techniques of predictive knowledge creation. In my paper, I will elucidate this argument in more detail, by highlighting the fruitfulness of time studies (e.g., Adam 2004; Adam/Groves 2007) for the STS-informed analysis of recent practices of defuturizing (Luhmann 1976: 141) risky futures.

Session Organizers:

Simon Egbert, Technische Universität Berlin
Nikolaus Pöchhacker, University of Graz

Chair:

Sarah Young, Erasmus Universiteit Rotterdam

276. Personhood in more-than-human worlds: reflections from the borderlands of anthropology and STS

3:00 to 4:40 pm
virPrague: VR 17

This panel explores what personhood might offer science and technology studies (STS) amidst engagements with more-than-human worlds. STS has largely eschewed talking about persons in favor of entities like actants, networks, and assemblages. Meanwhile, debates within and outside the academy have challenged the privileging of the human and worked to center non-humans as matters of concern. At the same time, however, "person" is not the same kind of entity as "human," and a range of activists and social projects have sought to extend personhood to bonobos, robots, and rivers. Meanwhile, developments in the life sciences provoke moral ambiguities and raise specters of the person that vex boundaries between human and thing. Cadaveric organ donors, "orphaned" embryos, palliative care, stem cell lines, the proliferation of big data, personalized medicine, genomes in data archives, research animals, and population economics all raise questions about what a person is—questions for the people directly involved no less than for us as scholars. Our contributions identify and challenge broad disciplinary conventions: While STS scholarship has directed attention to the configurations of entities in specific practices and as emergent in the entanglements of humans, technologies, and landscapes, anthropological scholarship has addressed human actors' moral worlds and experimentation. How might the two perspectives—one favoring the distributed agency of actants, the other engaging the moral striving of

humans—be put in dialogue? Does the category of the person offer a resource or a stumbling block for this dialogue? How may rethinking personhood help us reach wider academic and non-academic audiences? Part 1 [SEP] 3:00 Intro: Mette N. Svendsen and Tyler Zoanni 3:05 Julienne Obadia, "In/Animacy at the Margins: Cyborg, Actant, Person" 3:20 Lesley A. Sharp, "Care and the Cowboy Boot:[SEP]Interspecies Responsibility and the Boundaries of Lab Animal Personhood" 3:35 Celia Lury, "Prototyping a pathway, property and participation: one and the same thing" 3:50 Mie Seest Dam, Sara Green, and Mette N. Svendsen, "Precision Patients: On selection practices and moral pathfinding in experimental precision oncology" 4:10 break Part 2 4:25 Anja Marie Bornø Jensen, "Donors, Data and Disposable Bodies. Dignity and Personhood in Organ Transplant Technologies" 4:40 Marieke van Eijk, "Doing Health Economics in US Clinical Practice" 4:55 Tyler Zoanni, "On the Subject of Demography in Uganda" 5:10 Karen-Sue Taussig, discussant 5:30 Discussion

Participants:

Accounts of more-than-human but Less-than-person: clinical interventions when life is fragile *Simon Cohn, LSHTM*

There is often a celebratory quality to more-than-human accounts. Such work not only undermines the bounded nature of what it is to be human; it also enlists other objects and organisms that collectively present the individual as an assemblage or constellation of things. However, whilst there may be great political potential in approaches that disrupt and reconfigure the human as a category, there is also the risk that the practices and values that constitute personhood may often get eclipsed. In this paper I draw on research conducted with colleagues in UK clinical settings when life is fragile and the possibility of death is palpable. In such cases, questions about what it is to be human and what it is to be a person are not abstract, but ever-present. Although the increasing incorporation of different biomedical technologies to support life or ease the experience of dying can be seen as a manifestation of becoming progressively more-than-human, I will describe how both patients and others around them experience this as a process of deterioration and becoming less-than-person. As a consequence, I will describe how these two trajectories – the expansion of humanness and contraction of personhood – sometimes operate together, but on other occasions are regarded as entirely contradictory. I will argue that any more-than-human perspective that we may advocate also requires a reinvention of the concept of personhood in order to ensure any new politics of the social is not merely defined materially, but also through the values that constitute people's lives.

Precision Patients: Fit for tailored medicine *Mie Seest Dam, University of Copenhagen; Sara Green, University of Copenhagen; Mette Svendsen, University of Copenhagen*

Within most disease areas, "personalized medicine" or "precision medicine" is no more than a promissory field of statistical genetic analysis and laboratory research in cell lines and animal models. In oncology, however, genomic tumor profiling is increasingly integrated into clinical research practices. In this paper, we investigate ethnographically how the translation of precision medicine is practiced in a Danish phase one clinic conducting "first in man" trials of genetically targeted anti-cancer drugs. Our ethnography demonstrates that whereas precision medicine is often conceptualized as medicine fit to the patient, its realization requires that patients are fit to tailored treatments. The experimental oncologists and molecular biologists involved experience a strong ethical obligation to seek out and offer experimental precision medicine to advanced cancer patients with no other treatment options. Yet, in their daily practices these professionals unite clinical experience and advanced genetic technology to identify "precision patients" – a highly selected patient population fulfilling the multiple criteria required to match an individual patient to a trial based on genomic profiling. In this selection work, the exclusion of incurable cancer patients in urgent need of treatment is inseparable from facilitating a translational link between preclinical animal studies and safe clinical application. Combining the practice perspective of STS and the anthropological focus on human experience and moral striving, we argue that the process of selecting precision patients "fit" for tailored medicine entails closely interdependent scientific practices and moral deliberations that shape individual patient pathways as well as the translational pathways of precision oncology.

Things Like This Like People Like You: the Parallax Projections of Personalization *Celia Lury, University of Warwick*

A paradigmatic form of address associated with personalization is that associated with algorithmic recommendations: People Like You Like Things Like This (Lury and Day 2019; see https://peoplelikeyou.ac.uk/). Three observations about this form of address are the starting point of the analysis presented here. First, the address can be operated in reverse, that is, as Things Like This Like People Like You. Second, it puts relations of liking and likeness, preference and similitude, participation and proportion, in recursive relations to specify a 'you'. Third, the 'you' that is addressed is both singular and plural. These observations lead into an analysis of personalization as a logic of distributed human and non-human personhood in which populations and publics emerge from parallax projections.

Organisms and partial human personhood *Amy Hinterberger*

In 1997, the United States Patent and Trademark Office (USPTO) received a patent application entitled "Chimeric Embryos and Animals Containing Human Cells". The application claimed human-animal chimeric embryos made from human and animal embryos, including human-mouse, human-baboon, human-domestic pig, and human-chimpanzee embryos. Unlike most patent applications, this one was filed as a political protest against what the applicants saw as human life becoming instrumentalized within biological research. The legal archive comprising the applications and USPTO rejections captures one of the first comprehensive articulations of how researchers and regulators approached concerns over the possibility of creating organisms that have partial human personhood. The patent application became a test case for how property law might be used to mobilize national authorities to more clearly define what a human-being or person constituted. This paper draws on this documentary archive, along with interviews with the patent applicants, to explore how distinctions between animal, human and person were made in this historical moment and their significance for contemporary biological research.

Donors, Data and Disposable Bodies. Dignity and Personhood in Organ Transplant Technologies *Anja Marie Bornø Jensen, University of Copenhagen*

Organ transplantation foregrounds the opportunities and potentials of medical advancements regarding sustaining life, inventing new ways of dying, and getting viable organs at any cost and means. In Denmark, the quest for improving donation rates focuses on detecting potential donors, generating more data on organ donation processes, and improving organ preservation technology. At least in principle in these endeavors, the question of the personhood of organ donors seems to be absent in organ transplantation policies: organ donors are counted and turned into data, or else substituted in research experiments by a pig model providing organs in lieu of human organs. However, the daily practices of transplant professionals reveal a different picture. Based on ethnographic fieldwork among Danish organ transplant professionals, this paper discusses how personhood is contested and negotiated among them. Why does the intensive care nurse put lotion on the feet of the organ donor? Why does the transplant coordinator print the donor journal and cautiously put it in the right kind of new plastic folder in the archive cabinet even if it is already digitally stored? And why does the transplant surgeon reflect on the dignity of human organ donors and the practices of organ procurement when using and disposing pig bodies? Addressing the moral and material practices in the daily work of transplant professionals, this paper examines how personhood can be conceptualized in relation to deceased organ donors, how notions of personhood, care, and dignity intersect, and how understandings of personhood will unfold in future transplant technology.

In/Animacy at the Margins: Cyborg, Actant, Person *Julienne Obadia*

This paper takes the recent death of a prominent organizer in New York City's women's movement as an entry point into the analytic, moral, and political affordances of "personhood."

Highlighting contemporary entanglements of kinship and care with technologies of healing and palliation, the person in death renders newly visible the possibilities and foreclosures of the social-technical world we have inherited – with its forms of assisted living, differential survival, and webs of socio-technical care. However, thinking with a feminist organizer's life history also returns us to the late 20th century conjuncture of progressive political movements, a changing world order, and new methods for analyzing social relations of science and technology. Taking feminism as a pivot point, I analyze two key agents proposed in that moment – cyborg and actant – and their self-conscious links to anthropology. I consider the different approaches of feminist studies of technoscience and actor-network theory, asking why personhood was not adopted by either one. From the border zones of mortality, medicine, and feminism, I argue that despite this history, personhood can offer important paths toward addressing the postcolonial and feminist critiques increasingly levied at STS by shifting approaches to power, symmetry, and responsibility. Emerging from engagement with non-liberal systems of kinship, exchange, and ontology, personhood's orientation toward indigenous, gendered, and in/animate forms of difference can attune us in different ways to the relations that organize us, as well as the traces that persist when an organizing force passes.

Care and the Cowboy Boot: Interspecies Responsibility and the Boundaries of Personhood in Animal Lab Research *LESLEY A Sharp, Barnard College, Columbia University*

Of what relevance are a custom-made housing unit and a cowboy boot to understandings of animal care, value, and agency in research laboratory contexts in the US? Two vignettes from my fieldwork on the moral underpinnings of lab research demonstrate quirky yet creative efforts at care that unexpectedly reconfigure the boundary of personhood that separates human (HPs) from non-human primates (NHPs). The first vignette concerns a senior researcher's passionate efforts to redirect his own celebrated research history with captive chimpanzees by focusing, now, on innovative, custom-designed caging for various NHPs; the second involves the frustrating yet, ultimately, enlightening efforts of personnel in a sanctuary for former lab animals to decipher the meanings a "retired" chimpanzee inhabitant assigns to a cowboy boot. As I seek to demonstrate, our attentiveness to the value of presumably inanimate "things" can uncover otherwise obscured or hidden efforts to redirect standard notions of professional responsibility, compassionate care, and the limits of species sentience. If anthropological definitions of personhood are anchored in forms of human sociality, under what conditions might various practices, material objects, and creatures rattle, alter, or redirect associated premises, such that personhood might extend beyond the intrahuman to incorporate the interspecies? When animals convert from actants to actors, what do associated examples of boundary-breaking have to say about professional responsibility, life's worth, and anthropocentric notions of personhood?

Doing Health Economics in US Clinical Practice *Marieke van Eijk, University of Washington*

Health care markets are made, not born. More to the point, they are "performative," namely economists' and others' principles actively construct the economy they seek to describe (Callon 1998; MacKenzie 2006). The algorithms and economic calculations they use to determine the price of health care are neither neutral, nor objective. They are deeply cultural (Mulligan 2010) and part of broader institutional and political dynamics that shape the implementation of reimagined visions of the public good (Bear and Mathur 2015). As such, health economics reflects a large variety of human hopes, fears, and future imaginaries (Glabau 2017). Focusing on the workings of health economics in US clinical practice, I bring together anthropology's focus on the moral and the person with health economics' calculations and budgetary prioritizing. I explore which economic principles get activated in clinical care, how clinicians navigate between a person's therapeutic needs and economic exclusions on care, and what therapeutics and health economics suggest about imagined but not yet materialized futures. I theorize the "doing" of health economics in clinical care as moral work. It is in clinicians' clinical bureaucratic and financial care labor that economic and therapeutic assumptions about the worth of individual and collective life are determined vis-à-vis conflicting visions of what is "right" in health care, both in the present and in the future.

Counting on the people: on the subject of population in Uganda *Tyler Zoanni, University of Bayreuth*

Like many countries in sub-Saharan Africa, Uganda is undergoing a massive demographic expansion, with the entire population projected to double within several decades. Lively debates accompany this expansion: if the consensus is that it carries radical change, it is less clear whether this rapid population growth is a threat or a possibility. Accordingly, this paper tracks "the people" as a matter of concern across journalism, development discourses, and state statistics. It explores how these related but distinct endeavors enact "the people" as a figure as well as the kinds of affects, atmospheres, and projects they unfold around it. The paper thus explores an avalanche of numbers that is also an avalanche of people. It shows how a particular concern with personhood is at the heart of the entanglements of statistics and states, number and power. And it analyzes the contested and multiple nature of that concern with personhood in contemporary Uganda.

Session Organizers:
Tyler Zoanni, University of Bayreuth
Mette Svendsen, University of Copenhagen

Chair:
Tyler Zoanni, University of Bayreuth

Discussant:
Karen-Sue Taussig, Univ. Minnesota

277. Making Chemical Kin 2
3:00 to 4:40 pm
virPrague: VR 18
Participants:

Genital(*)Panic *Mary Maggic, Hackteria*

Since the rise of endocrine disrupting chemicals, we all dwell in a profoundly polluted world that is deeply tied to patriarchal capitalism. In an attempt to get an analytic grasp on how chemical pollution has become entangled with ecological normativity, scientists have used the anogenital distance (AGD; distance between anus and genitals) as a biometric for assessing reproductive toxicity. Results show that the AGD has been steadily decreasing over time. In the wake of hormonal disruption, it's clear our bodies are not as fixed and recalcitrant as we want them to be. We must (re)consider the "normative" body, and how "disobedient" bodies are already pathologized - from the medicalization of infants born of ambiguous genitalia to the disqualification of intersex athletes on the basis of biology. These guidelines matter. What they entail matter. They determine how we are policed, how we are surveilled, due to our biology, whether or not we fall within the oppressive norm. The project imagines a queer-feminist population study that chooses the users' gender identity over their gender assignment by doctors. It will exist as both an online 3D-scanning tool that anonymously crowdsources for the Alien Genital Database, as well as a series of public gynecological installations and workshops. Participating in this database symbolizes a counter-hegemonic strategy that dismembers the State-owned tool for policing otherness, acknowledges our bodies as unfixed and changeable in this queering landscape, and creates spacious room for our toxic variance, for all the aliens living among us. We write our own future...

Pesticide contaminated waterscapes: entanglements that shape uneven chemical geographies. *Maria Soledad Castro, Universitat Autonoma de Barcelona; Diana Barquero, ICTA/UAB*

Global pesticide use has been increasing in parallel with agricultural intensification trends. Costa Rica is a paradigmatic case in this regard; its export-led agricultural model has entailed a continuous rise in the use of pesticides, consolidating itself as one of the world's most intensive pesticide users. Our research is grounded in the case of the pesticide-contaminated wetland "Térraba-Sierpe", a Ramsar site pierced by large scale monocultures such as palm oil, banana and pineapple plantations.

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In Térraba Sierpe the presence of pesticides is a physical-chemical manifestation of the contradiction of environmental policies versus agricultural policies and the role of corporative power regarding pesticide regulations. Furthermore, pesticides are intrinsic from our bodies to the environment, having an active and multi-scale interplay with the living and more than living world. The project responds to a collaboration between arts, political ecology and critical geographies exploring the multiple stories and relationships between chemicals and waterscapes in the production of socionatures. Based on ethnographic work, we study how chemicals are embodied in waterscapes. We explore: What do chemicals represent beyond their physical-chemical expression? Why and how pesticide contaminated waterscapes are produced in Costa Rica? The chemical archaeology of the waterscape is a reminder of the historical process of transformation of agriculture. Pesticides, which are residual elements of consumer goods, arise as traces of the spectre of the commodity. In the waterscape, where past and present, absence and presence, the material and the symbolic are in dialogue, stories are as entangled as the mangrove swamp.

Toxic Entanglements. Reconfiguring Toxicity in Environmental Epigenetic Research *Sophia Rossmann, MCTS, Technical University of Munich; Ruth Müller, MCTS TU München*

This talk presents results of an unfolding research project which traces how toxicity is "made to matter" (Murphy 2006) in environmental epigenetic research on toxins. Environmental epigenetics is a research approach from molecular biology that explores how environmental stimuli, such as toxins, induce chemical modifications upon the DNA that change gene expression without any underlying genetic mutation. Based on literature analyses and interviews with researchers, we trace how adopting an epigenetic approach in environmental toxicology challenges linear models of toxicity based on notions of monotonic dose-response and the immediate action of toxins. Instead, epigenetics shifts epistemic attention to the effects of low-doses and the long-term consequences of toxic exposures, particularly of those occurring during early life. Researchers thereby stress the procedural character of toxicity, resituate it within the body and trace its relational pathways. We show that through these reconfigurations, environmental epigenetics gradually creates novel imaginaries of toxicity that center on living with rather than despite toxic exposures and their multigenerational effects. These notions of toxicity include not only adverse but also generative effects; effects that might create a more 'robust' body that is adapted to living with its toxic relations. While co-exiting with more traditional approaches within toxicology, environmental epigenetics thereby opens up possibilities of thinking and doing toxicity as multiple, situated and relational; as relationships that unfold gradually between specific bodies and specific environments across space and time. We trace the ambivalences inherent to this shift, particularly regarding social and political responsibilities for toxic exposures in unequal societies.

Session Organizers:
Angeliki Balayannis, University of Exeter
Emma Garnett, King's College London
Chair:
Angeliki Balayannis, University of Exeter
Discussant:
Michelle Murphy, University of Toronto

278. Charismatic Technology 2
3:00 to 4:40 pm
virPrague: VR 19
Participants:

Charismatic Electricity: Electrification and Technological Faith in Historical Perspective *Samantha Wesner, Cornell University*

"The key to attacking climate change: electrify everything," ran a Vox headline in 2017. Electricity pervades modern life in technological form; often heralded as a beacon of hope in the face of fossil-fuel driven climate change, electricity appears as, literally, the stuff of life when the grid goes down in climate-change driven natural disasters, or deadly liability, as when sparks from PG&E's power lines sparked the 2018 Camp Fire, California's deadliest on record. Electrification evokes — like nothing else — both technological miraculousness and technological overdependence; it illuminates but also blinds. My paper develops a genealogy of electrical charisma, from electricity's scientific birth to its absorption into revolutionary rhetorics at the end of the eighteenth century, to its development as technology and commodity in the nineteenth century, to its central role in both Soviet and Western ideological visions of the good, modern life, and lastly to electrical narratives of "development", entangled in post-colonial relations between global North and South. I bring a critical historical methodology to an analysis of electricity as science and technology and to its forms of charisma over the centuries. The paper develops an informed critique of electrification as technology of faith, and argues that the electrical grid—the world's largest machine—uniquely embodies both techno-futurist optimism and entrenched inequality of access to hope in the face of climate catastrophe.

Relocating Renewable Energy *Annika Marie Hirmke, Earlham College*

Renewable energy technologies are taking up a central role in conversations about our current moment, offering the story of a technological fix for our dire climate futures. This advertised potential falls into the familiar narrative of technological inventions that promise better futures. This technologically focused narrative, however, fails to escape systems of objectification and capitalocentrism that are related to many of the problems those technologies claim to solve. This paper critically reflects on how renewable energy is currently used. While having a lot of positive potential, renewable energy, a technological invention, has strong ties to our capitalist system which is focused solely on economic growth with no regard to its negative effects on the environment and at risk communities. In sustainable development discourse, renewable energy is widely seen as both good for the environment as well as socially and democratically empowering to the people. This paper discusses how the technological focus of this narrative and renewable energy's ties to capitalism hinders some of the positive potential of it and aims to present a more complete picture of how renewable energy is used and what that means for our society.

"It made no sense": Charisma, HPV vaccines and post-vaccination injuries in Colombia *Natalia Lozano, Erasmus Universiteit Rotterdam*

Through the promise of reducing the global, yet geopolitically differentiated, burden of cervical cancer and of creating the conditions for a healthier future for vaccinated women, and by extension, prosperity for all, the Human Papillomavirus (HPV) vaccine derives a powerful authority that is highly charismatic. In that account, this new biotechnology carries a sense of moral urgency and legitimacy that presents national vaccination programs as unquestionable necessary, doubtlessly beneficial and simply, the right thing to do. From the perspective of young women's experiences of vaccination in Colombia, the paper argues that the HPV vaccine is a charismatic technology that is reinforcing the very conditions that legitimize its authority, as well as the inequalities it is meant to alleviate. The paper critically analyzes the underpinnings upon which this charisma stands and its effects in the daily lives of young women that have reported feeling ill after vaccination. It builds on the data collected in four months of fieldwork in Colombia during 2019, and the narrative analysis of a diverse set of materials from interviews with young women to policy texts, media coverage, and vaccination campaigns. The purpose of this article is to illustrate how the vaccine's charisma is affecting young women whose experiences of vaccination contradict the norm. This conversation contributes to the understanding of the material-semiotic entanglements between biotechnologies and their users, and the implications for social justice of the discursive affiliation of progress, health and technological determinism.

Techno-Solutionism in Education Reform: A case study on Thailand's one laptop per child *Panita Chatikavanij, Science and Technology in Society, Virginia Tech; Pratyusha Kiran, Virginia Polytechnic Institute and State University*

The 2005 World Summit not only marked the beginning of UN support for Negroponte's One Laptop Child project (OLPC), but it also marked the beginning of Thailand's interest in technological education reform. Like many other countries, Negroponte's promise for a low cost and durable laptop gave Thailand hope to catch up with other developed countries while closing the gap in socio-cultural, economic, and technological aspects. Technology thus was seen as a viable solution to all of Thailand's problems. The presentation will look at the effect of techno-solutionism in Thailand through the attempts of technological education reform policies. I will examine the rise and fall in Thailand's educational technology policies focusing on one laptop per child project through analyzing media and official documents. STS scholars (James C. Scott 1999, Evgeny Morozov 2013 and Vincent Mosco 2005) examined the effects of treating technology as an "ultimate problem solver" while Christo Sims (2017), Morgan Ames (2019), and Roderic Crooks (2018) analyzed how solutionism develop in education technology. My case study on Thailand presents an alternative angle since most technological projects in Thailand are instituted through a top-down approach. It will answer the following questions: does the failure of the one computer per child project arise from the macro failure of charismatic technology transfer? Does the concept of technology as a solution to the developmental issues persist and could it re-emerge back into Thailand's political scene? What is the impact of seeing technology as an ultimate solution for all problems in the Thai context?

Session Organizer:
Francis Lim
Chair:
Samantha Wesner, Cornell University

279. Marxist STS 2 (History)
3:00 to 4:40 pm
virPrague: VR 20

In this subsession of the panel "Marxist STS", the papers explore historical debates and approaches to the study of science and technology in the Marxist tradition.

Participants:

Misplacement of the Critiques of Technology: The Frankfurt School in China *Xiaoyi LI, Peking University*

This article is rooted in the thought of the disenchantment and demythologizing of science and technology in China since reform and opening-up. As one of the most important representatives of western Marxism, the Frankfurt School was first translated into Chinese and introduced to China in 1978, at a time when the school itself had been less influential in western world. And it soon became one of the most popular western schools of thought in China. Although being significant and fundamental, the critiques of technical rationality have not received as much attention as critiques of capitalism and mass culture do in China in the 20th century. In other words, the critiques of technology were lagging or even misread in China. This article tries to summarize the critical research of science and technology in China from 1978 to 2019 based on the statistics analysis of CNKI, which may outline a general evolution both in attitude and scale. Then, it compares the critical theories of science and technology between classical Marxism and the Frankfurt school, as Also, it discusses the mainstream trend of "science and technology are primary productive force", with the hope of demonstrating the misplacement of the critiques of technology in Chinese Marxist philosophy. At last, this article tries to explain that in the aspect of epistemology how science and technology in China were transformed from mythologized to demythologized facing the collision of the Frankfurt school's theories.

Science Accidental: Has STS morphed into a 21st Century version of Technoscience, Controlled Opposition *Richard B Duque, George Washington University*

As part of this three-volume scholarly and theoretical memoir, the author traces their family's STS roots from before, during and after the 1973 right-wing, coup d'état in Chile of democratically elected Marxist President, Dr. Salvador Allende. This scholarly and personal STS reflection intertwines (a) the grand ideological debate of the 20th century, John Maynard Keynes' Controlled Markets versus Friedrich Von Hayek's Free Markets, with (b) the Cold War rise of Hollywood and STS as the fictional and theoretical counterbalances and protests over the excesses of global, Technoscience Capitalism, to (c) the material and symbolic realities of the author's young professional parents' migration from pre-Marxist Chile to fulfill their professional American Dreams. The author's parents, one a self-proclaimed Marxist, realized themselves within a stone's throw of Hollywood, the propaganda engine of American "Technoscience" Exceptionalism. The author's family then moved to Central America, during the Marxist-inspired revolutions that erupted in that region. There the author's father assumed a position with the United Nation Development Project (UNDP), a position he would renew over the next 20 years across Sub-Saharan Africa, Central America and South-east Asia. Before returning to the Academy, the author earned a degree in Market Economics, ran a retail business, backpacked half of the world, and pursued a Hollywood career. Then the Internet hit and changed everything. As a young PhD candidate in the Deep South of the USA, researching the global diffusion of the Internet in Sub-Saharan Africa, the author returned to the family's homeland, Chile. There the author conducted a study that traced the Technoscience legacy of the 1973 coup d'état in the digital age. As a junior STS scholar, the author then assumed a faculty position in Central Europe, an arguable seedbed of Marxism, Free Market ideologies, as well as STS. There the author begins to uncover dark family, institutional and global contradictions, which put into question whether their family, Hollywood, the United Nations or STS were ever the counterbalance to 20th, and now 21st century, Capitalist global hegemony or rather well-orchestrated and staged controlled opposition.

Science, Technology and Socialism: the Soviet Engineering Studies *Elena Gavrilina, Bauman Moscow State Technical University; Aleksandra Kazakova, Gubkin Russian State University of Oil and Gas, Bauman Moscow State Technical University*

During the Soviet period, STS-like activity took place in a few relatively isolated disciplines: industrial sociology, ergonomics, engineering psychology and theory of discovery or invention. With different levels of institutionalization, they tried to combine the Marxist approach to S&T with the expertise for planning, management and education in the command economy. Soviet "ergology" initially appeared in 1920s, gradually moving from physiology (Myasishchev, Bekhterev) to psychology and "industrial psychotechnics" (Gellerstein, Shpilrein), had anti-Taylorist orientation and was aimed at overcoming alienation of labor in human-machine interaction. After its reemergence in 1960s, ergonomics became an active field of research and experimentation both for production and consumption. Similarly, industrial sociology was abandoned for a few decades between the pioneering works of Gastev's Institute of Labor and institutionalization of applied social research in factories in 1960s, studying distribution of knowledge and control, as well as interaction, communication and conflict in the heterogeneous collectives. At the same time, the production of knowledge was studied both with analytical approach to problem-solving (Altshuller's "TRIZ" movement), technical and scientific creativity (Bush, Look) and from the socio-historical perspective (based on the concept of "universal labor"), which later became a source for engineering ethics (Kedrov, Gorokhov). Some interesting theoretical and empirical insights into relations between science, technology and socialist society can be found in these fields. Their overview reveals the constant oscillation of intellectual community between the pragmatic technocratic approach and the efforts to grasp the social complexities of scientific and technological development in the context of changing political regime.

Session Organizer:
Davide Orsini, Mississippi State University
Chair:
Ed Hackett, Brandeis University

280. Gendersexualities, Race/ism and The Postcolonial: STS

treatments I
3:00 to 4:40 pm
virPrague: VR 21
Participants:

Gender (Dis)Parity in Computing: India vs West *Deepak Kapur, University of New Mexico; Roli Varma, University of New Mexico*

STS scholarship on women in computing has been preoccupied with whether technologies have a gender. Typically, scholars show how women have been excluded from the computing field and how such exclusion has given it masculine characteristics. It is argued that a special community within the computing world, who possess traditional masculine characteristics such as fascination with technology and lack social skills, maintains this image. Women are seen as "naturally" afraid to fiddle with the computer, while men are "naturally" brave to have a close encounter with the powerful technology. Such gendered constructions of computer technology portray women's natural professions to be in areas other than computing. Empirical studies undertaken in the United States and in Western Europe show that women tend to stay out of computing fields. In contrast, computing has not lost its allure with women in India. Computing in India is perceived as a women-friendly field; it is mostly because it will provide good careers to them, and they will have a desk job in an office thus protected from the outside environment. The Indian case shows that the gender imbalance in the west is specific to the countries and it is not a universal phenomenon as it has been portrayed in the STS literature.

Infrastructures of Inequality: An Examination of Detroit's Project Green Light *Megan M Rim, University of Michigan*

In recent conversations on face recognition technology's algorithmic bias and its use in the United States, Detroit's Project Green Light has consistently been cited as an important case study in the implementation of the technology by law enforcement at city scale. An initiative that claims to be the first of its kind, Project Green Light offers enrolled business owners dedicated monitoring, utilizing face recognition, on continuously streaming cameras as well as prioritized police response. In part, the initiative's significance in the national conversation on face recognition is derived from Detroit's specific racial demography (more than 80% people of color) and prevalent narratives of its recent economic and infrastructural failure. However, the roots of Detroit's economic and infrastructural crises in the 1990s and 2000s lay in earlier racist policies of social and spatial control such as redlining (Sugrue 1996). Detroit activist Tawana Petty describes the installation of Project Green Light cameras in neighborhoods as digitally facilitated redlining. In this paper, I explore the infrastructural components of Project Green Light tracing the social, political, and economic investments it rests upon. Drawing from participant observation fieldwork in Detroit and a discursive analysis of Project Green Light materials, I identify sites and moments of infrastructural unevenness in Project Green Light that reveal these investments. Utilizing a framework grounded in STS and Critical Race Studies, I situate it within the context of larger historical racial projects of spatial control, dispossession, and deinvestment in Detroit as well as current processes of gentrification and economic revitalization.

Desire in Sight: The Aesthetics of Knowledge Organization *Melissa Adler, Western University*

Every system that organizes information was inspired by a person with a vision. Mark Zuckerberg's Facebook, Jimmy Wales' Wikipedia, and Melvil Dewey's Decimal Classification are among the global systems designed to assemble, organize, and facilitate access to the world's knowledge. However, in contrast to the notion that large knowledge organization systems will advance cross-cultural communication, scholars have begun to unmask some of the ways in which algorithms, library databases, and archives facilitate access by using colonialist categories and structuring techniques that universalize western perspectives, whiteness, and heteropatriarchy. This paper is motivated by an appreciation of the multitude of ways to think about what knowledge organization is and does, as well as an awareness that aesthetic qualities are integral to the creation and analysis of knowledge organization techniques. I will talk about my project, which investigates a variety of models for creative knowledge organization systems by examining methods that reside at the intersections of art, story-telling, poetry, craft, and information practices. I have been studying the creative work of Audre Lorde, Jorge Luis Borges, Judy Chicago, Orhan Pamuk, and others. The aim of the research is to privilege personal and local knowledge organization techniques, and to find creative ways to augment, revise, repair, or resist global standards. If we understand knowledge organization and classification as creative endeavours that reflect and animate intellectual terrains and socio-technical imaginaries, we may appreciate them for the ways that they circulate knowledge along lines of desire, fear, love, hatred, mourning, and curiosity.

Social Circus and disability - a possible approach of inclusion *Consuelo Vallandro Barbo, Universidade Federal do Rio Grande do Sul (UFRGS/Brasil)*

This presentation aims to show how Circus was the key for the inclusion program of the special school Legato in a poor region of a city of Brazil: Canoas. In a country where poverty and social inequality is a huge problem, dealing with disability among the poor community is even a greater challenge, as these citizens do not have financial conditions to pay for the good rehab and social inclusion institutions, which are mostly private. They depend on NGOs, which not always have much financial aid to survive. Our experience of 5 years teaching at this Non-Governmental Institution showed how circus, with its specific apparatus and techniques, could help children and adults with intellectual, physical and sensory disability of the peripheral district of Niteroi to develop new physical, emotional and self-confidential skills with a small structure. This experience, however, has not yet been explored by the local academic field as it could be. As the researcher tried to submit this Doctorate study at the same school she had taken her Master Course in Performing Arts, it was not accepted. This may have happened because circus itself is not respected as a form of art in the South of Brazil and, besides, it is associated to some prejudices, also wrongly connected to disability, as we see in the conception of many people a strong influence of the North-American history of circus, where the Freak Shows were created.

Session Organizer:
Megan M Rim, University of Michigan
Chair:
Megan M Rim, University of Michigan

281. Hormonal paradoxes: circulations, access, exposures
3:00 to 4:40 pm
virPrague: VR 22

Synthetic hormones, as well as hormone-like chemicals, impregnate our everyday lives. "Sex" hormones are among the most sold molecules on the pharma market, while endocrine disruptors can be found in virtually every other household and industrial product. These chemicals do not stay put, but circulate, react, transform, bind, break, agglomerate, accumulate, dislodge, and endure, and in doing so they transform tissues, bodies, relations, lives and ecosystems. They travel from labs, through human and non-human bodies, through membranes, sewage systems and bodies of water, and often back again into bodies through environmental exposures. Hormones and hormone-like chemicals circulate and accumulate, but they do so unevenly and following patterns of race, class and gender-based inequalities and oppressions defined by capitalism, binary and cis-normative gender orders, and the coloniality of power. Therefore, paradoxically, often the same molecules that are promoted or even imposed to some, are denied to others. In this panel we ask: what can be learned by following synthetic hormones and hormone-like chemicals across material, social and epistemic boundaries? How do access, exposure, pollution, and hormonal balance and disruption look like if we choose such an approach? Presenters explore the uneven circulation of synthetic hormones and hormone-like chemicals, through contrasting places, organisms, social worlds, media, technologies, theoretical and disciplinary fields.
Participants:

Open Molecular Coop. *maddalena fragnito, Centre for Postdigital Cultures, Coventry University, UK*

The corporate profit that stems from the commodification of drugs is primarily based on the control of bodies, sexuality,

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reproduction and health. Therefore the human, the animal and the environment are precious assets and the main sites for the exercise of both sovereignty and resistance (Federici, 2004). By making reference to the political context of "molecular colonisation" (Critical Art Ensemble, 2002), I will compare two practices of production and administration of hormones in order to highlight how this phenomenon is stretching the concept of 'business property' over bodies and cells of humans, animals and plants. On the one hand, I will analyse the powers that have the monopoly on the biogenesis of hormones' molecular patents; and have the authority to introduce or withdraw from the market drugs on which many people rely. On the other hand, I will look to DIY/DIWO biohacking medical practices, organized by activists and artists, which are challenging the dissemination of open-source for-human hormones treatment protocols, by using open source and workshopping methods, and by reframing toxicity without reasserting a politics of purity. Hence, starting from the "Commoning Molecules" framework exposed in an earlier paper (which will be published in the "In medias res: Decolonial Interventions" Journal of International Women's Studies - Special Issue), I would like to continue these reflections by speculatively framing the proposal of an Open Molecular Coop. This will allow me to think about the ethics of (commoning) care by relating this speculative project to Indigenous seed savers initiatives.

Retrospective Exposure: Tracing Narratives of Chemically-Induced Transgressions *Jacquelyne Luce, Mount Holyoke College*

Diethylstilbestrol, or DES, a synthetic estrogen, is most recognized in the public sphere for the rare cancers and reproductive disruptions experienced and embodied by millions of assigned female at birth individuals who were exposed in utero. To a lesser extent, DES "appears," publicly and scientifically, as the prototypical endocrine disrupting chemical. This paper offers a queer feminist tracing of the ways in which these two nodes of DES' relevance inform a contemporary discourse of chemically-induced transgression. Drawing on research conducted in the DES Action health movement archive and twenty-five narrative interviews with people with either documented or suspected exposure to DES, I explore how temporally unbound and (re)spatialized understandings of how DES works, and the potential effects it may have, engender particular narrations of sexual difference, gender identity, and sexuality. Which stories of DES-exposure lie outside of the gender/sex binary frame of kinship (DES daughters/DES sons) that have underpinned DES-related representations, education, and activism? How do "retrospective exposure" narratives contribute to and/or challenge social, medical and scientific understandings of gender/sex/sexuality, and the politics of DES-related biology/genetics/epigenetics, and the politics of DES-related research? In conversation with scholarship on sexed/gendered bodies, hormones, and health and environmental justice, this paper contributes to STS analyses of the historical and contemporary racialization and queering of science, medicine, and transgenerational chemical exposure. An autoethnographic attentiveness to the processes of analyzing the interview narratives and archival material highlights the complexities of situated and entangled queer feminist commitments to diverse and, at times, divergent affected communities.

Rhythms — Flows — Pains — Desires *Lenka Veselá, Brno University of Technology, Faculty of Fine Arts*

In the panel, I would like to present and discuss my research that looks at how menstrual rhythms and flows are fabricated by assemblages of endogenous (bodily produced) and exogenous (pharmaceutical and environmental) "sex" hormones. I propose hormonally induced menstrual experience as a productive perspective from which hormonal ecologies may be mapped and examined. As variously situated menstruators are exposed to industrially manufactured hormonally active compounds in the environment and/or regulated by pharmaceutical hormones, I interrogate how unevenly distributed disrupted periods, fabricated cycles and suppressed menstruations are endured, resisted, hacked, appropriated and embraced. How are bodily produced hormones, molecules that can mimic their action absorbed from the environment and pharmaceutical hormones

mobilized in performances of embodied rhythms, flows, pains and desires?

Session Organizers:
Mariana Rios Sandoval
Olivia (Roger) Fiorilli, IFRIS, Cermes3
Chair:
Mariana Rios Sandoval
Discussant:
Susanne Bauer, University of Oslo

282. Health Made Digital - II
3:00 to 4:40 pm
virPrague: VR 23
Participants:

Digital Health: The role of regulatory boundary organizations in shaping the health/lifestyle demarcation *Elisa Lievevrouw, Centre for Sociological Research, KU Leuven; Luca Marelli; ine van hoyweghen, University Leuven*

In recent years, Western healthcare systems have been overflown by new digital health technologies (DHTs, e.g., wearables, big data platforms, Electronic Health Records, Artificial Intelligence, and mobile health applications) promising to increase the efficiency, outcomes, and quality of care. Silicon Valley has been widely recognized as the epicenter of this rapidly evolving digital health market. However, the broader socio-political dynamics underpinning the innovation journey of DHTs have so far eschewed in-depth social science scholarly scrutiny. In promising to personalize medicine, digital health technologies, in particular, question the institutionalized boundary between health and lifestyle (consumer) technologies. Building on insights from the field of science and technology studies (STS), this paper aims to account for the role of regulatory boundary organizations in performing this health/lifestyle demarcation. Through an in-depth discourse analysis of US and EU policy- and regulatory documents and 'grey articles' from newspapers and technology-specific news websites ranging from 2008 to 2020, this paper provides an account of the controversies both around the development of a digital health quality and safety approval framework by the American Food and Drug Administration (FDA), as well as the implementation of the adjusted medical device regulation by the European Commission, the European Medical Agency (EMA), and its national regulatory bodies. Building on this, we reflect on (i) the co-production between DHTs and US' and EU's regulatory bodies, underpinning the creation of a new object of governance, (ii) the role of tech companies in medical device expert communities, and (iii) the reconfigurations these new digital health approval frameworks bring forth with respect to established evidence-based medicine approaches.

Perceptions of Actionability in Clinical Genomic Sequencing *Kellie Owens, University of Pennsylvania*

Clinical genomic sequencing (CGS) is moving into primary care settings. By identifying pathogenic and highly penetrant variants in healthy individuals, providers can suggest treatments or lifestyle interventions to manage health risks and prevent poor health outcomes. But CGS is also expensive and not without potential harms. CGS produces large amounts of data, much of which is hard to characterize or may have a negligible or negative influence on health. The concept of actionability is commonly used by genomics researchers to help separate data that may be useful from data that is likely irrelevant for patients. Even with widely referenced guidelines on actionability, there is still ongoing debate about what actionability means and variability in how clinicians and laboratories interpret these guidelines. Experts disagree, for example, about the level of pathogenicity needed to define a result as actionable, or what interventions count as actionable. Based on pilot interviews with experts and an analysis of published literature, I characterize the varied meanings of actionability in clinical genomic sequencing of healthy populations. I find that experts' conceptualizations of actionability are influenced by their normative values and assumptions, in addition to scientific or medical evidence. Unlike prior research that has proposed new definitions of actionability,

I do not seek to define what actionability should be. Instead, I seek to uncover the underlying values that generate genuine and respectable disputes about what constitutes actionability. Understanding these values is necessary for the development of clinical guidelines surrounding actionability in clinical genomics.

Technological Interventions in Indian Healthcare : Knowledge-making and the Promise of Digital Transformations *Nishtha Bharti, Indian Institute of Technology, New Delhi*

Through my paper, I will seek to problematise the aspirational and normative aspects of imaginations of social life deemed attainable through the advancement of algorithmic systems in the healthcare space in India. Highlighting the analytical purchase afforded by the concept of 'sociotechnical imaginaries' (Jasanoff & Kim 2009, 2015) in this endeavour, I will also explore the privileging of certain knowledge forms and collective understandings shared amongst technological and medical experts that intersect with the sociotechnical imaginary endorsed by the Indian government. I intend to demonstrate that even as this top-down imaginary has inspired significant uptake of Artificial Intelligence (AI) in the domain of healthcare, the promise of its putative (data-driven) benefits occludes certain patient groups/cohorts from the scope of technological dividends. Effectively absent from the dominant imaginary of technological interventions destined to deliver the goal of 'social good' are those publics that are paradoxically most in need of healthcare support and investments. Drawing on analysis of policy documents and expert interviews, I contend that invisible in the rhetoric of a 'desirable' social future and buried in technical discussions are unsettling questions about the values being prioritised in the vision of technologically-mediated healthcare and the disparate consequences for various stakeholders in such projects. My purpose is not to evaluate the plausibility or material possibility of the projected imaginary, but to engage with its claim to facilitate equitable healthcare service.

The Absence of Genetic Data: An Analysis of Direct-to-Consumer Genetic Test Policy *Hined A Rafeh, Rensselaer Polytechnic Institute*

Classified as a consumer product, direct-to-consumer (DTC) genetic tests in the United States are governed under commercial regulation rather than clinical regulation. The classification of a genetic test determines its governance; it determines the federal agency that regulates it, the type of data it produces, and even the individual that the test was done on. This regulation is based not on the type of genetic test (that collects the same spit and sequences the same DNA) but on its intended use. For example, genetic data is not always health data, at least in the eyes of the law, as US legislation such as HIPAA only applies to patients, not consumers. The loss of the identity of the "patient" comes with the loss of data protection for health information. This affects not only the regulation of these tests, but the kinds of data it produces. Legislation has explicit definitions of "health data" and "consumer data", yet "consumer health data" blurs legal and social lines. Moreover, "genetic data" remains absent. Through the two questions "how are DTC genetic tests regulated? and "how is genetic data classified?", this paper examines the treatment and transformation of genetic data through the governance of DTC genetics in the US.

Session Organizers:

Hined A Rafeh, Rensselaer Polytechnic Institute
Danya Glabau, NYU Tandon School of Engineering

Chair:

Danya Glabau, NYU Tandon School of Engineering

283. The Cultures of New and Old Technomedia I
3:00 to 4:40 pm
virPrague: VR 24
Participants:

Global Pokémon Culture: Constructing A Culture Of Knowledge And Expertise Through Play *Allen Kempton, Faculty of Information, University of Toronto*

Information communication technologies (ICTs) are changing the way people play and how they learn to play. As part of an investigation into local play cultures of suburban Canadian

Pokémon players, interviews and a group play session revealed insights into ways Pokémon players build a sophisticated culture of knowledge and expertise through forms of play that are facilitated by ICTs, and how this culture, though global in nature, affects local play practices. This paper contributes to STS by examining how digital game players use ICTs to facilitate user-generated content as bases of knowledge, accumulate capital and authority, which in turn shapes play practices, how knowledge is disseminated, and what is considered relevant in the game to players around the world. This paper argues that ICT platforms position contemporary Pokémon play to be a culture of user-generated knowledge instead of the mysterious adventure game it was originally presented as, representing a push against the industry in favour of user-generated content. Databases are built from the ground up, and players worldwide depend on the knowledge produced by other players. Reputable content creators push play practices forward. The accumulation and relevance of capital is accelerated by video platforms such as Youtube and Twitch.tv, leading to forms of visible authority, while dismantling hidden algorithms, myths, and invisible forms of authority. Data mining tools have led to a demystification of the games, resulting in detailed documentation that was purposefully hidden by developers, and the development of a complex metagame grounded in expert knowledge from play practices.

Homelessness and the Digital City: The Role of Technology, Institutions, and People in the Search for Free Internet Access *Will Marler, Northwestern University*

There is growing interest in how digital infrastructures shape urban mobilities and exclusions (e.g., Humphry & Pihl, 2016; Sheller & Urry, 2006). Homelessness is underexplored as a case study. I conducted participant observation over three years with unstably housed adults living in Chicago. I followed my interlocutors and interview them as they sought out internet access across devices and locations in a gentrifying north side neighborhood. My findings point to an ecology of sites and locations associated with different attitudes. Computer access at the library meant security and support, computer access at the non-profit organization meant a sense of community, and mobile and wi-fi hotspots delivered a feeling of autonomy, all in the same neighborhood. The findings illustrate the role of social as well as instrumental needs in the search for internet access. For example, while smartphones fit the mobility needs of the homeless, and while libraries encouraged productive uses of the internet, many of my interlocutors preferred to use computers at a non-profit agency because they could do so in a social way that encouraged bonding among friends and strangers. A core tenant of STS is that the meaning of technology is shaped by its users. People experiencing homelessness are agents in this way, even as they depend on public and free resources. Understanding the nature of exclusion/inclusion in the digital city requires paying attention to the interaction of technology access, urban institutions, and the social conditions for typically excluded populations.

Social Construction of Mobile Phones in the Classroom: An STS case study on the relationship between the use of mobile phones and English language development of ab-initio pilots *Saadet Tikac, Ozyegin Universitesi*

This paper explores the social construction of mobile phones in an English class designed and delivered for first year pilot training students at a private university in İstanbul. Originally an irrelevant and a distracting item for the class, mobile phones get shaped into a core learning device as described in the case study. The process of social construction is detailed using the methodology of Social Construction of Technology (SCOT) theory as presented by Bijker (1997). Through a description of historical development of mobile phones, and relevant social groups first; it is explained how transformation of mobile phone into a learning device is achieved in the mentioned classroom and how closure happens as the problems surrounding the artifact are removed. Along with the shaping of the technological item, a social shaping by the use of technology is also observed; which allowed a personalized learning, practice and feedback chance; thus improving the speaking skills of the students. Implications for future technological opportunities for student pilots include

AI and the help it can bring into the educational and their specialized professional scene, along with the risks and challenges it poses to traditional system of pedagogy.

User-platform Relationships: Scripting Community and Commercial Practices On a Live-Streaming Gaming Platform *Kristine Ask, Dept. of Interdisciplinary Studies of Culture, NTNU; Hendrik Storstein Spilker, Norwegian U. Of Science And Technology (NTNU)*

Twitch is a highly successful streaming platform best known for live-streaming gameplay and being a key hub of gaming culture. In this paper I explore how the platform combines community and commercial values when envisioning and engaging their users. Based on qualitative analysis of design, discourse and user practices, the analysis draw on the theories of "platform policies" (Gillespie 2010) and "scripts" (Akrich, 1992) to explore how different users and use are envisioned and materialized in the platform, and how users themselves accept and reject such configurations. The main thrust of the analysis explores the current script of the Twitch platform and identifies 5 characteristics of the envisioned Twitch user; a user that is a) social, b) an ethical community member, c) a gamer, d) a potential content creator and e) a patron. While seemingly expected qualities of a user of a game live-streaming platform , these five scripts also represent multiple balancing acts: The user should be social, but not ill-behaving; all users are welcome, but gamers still prioritized; commercial content draws new huge audiences to the platform, but encouraging users to become broadcasters is still vital – while the patronage system tries to mix fandom and loyalty with the commercial interests of the platform and its owners. The paper contribution to STS lies in combining platform studies with material semiotics to highlight the importance and role of users in the making of platforms.

Session Organizer:
Goede Both, HU Berlin
Chair:
Goede Both, HU Berlin

284. Meet with NSF STS Program Officer
4:40 to 6:00 pm
virPrague: VR 02
This will be an open session in which anyone who likes can discuss their potential proposals with one of the NSF program officers who direct the Science and Technology Studies funding program.
Session Organizer:
Fred Kronz, The National Science Foundation
Chair:
John Parker, National Science Foundation

285. META PANDEMIC: Working on pandemics pre- and post-Corona
4:40 to 6:00 pm
virPrague: VR 03
This social wants to gather those who work and have been working on the nexus of questions in Global Health / Security and pandemic preparedness, that COVID-19 the current politics of the urgent put in glaring light. As the Covid-19 pancemic spreads around the world, STS perspectives on pandemic preparedness, global health security and the government of infectious disease and its environmentalities become ever more important. While massive funds for research about the pandemic are being mobilized, existing research still waits to be read. Let's talk about experiences, frustrations, and euphoria in working on a „highly relevant" and „dynamic" „research object": What do the distress and the changes in the „transnational Covidscape" (Plenary 6) mean for our research? Let's talk about working on health security and losing (or gaining) „access to the field" - due to massive politizication of pandemic preapredness and management. Let's talk about the irony of having a timely panel on „Environemntalities of Health Security" canceled - due to Corona-induced shortfall of panelists. Let's talk about navigating the pitfalls of academic limelight or invisibilty, the politics of funding schemes, and the (ir)relevance of making social scientific work (ir)relevant in a time of crisis.
Session Organizers:
Carolin Mezes, Philipps-University Marburg

Sven Opitz, Philipps-University Marburg
Chair:
Carolin Mezes, Philipps-University Marburg

286. Hackers, Maintainers, Programmers and Geeks
4:40 to 6:00 pm
virPrague: VR 09
For those interested in chatting further about everything from hacker cultures, maintenance, or anything that was on your mind during your panel, please feel free to join this informal meeting, which will take place after the Hacker Cultures panels on Thursday evening.
Session Organizer:
Paula Bialski, Leuphana University Luneburg
Chair:
Mace Ojala, IT University of Copenhagen

287. Comm Scholars in STS - Making it work as an interdisciplinary scholar
4:40 to 6:00 pm
virPrague: VR 15
This is a freestyle chat aimed at scholars with a background or current position in communication who have found a home at 4S. We hope this will be a space where we can discuss how to build theoretical, professional, and pedagogical bridges between communication and science & tech studies. We'd also love to hear from scholars with an STS background interested in exploring what communication has to offer. The more, the merrier!
Session Organizer:
MC Forelle, Cornell University
Chair:
Jeremy Hunsinger, Wilfrid Laurier University

288. Personhood in more-than-human worlds: reflections from the borderlands of anthropology and STS - follow-up discussion
4:40 to 6:00 pm
virPrague: VR 17
Part 1 ⌷SEP 3:00 Intro: Mette N. Svendsen and Tyler Zoanni 3:05 Julienne Obadia, "In/Animacy at the Margins: Cyborg, Actant, Person" 3:20 Lesley A. Sharp, "Care and the Cowboy Boot:⌷SEP Interspecies Responsibility and the Boundaries of Lab Animal Personhood" 3:35 Celia Lury, "Prototyping a pathway, property and participation: one and the same thing" 3:50 Mie Seest Dam, Sara Green, and Mette N. Svendsen, "Precision Patients: On selection practices and moral pathfinding in experimental precision oncology" 4:10 break Part 2 4:25 Anja Marie Bornø Jensen, "Donors, Data and Disposable Bodies. Dignity and Personhood in Organ Transplant Technologies" 4:40 Marieke van Eijk, "Doing Health Economics in US Clinical Practice" 4:55 Tyler Zoanni, "On the Subject of Demography in Uganda" 5:10 Karen-Sue Taussig, discussant 5:30 Discussion
Session Organizers:
Tyler Zoanni, University of Bayreuth
Mette Svendsen, University of Copenhagen
Chair:
Tyler Zoanni, University of Bayreuth

289. SUBPLENARY: The Politics of Explanation
6:00 to 7:40 pm
virPrague: VR 00
This subplenary will discuss the conflicts and collaborations among modes of explanation in STS as well as new approaches to research that challenge old dichotomies. It will focus on the many complexities of social, environmental, medical and scientific problems that require combination and negotiation of different types of expertise, and collaboration among different modes of study and explanation. In contrast to siloed methodologies, STS researchers are, for example, ignoring oppositions between quantitative and qualitative research methods and combining these two modes of explanation in innovative ways to study difficult questions and problems. They work across the boundaries between social research and creative practice, attempting to re-craft relations between representation and participation, for example by connecting data analysis and visualisation methods from design. While much of this work is practical and methodological, it also requires deep and enduring engagement with the politics of explanation. Thus, while there is

increasingly widespread acceptance that today's complex problems cannot be solved by one discipline, the fundamental challenges this poses to established methodological dichotomies are much less widely recognized, as notions of "real science" continue to dominate the understanding of science's usefulness to society. Some examples include how social understandings of race have entered into algorithms and software packages used in biomedical research; the socio-technical arrangements that inform and constrain the spread, testing, treatment, and mitigation of Covid-19. In each case, one needs not only both quantitative and qualitative data and methods, but also new experimental methodologies, to understand and account for what is going on and to craft strategies for change. For this subplenary, each of the speakers will bring examples from their own work to show how and why today's complex problematics requires us to engage practically, conceptually and imaginatively with the politics of explanation. Drawing on research experiences, we will discuss research methods and forms of explanation that challenge, trouble or seek to undo the dichotomies between quantitative and qualitative, scientific and creative, observational and experimental knowledge, and show how they can be productive of new ways of making knowledge and new ways of organizing our worlds.

Session Organizer:
>**Tereza Stockelova**, Institute of Sociology of the Czech Academy of Sciences

Chair:
>**Joan Fujimura**, University Of Wisconsin-Madison

Discussants:
>**Laura Forlano**, Illinois Institute of Technology
>**Joan Fujimura**, University Of Wisconsin-Madison
>**Noortje Marres**, University of Warwick, UK
>**Ismael Rafols**, Centre for Science & Technology Studies (CWTS), Leiden University

290. Integrating Stakeholders From the Beginning – But (How) is that possible? #1
6:00 to 7:40 pm
virPrague: VR 01

A central mean of STS is to integrate diverging perspectives on science and technology within scientific discourses, as well as integrating non-academic actors in such projects and processes. In recent years, this mission has been adopted by funding agencies and further scientifc communities. The aim to intensify interdisciplinary cooperation with other academics and transdisciplinary cooperation with stakeholders from practice has come to the fore, such as in the EU funding governance concept „Responsible Research and Innovation" and other modes of „Post-ELSI interdisciplinary collaboration" (Balmer et al. 2016). The questions what does it take to intervene, and whom a specific research constellation wants to speak to and act with, are normative, dynamic and often cannot be answered in a single solution that remains the same throughout the process. The session acknowledges this difficulty and focusses therefore on the very beginnings of (academic and non-academic) stakeholder integration. How do we, can we and should we (re)organize our methods and practices to integrate different stakeholders in the very beginning? How do we rethink and remake ways of integrating and recognizing the needs and inputs of others in early stages of research processes? The session seeks to discuss past and ongoing efforts of user-centered design or participative research, as well as other forms of outreach activity that aimed at integrating stakeholders in academic contexts. Furthermore we welcome reflections on practices and methods of interdisciplinary cooperation focussing the very beginnings of such projects.

Participants:
>Let's talk with our hands: a phenomenological approach to multidisciplinary work *Laura Cortés-Rico, Universidad Militar Nueva Granada; Tania Pérez-Bustos, National University of Colombia*
>
>This work presents a phenomenological and situated approach to the question of How do we, can we, and should we (re)organize our methods and practices to integrate different stakeholders in the very beginning? We exhibit the case of a research project aimed at promoting knowledge dialogues between diverse participants while designing tangible interfaces for the interaction with mobile devices. The participants ranged from multimedia engineering academics (students, professionals, and teachers) and anthropology researchers, to textile crafter masters. We belong to

different communities of practice, with distinct methods and philosophies when conceiving, designing, and even using digital technologies. Therefore, the great challenge at the very beginning of the project was to grow a small community where all the stakeholders (crafters, engineers, and anthropologists) felt part, identifying ourselves as co-creators of the same tangible interfaces. This confidence was possible from a phenomenological approach: getting bodily involved in the doings of the others by walking their spaces, experimenting with their materialities and tools, or learning terminology from their expertise. Accordingly, we developed workshops where engineers learned the basis of embroidery, macramé, and crochet, and others where crafters learned how does a speaker work, how to connect a circuit, or how to design an algorithm using flow diagrams. In the end, we were able to shape three tangible interfaces, each developed collectively during a multi-session workshop led by an artisan and two engineering students who worked together, hand in hand. All the interfaces have core textile and computational components, all of them required for the function of the interfaces: i) a knotted speaker, ii) a textile sampler which tells stories about its embroiderers on the mobile, and iii) a toolkit to program crafted tangible interfaces

From Stakeholder to Collaborator: Critical Reflections of Stakeholder Integration *Annie Y Patrick, Virginia Tech*

This talk explores my experimental interventions to bring visibility to the invisible in large-scale reform projects. In 2014, the National Science Foundation (NSF) launched a national, multimillion-dollar grant to spur a cultural revolution within engineering departments across the United States. The NSF challenged these engineering departments to carry out this revolution with an engineering education expert and in an unprecedented move, a social scientist. In 2016, I joined my university's RED project as a graduate research assistant on the social science team. Though I came with qualitative research skills, I had little training as a "changemaker." After three years of interviewing stakeholders, observing this revolutionary process, and participating as an STS graduate student, I decided to cause my own revolution inside the project. Utilizing experimental participation, I seek to provide a voice to those that go unseen due to the dominant images that limit engineering at the expense of excluding others; to bring recognition to labor that is invisible because it is not considered "rigorous;" and to the socio-cultural aspects that are necessary for a revolution. For this talk, I focus on my initial efforts of identifying and negotiating the objectives, identities, and politics of multiple stakeholders. I discuss my work of negotiating institutional power and authority from above; of approaching the needs of the unseen through open dialogue, transparency, and respect; and lastly, the work of continuously maintaining my own STS identity. My on-the-ground experience highlights the importance of early-on, transparent stakeholder engagement in intervention development.

Valuation practices in the co-creation of better futures for ageing in place *Susan van Hees, Utrecht University; Carla Greubel, Utrecht University; Alexander Peine, Utrecht University*

In this paper we present and reflect on the development of a framework to map and explore valuation practices in ageing and health innovations. The development of this framework is embedded in the European largescale innovation project GATEKEEPER. The framework aims to contribute to responsible innovations by enabling reflexive practices. We therefore designed workshops in which participant conjointly map and reflect upon current and future values –such as trust, privacy, autonomy, taking care of each other- in the development of smarter living environments (e.g. the introduction of health monitoring apps, robotics, AI). In the first half of 2020, nine co-creation workshops will be organized in seven different European countries (Cyprus, Germany, Greece, Italy, Poland, Spain, United Kingdom). Following our design, relevant pilot site stakeholders will build future scenarios that visualize different perspectives on better ageing in place: their own, their imagined future perspective, and the perspective of an older person in their environment. By building these scenarios, the underlying and dynamic values will be explored, in relation to technological

innovations. We assume that building futures will help unravel different perspectives on ageing in place and related values, as well as open up opportunities to reflect on the potential tensions these diverging perspectives create. Our own observations during the workshops will not only help us unpack how valuation practices in the co-creation of health and ageing innovations are being shaped, but they will also enable us to reflect on the opportunities and limitations for the co-creation of responsible innovations.

‚Configuring The User As Somebody?' A Transdisciplinary Technology Design Approach *Anita Thaler, IFZ - Interdisciplinary Research Centre for Technology, Work and Culture*

This paper reflects on an ongoing medicine technology project, which received funding for implementing a gender perspective in the interdisciplinary team. The aim is to develop a multifunctional data patch for monitoring of vital signs and movements in everyday environments. ECG and piezoelectric sensors on ultra-thin stretchable adhesive foils send signals to a smartphone app. The potential applications range from everyday use for fitness monitoring to medical purposes. The logical starting point for the gender and diversity expertise was to integrate knowledge about feminist techno-science, especially the concept of "configuring the user as 'everybody' and the use of the 'I-methodology '" (Oudshoorn et al. 2004, p.30). Very early in the collaboration of physicists, engineers and feminist STS researchers (in the stage of proposal writing) it became clear that the requirement of integrating gender can be used to apply a participatory technology design approach which includes stakeholders from the very beginning. So instead of sticking only to the demanded tasks of reflecting gender in meetings, the project team expanded their methodology and interdisciplinary set-up into a transdisciplinary undertaking drawing on the RRI values of reflexivity, responsiveness, anticipation and deliberation (Stilgoe et al. 2013). The methods comprise • interviews with experts from physical therapy, cardiology, work psychology, • gender and technology workshops and participatory observations of lab activities, • a scenario workshop, which led to a decision to aim on cardiological rehabilitation, • stakeholder workshops with various experts and users, • constant meetings of the interdisciplinary research group to discuss the project progress and reflect on ethics.

Session Organizers:
Andreas Bischof, University of Technology Chemnitz
Arne Maibaum, TU Berlin
Chair:
Arne Maibaum, TU Berlin

291. Building Digital Bioethics: Transformations In Theory And Applied Practice
6:00 to 7:40 pm
virPrague: VR 02

Technologies that facilitate the collection and use of electronic health data have increasingly become the tools used to diagnose conditions and administer services. Digital transformations are at the centre of scholarly critiques of power imbalances in healthcare, partly because developments in digital biomedicine have been accompanied by data misuse scandals and genuinely new bioethical problems. Just as scientific advancements and concomitant human rights violations in clinical research and practice led to the development of bioethics in the 20th century, the turn toward the digital in healthcare is giving rise to new transdisciplinary trends in the theory and practice of contemporary bioethics (e.g. Klugman et al., 2018). In this open panel, we aspire to deepen conversations between theoretical and applied approaches in bioethics, and call for contributions aimed at "building digital bioethics." Inspired by the work of critical bioethicists (see "bioethics of the oppressed" by Guta et al., 2018, as well as Benjamin, 2016), we have received contributions in keeping with the STS commitment to centering subaltern perspectives, and to bioethics' grounding principles of respect for persons, beneficence, and justice (Belmont Report, 1976). How can emancipation and self-determination become possible in an area in which individual control is often reduced to check-box "consent"? Topics to be discussed include: • Digital bioethical methods and imaginaries • Bioethics and sex offender registries • Digital bioethics and residential care labor • Big data, genomics, and

neurodiversity • The ethics of person-centered public health surveillance
Keywords: Bioethics, Data, Governance, Health, Biomedicine
Participants:

Building a Digital Bioethics of HIV Surveillance: Centering the Lived and Living Experiences of People Living with HIV
Martin French, Concordia University, Montreal, Canada

In their recent commentary on the emergence of a "digital medicine panopticon," Guta and colleagues stressed the importance of "centering the experiences of people whose health makes them subject to the disciplinary gaze of medicine, public health, and the law" (2018: 63). Echoing this call with reference to "HIV surveillance,"—the epidemiologically-informed, socio-technical assemblage of practices and actors that attempts to track HIV in bodies and populations—I argue that public health practitioners and organizations have to do a better job of centering the lived and living experiences of people living with HIV in the development of their policies, plans and practices. The method informing this analysis is ethnographic (involving participant-observation), drawing primarily on my decade-long involvement in the global movement to end HIV criminalization. The paper contributes to STS a development of my friendly critique of Actor-Network Theory (French 2019) in the context of HIV surveillance.

Defining missing links: MSSNG and Modern Eugenics *Rua Mae Williams, University of Florida; Katta Spiel, University of Vienna*

In May 2019, Autism Speaks (AS) and Google, released the largest genome dataset involving autistic people to date. The MSSNG project is dedicated to "master" autism by investigating autistic people's DNA at scale. Stylised graphics, dramatic music, and a somber voice accompany the online presentation. We examine the implications this privately driven project has for autistic people toda by relating to McGuire's (2016) previous analysis of AS campaigns and highlighting how the discourses of tragedy and urgency are maintained despite the organization's claims of shifting objectives. MSSNG draws on DNA and Big Data as near-future utopias assigning money, time and resources to the promise potential of cure that ties into eugenic discourses. It appeals to a responsibility oriented towards a neurotypically presenting 'us' to figure out the autistic 'them', conveniently placing change into an uncertain future instead of focusing on improving the lives of autistic people now. This fixation on futurity plays into cultural entitlements to nondisabled progeny that associate "imperfect" genetic legacies with unacceptable risk (see also, Clare, 2017 and McGuire & Fritsch, 2019) . In contrasting the MSSNG project with the Crip Technoscience Manifesto (Hamraie & Fritsch, 2019), we point to alternatives in how to approach research on autism. Considering the role scientists and technologies have played in previous eugenic movements, we close on a call for science and technology to examine their practices and reflect on the roles they play in affirming ableist and eugenic oppression of autistic people specifically and disabled people more generally.

Intimate Invasions: (The Lack of) Digital Bioethics in Residential Care *Katta Spiel, University of Vienna; Vero Vanden Abeele, KU Leuven*

Due to the lack of societal appreciation and, subsequently, low wages associated with care work, nursing homes are expected to care for more and more residents with dwindling staff numbers. Within technology research, the ensuing lack in quality of care (Eaton, 2000) is treated as an opportunity to automate procedures and predict the 'optimal' distribution of person-hours — with the result of limiting human contact ungoverned by necessities between carers and residents. Subsequently, we see an increase in applications monitoring residents (e.g., by installing an infrared motion-detection system as in Suzuki et al., 2006) as well as staff (e.g., by developing algorithms with the assumption of widespread fraud in task reporting as in Han et. al., 2019). Digital bioethics in this space often rely on individual responsibility and responsiveness (see, Hofman et al., 2014) without also including larger societal power structures playing out in everyday care work. We illustrate how some of these pressures play out in a Flemish nursing home, specifically around

the intimate topic of continence care. To guide technology research as well as practice in taking on a more nuanced understanding of how sensors and algorithms act in nursing homes, we developed a set of guiding questions for the critical assessment of ethical dimensions as they relate to power structures extending existing guidelines by Hofman et al. This work is then augmented by a set of strategies for addressing potential issues, including withdrawing from projects that might risk counteracting not just high quality of care but also human rights.

Theorizing from Monstrous Flesh: On Sex Offenders, Data and Personhood *Jenny Brian, Arizona State University*

The term "sex offender" conjures a horrific imaginary, and thus it is no surprise that US sex offender laws have become increasingly severe. The sex offender registry is a technology that is accepted and deemed necessary because it is ostensibly meant to empower communities, to share information to help families protect themselves. However, existing research shows that registries and post-release notification laws do not seem to be effective at reducing sex crimes or recidivism by sex offenders (Argan 2011).The sex offender registry is a technology scripted with meanings of empowerment, but instead restricts freedom, disciplines bodies, and limits life chances. There is little centralized national data, and an overabundance of statewide data, and we know little about the characteristics of a "typical" sex offender (e.g., the nature of the crimes, their age). The failure to meaningfully disaggregate the data produces consequential sites of silence that erase personhood and foreclose any possibility for justice. In this presentation, I take seriously Benjamin's (2016) provocation that we cultivate an abolitionist consciousness in bioethics and STS, and using tools from queer theory, crip theory, and intersectionality, ask what it look like to develop a theory from the flesh (Moraga 1997) of those made most monstrous? What happens when we look at technologies "from below", from the perspective of the most vulnerable user? What data tells us who is disposable? To invoke Bowker and Star (1999), who gets sorted out? Who are bodies to be asked questions of, with and for?

The road to digital bioethics: a conceptual framework *Manuel Schneider, ETH Zürich; Effy Vayena, ETH Zürich; Alessandro Blasimme, ETH Zurich*

Technology changed our lives drastically over the last two decades, reshaping how we communicate and how we debate public issues, including those regarding science and technology governance. This transformation has generated a new terrain on which important ethical deliberations are conducted and meaning is negotiated among different actors. The empirical analysis of such terrain is the aim of what we propose to call digital bioethics. In this paper, we offer a definition of digital bioethics and suggest empirical methods, adopted from other emerging disciplines such as computational social science, critical to the digital bioethicist. We illustrate the methods' potential for bioethics through two case studies: 1) The sharing and secondary use of personal data for research purposes is considered one of the most fundamental enablers of future health research. We used network analysis to discover power structures among scientific societies and research institutions worldwide that determine the moral economy of data sharing and produce data sharing policies. 2) CRISPR/Cas9 genome editing represents one of the most hotly debated issues in biotechnology. Such debate on the ethical and regulatory issues of genome editing involves mostly experts gathered in high-level national and international conferences and committees. We employed natural language processing to trace the scope and characteristics of the public discourse on CRISPR on Twitter, capturing both expert and lay voices. Through these two case studies, our paper shows the potential of digital bioethics to enrich the agenda of current debates about science and technology.

Session Organizers:
Mustafa Ibraheem Hussain, University of California Irvine
Victoria Neumann, Lancaster University
Stephen Molldrem, University of California - Irvine
Chair:

Mustafa Ibraheem Hussain, University of California Irvine

292. Health, care, (dis)abilities V
6:00 to 7:40 pm
virPrague: VR 03
Participants:

Navigating Uncertainty: Evidence-Based Medicine in Russian Healthcare *Ekaterina Borozdina, European University at St.Petersburg; Siberian State medical University*

Evidence-based medicine (EBM) - a paradigm that postulates the most reliable biomedical knowledge as a foundation of clinical practice – is a golden standard in modern healthcare provision. Its introduction has profoundly influenced medical practice and medical profession. While some researchers praise EBM for providing doctors with new truly scientific instruments for making decisions and for reducing ambiguities of clinical routines, the others question how its implementation triggers unintended consequences and creates new uncertainties for health-care specialists to tackle. In this presentation I address EBM as a distinct logic, which provides physicians with classification schema for practices, determines regulative structures, and influences identities within healthcare domain. I demonstrate the complex relation between this logic and other logics that inform doctors' clinical decisions (managerial, professional, and market logics) in particularly volatile context of Russian healthcare system that has been reforming since the dissolution of the USSR. The paper relies on data from 22 semi-structured interviews with Russian physicians that were collected in 2018-2019. The research is focused on the question of how doctors acquire, assess and use in their clinical practice scientific data (in particular, the results of randomized clinical trials). The particular emphasis is put on how physicians' perception of the data and the resulting clinical decision making are conditioned by the changing institutional context of post-Soviet healthcare, its quest for modernization, and complex relationship with 'Western' medicine.

Articulating knowledge and bringing forward good ideas: visualizing mental healthcare at a distance *Annemarie van Hout, Hogeschool Windesheim; Nynke Boonstra, NHL Stenden University of Applied Science*

In mental healthcare, blended care (online combined with face to face treatment) is presented as a mundane practice. Most mental health care organizations have 'opened' their electronic patient records for patients, as well as provided for online treatment interventions like psycho-education and cognitive behavioral therapy, so patients can work on their issues at home. This presentation of blended care in mental health care fits organizational and governmental policies, as online treatment is expected to help solving the problems of labor shortage in care and fit the self-managing patient. When zooming in though, we found how care professionals have to deal with all kinds of practical or fundamental issues on blended treatment. Some care professionals deal with hindrances hands on like "apps for texting are not supposed to be used for safety reasons, but they are quick and easy and hold all kinds of opportunities for contact with patients". At the same time, there are care professionals that do not know how to adjust their routines and find it difficult to make use of online modules in a good way. In our ethnographic research, we add image to text and discuss with care professionals and patients what we observe and encounter in different ways. In this way, we articulate patients' and care professionals' knowledge and experience with blended care, and aim to help them solve their hindrances.

The whole milk seems to be alive: a symbiopoietic perspective on breast milk donation *Carmen Romero-Bachiller, University Complutense of Madrid (Spain); Pablo Santoro, Universidad Complutense de Madrid*

Since ancient times, human breast milk - the most intercorporeal (Waldby, 2002) of all bodily fluids - has been a substance loaded with cultural, anthropological and magical significance, judged to generate bonds, capacities, kinship and obligations. Both a biological fluid and a cultural artifact, milk was a complex, vital, full of life. The arrival of scientific biomedicine challenged this

view, and during the 20th century many initiatives - in veterinary science, pediatrics, microbiology - tried to turn it into a standardized matter, into a "technology" (Swanson, 2009). However, the paradigm shift brought about by microbiome research is changing the way in which we think about milk: human milk is no longer considered a sterile fluid but instead a magmatic source of microbiota, a dynamic substance whose properties and composition are constantly changing (McGuire & McGuire, 2017). In our presentation we discuss the impact of this transformation through a case study: breast milk donation. Drawing on examples collected from our research in Spain, we show how both hospital banks that collect human milk for the feeding of fragile preterm infants and research labs that develop probiotics from samples of donated milk are adapting their technical protocols and the methods through which they collect, manipulate and process milk to account for the crucial role bacteria and other non-human actors play on it. Here we can witness the emergence of new forms of thinking and relating to milk, that treat it as a symbiopoietic(al) substance that, far from being sterile, brings together many more-than-human worlds (Haraway, 2016).

"Veteran Disorder" and the Evidence of Compliance *Kenneth MacLeish, Center for Medicine, Health and Society, Vanderbilt University*

This paper investigates how diverse forms of behavioral, testimonial, biological, and surveillance data are synthesized as evidence of "health" in a highly constrained and disciplinary setting: a veteran treatment court. Since 2008, civilian municipal jurisdictions across the US have established VTCs, special courts for military veteran offenders whose low-level crimes are understood to be rooted in psychological and social disorderliness rooted in military service. Like the non-adversarial drug courts on which they are modeled, VTCs offer diversion from jail and expunged criminal records to offenders who complete a rigorous 12- to 18-month court-supervised rehabilitative program. Drawing on three years of ethnographic fieldwork in a VTC, this paper analyzes how the court's interdisciplinary staff of lawyers, administrators, and social workers makes use of diverse forms of evidence to evaluate participants' compliance and rehabilitative success. Some of this evidence—urinalysis results, GPS and biological data from remote drug testing devices, risk assessment instruments—is highly technical, while other kinds—participants' attitudes, narrative self-fashioning, or level of "investment"—seem far more value-laden and impressionistic. I argue that all this evidence is unified by what Seb Franklin (2015) terms a digital logic of control. VTC staff and participants alike negotiate the binding power of this logic, under which veteran "health" is defined not only through problems of vulnerability and survival, but also by broader cultural anxieties about the domestic containment of the violence of the effects of the US's post-9/11 wars.

Session Organizer:

Ekaterina Borozdina, European University at St.Petersburg; Siberian State medical University

Chair:

Ekaterina Borozdina, European University at St.Petersburg; Siberian State medical University

293. Geoethics

6:00 to 7:40 pm

virPrague: VR 04

FLIPPED Session This panel brings together international scholars whose work addresses technologies, practices, and forms of knowledge related to the Earth's subsurface. The topics of the panel link in manifold ways to the conference theme, notably to questions of continuities and discontinuities and material legacies that built into sociotechnical infrastructures and those of processes of localizing geopolitical, economic and epistemic globalization. This session focus on Geoethics. Concepts such as geoethics or responsible mining have been suggested to improve relations between mining businesses and (local) societies. The papers critically discuss these concepts, their use, impacts and effects in sectors related to underground uses.

Participants:

Geoethics – A New Concept to Foster Responsible Mining? *Diana Ayeh, Helmholtz Centre for Environmental Research GmbH - UFZ; Alena Bleicher, Helmholtz Centre for Environmental Research - UFZ, GmbH*

In an era of "responsible mining", communities, governments and civil societies, increasingly hold the mining industry accountable for positive and negative impacts of extractive activities. The respective corporate and governmental norms and standards primarily target corporations as "collective actors". In contrast, the concept of "geoethics" puts the individual responsibilities of geological professionals and geoscientists at the center of ethical matters. In its current form this concept has been invented by Italian geoscientists in 2012. Today, however, the interplay between individual and group agency of different actors in the global mining sector and the role of respective concepts remains understudied. "Ethical engagements" are usually discussed on the level of organizations in relation to the public relations, environment or corporate social responsibility (CSR) departments of mining corporations. Addressing the role of geoscientific professionals is important, as they often are the first representatives of mining industries that encounter local communities in exploration phases. Moreover, geoscientific professionals often maintain close contacts with local communities and local and national policymakers along the mine life project cycle. Thereby they act as individuals but are embedded in the complex organizational structure of the global mining industry's policies and practices. Within this presentation, we will explore which challenges confront geoethical action in the context of mining industries. In order to do so, we will contrast the claims of geoethical codes of conduct with organizational structures (and practices) in the global mining sector.

Nickel in New Caledonia: Interweaving Mineral Sovereignty, Decolonisation and Lithium Batteries *Nicole Gooch, School of Communication, Faculty of Arts and Social Sciences, University of Technology Sydney*

With a referendum on independence set for the 6th of September 2020, New Caledonia, nestled in the south Pacific, is a country where matter and agency are deeply intertwined and where the concept of mineral sovereignty is brought to life in all its complexity. The French overseas country of 270 000 inhabitants contains 25% of the world's nickel resources, currently operates three nickel smelters and, in 2014, produced as much CO_2 per capita as North America. It is also a biodiversity hotspot and has one of the highest rates of plant endemism in the world. After years of conflict, including intra-community conflict, and environmental damage at its unique high pressure acid leaching nickel refinery in the south of the island, Brazilian mining giant Vale signed a Sustainable Development Pact in 2008 with the local indigenous leaders. The future of this pact has however been brought into question since Vale announced in late 2019 its decision to sell its New Caledonian smelter, while also suggesting the livelihood of the refinery, going ahead, would be most likely only possible thanks to the growing market of lithium batteries for electric cars. Using journalism as a research practice within a framework of political ecology and environmental justice, I examine the role of nickel and the balance of geological power at country level within the context of decolonisation, and critique the conundrum of the renewable energy-mineral nexus and the impacts of geoethics using the Vale New Caledonia refinery at Goro as case study.

Potential successes and pitfalls of co-producing research with stakeholders: empirical notes from a sustainable mining workshop in Northern Brazil *Marko Alves Monteiro, State University of Campinas - UNICAMP; Angelina Bellamy, Cardiff University; Roberto Greco, University of Campinas; Isabela Noronha, University of Campinas; Maria Cristina Oliveira Souza, UNICAMP; Maria Jose Mesquita, University of Campinas; Lambert-Smith James, Cardiff University; Diego Ducart, University of Campinas; Ricardo Perobelli Borba, University of Campinas; Rosana Icassatti Corazza, Unicamp; Alfredo Borges de Campos, University of Campinas; Guilherme Primo, University of Campinas;*

Carlos Xavier Araujo, University of São Paulo; Guilherme Nascimento Gomes, University of Campinas; Ernest Chi Fru, Cardiff University

This paper reports on a 5-day engagement workshop held in the city of Peixoto de Azevedo, Mato Grosso State, Brazil, a legally reserved area for small scale gold mining (garimpo). The workshop brought together 15 researchers from the universities of Campinas (Brazil) and Cardiff (UK), local community leaders, artisanal miners and stakeholders from mining companies and local authorities, to discuss challenges and possibilities for building more sustainable mining practices in Peixoto. For this paper, we aim to a) report on important lessons learned from the workshop with respect to co-production processes and b) discuss key potential successes and pitfalls of the engagement exercise. The workshop was funded to promote networking activities to co-produce research questions with participants, for the development of a large-scale research proposal for the empowerment of artisanal mining stakeholders (garimpeiros) and sustainable mining practices in Peixoto. While the process revealed a rich potential for engagement with local realities and perceptions, including those around local mining identities and how people perceive environmental damage (e.g. mercury contamination of water, soil and biota), it proved to be a difficult mechanism by which to co-produce research questions. Actual results of the exercise aligned more closely with desired outcomes and interventions, and in many instances diverged from what would be understood by the research team as sustainable practices. We conclude by discussing possible limits of co-production in similar cases, where diverging understandings of sustainability is conceivably at stake in any potential alliances between researchers and local communities.

"Responsible mining" contested: water scarcity as a "matter of concern" and the new agencies of coal extraction in Colombia *Susana Carmona, Universidad de Los Andes/ Ruhr University Bochum*

In the region of La Guajira, in northern Colombia, one of the biggest open-pit coal mines in the world plans to grow with a controversial project that involves diverting a creek. Water scarcity is one of La Guajira's most pressing issues; therefore, intervening a watercourse appears as overtly contradictory. I conducted ethnography of the sites of the controversy to observe the Company and the activist' enactments of expertise to portray the problem of water scarcity and its relation to the mine. I explore how the company claims certain "water expertise" by stating that with top engineering and following international standards, it can "reproduce" the creek according to its original characteristics. At the same time, it invests in community wells and windmills to shift moral attention from the materiality of the creek to other sources of water supply. Meanwhile, activists contend that the seven open operating pits of the coal mine actively produce water scarcity by irreversibly affecting the underground water system. By exploring how water becomes a "matter of concern", I argue that the corporate discourse of "responsible mining" and its implicit deployment of expertise, rather than improving relations between mining businesses and (local) societies, enables coal extraction in poor regions despite the increasing global questioning of coal's legitimacy. I contribute to STS by exploring the relations between knowledge production and the shaping of environmental governance, and by shedding light over how powerful institutions deploy governmentality that reproduces the current relationship between humans and nature.

Making Rocks Matter: Subsurface Geoscience and Life Politics in Oklahoma's "Frack-quakes" Debates *Lara Rodriguez, George Washington University*

Oklahoma's recent emergence as one of the most seismically active places in the US—despite lacking a modern record of seismic hazard—has catalyzed public technical debates over the relationship between earthquakes and the proliferation of "fracking" in the state. The issue has bolstered a frenzy of geoscientific research seeking to merge both applied and theoretical goals in Earth Science. But in a context plagued by public demands for more democratic modes of energy extraction and fair reparations, geoscientific research remains in the

crosshairs of political controversy. Drawing on ethnographic research, this paper describes a scientific program's efforts to study "man-made" earthquakes in Oklahoma, identifying geoscientists' dilemmas with "letting the public in" and their ambivalence over the role of subsurface rocks in political life in Oklahoma. These findings are examined in relation to one indigenous tribe's efforts to incorporate subsurface geoscience into renewed claims for sovereignty amid extraction conflicts on their lands. Considering how "Geoethics" has emerged as a set of principles guiding geoscientific practice, this paper explores what a geoscience that challenges subsurface matter's role in political life may look like for those concerned about both the distribution of power between the surface and the subsurface and the role of geoscience in social equity.

Session Organizers:
Alena Bleicher, Helmholtz Centre for Environmental Research - UFZ, GmbH
Roopali Phadke, Macalester College
Abby Kinchy, Rensselaer Polytechnic Institute
Chair:
Alena Bleicher, Helmholtz Centre for Environmental Research - UFZ, GmbH

294. STS for a post-truth age: comparative dialogues on reflexivity (II)
6:00 to 7:40 pm
virPrague: VR 05
Participants:

Understanding emotions around science denial and post-truth: toward an emotionally reflexive science? *Anna Durnova, Institute of Sociological Studies/ Faculty of Social Sciences*

This paper argues that current societal polarization around science denial and promotion of alternative facts is a result of the way emotions have been placed outside the public presentation of science and scientific expertise. It discusses the role of STS in creating this binary and proposes ways forward. The images of rational experts have embodied a powerful binary of factual knowledge and emotions, which dominates the public discourse on science. Yet science can interrelate with all sorts of emotions; it involves all sorts of irritations, fears and hopes. On the basis of the analysis of the March for Science movement the paper thus asks what and who is considered "emotional" in the public discourse on science and what are the societal implications of it. Most importantly, science brings facts that often break accepted path dependencies and institutional responsibilities. The paper concludes that - in order to deal with promotion of alternative facts and science denial - we should pay attention to how emotional appeals to facts are used and mobilized in the public discourse on science. This means to analyse how emotions might conceal particular interests, how they create groups of actors; how they are presented as either 'good' and 'useful' or as 'disturbing' and 'irrelevant'.´ STS should include emotions in its analysis and rehabilitate the role of emotions within science. In a nutshell, saving science in post-truth age might require us to politicize our scientific selves by making us more reflexive toward emotions.

Truth is an activity: alethurgy and speculative objects in an evidence-based governmental scenario. *Jorge Castillo-Sepúlveda, University of Santiago de Chile*

In recent decades, have been extensively documented profound epistemological governmental transformations that articulate politics and methods of evidence-based medicine. These have rethought political design scenarios on regular processes of population diseases, but, above all, on how to produce the truth, what are truth grids, understandable statements or propositions, and the effects of such on population life. In this work we address the relationship between government and knowledge, analysing a health policy in Chile that raises the need to prioritize diseases to be treated at the population level. Adopting a pragmatic and material-semiotic approach, we consider two processes linked to it. The first refers to the relationship between activity and truth. We discuss this on the notion of alethurgy, recovered by author Michel Foucault. With the concept, he refers

to the procedural, concrete and situated relationship interwoven between activity and truth. Likewise, we consider the emergence and creation of objects on which said truth acquires a specific intensity, is argued and opens various possible action scenarios. We call such entities speculative objects. These consist of a wide range of entities, such as indexes, synthetic results of the search for evidence and prioritization tables, which allow the opening of conjectures, regardless of the existence of exact information or the totality of "facts" that compose A situation. We conclude on the contingent quality of the production of government truth and the agency of objects in the stabilization of ordinances on human life.

'Trying To Lock The Barn Door After The Horse Has Already Bolted': Bounded Democratization's Limitations *Kinley Gillette, Department of Philosophy + Science and Technology Studies, University of British Columbia, Vancouver*

There is widespread anxiety about seemingly insufficient public trust in expert authorities. In STS, much of the anxiety has been expressed by proponents of the Third Wave, although critics worry that the Third Wave fails to develop an adequate response. For example, according to Jasanoff (2003), proponents of the Third Wave "are trying to lock the barn door after the horse has already bolted." "Trying to lock the barn door" here refers to the Third Wave's attempt to separate the "technical phase" of a debate from its "political phase" and then grant non-experts decision-making rights exclusively in the latter (Collins and Evans 2002, 2007). To say that "the horse has already bolted" is, then, to say that such a division of labour is no longer feasible. Collins and Evans (2003) respond to Jasanoff's "barn door" argument by arguing that Jasanoff is merely making a descriptive point, while they are engaged in a prescriptive project. In other words, they accuse Jasanoff of committing the is-ought fallacy. The is-ought fallacy is a philosophical commonplace, but here is another: that "ought" implies "can." Roughly on the basis of this principle, I provide a political-theoretic defence of Jasanoff's "barn door" argument. In societies characterized by what Warren (1996) calls "extensive contestability," democratic accountability is likely the only means to legitimize controversial authorities. Of course, proponents of the Third Wave may wish for an end to such contestability, but to hope for a non-political basis for decision-making is to underestimate the depth of the problem.

Session Organizers:
Melike Sahinol, Orient-Institut Istanbul
Emine Onculer Yayalar, Bilkent University
Chair:
Emine Onculer Yayalar, Bilkent University

295. Modes of Futuring between Care and Control: Engaging with the Conservation of Endangered More-Than-Human Life II
6:00 to 7:40 pm
virPrague: VR 06

The accelerating loss of biodiversity is one of the central contemporary ecological crises that challenge the foundations and conditions of current forms of life on Earth. In the wake of this development and the associated threats, projects of environmental conservation that seek to care for the ongoingness of life have gained momentum. Exploring these from an STS perspective, we contribute to an important discourse about and intervention in the technoscientific politics of life and death in times of ecological crises. We want to discuss how practices and technologies of conservation engage with endangered more-than-human life and what future worlds they bring to matter; how they account for the entanglement of fatal ecological developments with extractive naturalcultural forms of (human) life. In this context, we are interested in the notion of care: Who are the recipients of conservational care? What is the relation between care and control? How are conservation practices directed at the sustainability of more-than-human life embedded in power relations? We specifically want to discuss dis/continuities to humanist forms of controlling nature in conservational practices of care. Finally, we want to explore modes of futuring in conservational care. How does the temporality of urgency of ecological crises affect practices and politics of conservation and more-than-human forms of life? What could it mean for practices of conservation to (re)think ecological vulnerability and precarity, maybe even extinction, as part of (techno)ecological processes of worlding? How can a notion of living and dying well together help us craft new modes of caring?

Participants:

Knowledge Infrastructures for Conservation as Matters of Care
Anne Beaulieu, University of Groningen

Data infrastructures have been widely analysed as tools of control that focus on discrete elements according to extraction logics. What would it take to imagine and implement knowledge infrastructures as instruments of care? This question is at the heart of the research programme Knowledge Infrastructures for Sustainability at Campus Fryslan (University of Groningen, the Netherlands). In this presentation, I address how conservation intersects with data about migratory animal populations, their habitats, and climate, as a matter of care. The cases used are global flyways for waders, which involve complex assemblages of diverse data at widely different scales, ranging from satellite and sensor data, to fieldwork pursued by biologists, to birdwatching reports. In STS, critical data studies and information technology studies, care is often defined in contrast to control (Lyon 2007) and data (Pigg, Erikson, and Inglis 2018). The need to care for data is also an important line of work (Baker and Karasti 2018). Building on this scholarship, the presentation will explore whether infrastructures can be designed, built and used to help us see the world through care and "accentuate a sense of interdependency and involvement (Bellacasa 2017)(17)". This would mean entwining ethical obligations into these tools for knowledge, in order to support the work, affect and politics of care, and ensure "the everyday continuation and maintenance of life (Bellacasa 2017)(22)". I will open up a dialogue between this line of work and Jasanoff's technologies of humility (Jasanoff 2003) and Tsing's notions of friction and survival (Tsing 2005, 2015).

Seeding Futures/ Saving Worlds: Seed Banking as a Relational Practice? *Marleen Boschen, Goldsmiths College, University of London*

A seed is a mystery that hasn't happened yet. Inscribed into it is the promise of a future plant and the biocultural memory of a vegetal past, often entangled in histories of domestication and cultivation. This paper brings together empirical research from a range of seed saving practices from global seed vaults to local, informal, grassroots organisations through the lenses of temporality and relationality. Suggesting that some seed banking architectures and infrastructures reproduce colonial systems of classification and uphold a nature/culture binary I look at the biopolitical entanglement of care and control in these spaces as they try to stabilise seeds against a rapid and violent loss of diversity – genetic, cultural and epistemological. What practices and temporalities of saving biocultural relationality and resilience are overshadowed by iconic seed banking infrastructures and how might these stories be told? Narrating the global flows of seeds across borders and in and out of various cold storage spaces through a small selection of plant species and varieties, this paper is a testing ground for understanding how multi-species ethnographies and an organism-centred approach can shift anthropocentric temporalities of banking to reframe human-plant dependencies. Bringing in materials from interviews with plant scientists, agronomists and conservationists the paper opens up questions of what it might mean to learn from seeds and plants about temporality and relationality in violently changing worlds, and in developing a sensitivity for nonhuman organisms. I am interested in how scientific relational care can in this way challenge institutional infrastructures of technocare from within.

Rewilding Patagonia *Maria Soledad Altrudi, University of Southern California*

In times of damaged habitats and mass extinction, wildlife governance practices are rooted in notions of care that seek to preserve biodiversity by "caring for" endangered species. However, as recent critical studies of wildlife management demonstrate (Bocci, 2017; Crowley et al., 2018; Reinert, 2013), care is a non-innocent principle that organizes and disciplines bodies, making it a type of encounter that implicates power relations where questions of "who cares" and "who is taken care of" are constantly present. This is further complicated by the technologies that substantiate these conservation practices, such

as those of modern wildlife tracking, which tend to obscure the significant human intervention and management that they require. Following this and drawing from empirical research, this contribution focuses on "Rewilding Patagonia," a problematic project for biodiversity preservation in Santa Cruz, Argentina, enabled by monetary donations and private purchases of land by Swiss and American philanthropists. Embedded in a "deep ecology" (Balch, 2005) that equates nature with the idea of unspoiled and uninhabited wilderness, this rewilding initiative seeks to fix the "massive abuse of the soil" done by local farmers and reintroduce locally extinct species or strengthen the presence of the vulnerable ones. Therefore, this work explores how the logics at play condition the recognition of multi-species assemblages as well as any form of politics of conviviality where local practices of production and conservation can co-exist, as it simultaneously tries to disentangle the power dynamics that are effectively shaping this romanticized landscape through foreign (human) models of ecosystem management.

Killing as Care – The Biopolitics of Wolf Conservation in Washington State *Robert Anderson, University of Washington*

In the past decade, Washington state (USA) has been rocked by conflict over wolves recolonizing rural landscapes after extirpation a century ago. Wolf predation of cattle has led to poaching, state intervention to kill "problem wolves," and death threats against ranchers, advocates and scientists. Advocates see wolves as a native keystone species, heralding their return as large-scale ecosystem restoration, while opponents consider them a dangerous threat to rural lives and livelihoods. Drawing on ethnographic and historical research on the recent wolf controversy in Washington, I frame wolf conservation as a contested practice of care for an endangered form of nonhuman life that paradoxically requires killing that same life when it gets out of control. Specifically, wildlife managers seek to reduce conflict over wolves by engaging in limited killing (euphemized as "lethal removal") of wolves that become habituated to preying on cattle, aiming to reproduce so-called "normal" behavior in surviving wolves. I argue that lethal removal, as a biopolitical intervention to discipline wolf population and behaviors, also aims to change human behaviors, norms, and values, producing "social acceptance" of wolves by reassuring concerned rural residents that wolves remain killable. The paradox of wolf conservation governance is that achieving the social acceptance necessary for long-term recovery and coexistence requires that the state kill wolves in the name of shared common interest and responsibility.

Session Organizer:

Markus Rudolfi, Institute for Sociology, Goethe University, Frankfurt

Chairs:

Franziska von Verschuer, Goethe University Frankfurt/Main
Franziska Dahlmeier, Hamburg University

296. Global Imaginaries of Precision Science 2: Diversity, Inclusion and Justice

6:00 to 7:40 pm
virPrague: VR 07

Precision science focuses on individual and group differences as a path towards greater accuracy, efficacy and efficiency. This panel focuses on the sociotechnical imaginaries of the promise of precision that fuel the increasingly global infrastructure for collecting personal data and biospecimens. This promise has been motivated by, and operationalized as, the quest for greater inclusion and diversity in precision medicine research. Precision science has extended to other domains such as the genetics of socio-behavioral traits, such as criminality and educational attainment. This panel calls for papers that interrogate the constituent concepts, practices, and discourses of precision science - its actors, institutions, networks, values and cultures - and its applications and uptake in a wide range of domains, including medicine, criminal justice, and social policy. We are interested in papers that examine forms of knowledge and practices in precision science, their impacts on emerging subjectivities and data-driven publics, and the development of frameworks on justice, ethics and inclusion.

Participants:

'Harnessing Little White Cells': Inclusions And Exclusions Provoked By Immunotherapy Treatments In Precision Cancer Medicine *Julia Swallow, University of Edinburgh*

This paper presents a Wellcome Trust funded project (2020–2023) exploring the emergence of chimeric antigen receptor T-cell (CAR T) immunotherapy in the UK for the treatment of advanced cancer as part of a precision medicine approach to managing the disease. CAR T is heralded as both a universal treatment and a precise, personalised therapy since it positions the patient's own immune system and body as active agent in managing, and more efficiently targeting cancer; potentially leading to long-term survival and 'cure'. Applying approaches from STS and focussing on situated local practices, this paper theorises on the impact of CAR T therapy, where questions arise concerning the health and social inclusions and exclusions provoked by the implementation of these therapies as part of a global appeal to precision science. Despite CAR T's aim for precision, local logistical challenges emerge: only a small minority of patients are set to benefit given the difficulty in predicting individual response rates, side-effects and prognosis, and questions remain concerning who has access to these novel therapies given the complicated nexus of private/public healthcare in the UK. Emphasis on the body for ensuring the immune system is fit for, and prepared for, treatment also circulates scientific discourse concerning these therapies, further (re)producing health and social inequalities with regards to biosocial experiences of living with cancer. This paper reflects on how subjectivities, identities, notions of individual responsibilisation and inequalities unfold and are potentially (re)configured by the emergence of these novel therapies and commitment to precision medicine.

Postgenomics and Education: The Intersections of Evolution and Educational Theory, Practice and Policy *Chessa Adsit-Morris, University of California, Santa Cruz*

This presentation explores the complex intersections of evolutionary theory and educational theory, policy and practice, both in the past and in our post-genomic present. Beginning with Darwin's influence on the establishment and normalization of mental testing—and associated concepts/practices including: bell-curves developed by Francis Galton; letter/number grades; and rankings via the use of standardized tests—leading to a reductive, measurable, genetically fixed conception of intelligence. My research traces the implications of such a (misinterpreted) normalized conception of intelligence, and resulting biological determinisms, in shaping the educational institutional practices and policies that have created the "achievement gaps" of minority and low-income students, as well as students labelled with mental or physical challenges/disabilities, which we are (still) so fervently trying to close. With the current rise of interest in post-genomics, my research inquires into the possible implications of "educational genomics"—a new field of (evolutionary-based) research aimed at using bigdata from the Human Genome Project to identify particular genetic traits related to education—as a controversial and potentially harmful yet impactful new front in educational knowledge production that through, for example the so called "polygenic score" renews and reifies discourses of biological and genetic determinisms. My work begins by exploring: (a) how genomic research is affecting education policy debates; (b) the need for new social scientific forms of engagement with, and critiques of, genetics research and postgenomic science in the education field; and (c) the potential for cooption of such research by commercial organizations aimed at creating new markets for educational products.

The Polygenic Score and Social Genomics: The Making of a Research Field or Genomized Socialities? *Kaya Akyüz, University of Vienna*

Social genomics researchers have been using genome-associated data already collected by biobanks in order to improve, if not entirely re-think, the quantitative models of social outcomes. One of the hot topics in this field is educational attainment. In this paper, I analyze how the social genomics studies of educational attainment emerged and developed over the last decade by following a central component of this research—the polygenic

score (PGS)—in research articles and supporting material as well as scholarly discussions. PGS is relevant in two respects: first, it is ordering the research and linking data in an international, rich but fragmented and highly contextual data milieu. Second, its versatility makes it an interesting data object that is constructed both as a quantitative instrument in and a key for revitalization of social sciences in the big data era. In following the PGS of educational attainment, I highlight the entanglements of emergence of new research fields and secondary uses of data available in research infrastructures/biobanks. In doing so, I discuss how genomized socialities are constructed and linked to new and often uncritical understandings of social inequality as well as hyped imaginations of "precision education" despite efforts of major actors towards self-critique.

STS meets forest genomics: Co-producing just and equitable environments in a climate altered world *Gwendolyn Blue, University Of Calgary*

Genomic technologies are currently proposed as solutions for forestry to meet the challenges of climate change. Specifically, proponents argue that large scale collection of genetic and phenotypic data and new forms of algorithmic prediction can help tree breeding in response to environmental stresses such as drought, pests and disease. Informed by the idiom of co-production and the concept of environmental justice, this presentation outlines the narratives used by scientists in promoting, developing, and applying genomic technologies to improve tree breeding practices. Data collection consisted of qualitative interviews, document analysis, and personal observations of laboratory practices, government and industry workshops, and genomic conferences. Findings show that genomic technologies were positioned as extensions of traditional breeding practices where public concern was perceived to be an obstacle to be managed through education, a domain for which social scientists are expected to play a key role. In addition to collating these narratives, we reflect on the ways in which STS might foster narratives, practices, and performances that shape genomic developments in more equitable and open directions. We outline some of the challenges and possibilities of experimenting with co-production to open up alternative stories and pathways. We suggest that the trivalent framework of environmental justice (redistribution, recognition, representation) can provide guidance to scientists, funding agencies and governments to co-produce more just futures for genomic research in a climate altered world.

Sowing the Seeds of Bias: Hidden Agendas of "Precision Agriculture" *Rian E Wanstreet, University of Washington*

Is precision agriculture the panacea solution to the ever-growing demands of an increasing global population? That is the promise of "Precision", as knowledge-producers, magazines articles, and tv-ads demonstrate drones and robots replacing workers, and show data-driven algorithmic platforms making decisions about where to plant, how much water to use, the volume of fertilizer, and the amount of chemicals to apply. Few people question what type of agricultural system these technologies are encoded to perpetuate, and what precisely is the outcome they are designed to model. Yet underlying the imaginaries of precision agriculture lies very specific ideals about how to farm, what to farm, what inputs to use, and critically: who the products should go to. Drawing from two years of online ethnographic research, media analysis, and qualitative interviews, this paper interrogates the underlying assumptions perpetuated in the world of precision agriculture. Ultimately, I illustrate that in actualizing the imaginary of "precision agriculture", governments, development agencies, media, and farmers themselves are accepting an ideological viewpoint that perpetuates western, extractive ideals about farming, technology, markets, and society itself.

Session Organizers:
Sandra Soo-Jin Lee, Columbia University
Janet K. Shim, University of California, San Francisco
Chair:
Sandra Soo-Jin Lee, Columbia University

297. Scientific fields and communities in (re-)formation II
6:00 to 7:40 pm

virPrague: VR 08
Participants:

Library Information Science and Memory Practices: The (re)formation of Librarianship in the Information Age. *Caroline Mason, Rensselaer Polytechnic Institute - STS*

Contemporary concerns surrounding the preservation, accessibility, and (mis)use of (digital) information have called attention to the politics of information infrastructures. However, while a large amount of scholarship within STS, Media Studies, Platform Studies, and the Digital Humanities has focused on individual examples of information infrastructures, the practices, epistemologies, and methodologies of the field of Librarian Information Science (LIS) – a field that developed many of the concepts, categories, and structures for thinking and doing present-day information infrastructures – has remained understudied. While the formation of the field of LIS is commonly understood to be a response to the emergence and possibilities of new ways to produce, organize, and disseminate information, the evolving methods, practices and standards of LIS themselves helped to shape and produce new memory technologies or infrastructures. Finalized in the late 1990's from the merging of Library Science and Information Science, the emergence of LIS not only lead to a new academic discipline, but, also, (re)configured archival "memory practices" (Bowker, 2005) from the epistomological and methodological hybridization of Library Science, Information Science, and digital computation. Accompanying the (re)formation of the fields of Library Science and Information Science into LIS, in response to a perceived and anticipatory 'boom' of information, debates (re)ignited about the "memoro-politics" (Hacking, 1995) of universal classification systems. This paper traces the methodological and epistemological changes, controversies, and commitments that culminated in the (re)formation of memory practices through the field of LIS in order to show how its emergence changed and continues to change the ways information and the relationship between the past and present are imagined and materialized. ⌷sEP⌷

The transformation of academic labs in the era of commercialization: From PI as bench scientist to PI as multiple-grant entrepreneur *Annalisa Salonius, Independent Scholar, formerly University of Pennsylvania*

Studies in STS examining how academic research in the life sciences has been changing in the era of increased commercialization of academic research have focused mainly on new corporate practices (e.g. patenting and spin-off companies) and the effects of enhanced university-industry ties. There is an assumption that the organization of work in academic labs themselves during this period has remained unchanged. This paper examines an episode that challenges this assumption: the emergence of larger lab groups in the biomedical sciences. The analysis reveals that, in the case of the biomedical sciences in Canada, the academic lab of the 1970s and early 1980s was typically that of an individual scientist with a single federal grant who carried out research at the bench, even if with some assistance. Based on evidence from work history interviews done with older and retired scientists during a larger ethnographic study of academic labs, the findings identify key changes in practice which suggest that a major shift in standard federal funding arrangements for biomedical research occurred in the mid-1980s leading to new work practices (and a new role) for the funded academic scientist, which in turn led to larger hierarchically-organized lab groups. The implications of these findings for understanding the shift from individual scientist to group research in this field as well as the broader impacts of a new regime of commercialization in this field are discussed. The paper extends existing work in the area of lab studies, and connects it to, as well as contributes to, the emerging area of the political economy of research.

Scientists on the Verge of a Nervous Breakdown *Alexis Turner, Harvard University*

If one could take the pulse of LSD enthusiasts in 1962, it would have been trembling. Scientists had just been dealt a blow by Sandoz Pharmaceuticals and the FDA, who had restricted

research access to the drug. At the same time, and with scientists' help, their subjects, assistants, patients, and friends were enthusiastically bringing LSD to public attention all at once. Anticipating a moral panic, scientists took it upon themselves to launch a public relations campaign to reestablish their authority. It was a disaster. In the coming years, scientists' outreach efforts would coalesce with simultaneous campaigns by pharmaceutical companies and legislators to actively generate the panic they'd hoped to avoid. Drawing on archival research, this paper focuses on the brief period when researchers began to distance themselves from their previous positions. I argue that the foregrounding of a handful of personae in the history of psychedelics began to take place in this moment, while others – particularly the assistants, subjects, family, and friends responsible for making such research happen – were shunted to the background. Neglecting the role that such "normals" played in expanding awareness of LSD was directly responsible for scientists' failure to identify appropriate tactics for interacting with the public. This argument revises the current understanding of the history of LSD in the United States by moving beyond anti-democratic narratives that would pin a rejection of scientific authority on simple public irrationality. Such reactions must instead be understood in their broader social, political, and economic contexts.

Session Organizers:
Michael Penkler, Technical University of Munich
Sarah Maria Schönbauer, Munich Center for Technology in Society, Technical University of Munich

Chair:
Michael Penkler, Technical University of Munich

298. Hacker Cultures Session 2. People Who Hack
6:00 to 7:40 pm
virPrague: VR 09
Participants:

Throwback Culture: The Role of Nostalgia in Hacker Worlds
Morgan G. Ames, CSTMS/School of Information, UC Berkeley

The maintenance of 'hacker' identities often involves the discussion of one's origin story—the nostalgic rendering of the path that one took into programming and technical tinkering, involving the technologies and media of hackers' childhoods. This paper explores the ways in which these memories are mobilized to do cultural work in contemporary technology worlds, especially among those creating computational devices and software for children. Origin stories can serve as gatekeepers within hacker circles, delimiting who is a good "culture fit." It can moreover shape the design process by influencing who hackers view as their primary audience and what they think this audience will find captivating. This paper explores the role that nostalgia plays in hacker worlds, drawing on interviews and oral histories, archival research of technologies referenced in interviews, and critical readings of contemporary products. I focus specifically on the devices and software meant to enable today's youth to become 'hackers,' such as the Minecraft videogame and the Scratch block-based programming environment. Archival materials primarily focus on children's technologies and media from the 1980s and 1990s, as videogames, cable television, computers, and the Internet joined books, broadcast television, and toys in shaping children's cultures. Drawing on cultural history and media studies, this work expands on previous research documenting processes of "nostalgic design" in the One Laptop per Child project; here, I chart the patterns of nostalgia, the technological targets of it, and its effects among 'hackers' more broadly.

Do-It-Together: Feminists Redefining the Hacker Community
Christina Haralanova

Hacking cultures today are quickly evolving around diverse practices expanding from software development and moving to broader fields of technological exploration, including "digital manufacturing, political activism, open hardware, and DIY biology" (Delfanti and Söderberg 458). Through mass gatherings (hackathons, hackerspaces) the movement has been opening up to larger numbers of interested people. Even so, the definition and ethics of hacking have remained as rigid as they were described decades ago. Hackers are still commonly associated with young, male "computer aficionados" (Coleman 3). These traditional and liberal hacker ideals present significant barriers for those not fitting the mainstream hacker profile. This paper focuses on a hacking feminist subculture, embracing more inclusive, diversified and connected hacking practices. Through ethnographic action research, I observed and participated in two Montreal hackerspaces (Foulab and Femhack). Based on a recently completed six-year PhD research of feminist hacker practices, I documented from the advantageous insider position the local expressions while theorizing its approaches related to space, boundaries, and learning. Feminist analysis has been taken up by STS researches to critique men's historical hold on technology and the continuous under-representation of women in technoscience. This study contributes to building a feminist critical theory on hacking culture, defining feminist actions and creating a model of hacking in which a broader public could participate. In a nutshell, I suggest that the ideals of the feminist hackers could be the beginning of a movement toward a DIT (Do-It-Together) hacking culture focused on more connected local communities, sustained engagement and inclusive participation.

Hacker Culture Is Everything You Don't Get Paid For In the Information Security Industry *Alex Dean Cybulski, University of Toronto*

Capture the flag (CTF) is a competitive game in which players mimic the experience of discovering and exploiting vulnerabilities in information systems, hacking into simulated software and/or networks to retrieve data known as a 'flag.' CTF participants, often drawn from the information security and IT industries utilize these games as a means of training to develop/apply offensive security knowledge in a legal way, so that they can better defend the software/systems they are entrusted with. Lily Irani has described similar kinds of participation as the "entrepreneurial citizenship" of present-day high-tech labour (Irani, 2015, p.801), the behaviors that workers engage in to make themselves more desirable employees. This presentation will discuss preliminary findings of my research: ethnographic, semi-structured interviews with a team of players at an on-site CTF who also share the same workplace. Interviews with this team of co-workers articulates the challenges of workplace structures in information security likely to become more common in the future including: bug bounties, distributed & remote workplaces, security work using a client-service model and the use of games and competitions as a hiring practise. Consequently, the data also identifies the tensions arising from these structures including: labour precarity, decentralized workplaces & relationship management. The presentation considers how these participants came to view on-site CTFs with co-workers as a kind of "cultural infrastructure" (Turner, 2009, p.75) necessary to address the tensions of many emergent workplace structures and deficits in their workplace, but also examines how interview data challenges and critiques the increasingly popular application of gamification to knowledge work as a method for training and hiring. References: Irani, L. (2015). Hackathons and the making of entrepreneurial citizenship. Science, Technology, & Human Values, 40(5), 799–824. Turner, F. (2009). Burning Man at Google: a cultural infrastructure for new media production. 11(1 & 2), 73–94.

'Forget about the learning'. On (digital) creativity and expertise in hacker-/makerspaces *Annika Richterich, University of Sussex*

Hackers and makers are curious people. They tinker, try, and team up – driven by tech-political motives, entrepreneurial interests, or just for the fun of it. Their curiosity about digital technology and crafts makes them self-driven learners in these domains. To share their enthusiasm as well as required machines, hackers and makers worldwide have formed communities called hack-/hackerspaces and makerspaces. These are physical places where members engage in creative DIY activities involving software and electronics. Learning is key to the social tech and craft practices cultivated in hacker-/makerspaces (HMS). Yet, the

educational value of these DIY communities has been rarely acknowledged. Drawing on a mixed-methods study, this paper explores how (digital) creativity and expertise are interrelated in HMS. In qualitative interviews and survey responses, members described their socio-technical interactions as curiosity-driven and hands-on. Creativity itself was conceptualised as a form of 'experiential expertise', i.e. a skill that can and should be obtained and nurtured. Yet, many were hesitant to label what they do as learning. While it would be misleading to conclude that no learning is taking place in HMS, the interviewees' rejected traditional notions of learning as associated with educational institutions such as schools or universities. By relating their perspectives to experiential learning theory, this paper reflects on the reasons and implications of HMS members' scepticism towards the notion of learning.

In the grey zone of hacking? Two cases in the political economy of software and the Right to Repair *Minna Saariketo, Stockholm University; Barry Brown, Stockholm University; Mareike Glöss, Stockholm University*

In this paper we address the 'grey zone of hacking': end users subverting software and hardware controls imposed by manufacturers. We discuss two empirical cases: farmers claiming the 'right to repair' of agricultural equipment, and Nintendo game console hacking. In both cases an extensive online community has helped users to overcome technical restrictions on systems they have purchased. The 'Right to Repair' movement has brought together users and developers to circumvent products that cannot be repaired or modified freely. Manufactures have responded by 'lock-ins' by not supplying spare parts, service manuals, disassembly and diagnostic tools, as well as forbidding modification of software in their licenses. Hackers have worked around these lock-ins, creating parallel networks of software and hardware distribution, supplying hacking tools to end users. We discuss two analytic issues. First is the political economy of software: how the control of technical artefacts is achieved both legally and economically. On top of this technical constraints in software and hardware themselves produce control. Second is the issue of agency, expertise, and technological literacy. Who and how the limitations can be circumvented? Who has agency (and what kind of agency) in the case when hackers provide farmers with tools to bypass software lock-ins that prevent them from independently repairing their farm equipment? What kind of technological literacy and ideology is portraited in the manuals and tutorials guiding owners of Nintendo to jailbreak their devices? We conclude by describing how issues of economic conflict develop in this emergent 'grey zone' of hacking.

Session Organizers:

Mace Ojala, IT University of Copenhagen
Paula Bialski, Leuphana University Luneburg

Chair:

Mace Ojala, IT University of Copenhagen

299. Moralizing the data economy: Governing data economies
6:00 to 7:40 pm
virPrague: VR 10
Participants:

The Legitimacy of Data Infrastructure *Dan Bouk, Colgate / Data & Society; danah boyd, Microsoft Research / Data & Society*

Since 1790, the US has conducted a decennial census in order to count all of the people residing within the country. This process has always been fraught and politicized. People have been systematically excluded, undercounted, and omitted. The data have never been perfect. Yet, US democracy has relied on this data infrastructure in order to apportion representatives, redistrict political units, and allocate funds. Furthermore, statistical social science research and data-driven policy decisions rely on this data. Under US law, the Census Bureau must guard the confidentiality of the data and produce statistical products that are "fit-for-purpose." Significant changes in the data ecosystem--including computational techniques that make reconstructing individual records from statistical tables and linkage attacks that

combine distinct sets of data--complicate the task of providing statistical tables and keeping individual records confidential. To balance utility and confidentiality, the Census Bureau has designed a sociotechnical intervention, building on the mathematical guarantees of differential privacy. This controversial move is likely to result in a Supreme Court case by 2021. In this paper, we rely on a range of ethnographic observations, qualitative interviews, and archival analyses to examine this sociotechnical intervention. We argue that the legitimacy of data infrastructure is not a function of data quality, accuracy, or usability. Rather, legitimacy depends on a range of social, political, and historical factors. Lacking an understanding of the technopolitics surrounding their efforts, the Census Bureau's efforts at transparency and technical precision are complicating the data's legitimacy during a highly politically fraught census.

Is consent a relevant model for digital markets regulation? *Thomas Beauvisage, Orange Labs; Kevin Mellet, Orange Labs*

The GDPR gives a central place to the free and informed consent of individuals. After the vote, private companies began a process that was supposed to lead them to comply with the regulation. In practical terms, this meant implementing new interfaces to obtain consent in order to collect and process personal data. How did actors incorporate consent into their tools and practices? Is consent a relevant model for market regulation? We focus on two lines of inquiry: i) Our first aim is to locate and describe the arenas where compliance, as a practice, takes place; ii) we study the way in which legal matter is translated and transformed into matter of a market order. This line of research is an extension of three theoretical perspectives: works that problematize the development of the data economy; works which focus on the integration of moral concerns into the market; iii) studies in law and society which consider the application of law as a circular and endogenous process leading to the constitution of models of compliance in. In this presentation we focus in particular on the role of the French Data Protection Authority, the CNIL, in this dynamics of building a norm of compliance for the collection of consents. We claim that the CNIL case is an example of the difficulties to operate in practice the regulation of data economy based on consent. The study combines qualitative methods (interviews with professionals) and the analysis of a database of 500 home pages from French websites.

Making Governments Smart: Dashboards and Analytics in Local Governance *Burcu Baykurt, University of Massachusetts Amherst*

Many cities around the world, large and small, partner with tech companies to test smart technologies and data analytics in local environments, or as it is popularly known, they try to become a smart city. While tech giants' attempts to build smart cities from scratch receive most public attention (e.g. Alphabet in Toronto or Cisco in Songdo), this paper examines data analytics companies and their platforms, which promise to turn various urban datasets into predictive models and "actionable intelligence" for municipalities (Gandy, 2012). Mediating between tech giants and municipalities, these firms design tools that decide which kind of measurements should be included in decision making and how data should be presented to public officials and residents. They also help local governments interpret and put to use the avalanche of numbers received through smart city applications. Drawing on three years of ethnographic fieldwork in an aspiring smart city in the U.S, I demonstrate four ways these intermediary actors help legitimize and universalize what it means to become data-driven in local governance: 1) building and maintaining urban big data, 2) helping cities "uncover" insights across the city, 3) promising community engagement, and 4) assisting the city as it figures out how to finance the updating of smart infrastructures. If the so-called success of the smart city relies on a well-oiled bureaucratic machine, these quasi-consultants are increasingly the locus of knowledge and expertise that give meaning to the frameless data that are indiscriminately collected in cities.

"What is a market?" and other problems of legibility and logistics *Norma Tamaria Möllers, Queen's University*

(Kingston, Canada)

What happens when states go head to head with Big Tech? Despite burgeoning research into the dynamics and consequences of 'digital capitalism' and its consequences, we still know relatively little about how states are catching up to these large-scale economic transformations. Drawing on interviews and fieldwork with German government officials, this paper analyzes how the German state makes digital capitalism governable. These attempts go way beyond 'regulation,' but include the production of new expert knowledge and infrastructures to make digital capitalism legible and to gain independence from Big Tech's infrastructure (making digital territory). For example, economists are redefining how they understand what a market is, physicists are re-arranging networked supply-chains, network engineers are building state-owned cloud infrastructure, and computer scientists are defining digital citizenship. Alongside the technoscientific practice which engender digital capitalism, then, technoscientific state practices emerge to produce and maintain state power. This in turn means that more and more tasks of government are put in the hands of scientists and engineers, raising longstanding questions of modernity about the tensions between 'rational,' technical government and morality and ethics.

Session Organizer:

Kevin Mellet, Orange Labs

Chair:

Marion Fourcade, University of California, Berkeley Dept. of Sociology

300. Organizing Technoscientific Capitalism: Assets, Rents, and Values - 3

6:00 to 7:40 pm
virPrague: VR 11

Technoscientific capitalism is organized through the configuration of technological products, platforms, and data, as well as the configuration of capitalist practices like accounting, corporate governance, and valuation logics. As a result, technoscientific capitalism entails organizational dynamics and inter-organizational relationships that often get obscured within STS debates about the supposed 'neoliberalization' of society and science. In this panel, we want to explore how assets, rents, and values are made through this configuration of technoscience and capitalism. There are many possible analytical and empirical avenues and questions to explore here: How do managerial practices and collaborations underpin the transformation of things into assets? How do organizational epistemologies and resources manifest as different forms of rentiership? And how do public-private logics and frameworks produce specific forms of socio-economic values? Overall, we are concerned with examining how diverse processes of assetization, rentiership, and valuation open up and/or close down alternative futures and political possibilities.

Participants:

From "Data Protection" to "Data Donation": Conceptualizing the Reuse of Personal Data in Policy Responses to Big Data
Anna Artyushina, York University

Before the European Union General Data Protection Regulation (GDPR) came into force in 2018, a range of academic, civic, and industry actors had thrown their weight behind the campaigns aimed to redefine the legal definition of user consent. The shift from "traditional" to "dynamic" consent, which has resulted from these activities means an easier way for third-party companies to get access to, reuse, and share personal information collected by state agencies and private entities. Similarly, the lobbying activities pushing for legal derogation for data reuse accompanied all the stages of negotiations over The California Consumer Privacy Act (CCPA), the bill modelled after the GDPR that passed into law in 2019. Both the GDPR and the CCPA have been envisioned as the most comprehensive privacy laws in history. However, a closer look at these legal frameworks shows that they are premised on two conflicting assumptions: the need to protect personal data and the fear to be left behind in the data-driven innovation race. The arduous efforts to make the new legislation effective mark a paradigmatic shift of the policy discourses around personal data away from "protecting data" as key concern to "donating data for a legitimate purpose". A growing chorus of critics denounces the new policies as vague and inconsistent; as a response to these legislative efforts a number of alternative governance models have been devised, including the solidarity model, collective ownership of data, and open data. Drawing on STS scholarship and critical data studies, I explore the social and economic assumptions underpinning the existing data governance approaches. The core of my argument is that these approaches define digital information as a (private/public) asset and seek to establish a government monopoly over personal data.

Moral Economies of Open Data Platforms *Ryan Burns, Department of Geography; Preston Welker, University of Calgary*

Municipal open data platforms are currently caught in a range of tensions. They rely on an unspecified subject to analyze the data, and yet are surrounded by discourses of "empowerment" and "transparency". They are often most beneficient when approached with data science skills, yet often entail unremunerated digital labor. And they are often engaged by organizations tacking "for Social Good" onto their mandate - the Canada-wide organization Data for Good being a key example. To date, STS research has generated important insights into the political economies of data and platforms that highlight the ways they produce, mediate, circulate, and accumulate surplus and exchange value. Less attention has been devoted to understanding the ways moral values and sentiments are deployed to attract the digital volunteered labor subtending municipal open data platform usage. Those who mobilize these moral economies are deeply situated within capitalist platform economies, and benefit from the free labor of those wishing to improve their communities. In this paper, we argue that hackathons, datathons, and open data platforms are constituted through moral economies that are entangled within technoscientific capitalist accumulation practices and logics. These moral economies are key ways in which digital labor is procured, and represent a core component of what Boltanski and Chiapello call the "new spirit of capitalism". To substantiate our argument, we draw on an ongoing long-term ethnography into Calgary, Alberta's open data ecosystem. We conclude by politicizing the fissures of these moral economies, to identify the new political strategies that they necessitate.

Anchored to Machine: Regulating Algorithms in Financial Markets *Bo Hee Min, Copenhagen Business School*

This article examines the development and implementation of the Consolidated Audit Trail (CAT), a central market surveillance technology proposed by the Securities and Exchange Commission (SEC), a U.S. financial regulatory agency, in 2010. The CAT is a central market surveillance system for tracking all market activities via algorithms. The system is part of the comprehensive overhaul of regulatory systems that U.S. financial regulatory agencies launched after they experienced a crisis in their investigation of the Flash Crash of 2010, a market-wide meltdown in which trading algorithms played a critical role. The analysis in this article shows that the proposal and implementation of the CAT accelerated the algorithmic shift both across the organizational field of securities trading and within the regulatory regime. Building on the literature in the social studies of finance, the current study also demonstrates that the algorithmic shift was mediated by the transformation of time and temporality of market participants entailed by the universal clock-based timestamps and real-time reporting requirements of the CAT.

Valuing Views, (Re)viewing Value: Platform Capitalism and the Derivative of Attention *Jacob S. Hagelberg, University of California - Davis*

It is estimated that upwards of three-quarters of all global IP traffic is video. While a significant portion consists of CCTV footage and video conferencing, most is made up of platform-hosted video content. To sort and finance this data-intensive service, advertiser-supported firms have come to prominently rely on, among other metrics, views and various definitions of watch time in order to model ad pricing. This paper proposes to re-examine the role and contested ontological status of this metric in relation to contemporary techno-scientific critiques of capitalism by asking a question of central concern to STS and Marxist media scholars alike: What is a view? Through critical

readings of an advertiser class-action against Facebook over fraudulent views as well as a YouTube's internal billion-hour daily watch time target set in 2015, I contend the measurements of views themselves in our post-broadcast present have come to function as derivatives. Against "labor of looking" theses (Beller 2006, 2018) that position viewing and other 'free' online usage as a new form a labor and the source of internet firms' massive profits, I suggest that by reading this pseudo-asset in its material-semiotics, it implodes as any container of value and reveals an unstable status as a financial asset. By placing views, and the advertising they facilitate, in Marx's sphere of circulation rather than production, it becomes clear they operate under the same category of financial credit—speeding up actual exchange in the face of declining surplus value found in production.

Where is Monopoly in STS? Techno-rents and Big Tech in an Age of the 'Techlash' *Kean Birch, York University; Callum Ward, UCL*

'Techlash' was the Financial Times word of the year in 2018, reflecting an annus horribilis for Big Tech and potentially the start of an annus decennium – apologies for mangling some good Latin there. This ongoing technology backlash reflects growing concerns about the political-economic steamroller that is so-called GAFAM (i.e. Google, Amazon, Facebook, Apple, Microsoft). Fears about the social and political effects of market dominance and monopoly in the 'tech' sector has driven this public and political reaction. But, as The Economist notes, this techlash has hardly dented the market performance of Big Tech whose share value rose an astonishing 52% over the last year reaching a combined value of US$5.2 trillion. Is this a bubble? Is it something else entirely? For me, this raises some very interesting research questions for STS scholars, not least of which is the simple issue of how we deal analytically with monopoly – and other forms of market power. Outside of older STS debates about agriculture and intellectual property, monopoly seems to have attracted little attention in STS circles. My aim in this paper is to attend to the issue by exploring how STS can contribute to the ongoing discourse around the social power of Big Tech and what it might offer that other approaches cannot. My paper draws on ongoing qualitative research with policy informants who are dealing with Big Tech and the effects of monopoly and market dominance on our societies.

Session Organizers:
Jane Bjørn Vedel, Copenhagen Business School
Kean Birch, York University
John Grant Gardner, Monash University, Australia
Chair:
Kean Birch, York University

301. FLIPPED | Digital Experiments in the Making III: Researching Methods, Tools, And Platforms Within The Datalogical Turn

6:00 to 7:40 pm
virPrague: VR 12

As a matter of research, digital infrastructures and technologies as well as data sets play a large role. But how to look at them from an STS perspective? How to adopt the datalogical turn to emerging and ongoing developments from the technological side? What data is available and helpful for STS questions? What should be improved and how can we critical reflect these developments? Within the session, existing resources and datasets are examined for the integration and adaption for STS perspectives. Large collaborative projects such as Wikipedia and web archives as well as databases generated and curated by private companies play a role here. In addition, perspectives on the analysis of such datasets within the intersection of STS and computational science are taken into account. This is a flipped session, where we focus on discussion. All presentations are available at the STS Infrastructures platform: https://stsinfrastructures.org/content/open-panel-easst4s-2020-digital-experiments-making/essay

Participants:
Locating And Timing Matters Of Attention Through Wikipedia: Technical, Epistemological And Political Considerations *Nicolas Baya-Laffite, STSLab, Université de Lausanne; Ogier Maitre, STSLab, Université de Lausanne; Boris Beaude, STSLab, Université de Lausanne*

Wikipedia has become a ubiquitous digital knowledge infrastructure and thereby a locus for politics by other means. As the primary online reference, it is central in our everyday life digital information ecosystem. Because of its uniqueness, it constitutes not only an essential object of study, but more and more an instrument for doing social research – especially as many social media APIs are closed to most researchers. While open, its traces still require considerable work before being amenable for exploration, repurposing, and experimentation. Several initiatives have thus sought to facilitate this by conceiving accessible tools, protocols, and platforms. Much of this effort has focused on Wikipedia as a site of controversies, employing edit histories to trace them. Against this backdrop, we draw on our own experience in tool development within the WikiMaps project to reflect upon the potential of Wikipedia data, other than edits, for locating and timing matters in STS and beyond. Using consultation traces and geocoded contents across all editions since 2008, our comparative cartographic visualization device works as an open observatory of interest dynamics for all collectively documented phenomena which take place. Whether matters of fact or matters of concern, these matters of attention provide unique insights into complex processes, such as collective memory formation. We illustrate this with the case of the commemoration of Hiroshima, Chernobyl, and Fukushima nuclear disasters. To conclude, we sum up the technical, epistemological, and political value of open tools drawing on Wikipedia for the infrastructuring of STS research.

Knowing Infrastructure: Critically Engaging The Wayback Machine As Source For STS Research *Jessica Ogden, University of Southampton; Ed Summers, University of Maryland; Shawn Walker, Arizona State University*

From documenting human rights abuses to studying online advertising, web archives are increasingly positioned as critical resources for a broad range of scholarly Internet research agendas. And yet, web archives as research infrastructures remain relatively understudied. In this paper we reflect on the motivations and methodological challenges of investigating the World's largest web archive, the Internet Archive's Wayback Machine (IAWM). Using a mixed methods approach, we report on a pilot project centred around documenting the inner-workings of 'Save Page Now' (SPN) - an Internet Archive tool that allows users to initiate the creation and storage of 'snapshots' of web resources. By improving our understanding of SPN and its role in shaping the IAWM, this work both reveals how the public tool is being used to 'save the Web' and highlights the challenges of operationalising a study of the dynamic sociotechnical processes supporting this information infrastructure. Inspired by existing STS approaches, the paper charts our development of methodological interventions to support an interdisciplinary investigation of SPN, including: ethnographic methods, 'experimental blackbox tactics', 'speculative data modelling' and documentary research. We discuss the opportunities and limitations of our methodology when interfacing with issues associated with temporality, scale, visibility and access, as well as critically engage with our own positionality in the research process (in terms of expertise and access). We conclude with reflections on the implications of STS approaches for 'knowing infrastructure', where the use of information infrastructures is unavoidably intertwined with our ability to study the situated and material arrangements of their creation.

New Perspectives In Digital Platform Governance: Qualitative Studies Of Open Access Platforms *Luis Ignacio Reyes-Galindo; Clement Bert-Erboul, Université Libre de Bruxelles*

We propose a set of three new conceptual tools to analyse the role of digital platform 'insiders', adding to debates on the understanding of digital governance as a socially embedded phenomenon through the study of open access academic platforms. Rather than framing these debates as a confrontation between private/commercial and public/non-profit actors, as is done in much of the literature on open access, here we use online scientific platforms as case-studies in STS and socioeconomic to

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assess broader issues surrounding scholarly digital-content management, such as the structuring of international vis-à-vis regional networks, the politics and practices of assessing organisational performance within platforms, and the creation of managerial logics corresponding to the non-commercial interests within scientific communities.

Session Organizers:
Lina Franken, University of Hamburg
Kim Fortun, University of California Irvine
Mike Fortun, University of California, Irvine
Gertraud Koch, University of Hamburg
Chair:
Mike Fortun, University of California, Irvine

302. Prototyping Urban Futures 2
6:00 to 7:40 pm
virPrague: VR 13
Participants:

Facilitating Collaborative Processes In Transformative Transdisciplinary Research – Design Prototyping As A Creative Intervention *Daniela Peukert, Leuphana University of Lueneburg; David P. M. Lam, Leuphana University Lueneburg; Andra I. Horcea-Milcu, University of Helsinki; Daniel J. Lang, Leuphana University Lueneburg*

Transformative research approaches in sustainability science address complex issues by including diverse perspectives, forms of cognition and knowledge production, as well as different bodies of knowledge. Therefore, collaborations are a central component of this kind of research. But processes within heterogeneous project teams are accompanied by various challenges such as gaining a common understanding of what is considered the problem or facilitating mutual learning between partners with their specific expertise. Different epistemic cultures, theoretical concepts, and methodological approaches need to be bridged to produce socially robust solutions towards a future-oriented transformation. This bridging requires an extended range of methods to facilitate essentially needed collaboration in transformative processes. To support building bridges we propose and introduce a participatory method based on design prototyping. Prototypes represent coded knowledge and thus work as epistemological tools. Their visuality, tangibility and spatial situatedness provide an addition to written text and spoken word, enable the negotiation of different perspectives, and level hierarchies, power, and rhetorical abilities. These characteristics seem promising to stimulate exchange in collaborative processes. We conducted four workshops to explore the application of design prototyping. Each workshop represented an archetypical situation (e.g. Interdisciplinary Team Building). Our results provide insights into the practice of design prototyping being applied outside the context of design. Furthermore, they show how the method can facilitate such processes and address the challenges that come along with it. A framework consisting of six different challenge categories, derived from the literature, serves as a base to analyze the empirical data and shows the potential of design prototyping to facilitate collaborative processes. With using design prototyping in sustainability science, a promising field opens up that broadens the methodological canon for an active contribution to solution-oriented and robust ideas, as needed for future-oriented transformations.

Reconstructing DISCOURSE: Rules and Data Structure Reconfiguring Urban Planning Work in the 1960s MIT *Emek Erdolu, Carnegie Mellon University; Daniel Cardoso Llach, Carnegie Mellon University*

This paper examines DISCOURSE — a computer-aided city design system developed by researchers at MIT's Department of City and Regional Planning in the late 1960s. Prototyped after a real-world planning project in Ciudad Guayana, Venezuela; which the Harvard-MIT Joint Center for Urban Studies joined as consultants, DISCOURSE is an artifact of the US culture of postwar urban planning policy and design. The system is geared for designing large-scale environments by creating and testing alternative land use configurations. It enables the designer to enter, store, and manipulate large amounts of data representing environmental descriptors (attributes), and map them to the scaled units of land (locations) displayed on a visual interface. Formalizing the land use allocation into logical statements, the system can also generate new configurations based on the initial attributes on locations. Drawing from recent work in software reconstruction as a method to study sociomaterial aspects of software (Cardoso Llach 2018), the paper combines the examination of historical documents and oral accounts with a discussion of the development, by the first author, of a reconstruction of the software itself. With these materials, the paper reflects on the interdisciplinary influences shaping the system, on the contrast between the software's technical capacities and its projected role as a design instrument, and on the notions of collaboration that guided the software's development and which inscribe distinct aspirations about urban planning in the American post-war.

Commercial motorcycle as sustainable mode of transportation *Emmanuel Ejim-Eze, Institute of Engineering, technology and innovation Management; Elizabeth Omimakinde, National Centre for Technology Management*

Motorcycles compared to other automobiles look like sustainable means of transportation as they take less space, fuels (though with less passengers), pollute less and navigate congestions and bad roads. Proliferation of commercial motorcycles has got consequences, contributing to road accidents, deaths and injuries to passengers, used for crimes by robbers, and caused job mobility of technicians. Its high numbers frustrates regulation, contributes to air/noise pollution and affects labour supplies. This study investigated how the continuous use and explosion in number of motorcycles improves or lessens the sustainable mobility in urban cities. It explored the literature and secondary data were obtained and used for analysis. The case of commercial motorcycle operation in some urban cities in African and Asia were considered. Findings from this study show that claims about the sustainability of commercial motorcycle transportation mode are controversial. As an informal transportation mode it has faced outright bans in some cities. Proliferation of motorcycles contributes to traffic congestions, air and noise pollution, traffic accidents and competes with viability of formal public transport modes. Even though it has provided mobility in some poorly developed urban cities and employment for operators, tax revenue for some authorities, yet this mode of transportation should be considered to be a transition. Outright ban may be infringement of people's right to mobility. The authors made some policy recommendations which includes the need to study the emergence of commercial motorcycle transportation as an issue in socio-technical systems to enable urban authorities to provide proper transition to sustainable mobility.

Mapping the rhizome of smart city performances *Harsh Mittal, Indian Institute of Management Ahmedabad*

The concept of smart cities has occupied a widely entrenched position in the urban policy discourse globally. This paper critically examines the policy processes enveloping Smart Cities Mission (SCM), a flagship scheme of the Indian federal government elected in May 2014. Drawing on Deleuze and Guattari's (1988) assemblage thinking, I focus on how practices of knowledge production over smart cities shape and influence the ongoing political process of urban decision-making in India. The paper is grounded in two-year-long fieldwork at sites of knowledge production and circulation over smart cities, constitutive of participant observations and conversational interviews, combined with contextual examination of archival material relating to policy frameworks, prescriptions, and technological solutions. This paper provides an ethnographic view into the materiality of spaces where policy-makers are schooled to frame the urban problematic in the language of smart cities. It does so by making visible rhizomatic connections between stages of performing urban expertise and other heterogeneous elements in the urban policy-making assemblage, namely - policy magazines, awards, conference producers, management consultants, representatives of sponsoring corporations, municipal bureaucracy and elected representatives. By mapping the rhizome of smart city performances, I attempt to

move the understanding of exclusion through urban policies and more specifically India's smart urbanism, beyond conventional critiques, such as poorly mobilized citizen participation, exclusionary selection of projects, and narrow targeting of populations.

Session Organizer:

Marcel Woznica, Johannes Gutenberg-Universität Mainz | Institut für Soziologie

Chair:

Kevin Weller, MCTS Technical University Munich

Discussants:

Sascha Dickel, Johannes Gutenberg-Universität Mainz
Andrea Schikowitz, TUM

303. Making Futures by Freezing Life II

6:00 to 7:40 pm
virPrague: VR 14
Second session of the panel "Making Futures by Freezing Life"
Participants:

Potential Value. Producing Knowledge And Commercial Value In Natural Product Chemistry *Klaus Angerer, University of Tübingen, Germany*

Based on an ethnographic case study in a small company, the paper analyses the production of knowledge and commercial value in natural product chemistry and offers insights into industrial research built upon large collections of cryopreserved samples. The company I investigated isolates compounds from plants and microorganisms to assemble a library of pure natural products. To speed up the process, only a limited amount of information is gathered: Molecular structures of compounds are elucidated whereas their biological activities remain unknown as they are sold, in contrast to traditional ways of using natural products in drug discovery since the 19th century. Accumulating and preserving resources with unknown effects but in formats adapted to industry's needs amounts to trading in potential value. From industry's point of view, natural products are expensive to acquire but increase the diversity of compound collections – an uncertain yet potentially vital resource in light of the likely failure of most drug development projects. Hence, the company provides compounds in a way that minimizes issues typically associated with natural products: Purified constituents of living beings are made available and durable in standardized formats; ephemeral organic matter is transformed into commodified resources for further research and potential applications yet to be determined. Yet, cryopreservation in itself is not sufficient to sustain any kind of potential value: Microbial samples can be kept potentially productive for unlimited time; thus, they unfold in different temporal frames than compounds which have to be re-isolated from plants once they are out of stock.

"Cattle Banks": Preserving Nordic Exceptionalism and Future Human-Cattle Relations. *Charlotte H. Kroløkke, University of Southern Denmark*

Science and technology studies scholars have theorized how freezing technologies alter our understanding of what it means to be biological (e.g. Landecker, 2007; Radin and Kowal, 2017). In this presentation, I ask: How is the cryopreservation of Nordic cattle genetics, in the case of commodified and endangered cattle species, imagined and potentiated? In the case of Nordic commercial cattle breeds, frozen 'Viking' bovine sperm is potentiated in light of 'healthy' and 'easygoing' cows visually reiterated through images of happy, white, blue-eyed men and their male offspring. Meanwhile, to the Nordic Genetic Resource Center (NordGen), cryopreservation is potentiated as a rescue technology preserving 'native' and 'endangered' breeds as well as human-animal Nordic and Arctic cultural heritage. Empirically, I rely on Viking Genetics and NordGen presentational material (websites, brochures, YouTube videos), participation in NordGen seminars and interviews with VikingGenetics and NordGen researchers. Whereas cryopreservation, in the case of VikingGenetics, is mobilized in light of commercial, gendered and racialized logics, cryopreservation becomes, in both cases, animated in light of Nordic 'exceptionalism.' In the specific case of NordGen,

however, cryopreserved cattle DNA gets additionally potentiated as "the promise of vitality to come" (van Dooren, 2017: 263) and the "what could be" of a given future (Shoffstall 2010: 287). In this manner, cryopreservation goes, as van Dooren (2017: 271) notes, beyond the potentially endangered species to the societal fabric or "ways of life" including the anticipation and promise of a Nordic and Arctic biocultural refuge of human-cattle relations.

Frozen Futures: Crafting Natural History in a Genomic Age *Adrian Van Allen, California Academy of Science / Smithsonian Institution*

As biotechnology reshapes museum practices, vanishing biodiversity is being preserved for uncertain ecological futures in a variety of ways, each with a distinct shape and scale of time guiding its making. This ethnography focuses on the Global Genome Initiative at the Smithsonian National Museum of Natural History in Washington D.C., a project that seeks to cryo-preserve half of the taxonomic families of life in the next five years. Grounded in a feminist STS perspective of how materials are made to matter, I examine how museum cryo-collections are crafted as ontological embodiments and forms of "latent life" as they are made and used. Through stuffing bird skins, pinning beetles, pressing plants, taking tissue samples and assembling genomic data I explore how these disembodied living things are transformed into embodiments of different types of time— through their preservation, negotiated use and continuing re-evaluation as specimens are made, evaluated, and consumed. As specimens' biologies are unbound into differently valued parts and pieces, spread across the spaces of the museum—from frozen tissue samples to a bird skins in cabinets to globally dispersed data—these distributed specimens remain sites of contested classificatory meanings, objects of shifting value and hand-crafted "natural orders." Through exploring museum specimens as epistemic objects, mobile and transformative of a variety of scales of time, I argue there is multiplicity not only between but also within objects as they negotiate reconstructed pasts and imagined futures.

Remind Me when I Wake Up: Memory and Recollection in Animal Cryobanks *Veit Moritz Braun, Goethe University Frankfurt/Main*

Cryobanks have a dual role in the biosciences. Looking forward, they collect deposits for the future - looking backward, they document and archive the past. But what links these two temporal planes? In this talk, I want to show what crucial part memory plays in the frozen life of samples in an animal conservation biobank. Where does the memory of samples rest when they go to sleep in a freezer? There is only so much that can fit in and on a cryovial - often not enough to maintain the identity of a sample and its relation to past and future events. The material state of frozen samples does not usually allow for invasive analysis to ascertain their provenance and to recollect the past. Instead, memories need to be carefully separated from frozen organic matter and conserved in their own archives. This process does not just reconstruct the past but also anticipates a future that lacks certain memories but not others. The fixation of memories on labels, in spreadsheets and in QR codes is never perfect, however: important memories are lost when researchers pass away, documentation is cryptic or database systems are harmonised. While this does not make remembering impossible, it raises the question of when and how memories can be retained despite their constant loss.

What's disappearing? The constitution of microbiota banks at the time of their alteration. *Alexis Zimmer, Centre Alexandre Koyré*

Current research on the human microbiome - the genome of the microbial populations residing in our bodies, but more broadly the complex ecosystem of these microorganisms, also known as the microbiota - reveals a neglected catastrophe: many microbial and parasitic creatures with which our bodies had symbiotic relationships have disappeared or are in the process of disappearing. In other words, the ecological crisis, the collapse of biodiversity that characterizes our times is also at work in our bodies. At the same time, since 2013, surveys, specifically involving « hunter-gatherer » populations, have multiplied. All these surveys attest to the greater richness and variety of

intestinal microbiotes in hunter-gatherer communities, compared to those of western and urban populations. They all assume that this richness and variety explains the lower frequency of chronic diseases affecting them. But according to some estimates, by 2050, more than two and a half billion people will have left their so-called "traditional" lifestyle to join urban lifestyles. Faced with this situation, and "while there is still time", MIT researchers have launched a vast campaign to collect and preserve intestinal microbiotes from populations supposedly relatively free of Western lifestyles: the Global Microbiome Conservancy. Our contribution aims to question the futures and promises behind these projects, to confront them with the materiality of the preserved entities, to analyse transformations that these entities and the populations from which they are collected undergo, and to question what is thus likely to be preserved.

Session Organizers:

Sara Lafuente-Funes, Institute for Sociology, Goethe University, Frankfurt
Ruzana Liburkina, Goethe University Frankfurt

Chair:

Sara Lafuente-Funes, Institute for Sociology, Goethe University, Frankfurt

304. States of Planetary Environmental Knowledge I

6:00 to 7:40 pm
virPrague: VR 15

This panel explores the politics of planetary-scale environmental knowledge production. In convening scholars from across the methodological spectrum, we seek to ask: what, and whose, politics come into play when local knowledge is scaled up or planetary/global knowledge is localized? How is difference maintained or collapsed in the making and governance of global environmental knowledge? What forms of governance and/or infrastructure emerge out of planetary/global knowledge? Possible themes may include: Geographies/spatialities of planetary environmental knowledge How localized environmental knowledge is scaled up, aggregated, and/or made relevant at planetary and global scales How models about the global environment are assembled Questions of the planetary commons and climate governance Experiments, simulations, and models for producing planetary knowledge The limits of knowability, certainty, and quantification

Participants:

Gas Guzzling Gaia *Leah Aronowsky, Columbia University*

The Gaia hypothesis is the theory that the Earth's atmosphere and environment comprise a homeostatic system. Formulated in the 1970s, Gaia proposes that, through a series of biochemical feedback loops, life in the aggregate actively interacts with the environment to maintain the planet's climate and chemical composition within a narrow range of habitability. As historians have detailed, Gaia assumed an influential role in the modern environmental movement and within climate science. Less often considered, however, is the theory's life in the world of industry. In the 1970s, Gaia became an idea of interest to chemical companies like Royal Dutch Shell at a moment when these companies were coming under regulatory scrutiny for the threat their products posed to the climate. In this context, corporate officials furnished scientists with funds to explore the possibility that the planet, as a self-regulating, Gaian system, might possess biological mechanisms for counteracting the effects of anthropogenic pollutants. They touted the subsequent findings to US lawmakers as evidence of Gaia. This talk explores the politics of planetary-scale knowledge production through a focus on the oil and gas origins of the Gaia hypothesis. Drawing on archival research, it reconstructs industry-sponsored studies to explore how scientists scaled from localized environmental encounters to planetary-scale claims about the nature of the climate, and considers how the theories scientists use to produce climate knowledge have been wielded in the service of capital. The talk contributes to STS by accounting for the role of capitalism in the history of planetary-scale knowledge.

Territorializing the Atmosphere: International Politics of an Air Quality Survey in East Asia *Sungeun Kim, Korea Advanced Institute of Science and Technology (KAIST)*

This presentation examines how different political and spatial imaginations on the atmosphere were competed and negotiated during the international scientific study on air pollution. Conducted in May 2016, KORUS-AQ was a field study of South Korean air quality co-organized by NASA and Korea's National Institute for Environmental Research (NIER). In designing KORUS-AQ, NIER and NASA revealed different expectations on why they must study the airshed. For NIER, KORUS-AQ was a chance to measure the amount of transboundary pollutants that travel from China to Korea. The data was expected to provide the South Korean government with a scientific authority for holding China accountable for the bad air quality of Seoul. NASA, on the other hand, wanted to focus on domestic sources of air pollution. For NASA, Seoul was an ideal test site that revealed typical characteristics of air pollution in Asian megacities. While NIER imagined Seoul's air as the national territory transgressed by foreign pollutants, NASA considered it as a model that best represents the planet's urban atmosphere. Through the analysis of official documents and interviews with participating scientists, this presentation examines how different political and spatial conceptions on South Korea's atmosphere led to contrasting designs of KORUS-AQ, including the timing of the mission, the types of measurements, and policies for distributing data. The presentation suggests that multi-national surveys like KORUS-AQ are critical practices through which different scalar assumptions on the global environment are made explicit, and calls for more scholarly attention to their knowledge-making processes.

Timing an Anthropocene ocean: Temporality and environmental knowledge in the Deep Sea Drilling Project 1968-1983 *Erik Isberg, Division of History of Science, Technology and Environment, KTH Royal Institute of Technology*

In 2019, a special report from the IPCC stated that "all people on Earth depend directly or indirectly on the ocean." This view of the ocean as a key feature of the planetary system is a point of departure in contemporary discussions on climate change, but the configuration of the world ocean as an object of environmental knowledge emerged gradually over the 20th century. This paper seeks to add to previous research on the making of an "Anthropocene ocean" (Lehman 2019), by tracing the role of deep sea core drilling in the temporalization of oceans in the earth system. The Deep Sea Drilling Project (DSDP) was primarily funded by the NSF and took place between 1968-1983, with the aim to sample the world's oceans for deep sea cores from the ocean floor. The cores provided vast records of ocean dynamics, which made them possible to utilize for studies in paleoceanography. During the 1970's, the vast timescales of deep sea cores entered environmental discourse and were drawn into the burgeoning field of Earth System Science. The cores were used to determine and project the stability of the earth system in its entirety, thereby vastly expanding the temporal, spatial and political implications of deep sea core drilling. Over the course of a few decades, deep sea cores broadened their epistemological scope from ocean pasts to planetary futures. This paper seeks to show how the making of planetary scale environmental knowledge was not only the expansion of spatial imagination, but also of temporal boundaries

What's in a Footprint? Rival models of Communication and Materiality in Environmental vs. Carbon Footprinting Techniques *Anne Pasek, New York University*

The effective quantification of global climate impacts is a long-frustrated pursuit of environmental scientists and activists. This paper examines the political, affective, and theoretical stakes of such metrics by focusing on rival protocols and communication strategies through which carbon emissions have been enumerated. Through archival analyses of key scientific publications and public relations materials, it contrasts the logics and limitations of ecological footprinting and carbon footprinting. Ecological footprinting is a system developed by Canadian regional planners in the 1990s that evaluates environmental resource costs through associated hectares of land. Given the fixed quantity of global land on the planet, the system sought to model and insist on interconnected limits to growth and

obligations of transnational equity in trade and waste, though not without lingering settler colonial conceptions of spatial frontiers and forms of ownership. Carbon footprinting is a now hegemonic technique that grew out of ecological footprinting, but parses matter only in terms of tons emitted into a placeless sky. It was brought into prominence through a combination of targeted critiques against the ecological footprint concept by the Breakthrough Institute as well as the marketing efforts of BP in the early 2000s. In these questions of representation and communicability both a politics and theory of materiality can be uncovered through the different boundaries drawn around carbon's spatially diffuse geophysical and political relations. Accordingly, at stake in assessments of how carbon should be measured are larger structures of feeling and response-ability across often underexamined scales, markets, and theories of power.

Can Planetary Knowledge be Decolonized? *Jerome Whitington, New York University*

The rise of planetary knowledge is sharply associated with early modern mapping efforts in the context of European programs of planetary expansion. Indeed, this process was intimately tied to efforts to comprehend human difference, and one can say that the planetary and the human as programs of knowledge and rule share the same history. With respect to climate change, the singular focus on planetary science has been identified by indigenous scholars and others as narrowly constraining the problematic to atmospheric greenhouse gases, the steady rise of which is iconically known through the singular planetary variable documented in the famous Keeling Curve. The effects of this conceptual constraint are powerfully demonstrated by the obsessive fixation on carbon markets, which in spite of numerous well-documented problems are by far the most prevalent regulatory mechanism for climate mitigation. On the other hand, if climate change cannot be known except through regimes of planetary knowledge, then criticism of this colonial inheritance might be tempered by an effort to challenge the assumptions and consequences that come along with an unacknowledged ancestry. Building on long term research on carbon accounting and carbon markets in Asia, this paper weighs the possibilities of affirming powerful quantitative techniques from within a decolonial framework. I discuss ontological dynamics of different commitments to planetary knowledge and assess underlying assumptions about "molecular fetishism" (Fleming).

Session Organizers:

Jenny Elaine Goldstein, Cornell University
Leah Aronowsky, Columbia University

Chair:

Jenny Elaine Goldstein, Cornell University

305. Digital Technologies in Policing and Security - Session 3

6:00 to 7:40 pm
virPrague: VR 16

Participants:

Calculating Fairness. Enacting statistical justice in the case of risk recidivism *Nikolaus Pöchhacker, University of Graz; Peter Müller, Technical University Munich*

For some time now predictive algorithmic systems have been utilized within juridical practice, most prominently discussed in the case of Northpointe's COMPAS. In the last years, this case sparked discussions on racial bias, predictive accuracy, and algorithmic fairness. Interestingly, in the discussion different mathematically formalized notions of fairness were used to justify or contest the algorithmic system. In our contribution we will focus on these conflicts and their particular subtext: a) the trade-off between classification markers that are potentially biased and the plain, predictive power of models; b) the evaluation of error rates in different representations of the same statistical model; c) different modes of subjectivation based on applied categories assessing the changeability of variables in terms of social intervention and individual accountability. This raises questions of whose knowledges, visions, and interests are dominating the technological restructuring of punitive jurisdiction institutions and practices. As a democratic legal state

institution, judiciary institutions may operate under a formalistic-juridical tension, however, the question of justice and justification cannot be decided by judiciary intuitions alone, but should be embedded in a broader democratic discussion. Hence, we argue that the technological shift happening at certain courts challenges the very democratic questions of participation and representation. Which social identities are affected by the used statistical variables? Which ideas of the citizen or social ecology are used and reproduced by the discourse hegemonic voices? Who can and does evaluate the usage of SDSS at courts?

EVINCING SHADOWS: How Forensics Turns Digital Data into Evidence of Indecency *Brian Rappert, University of Exeter*

This presentation details how digital data gets turned into what is regarded as legitimate evidence of criminality. Specifically, it examines the administrative and technical processes within police forces that render extensive electronic data collected from digital devices (such as mobile phones and laptops) into evidence of a suspect's accessing of indecent images of children. Based on extensive observations and interviews as part of a multi-year Economic and Social Research Council funded project (undertaken with Dana Wilson-Kovacs - PI, Sabina Leonelli, Hannah Wheat), this presentation examines how those across criminal justice agencies in one region of England transform a heterogeneous crime scene with high volumes of digital footprints into a presentation of specific data points that can stand as evidence for the possession of indecent images. In doing so, this presentation will seek to (i) set out the procedures and practices in place for a central application of digital forensics today; (ii) conceptualise the complex loops between the identification, preservation and collection on the one hand, and examination and analyse on the other hand; (iii) assess how digital forensics is bound up with the constitution of forms of expertise and authority; and (iv) outline how police agencies manage the extensive demand for digital examinations in conditions of constrained resources.

Prediction, Production, and Disintegration: Corporate-Government Partnerships and the Need for Expertise *Sarah Young, Erasmus Universiteit Rotterdam*

Predictive policing is a trending issue both for proponents of incorporating analytics into crime prevention (Pearsall, 2010; Seele, 2017) as well as for critics that question the role and consequences of data, algorithms, and private corporations like PredPol in policing practices (Meliani, 2018). In addition to important ongoingly-explored risks of prediction in law enforcement practices like the mythic power of (big) data (Egbert, 2019) and questions of social justice (Richardson, Schultz, and Crawford, 2019), however, there are also risks of intentional misuse of automated prediction for other nefarious reasons. Automated, predictive technologies can be used to avoid contractually-obligated and vital investigative requirements (and to obscure the avoidance). One illustrative example demonstrating this is USIS, a government contractor authorized for law enforcement activities in background investigations, whose corporate implosion can be traced back to allegations of falsification of information enabled by automated and predictive technologies supposedly in place to identify areas of higher risk. With this premise in mind, using first-hand whistleblower testimony and court documentation, I argue that in addition to more "standard" ethical concerns for use of predictive technologies, there is also a more abnormal, secondary concern that predictive technologies can also be abused for corporate power and greed. Drawing on STS research focusing on technology policy (Lopez Cerezo and Gonzalez Garcia, 1993) and crime and technological expertise (Parker, 1976), I will not only chart out what went wrong, but I will also offer a discussion of how these problems might be avoided in the future with attention to oversight, policy, and subject matter experts.

Session Organizer:

Nikolaus Pöchhacker, University of Graz

Chair:

Simon Egbert, Technische Universität Berlin

306. They're Just Guidelines: Operationalizing AI Ethics -

Session 1 (Considering Context)

6:00 to 7:40 pm
virPrague: VR 17

2018 & 2019 have seen a surge of frameworks or guidelines that lay out principles of how Automated Decision Systems (ADS) can be developed and implemented ethically. The Private Sector, Multistakeholder Groups and Government Agencies have published guidelines covering principles of transparency/explainability, fairness/non-discrimination, accountability, saftey/security and privacy (Algorithm Watch, 2019). Occasionally, these guidelines include the demand for AI be socially beneficial and protect human rights. Few include recommendations or examples of how to operationalise these principles. Today, most major technology companies using Artificial Intelligence and Machine Learning have agreed to comply with these guidelines. But has the development of ADS changed? What challenges still remain? This panel seeks to convene scholars from multiple disciplines who are interested in the operationalization of AI ethics and welcomes submissions exploring themes such as: Are AI ethics guidelines changing the way companies and universities educate/train their data scientists and AI developers? How are factsheets, fairness toolkits, scenario planning exercises, etc being used within industry? (Stories of success and barriers) How does corporate culture influence the oversight and enforcement of AI ethics guidelines? What responsibilities fall on executives compared to data scientists? How are traditional approaches to risk management being applied to AI & ML? How do AI ethics guidelines vary across sectors, domains and cultures? How do these variations influence guideline implementation?

Participants:

A Case Study in Operationalizing AI Principles in Large Enterprise *Es Braziel, Microsoft; Emily McReynolds*

There has been an acknowledged proliferation of principles towards ethical AI with many, if not most, having overlapping themes. However, these principles can fail before real-world impact without consistent, cross-organization implementation. Similar to previous privacy-by-design efforts, the challenge in operationalizing AI principles occurs at multiple levels related to corporate norms. The team culture, the backgrounds of those implementing these standards, and individual interest also have significant impact on adoption. We are a design researcher and a governance manager developing a positionality informed approach to implementing ethical AI. We plan to develop an approach that outlines appropriate interventions at each identified role (developer, designer); level (individual contributor, team lead, executive); and social identity that are scalable to large and small organizations based on conducting a case study.

AI Ethics Principles: International Practices Versus Local Implementation In Taiwan *Yin-Ling Wei, National Taiwan Normal University; Cheng-Hsing Chang, National Taiwan Normal University; Li-Yun Chang, National Taiwan Normal University; En Chao, National Taiwan Normal University; Tony Szu-Hsien Lee, National Taiwan Normal University*

This study aims to explore international universality versus local implementation of AI ethical principles. First, we investigate common concerns in AI ethics guidelines under a multi-national context. Second, we discuss specific local issues in Taiwan and deliberate how AI ethical principles may be applied. Regarding international universality, we analyze 12 official AI ethical regulations and use the resulting ethical framework to interview scholars from five countries. Corpus analysis reveals that keywords such as human, responsibility, privacy, respect, society and autonomy are most frequently mentioned. These keywords echo the most common concerns of scholars we interviewed. These concerns were ranked in the following order: privacy, transparency, fairness, accountability and education. Furthermore, in linking these internationally universal AI ethics concerns to local implementation, we discuss three issues in Taiwan (e.g., health insurance, college admissions and mobile payment). First, in the National Health Insurance (NHI) program, a mutually-assisted system which provides health security to all Taiwanese citizens, individual medical records are registered using NHI cards and thus can be tracked. Second, in Taiwan's college entrance examination called General Scholastic Ability Test (GSAT), students' scores may undergo AI screening in order to qualify for oral interviews. Third, LINE PAY, a mobile payment method used by many Taiwanese, collects, processes, uses and discloses the user's personal information and consumption records. The above issues suggest that AI ethical principles need implementation at both the international and local levels. Taken together, we argue that the implementation of AI principles requires precise standards for different local issues.

On Algorithmic Opacity and Moral Certainty *Oleg Litvinski, CIRST UQAM*

In modern society, algorithms play an important role in social and cultural realms, in political and economic spheres. In spite of algorithmic pervasiveness in many areas and wide diffusion in digital life, algorithmic opacity is still poorly understood compared to other ethical issues (e.g., fairness, accountability, and transparency). In this essay, we try to elucidate the relation between algorithmic opacity and moral certainty from the individualistic standpoint and through the virtue ethic perspective. For doing so, we follow hermeneutic tradition and rely on interpretation of recent authors and impactful papers. We summarize our argument as follows: if the algorithm is understood as the combination of rules and numbers we create for simplifying our lives and sharing with others, then our present activities and future actions as imagined, realized or missed, ascertain if algorithmic opacity become a moral issue or problem for us and others. Among the implications, we emphasize that sometime dormant and hard to anticipate, algorithmic opacity becomes an apparent during executions, deployments and prolonged uses of algorithmic systems. Moreover, our lived experience and disharmony between our unrealized expectations and unanticipated algorithmic behavior may lead to moral issues and problems for us and others. Overall, algorithmic opacity may constantly evade the formalization efforts (e.g., outlining as guidelines, principles) or quantification exercises (e.g., assigning numerical values to symbols or signs), both of which are essentially social practices.

Session Organizer:

Anna Lenhart, University Of Maryland College Park

Chair:

Anna Lenhart, University Of Maryland College Park

307. Locating Psychoanalysis in STS Terrains

6:00 to 7:40 pm
virPrague: VR 18

STS has long been entangled with the disciplinary field of psychoanalysis, its concepts and theories: from philosophers of science Gaston Bachelard [1987; 2011], Thomas Kuhn (Forrester, 2007), and Donna Haraway [Haraway and Gane, 2006] to social theorists and feminist thinkers such as Michel Foucault [2005] and Judith Butler [1990], Elizabeth Grosz (1994) and Elizabeth Wilson (2015). Psychoanalytic theory and modes of attention to knowledge about subjectivity, lived experiences, emotions, unconscious, sensoria, fantasy, desire, and the uncanny inform STS works on scientific observation (Daston and Lunbeck, 2011), objectivity (Keller, 1985), techno-scientific imaginaries (McNeil et al. 2017), human-technology relationships and emergent intersubjectivities in relation to interfaces (Turkle, 1984; Clough, 2018), space (Thrift, 2004), artificial intelligence, code, and robotics (Anderson, 2006; Hayles, 2006; Stacey and Suchman, 2012). This panel intends to locate psychoanalytic theory in relation to the current moment in STS, and open up the possibility to explore generative interfaces between the two disciplines. Specifically, the panel invites works that engage with psychoanalytic theories and approaches in exploring the nuances and novel dynamics taking shape in the changing relationships of humans, technologies, infrastructures, and anthropogenic environments. Provocations may, but need not, include: -Object/subject relations; -Shifting/novel intersubjectivities; -Climate and environmental affects; -The limits and boundaries of psychoanalytic theory and behavioural sciences; -Ecriture feminine as worlding and challenge to phallo[go]centric technoscientific systems; -Interiority/exteriority; -Embodiment, sexuality and gender; -Epistemological plurality, ontological multiplicities; -Attachment, desire and fantasy in living, existing and emerging more-than-human worlds; -Scientific and legal positivism.

Participants:

Critical Attachments: The Strange Situation Procedure as a Primal Mis-En-Scene for Feminist STS *Eric Taggart, UC Davis Anthro/STS/Performance Studies*

"What if we derived our social theory from scenes of

ambivalence" writes Lauren Berlant, "the scenes of attachment that are intimate, defined by desire, and overwhelming?" It is by "thinking through primary impressionability and vulnerability" Judith Butler writes, that a "politically informed psychoanalytic feminism can proceed." This paper remediates Mary Ainsworth's Strange Situation Procedure (SSP) from a scientific artifact into an aesthetic object, and places it on a shortlist of preoedipal techno-psychoanalytic scenes that includes Freud's Fort/Da, Winnicott's Transitional Object, and Lacan's Mirror Stage. Based on clinical encounters as a psychotherapist, intermedial aesthetic research, and training/fieldwork in the Strange Situation Procedure, this paper mistranslates developmental attachment theory into a feminist-materialist revision of the psychoanalytic project without the subject.

Psychoanálisis, pharmaceuticalization and subjectivity *Andrea Clara Bielli, Universidad de la República; María Pilar Bacci, Universidad de la República; Gabriela Lilián Bruno, Facultad de Psicología de la Udelar Uruguay*

The pharmaceuticalization of mental health has recently captured the attention of several scholars in the STS field. In particular, the way in which this process generates social and subjective effects has been approached from the notions of pharmaceutical self and pharmaceutical imaginary (Jenkins, 2011), pharmaceutical person (Martin, 2006) or subjectivity as a continual process of experimentation (Biehl, 2011). In this paper we will explore the contributions of psychoanalysis to the understanding of the processes of subjectification driven by the pharmaceuticalization of everyday life. We will resort to Freud's contributions on the relationship of culture and dissatisfaction and to the Lacanian notions of the subject, surplus enjoyment and the capitalist discourse. We will illuminate this discussion with the narratives of different psychiatric drug users about their experiences collected in two qualitative research projects conducted from 2014 to 2019 in Montevideo (Uruguay), one focusing in benzodiazepines users and the other focusing on antidepressants users.We discuss that these narratives show how psychiatric drugs with their transformative power represent new opportunities for subjectification and new articulations of desire, distress and self-care in which subjects face global psychopharmaceutical technological fixes negotiating the nature of psychological suffering and the very nature of the self.

Psychoanalysis And Its Boundaries: A STS Approach. *Santiago Navarro, Universidad de la República, Uruguay*

In Uruguay different traditions of psychology coexist that respond to different epistemic and political positions. Within the different traditions, it is undoubtedly the psychoanalytic tradition that most deepened its effects in therapeutic practices. It is not risky to say that the vast majority of psychotherapists in Uruguay place themselves, fundamentally, within the field of psychoanalysis. However, as it has been repeated, under the label of psychoanalysis very different practices are usually placed. Pluralism seems to be the rule. However, the divisions within the psychoanalytic field are usually made by reference institutions, countries of origin of the referring psychoanalysts (English, French), or directly by the name of the referring psychoanalysts (Lacanian , Kleinian). This article shows some results of the analysis of in-depth interviews with Uruguayan psychologists who place themselves within the field of psychoanalysis. It analyzes from a STS perspective their different positions on a clinical problem: the encounter with benzodiazepines, an omnipresent technology in the clinic. The STS perspective offers psychoanalysts insight into the different clinical positions that they hold, which do not seem to depend so much on the theoretical and institutional references in which each practitioner is located, but rather on how they build the disciplinary boundaries of psychoanalytic practice with other disciplines such as medicine and psychiatry. The different articulations established between psychoanalytic practice and pharmacological technology seem to show aspects of boundary objects (Star & Griesemer, 1989) that have not yet been studied.

Voyeurism with Sympathy: The Cuteness of Online Animal Celebrities *Tsz Lam Ngai, University of Michigan*

Never in history have animals been so popular. Animal celebrities on social media attract billions of followers worldwide and have become a source of widespread merchandising nowadays. In When Species Meet, Haraway argues that animal-human relationships do not precede their meeting. It is the encounter between animals and human beings, "a subject-and-object-shaping dance", that constitutes species of all kinds. My question is, how do people become animal fanatics? How does the phenomenon of animal celebrities inform us about that subject-object formation dance between species? This paper will bring in Donae's psychoanalytic framework of voyeurism-with-sympathy to examine the subject-object relations between fans and animal celebrities. Her theory suggests that the spectator derives pleasure from multiple identifications by juggling the positions between masculine voyeurism and masochistic over-identification with the subject on screen. I will employ textual analysis and visual analysis to study the cuteness of some contemporary animal stars on Instagram such as Nala Cats and Mr. Pokee the Hedgehog. Previous studies of cuteness predominantly argue that the spectator takes pleasure in the vulnerabilities of the cute. This paper will move beyond that to investigate the interplay of tameness and wildness in the media representation of animal celebrities. It will use the voyeurism-with-sympathy framework to discuss how the playful aggression of animal celebrities reinforces our love of animals. By challenging the presumed passivity of the "cute" pets, the paper seeks to interrogate the presumed subject/object relation in the dominant understanding of the relationship between human beings and domestic animals.

Session Organizers:
Misria Shaik Ali, Rensselaer Polytechnic Institute
Aftab Mirzaei, York University STS
Chair:
Jamie Steele, Rensselaer Polytechnic Institute

308. Disgust
6:00 to 7:40 pm
virPrague: VR 19

A series of recent scientific and technological innovations have brought about changes over what, in popular cultures, have been distinctly categorized as objects of disgust. The current ecological crises call for novel solutions that sometimes are counter-intuitive to these cultural affects associated with cleanliness and what 'is disgusting'. Fecal transplantation to counter gut dysbiosis, edible insects as sustainable alternatives to animal protein, mosquitoes as helpful vectors in global health interventions against dengue and malaria, and critters thriving in polluted environments are but a few examples demonstrating changes to notions of purity and danger as they manifest in the notion of disgust. In this panel, we invite papers that reflect on disgust as a cultural specific, visceral response, with historical attachment to ideas of impurity and pathogenicity as well as how these notions might be reversed in new technoscientific practices. By sidelining human cognitive responses to disgust, we instead want to query the processes by which 'disgusting' is transmorphed into acceptable, normalized, or even desirable outcomes through technoscientific endeavours. How are notions of disgust reconfigured and to what ends? What kinds of novel multi-species entanglements are drawn in these practices? What kind of new practices do these reimaginations make possible? How do scientific understandings of 'disgusting' non-humans intra-act with our ingrained affective experiences of them? Enquiring the changing meanings of disgust enables deeper understanding about the creativity with which new solutions are crafted during extreme times.

Participants:
Yucky today, okay tomorrow? The embodied rationality of rejecting recycled water in spite of Arizona's water crisis *Marisa Manheim; Christy Spackman, SFIS - Arizona State University*

The water manager's plight to provide the water resource certainty required for investment and growth in the desert southwestern United States has become more challenging given over-allocated supplies and a hotter, drier climate. Enter recycled wastewater, a "new water" that has the potential to half Arizona's projected gap in supply and demand over the next 100 years – if only the public could surmount its "yuck factor" response to drinking treated wastewater. Water managers and researchers often dismiss the well-documented public rejection of consuming wastewater as "unfounded" given the "ultra pure" water

produced through advanced water treatment (Ormerod, 2016; Hurlimann & McKay, 2004). With regional growth dependent on public acceptability, water resource planners emphasize the necessity of "augmented" supplies and attempt to "educate" the public and expose them to recycled water in alternative forms, such as beer. Drawing from observations conducted at public-facing and specialist meetings, we examine how various actors anticipate the embodied reactions of the not-yet-sensing consumer body (Butler, 2018) to reduce the potential disruption it poses to sociotechnical transition. By considering the "yuck factor" as a form of embodied rationality, we surface several layers of consumer suspicion: of the limits of scientific detection, of the motives of decision-makers, of the public voice in decision-making, and of the material composition of water. Attending to the disjuncture between the not-yet-sensing body and its embodied rationalities in the "yuck" response to recycled water, this research identifies potential pathways for recasting embodied knowledge as data capable of entering into policy decisions.

Enacting Good Shit: Choreographies of Fecal Microbiota Transplants *Sabine Biedermann C, Technical University Berlin*

Not all feces are the same. The Bristol chart, for example, teaches us how to assess our own health based on the looks of our poop. But there is more than looks to poop. Recently, feces have had a drastic change in their reputation, becoming a cutting edge therapeutic in fecal microbiota transplants (FMT). But this procedure faces many challenges, with the visceral response of disgust being amongst the first ones. This contribution aims to discuss the practices involved in enacting feces that heal, and how disgust is transformed into scatological fascination amongst patients and donors. Drawing on ethnographic work around the human microbiome, I try to reconstruct how food, people, technologies, and microorganisms are choreographed to perform a FMT, and the role bodily and more-than-human sensing play in this.

Shit! *Tau Ulv Lenskjold, University of Southern Denmark; Danielle Wilde, University of Southern Denmark*

Shit! investigates how to anticipate more interdependently beneficial relationships between humans and their gut microbiome. While often blackboxed, the importance of this relationship becomes excruciatingly clear in situations of breakdown. The ensuring pathological conditions are often debilitating to health and also co-opted by taboo-ridden sociocultural discourse, shit and defecation practices. The way forward requires transgressing disgust, cultural norms and taboo. We present a series of critically-engaged participatory research-through-design actions: workshops in which people engage with their gut microbiome through food, materials, performativity and shit. The work involves the Danish Colitis and Crohn's patient advocacy organisation. It aims to assist people suffering from chronic gut illness and family members, to be empowered in shitty situations. To explore our vulnerable participants' relationship to their gut microbiome – and its entanglements in social and inter-personal perceptions of disgust and shame – we use design research methods to form a collective inquiry: carefully scripting procedures of collaboration, materialisation and self-experimentation. The driving objective is to understand how each person might be empowered to navigate trans-corporal interspecies relations with their gut microbiome. Activities include: 'Draw your gut', 'Build your gut', 'Shitty cakes' and 'let's talk about it' – the latter unfolds over coffee, tea and shitty cakes. Shit! examines potential alternatives to the dominant human-gut-microbiome relationship model provide by the health sciences, by experimentally opening up new ways of relating and responding to guts, shit and microbiomes, by means of externalizing – materially and discursively – what is deemed abject and shameful.

Session Organizers:
Jose A. Cañada, University of Helsinki
Salla Sariola, University of Helsinki
Luisa Reis Castro, Massachusetts Institute of Technology (MIT)

Chair:
Luisa Reis Castro, Massachusetts Institute of Technology (MIT)

309. Marxist STS 1 (Theory)
6:00 to 7:40 pm
virPrague: VR 20
In this subsession of the panel "Marxist STS", the papers develop theoretical ideas within the Marxist tradtion with a bearing on the study of science and technology.
Participants:

Class Struggle in Technology: The Dialectical Unity of Forces and Relations of Production *Josh Lalonde*

Although certain strains within the Marxist tradition exemplify a form of technological determinism according to which the expansion of the forces of production acts as the "motor of history", automatically and unilaterally bringing about social change, another strain, influenced by Maoism, emphasizes the primacy of class struggle not only in social change but also in technological development. I examine the work of Charles Bettelheim, in particular the critique of "economism" within the Communist Party of the Soviet Union and the world communist movement more generally, presented in his Class Struggles in the USSR (1976). On the basis of Bettelheim's theorization class struggle and the transformation of relations of production as the primary sites of social and technological transformation, I present two cases of class struggle-based analysis of techno-social development: David Noble (2011)'s history of numerical control in the factory and Andreas Malm (2016)'s history of the replacement of water by steam power. Finally, I argue that such works offer a model to be followed within STS in that their methodology overcomes the tendency within STS towards a certain "flattening" of the parties whose struggle brings about social and technological change into "actors" on an ostensibly level playing field.

Feminist Technoscience And Marxism: Contemporary Entanglements Towards Novel Conceptual Lenses *Mariacristina Sciannamblo, Sapienza University of Rome; Natalia-Rozalia Avlona, National Technical University of Athens*

Feminist technoscience perspectives have confronted the theoretical scaffolding of STS, pointing out the impossibility of being impartial, relativist and objective in doing science through notions and strands – e.g. 'situated knowledge', 'standpoint theory'. These elaborations have taken diverse turns (e.g. Feminist New Materialisms) as well as transversed scientific and technological theories and practices. The renewed interest in social reproduction for studying technoscience has revisited one of the most contentious Marxist binaries, i.e. productive/reproductive work.This line of thinking unpack, for example, the interplay between class and gender in technological change, the gendered division of labor in technoscience, the subject-object division in digital technologies, as well as the expropriation of the female body as property for the capitalist accumulation. This contribution returns to the classic Marxist distinction of productive/reproductive work in the light of feminist-inspired marxist perspectives and feminist new materialisms, in order to conceptualize the insights collected in two research projects. The first one is a European project called Commonfare, which aims to support people experiencing precariousness through the participatory design of digital technologies. The second one is a field study conducted in the makerspaces of Athens, which aims to explore the politics of a southern location and the gendered division of labour on the terrain of the open technologies. Aim of this presentation is to elaborate on the empirical data on the ground of STS, Feminist Technoscience and Marxist Theory, based on a mutual elucidation basis, towards the cartography of novel entangled perspectives.

How Marxism and the Social Construction of Technology Might Benefit Each Other *Owen Marshall*

Bijker and Pinch's influential "Social Construction of Technology" (SCOT) approach has been criticized for eliding

political and structural issues. In spite of this, SCOT's application of an evolutionary epistemology to technological development can be easily read as an answer—however unintended—to Marx's famous call for "the history of the productive organs of man, of organs that are the material basis of all social organization" inspired in part by Darwin's "history of Nature's Technology" (Capital Vol. 1, Chapter 15, Footnote 4). Indeed, though a certain vulgar Marxism (among other putative technological determinisms) served as a foil for SCOT, Bijker and Pinch pointed approvingly to the Marx-inflected work of David Noble and William Lazonick as key precursors to their approach. Clearly, then, the most important difference between the Marxist and SCOT approaches was not about technological vs. social determinism, but rather the relative focus on production vs. consumption, with Marx approaching technologies as the "productive organs" of humanity and SCOT focusing on technologies (such as the bicycle) as artifacts produced with respect to particular forms of interpretive consumption. I argue that the foundational SCOT texts are themselves usefully understood as technological artifacts, the consumption of which allowed for the production of scholarly work compatible with a historical materialist approach to survive under Western neoliberal hegemony. SCOT case studies may offer both an empirical and institutional grounding for ongoing Marxist analyses of technology, while Marxist theory might enrich SCOT analyses of technologies' broader socio-political contexts.

Techno-Luxury in Marxist Political Thought: Theorizing Excess in the Age of Automation and the Anthropocene *Maximilian Curtis, University of Cambridge*

Luxury is inextricable from technological advances under capitalism. Mainstream intellectual and economic history acknowledge the role of luxury consumption in the origins of capitalism and its desires for more, new, and better goods. Cultural historians like Maxine Berg, for instance, have identified the emergence of English consumerism for luxury goods as a key turning point in creating "the consumer", industrial capitalism, and the notion of "inventiveness". But Marxist political thought has largely been sidelined, despite its under-analyzed vein of empirical work on the relationship between technology, capitalism, and luxury, as well as a rich speculative imagination of luxury in a post-capitalist world. This paper puts two competing visions into conversation with one another, broadly differentiated as techno-luxury Marxism and climate-asceticist Marxism. The first is best epitomized by Fully Automated Luxury Communism (FALC), which famously began as an internet meme that the London-based communist Aaron Bastani recently turned into a manifesto. FALC suggests that automation and other utopian technologies will unravel the basic tenets of capitalism, such as the wage-labor relationship, necessitating the belated arrival of communism, with new science and technology allowing for a more luxurious future for all. The second faction, epitomized by eco-socialists, calls for a far more austere post-capitalist future in which many of today's former-luxuries-turned-necessities have their environmental impact reconsidered. In a world ravaged by capitalist climate catastrophe, plane flights and luxury goods may be untenable, with or without automation. Reincorporating such contested Marxist theory on luxury will prove vital for the future of STS.

Session Organizer:
Johan Soderberg
Chair:
Ed Hackett, Brandeis University

310. Gendersexualities, Race/ism and The Postcolonial: STS treatments II
6:00 to 7:40 pm
virPrague: VR 21
Participants:

"It's Over": Involuntarily celibate men's perception of women, social media, and the masculine order *Michael Halpin, Dalhousie University; Kayla Preston, University of Toronto; Finlay Maguire, Dalhousie University*

Hegemonic masculinity theory argues that men rank and evaluate themselves in relation to masculine ideals, and that masculine practices legitimate men's social dominance. This paper examines how apps and social media are central to the masculine practices and ideals of sexually unsuccessful men. Considerable research indicates that young men are becoming increasingly socially isolated. One dimension of this isolation is the difficulty that young men report in establishing sexual relationships. A subpopulation of these men refers to themselves as "involuntarily celibate" or "incels," and defines themselves by their inability to have sexual relationships with women. Drawing on 9062 comments collected over 3-months from a popular incel website, we demonstrate how incels situate apps and social media as the reason for their sexual shortcomings. First, incels argue that dating apps (e.g., Tinder) "inflate women's sexual market value" by providing them access to a large pool of potential partners, with women constantly "trading up" for a more desirable partner. Second, incels argue that these apps distort women's sexual standards by providing access to the most attractive men (called "chads"). Incels unfavorably compare their bodies to "chads," and openly acknowledge the latter are more attractive. Third, incels argue that constant adoration from less attractive "beta males" on social media (e.g., Instagram) further inflates women's perceptions of their own attractiveness and desirability. As a result, incels argue that women only interact with extremely desirable men and "normal" or "average" men no longer have "any chance for sexual relationships." The paper concludes by discussing how incels situate mandatory marriage and monogamy as the solution to their situation, which maintains both the intra-masculine hierarchy and asserts men's dominance over women.

Mobile Cyborgs: subverting the myth of the 'other' en route to Europe through digital technologies *VASILIKI MAKRYGIANNI, ITU Copenhagen*

The research on the use of ICTs and digital technologies from migrants that trying to reach and settle in Europe is rapidly growing (Gillespie et al. 2016, Latonero and Kift 2018, Dekker et al. 2018, Smets et al. 2019). This paper investigates the ways these human machine assemblages reconfigure migration and shape the contemporary Mobile Cyborg. Drawing from Donna Harraway's famous Cyborg personage and its provocative actions against various constrains, the paper rethinks the Cyborg in an era of intense mobility, proposes the term 'Mobile Cyborg' and explores effects of the interaction between the human and the non-human in the context of contemporary migration. Moreover, it discusses the ways migrants as digital cyborgs (Lupton 2012) of different age, gender, sexuality and ethnicity are (re)configured by digital technologies. While various technologies linked with detention, border mechanisms and surveillance infrastructures are employed to constrain human mobility, the Mobile Cyborgs challenge nation state sovereignty, form digital communities of solidarity and reconfigure the dominant personage of the migrant. This research intends to broaden STS understandings on contemporary migration and widen the discussion on vulnerability and the emergence of resistance practices. The presentation is based on field research conducted in Greece during the period 2016-2019 within the 'DIGINAUTS' research project. The paper suggests that through mobility and the use of digital technologies, Mobile Cyborgs constitute an irony in the nation state regimes while they question issues of citizenship, subvert the myth of the exiled, deny their fate as victims and blur dominant borderlines.

Teaching Technoscience Infrastructures of Care *Kalindi Vora, University of California Davis*

Analyzing imaginaries of both radical change and human futurity implicit in the design of new technologies, this paper asks: how do we work with the world we have, given its historical roots in colonial science, reproductive science, and our limited models for sustainable relations of care, to forward a different model of the human? It centers forward-thinking examples from radical robotics and artificial intelligence engineering to present a critique of how social technologies intended to serve individuals in fact act as infrastructures of social reproduction, and to demonstrate how a technology research and design culture shaped by feminist science and technology studies scholarship can center care as engendering interdependence. I argue that

attending to the problem of social reproduction can inform the design of new social and technological infrastructures that ultimately help "redescribe the human." Informed by historical critiques of techno-imaginaries and radical models of change that have their roots in women of color feminism. Building on the work of critical race studies and feminist science and technology scholars including Ruja Benjamin, Kim Tallbear, Lisa Nakamura, and Wendy Chun, I present the possibility of a pedagogy that teaches approached to technoscience based in care-centered technology design that can generate affects of social solidarity beyond the possessive individual and nuclear family.

The Return of the (Plastic) Indian *Jennifer Hamilton, Amherst College*

This paper engages what I call "the genomic quest for indigeneity," the ongoing focus of genomics research on the biological difference of Indigenous peoples, as a key site in the production of biomedical knowledge. Following Colin Milburn's claim that much of scientific knowledge is produced in an aspirational and speculative mode, I ask how speculative work in Indigenous futurisms might be understood as a place to rework what is "thinkable" in the realm of health and wellness. This is not a call to use speculative fiction to recruit and to increase Indigenous participation in current biomedical research; nor is it a call to further indigenize the existing domains of genomics. It is instead a provocation to pay attention to Indigenous engagements with speculative fiction, with spatiotemporal renderings of the past, present, and future; with bodily imaginaries, and with expressions of suffering and resistance. Work in Indigenous futurisms offers different imaginaries of time and space that not only challenge, confound, and expand narrowly defined notions of indigeneity but also offer other possibilities for living and thriving that are not rooted in "technoscientific fixes" or biomedical fantasies rooted in beliefs that genomic difference offers solutions to complex health disparities. I take seriously that if we accept, possibly embrace, the speculative and contingent yet material and consequential dimensions of genomics, we can potentially shift scientific modes of inquiry to reflect and refract imaginaries of other possible worlds.

Session Organizer:
Michael Halpin, Dalhousie University
Chair:
Michael Halpin, Dalhousie University

311. Grotesque Epistemologies: Institutional Locations
6:00 to 7:40 pm
virPrague: VR 22

This series of presentations centers around death, decay, decomposition, and abjection in institutional locations such as cemeteries, morgues, hospitals, and museums. These presentations, individually and together, explore how bodies and institutions reciprocally enact epistemological politics/political epistemologies in sites of encountering embodiment.

Participants:

Deliberate Decay: Multispecies Ethics in Emergent American Deathcare *Kristin Gupta, Rice University, Department of Anthropology*

Anthropogenic climate change has sharpened attention to death and dying, crystalizing funerals as ethical activities that confront ecological devastation and implicate the ways we handle the dead. This reckoning is particularly acute in the United States, where many deathcare traditions entail significant material effort to render the dead lifelike. Fueling a $20 billion "funerary-industrial complex" (Olson 2016), techniques to delay decay preserve corpses and sequester them apparent threats to the deceased's dignity. Such interventions have transformed cemeteries into toxic landfills through the annual internment of over 4 million tons of concrete, wood, steel, and carcinogenic embalming chemicals. Concerned with the damages of these practices, a growing coalition of "death positive" deathcare professionals and activists have worked to transform methods of corpse disposal, leading to the first legalization of human composting in Washington in May 2019. Along with natural burial, which only uses biodegradable materials, human composting makes corpses regenerative through the

redistribution of their nutrients to bacteria, plants, and animals. Attending to these efforts to reinsert the dead into biological cycles of life in Seattle, Washington, my ethnographic engagements consider how funeral professionals, activists, and alternative deathcare recipients reconfigure human decay as an imperative to "give back" to other species rather than a process of abjectification. How do those who choose to be composted or buried naturally make meaning through decomposition and frame their deaths as opportunities to disentangle themselves from systems of human mastery in contemporary social life?

The 'living' room: an ontological site for exploring decay at the museum *Martin Grünfeld, CBMR and Medical Museion, University of Copenhagen*

In this paper, I explore the materiality, temporality, and decay of museum objects. Museums are grounded on a politics of death. Objects are removed from their living contexts and kept in a hypometabolic state to extend their lifespan. In this double movement of removal and preservation, objects are ideally reduced to dead matter stripped from the features of life and kept outside the forces of time. Taking on DeSilvey's challenge 'to think about what could be gained if we care for the past without pickling it' this paper proposes a way out of the politics of death. Currently, at Medical Museion, we are developing a multispecies 'living' room that hosts life-processes, accentuates the intensity and plasticity of material processes and aims at rehabilitating the appreciation of the natural decay of things. In this paper, I explore what could be gained from this site ontologically, epistemologically and aesthetically drawing on practical and theoretical engagement with decay within the site. As I will argue, documenting the decay of things through multi-sensory methods (e.g. time lapse, sound art, lab protocol poetry) leads to a proliferation of things into multiple modes of existence (e.g. as food, shelter, poetry, images, sounds) that supports grotesque epistemological and aesthetic encounters with decaying things. Furthermore, such grotesque encounters become the driving force behind the development of a concept of metabolic things that accentuates the dynamic tensions (e.g. inside/outside, continuity/flux, build up/break down, energy/waste, growth/de-growth) of all things and unravel the temporal interface in-between thing and environment.

The Smooth, the Absorbing and the Broken – Encountering the abject body in medical practice *Helene Scott-Fordsmand, Medical Museion, University of Copenhagen*

Medical practice is by and large a practice of the grotesque: the diseased, the dysfunctional, the abnormal. To a great extent physicians skilfully manage bodies they encounter in a controlled, scientific and systematic way: examining, explaining, relieving, restoring, or urging for patience. This clinical routine is sometimes interrupted by absorbing encounters with puzzling bodies, symptom-clusters or cases not fully understand. But there are also moments when the abject body breaks through, when bodies that will not be contained in the medical framework become too much, even for the experienced physician, and break the smooth running of routine, not as puzzling, but as grotesque. Interweaving detailed case stories from my fieldwork among medical practitioners and psychoanalytical theory from Lacan and Kristeva, I flesh out differences between different body encounters in medical practice. Situating the abject body encounter between two other types of encounters, the smooth routine and the absorbing puzzle, I will ask what this 'broken' encounter means for medicine as a systematic, scientific practice? How does the abject figure in the epistemic framework of medicine? What role does it play, if any, in affecting the medical practice? With this paper I want to rehabilitate abjection itself, not decomposition aside from its abject function, as a relevant epistemological and ontological notion in STS. I hope to show how psychoanalytical theory can help us make place for and sense of the grotesque in scientific practice, and to contribute new possible lines of thought on the role of the abject in medicine.

Repairing the Newtown Creek with Cemeteries and Bacteria *Liviu Chelcea, University of Bucharest*

Infrastructural, geological and landscape repair are underway in and around the Newtown Creek, a waterway separating Brooklyn

and Queens that was recently declared a Superfund site in 2010. Repairing the creek means adding complexity to an already complex choreography of living things and inorganic matter. It currently means enlisting – in different infrastructural flows, geologic morphologies, and landscape transformations – oysters, aerobic bacteria, the 19th century cemetery belt of Queens which acts as a giant patchy bioswale, aerobic and anaerobic bacteria, oil degrading bacteria, rain, early 20th century municipal sewers, green roofs, stormwater catchment basins, and rain gardens. Repair work currently consists of trial and error plans, unstable materialities, infrastructural upgrades, enlisting of non-charismatic species (bacteria), removal of matter accumulated in the past (coal tar or oil, for instance) and addition of new matter. Drawing on participant observation carried out in 2018 among environmental activists, I focus in particular on access points to the creek's shoreline, where environmental activists have created spaces of interspecies care and hospitality through biotic and material-semiotic interventions. Yet, because of the intransigence of past sewage infrastructure, many actors involved, and the complexity of material interventions, such spaces are often in suspension. Generating what looks like imperfect, unfinished ruins of the future within the creek means living with the Anthropocene and overcoming it with some of its own materialities. Unlike the techno-futurist, magic-bullet visions of farsighted energy experts, such access points seems messy, populated by set-backs and contingencies, as well as breakthroughs.

Doing the Dead with Cariño and Tears. Postmortem Examinations, Cadaveric Fauna, and the War in Colombia. *Julia Morales Fontanilla, Rutgers University - New Jersey, USA*

Erupting analytically from concerns around the materiality of death, I interrogate the practice of postmortem examinations as they are performed in the Colombian public morgues. These morgues are a biomedical space in which medico-forensic practices produce diagnoses of death to serve the Colombian legal system. A space in which dead bodies and biomedicine come together in an encounter of practice (Biehl & Locke 2017) to produce state sanctioned evidentiary truth. Based on 24 months of ethnographic fieldwork, my broader research interrogates ethnographically the contested relation between death and life. The war in Colombia is the historical background of my work. I map the relations that emerge out of the postmortem examination of a dead body -human and more than human actions are part of those relations. Then, I describe how affective intensities (Deleuze & Guattari 1987; Stewart 2007) participate of co-constitutive relations among dead bodies, cadaveric fauna, biomedicine, and forensic workers during the performance of a postmortem. In this way, I suggest that cariño (affective care) and tears, as affective intensities, are a fundamental part of the relational encounter of practice that necropsies are. Cariño and tears emerge as part of medico-legal practices but also as part of my ethnographic labor in the morgues -and then as part of my ethnographic labor beyond the morgues. In this paper I illustrate how cariño and tears are a mode of doing postmortems inside the morgues, and at the same time a mode to ethnographically conceptualize them.

Session Organizer:
Lee Nelson, RPI
Chair:
Lee Nelson, RPI
Discussant:
Joanna Radin, Yale University

312. Health Made Digital - I
6:00 to 7:40 pm
virPrague: VR 23
Participants:

Aiming at the "Proper" Body: Therapeutic Challenges with Exoskeletal Devices *Denisa Butnaru, University of Konstanz*

Exoskeletal devices are relatively new technologies used in the medical field. Their purpose is to serve assistance and rehabilitation for persons with motor impairments. Most of them are active devices, meaning that they work with batteries. They may be equipped with a computer which records data about the type of movement the impaired persons exercises. In the following I will explore the challenges in doing therapy with exoskeletons for two types of neurological deficiencies: spinal cord injury (SCI) and stroke. Using qualitative empirical material in the form of narrative interviews and ethnography, I argue that the recording of patient's movements by the exoskeleton may overlook the felt reality of the impaired body and that it is instructive to understand the ambivalence exoskeletons introduce in providing "objectivity" about how patients live their improvements during therapy sessions. Due to the confrontation of two types of experience, first, the quantified, digitalized one, provided by exoskeletons, and second, the lived experience of the patient as well as that of the physiotherapist who monitors the exoskeleton during training – the aimed "proper" body urges a sense of ambivalence. This may destabilize the position of the "felt" subjective body (Merleau-Ponty 2012; Gugutzer 2012) of the patient. I find that getting near to a "proper" functional body by means of digitalization opens an inquiry on "epistemic injustice" (Carel 2016: 11).

Biomonitoring as Self-Fashioning: Data, the Self, and the Culture of Wellness *Heather Nolan, University of California - Davis*

As Gary Wolf, a founder of the Quantified Self movement, has noted, previous psychoanalytic framings of human behavior privilege knowledge of the self through language. Personal monitoring devices offer an alternative path to self-understanding through data. As scholars in STS from John Cheney-Lippold to Deborah Lupton have shown, self-tracking and Quantified Self communities provoke an essential STS question: What counts as knowledge about the self? A personal biofeedback device for meditation, the Muse Headband, comes with an app that purports to translate the complex data of brainwaves into a simple graphic interface. At the same time, it translates the self-tracking imperative "know (and track) thyself" into something like "perform thyself." By looking at the design and advertisement of the Muse, this paper will argue that Quantification is both mediated and performed. The Muse is positioned as an expert on the mind, and users are encouraged to privilege that expertise over other ways of knowing. This privileging also encourages an attitude towards the body and mind that makes the self unknowable without the device and the data it produces. Using Cheney-Lippold's idea of soft biopolitics, where the suggestion becomes a powerful tool of influence, this paper will look at how wellness and self-optimization in the name of productivity are mobilized to justify and encourage reliance on the device and its algorithms for self-knowledge. Through these means, the knowledge produced by digital personal monitoring technologies is legitimated, and this serves to reinforce acceptance of the surveillance of the body and the brain.

Older Adults Perception on Health Data and Personal Tracking Devices *Cora Van Leeuwen, Free University of Brussels (VUB); Ine van Zeeland, VUB; An Jacobs, VUB; Jo Pierson, VUB; Myriam Sillevis Smitt, imec-VUB-SMIT; Julie Doyle, DKIT; Patricia Sheridan, DKIT; Suzanne Smith, DKIT; Lorraine Tompkins, TCD; James Sheerin, Home Instead; Mary Galvin, Maynouth University; Emma Murphy, TCD; John Gerard Dinsmore, TCD*

Monitoring blood pressure, counting steps and tracking your pulse are some of the functions of commercially available health tracking devices (iHealth Feel or Withings Steel HR). The collected information can be used to make health choices. Certain parameters of this can be seen as traditional health data (e.g blood pressure). However, your step count might not be considered health data but can be used to make inferences about your health status. It has therefore become clear that the traditional classification for what can be considered health data is severely lacking, as one's health can be inferred from many other sources beyond the traditional bodily functions, by what has been called 'emergent health data' (Marks, 2019). What can be considered health data and how does having access influence a person's health decisions? In the H2020 ProACT project we introduced 60 older Belgian adults with chronic multimorbidity

to personal tracking devices to measure their health. We followed them for a year and interviewed them for a minimum of 3 times about the impact of digitally tracking their health. We found that most of the participants acknowledged a change in their habits due to having direct access to their health measurements. The adaptation to digital health technology, the perception of the data and the (un)willingness to share all have implications on what can be considered health data or not. Moreover they influence the situational discussion of who needs to be involved in this determination.

Patient No More: Recoding Expertise Through Diabetes Technology *Paige Edmiston, University of Colorado Boulder*

Type 1 diabetes is an intensely laborious condition. Blood sugar must be regularly monitored so that insulin can be injected appropriately. The stakes of this painstaking work are high: failure to do so can be life-threatening. While digital technology has automated many of life's routine tasks, even the best commercial devices for diabetes still require significant daily labor. In 2014, a group of people with personal connections to diabetes—and the technical skills to do something about it — decided they would no longer wait for industry-made technologies. Under the banner #WeAreNotWaiting, this group hacked existing medical devices to automate their care. They then shared their code freely so others could make do-it-yourself (DIY) diabetes technologies too. While these patient-hackers hold up "lived data," or information they have gathered about their own bodies and experiences, to assert the safety and efficacy of their DIY approach, the FDA have made it clear they view the issue very differently (Kaziunas 2018). DIY diabetes technologies have thus emerged as a central site of contestation between regulators, corporations, physicians, and patients—who have announced they will be patient no more. Drawing on ongoing ethnographic research at a large diabetes institute in the U.S., I examine how physicians assess patient knowledge when it conflicts with regulatory recommendations and how patients assert their own technical expertise to refuse medical authority. The diabetes clinic, I argue, is an intriguing microcosm, as it encapsulates larger epistemological tensions between software and medicine and the knowledge claims they undermine and enable.

The Ethos of Care in Self-tracking *Imge Ozcan, Research Group on Law, Science, Technology and Society, Vrije Universiteit Brussel*

Despite self-tracking has a long history, it has emerged as a social phenomenon in the last few years due to the improvement in sensors, the automation of data gathering and analysis and the proliferation of a wide range of gadgets which facilitate monitoring and recording elements of one's body and life. However, logging blood pressure readings by pen and paper or food intake by spreadsheet are techniques of self-tracking as much as wearable sensors. There is a tendency to consider self-tracking as part of the neoliberal idea that individuals should take responsibility for their own health and welfare. In a similar vein, some scholars have theorized the self-tracking subject as an entrepreneurial citizen equipped with a set of goals and placing self-improvement and optimisation central to her lifestyle. However, self-tracking practices have diverse subjectivities and looking at situated experiences can reveal that the ethos of care in self-tracking is not always self-improvement and optimization. For example, self-tracking to manage chronic diseases has more to do with maintenance, tinkering and self-preservation than self-improvement or optimization. Self-tracking also qualifies as counter-conduct as it can open space for what remains outside of the medical system, where diagnostic categories and hierarchies of clinical evidence prevail. Drawing upon theories of care in STS and feminist materialism, this paper proposes a reframing of the ethos of care in self-tracking. To do so, it focuses on self-tracking in health context and looks into online patient forums as well as patient narratives of illness where self-tracking technologies are part of the care networks. Highlighting the need to empirically engage with the multiple ways in which humans and technologies co-construct each other, the paper argues that self-tracking technologies can unfold in different ways as they

are always in the making and change through practice.

Session Organizers:
Hined A Rafeh, Rensselaer Polytechnic Institute
Danya Glabau, NYU Tandon School of Engineering
Chair:
Hined A Rafeh, Rensselaer Polytechnic Institute

313. The Cultures of New and Old Technomedia III
6:00 to 7:40 pm
virPrague: VR 24
Participants:

Disconnection Movements: From Nature versus Technology to TechnoNatureCultures *Paula Helm, University of Tuebingen*

Digital burnout, mass-manipulation, addiction by design: this project starts with the observation that in contemporary western societies, practices of disconnection emerge as a new trend responding to such issues. In doing so, this project is among the first to break with a methodological connectivity imperative that dominates both scientific and popular discourses and to instead spotlight disconnection as a purposefully pursued practice of its own right. While there are various types of disconnection (e.g. temporary, symbolic and selective), there is also a common ground: the idea of solving problems through detachment. Based on this commonality, three fields of disconnection are being examined: 1.) digital detox – disconnection as self-enhancement, 2.) tech addiction treatment – disconnection as therapy, 3. Builder-and-maker hacker culture – disconnection as care. How do different practices of disconnection affect human-environment and human-computer relationships? How are certain ideas about the interrelationship between technology, nature, and culture being enacted in different fields of disconnection? How do different fields of disconnection relate to different concepts of "sustainability", "literacy", and "care"? In my talk, I would like to discuss findings of a pilot study. While in digital detox we can observe the enactment of an understanding that construes nature and (digital) technology as incompatible opposites, in builder-and-maker-culture it is rather a Haraway'an understanding of TechnoNatureCultures, which is being enacted in common rituals and practices taking place around notions of de- and reconnection.

Smart Phone Usage, Social Networks, Food Choices, and Well-Being in Urban and Rural Kenya *Mark J Joseph Schafer, LSU AgCenter; Wesley Shrum, Louisiana State University; Matthew Harsh, California Polytechnic State University*

Using data from a 2019 network survey conducted in two low income Kenyan communities, we explore connections between smart phone usage, social networks, food choices, and well-being. Our study contributes to the growing literature on smart phone usage and its effects in several ways. First, the majority of smart phone usage studies focus on high income nations, but we selected two low-income communities in Kenya, one urban and one rural, where smart phone usage has become increasingly common. Second, we build on studies that highlight the perceived beneficial and problematic effects of smartphone usage by incorporating additional considerations of social networks, and interactions with individuals in personal networks, as well as food choices. Third, we explore the extent to which combinations of factors—smart phone usage, social network characteristics, the quantity and quality of interactions, and food choices--- influenced perceptions of well-being. Fourth, we build on existing measures of well-being to present multiple ways of operationalizing the concept for our sample of Kenyans from low-income neighborhoods who, perhaps, share some similarities with respondents in other studies but likely also have different daily routines and diverse ways of using their smart phones. Fifth, we also explore connections between smart phone usage and food choices, as well as between food choices and well-being. We plan to conclude the paper with an overview of the main findings and directions for future research.

The Social Life of Dowse: Ethics and Invisibility in IoT *Ester Fritsch, IT University of Copenhagen*

Since the rise of ubiquitous computing (ubicomp) visions of a world inhabited by seamless technologies melting into the

background of our everyday existence have flourished. With the rapid development of Internet of Things (IoT) sensing technologies these imaginaries have now entered the world in practice. The promises of frictionless connectivity, nevertheless, continuously seem to crumble as IoT devices break down and spark controversy. This paper is based on fieldwork among IoT developers around Europe. While a lot of IoT creators show enthusiasm about the possibilities that IoT technologies engender, uncertainty and concern about what kinds of creations and worlds they bring into being simultaneously proliferate. In manifestos and meetups IoT designers and developers call for attention and ethical reflection. In the paper I present an example of a critical engagement with IoT development through an analysis of the Dowse Box. This is a box developed by the free software organization Dyne based in Amsterdam created with a capacity to make visible otherwise invisible activity across networks and connected devices. Unfolding the social life of Dowse means exploring it as a material, political and ethical intervention into IoT development. My analysis of the Dowse Box reveals how a range of values are embedded in all choices of its design and updates. Through the creation and continuous refinement of Dowse I suggest that approaching the invisible becomes a travelling ethical practice around IoT development.

Tuning in to Gender, Technical and Information Management Work in the Radio and Telephone Industries, 1930-1950 *Carolyn Birdsall, Media Studies at the University of Amsterdam; Elinor Carmi, Liverpool University, UK.*

In research about media industries, a growing attention has been paid to 'below-the-line' labor in media and creative production – such work is essential to creative production, but remains hidden, undervalued and not infrequently gendered and feminized. This paper proposes a sound-sensitive approach that focuses on women's multiple functions in media industries (Birdsall and Carmi, forthcoming), tuning into technical and information management roles during the 1930s and 1940s, which was crucial to sustaining media output (Parks and Starosielski 2015). In particular, we explore how tensions in a time where several media gendered roles were gradually being automated (Carmi, 2015), and the labor unions who revolted and demonstrated around it, contributed in shaping the way the technology evolved. Taking note of specific institutional contexts, with cases spanning various European and North American contexts, we develop the analysis around four, key features of this labor, namely 1) technological skills, 2) embodiment, 3) record-keeping and 4) maintenance/care work. In particular, we focus on these women's multiple expertise involved with standard setting, care and affect and maintenance that have inspired contemporary automatic technologies while filtering out the nuances. Such work includes attentive listening and technical, hands-on skills in fixing technical apparatus like engineers, but also paper-based documentation of calls and technical malfunctions. Examining such "sound work" across commercial and public service media organizations, we attend to national and industry-specific differences, while also providing critical pre-histories to the current predominance of data and information management in media industries in the present-day.

Session Organizer:
Wesley Shrum, Louisiana State University
Chair:
Wesley Shrum, Louisiana State University

314. Integrating Stakeholders From the Beginning – But (How) is that possible? #2
8:00 to 9:40 pm
virPrague: VR 01

A central mean of STS is to integrate diverging perspectives on science and technology within scientific discourses, as well as integrating non-academic actors in such projects and processes. In recent years, this mission has been adopted by funding agencies and further scientifc communities. The aim to intensify interdisciplinary cooperation with other academics and transdisciplinary cooperation with stakeholders from practice has come to the fore, such as in the EU funding governance concept „Responsible Research and Innovation" and other modes of „Post-ELSI interdisciplinary collaboration" (Balmer et al. 2016). The questions

what does it take to intervene, and whom a specific research constellation wants to speak to and act with, are normative, dynamic and often cannot be answered in a single solution that remains the same throughout the process. The session acknowledges this difficulty and focusses therefore on the very beginnings of (academic and non-academic) stakeholder integration. How do we, can we and should we (re)organize our methods and practices to integrate different stakeholders in the very beginning? How do we rethink and remake ways of integrating and recognizing the needs and inputs of others in early stages of research processes? The session seeks to discuss past and ongoing efforts of user-centered design or participative research, as well as other forms of outreach activity that aimed at integrating stakeholders in academic contexts. Furthermore we welcome reflections on practices and methods of interdisciplinary cooperation focussing the very beginnings of such projects.

Participants:

Citizen Science and Participatory Water Resource Management: Possibilities and Limits *Sarita Albagli, IBICT Brazilian Institute for Information in Science and Technology; Luana Mendonça Pinto Rocha, IBICT - Brazilian Institute of Information in Science and Technology*

The paper presents results of a research project aiming to develop theoretical and empirical contributions on citizen science experiments directed at assessing and monitoring the quality of water resources, focusing on rivers and watersheds. The study involved: (a) literature review on methodologies, issues and challenges of hydrological oriented citizen science projects; (b) survey and characterization of online digital platforms developed for this purpose, in different countries and regions; (c) participatory observation of building an experience of citizen monitoring of the quality of river springs in the Upper Paraguay Basin, within the Pantanal biome in Brazil, one of the largest wetlands on the planet. Literature review revealed that citizen science initiatives focusing on water resources have grown in the past decade, due to: the increasing deterioration of these resources; easier access to technical devices for monitoring, recording and communicating data; and the recognition of the value of citizen contribution for scientific research and management of these resources. The analysis of the digital platforms evidenced the mutual feedbacks between data governance structures and participatory forms of citizen involvement in knowledge production and use. The practical experiment highlighted the challenges of carrying out these initiatives in areas of multiple and conflicting interests over natural resources, and the value and limits of a multi-stakeholder approach. In the end, the study demonstrated the situated character of these initiatives, considering the specificities of local environmental and social conditions, and, therefore, the need for protocols, tools, and parameters of analysis adequate to them.

Public engagement in design of wind turbines- the premises and the limits of user-centred design of sustainability technologies and their landscapes *Helena Maria Solman*

The development of wind energy is a key part of the renewable energy transition, but wind energy projects are often subject to public concerns about landscape conservation, noise, bird strikes but also about the quality of participation. Early engagement of publics, at the stage of design, can mitigate opposition by developing constructive and long-term relationships among stakeholders involved. However, there is a need to better understand how, at the stage of design, publics can influence how wind turbines are designed, evaluated and subsequently used. In order to shed light on how these decisions are being made, by whom and why this paper studies wind turbines at the stage of design, so as to gain insight into the engagement of stakeholders at the beginning of research and development processes. To do so, this paper traces development of wind turbines at the sites of the Siemens Gamesa, its test site in Osterlid (Denmark), and within an interdisciplinary EU Horizon 2020 consortium on wind energy development in Europe.[1] Drawing on data from interviews and a workshop with experts from different disciplines in the field of wind energy, this paper shows the opportunities and limitations of user-centred design of wind turbines. Doing so, it contributes to recent debates on the role of early stakeholder engagement in responsible research and innovation and public engagement with technology.

Explainable Software For Skilled Workers. Collaboratively Designed And Accountable For Its Users *Annelie Pentenrieder, Institute for Innovation and Technology*

Today´s computer displays have the intention to make it easy for users to communicate with a digital system. But the clean design of graphical user interfaces (GUI) of f.e. new algorithmic decision making or data analysis tools does not give any insights on how the systems work. Also technical compromises by programmers that are always inscribed in the software and might be interesting for an informed user are blackboxed. The more complex a software becomes the more difficult it is to use it in an informed way. Especially in working environments where workers have profound knowledge about specific processes, blindly following the information a system offers is no option in risky or cost-intensive processes. Workers must develop an understanding of the system´s logics to be able to prove and control automated recommendations. In a study with the German tool making industry we ask how software could be designed that skilled users can reflect the underlying logics of algorithms or used data. This industry is characterized by human-machine-interactions that combine complex high-end-technology with highly-skilled workers. It is a promising setting where design strategies for explainable software for informed users can be learned and developed. With STS methodologies like workplace studies (Suchman 2007) and participatory design (Ehn 1993) the study follows the question how workers could inform the software designers about what would be helpful in their concrete working process. We assume that their software would look different than it looks today. From this industry we may learn how to integrate individual user skills and experience in software programming.

Human Demands Of Sustainable Aviation: Integrating Residents' And Passengers' Demands Into Engineers' Knowledge Bases *Sandra Buchmüller, TU Berlin / TU Braunschweig, Germany; Julia Stilke, Technische Universität Braunschweig*

Keywords: sustainable aviation, aviation engineering, feminist science and technology studies, participatory design research Research projects in the field of aviation engineering currently face the challenge of dealing with contradictory demands. On the one hand, the wish for international mobility increases while, on the other hand, sustainability concerns create the need for reducing emissions caused by airplanes. To deal with this challenge, engineering projects mainly focus on technical solutions. In this approach, the actual needs of potential passengers and airport residents are hardly taken into account. Through our research, we aim at introducing a feminist STS perspective (Akrich 1995; Berg 1999; Cockburn, Omrod 1993; Wajcman 2004) into research projects on sustainable aviation in order to bridge the knowledge gap between engineering disciplines and actual human demands. Besides, our goal is to sensitize researchers and developers for multiple and marginalized perspectives. For this purpose, by using methods from ethnography and participatory design research, we intent to make airport residents' and passengers' demands part of engineers' decision-making and predictions about future aviation. In this regard, the practice-based ontological design approach proposed by Nold (2018) serves as an overall research framework. By referring to our project as a case study, we would like to discuss how feminist science and technology studies can contribute not only to reveal blind spots of engineering approaches but also to democratize technological innovation socially and ecologically with regard to aviation.

Session Organizers:
Andreas Bischof, University of Technology Chemnitz
Arne Maibaum, TU Berlin
Chair:
Arne Maibaum, TU Berlin

315. Global Imaginaries of Precision Science 3: Diversity, Inclusion and Justice
8:00 to 9:40 pm
virPrague: VR 02

Precision science focuses on individual and group differences as a path towards greater accuracy, efficacy and efficiency. This panel focuses on the sociotechnical imaginaries of the promise of precision that fuel the increasingly global infrastructure for collecting personal data and biospecimens. This promise has been motivated by, and operationalized as, the quest for greater inclusion and diversity in precision medicine research. Precision science has extended to other domains such as the genetics of socio-behavioral traits, such as criminality and educational attainment. This panel calls for papers that interrogate the constituent concepts, practices, and discourses of precision science - its actors, institutions, networks, values and cultures - and its applications and uptake in a wide range of domains, including medicine, criminal justice, and social policy. We are interested in papers that examine forms of knowledge and practices in precision science, their impacts on emerging subjectivities and data-driven publics, and the development of frameworks on justice, ethics and inclusion.

Participants:

Air pollution and the productive limits of precision science
Emma Garnett, King's College London

This paper is about precision medicine in public health research of air pollution. It has developed out of a project examining the experimental practices of participatory sensing. The sensing devices are worn by asthma patients and frequently include the generation of a whole host of other personal data, from everyday exposure, to bio-specimens, to physical activity. Encountering these multiple forms of data and their tensions, I came to learn about the ways in which scientists anticipate and imagine the capacities of personal data to address air pollution. Although big data analytics is framed as a tool for making sense of the environmental health risks air pollution pose, the limitations of precision science are also quite freely discussed. Drawing on document analysis and interviews, I will first describe the role of personal data in air quality and exposure science. Second, I consider the ways in which these data anticipate and produce new data subjectivities and publics, whilst raising questions about environmental health justice. For instance, projects that seek to address health inequalities face challenges in generating personal data of those considered most at risk. Thinking through air pollution is an opportunity to nuance and specify critical approaches to precision science in STS. I argue that whilst the risks of air pollution are increasingly individualised in public health, high levels of uncertainty mean concomitant discussions about how to collectively care for air pollution and in what ways responsibility might be (re)distributed also remain open and possible.

Uncertain Subjects and Imprecise Medicine: Discussing Food, Bodies and Direct to Consumer Microbiome Tests *Sandra Widmer, York University, Canada*

People who pay to send their bodily materials to a private corporation that analyzes the fluids' human and/or microbial genome are searching for a personalized and precise assessment of their health. Within this growing market of digital health and precision medicine, testing various aspects of microbiomes within is particularly appealing for people who suffer with unknown digestive issues, or who want to optimize their bodies that, while healthy, are experienced as needing improvement. Yet, though promising, the companies' directives are often confusing and imprecise. This paper describes the frequent discussions of health "journeys", uncertainty and precarity in association with people's experiences of learning about their test results of the microbial environments within human bodies. This paper draws from online ethnography with direct to consumer microbiome test users and participant observation with food fermenters in Toronto. I show aspects of how sociotechnical imaginaries of precision medicine are experienced in this case.

Bacteria, Genes And Scientists: An Approach From Global History of Science *Marco Ornelas-Cruces, Universidad Nacional Autónoma de México*

To be a successful practice, science must travel to other regions through collaborative networks as these cross any division, whether geographical or political. Studying them, from the history of science, a more solid narratives can be developed. The challenge of the global history of science is to clarify how scientific practices, ideas, teachings, materials and even scientists

themselves circulate. This work will try to address the institutionalization of molecular genetics of bacteria in Mexico, their research programs and the main institutions in which different scientific practices have converged. All this in the context of the Cold War. This issue has played a neglected role in the historiography of the life sciences in comparison with topics such as evolutionary theory or human genetics. Although these new global historiographies have been taken as a response to other models in history of science, they have also been looked at with a certain reserve, as they have some limitations that are important to mention. The elements or components of scientific practice are key agents in the circulation of scientific knowledge of molecular genetics of bacteria in Mexico and in the world.

Magic materials and the promise of precision tumour targeting
Matthew Kearnes, Environmental Humanities Progarmme, School of Humanities and Languages, University of New South Wale; Declan Liam Kuch, Institute for Culture & Society, Western Sydney University

The seemingly magical promise of a therapia sterilisans magna – a "treatment which could, in a single dose, destroy all microorganisms in the infected organism … without affecting the host's cells" (Bosch and Rosich 2008) – constitutes a horizon of imagined possibility across contemporary biomedical research. Well before the overtly militaristic tone of the 'War on Cancer', and Susan Sontag's warning of the 'distortions in the military rhetoric about cancer', visions of the precise targeting of therapeutic interventions had been popularised in the mid-twentieth century fascination with the concept of the magic bullet. Contrary to the widespread notion of the disenchantment of nature – and Weber's famous riposte that the a modern scientific vocation "need no longer have recourse to magical means" – this paper builds on a recent revival of studies of magic, arguing that magic is neither antithetical nor incidental to modernity but pivotal to its central institutions. This paper revives strands of the sociology, anthropology and history of magic to assess three key theses about modernity and magic in the context of therapeutic drug development Based on ongoing ethnographic research focused on the development of therapies designed to target cancer tumours, we interrogate the concept of the 'magic bullet' from its inception in 'receptor theory' and chemotherapy through to its ongoing use in contemporary nanomaterial and nanomedicine research. After almost twenty years of dedicated and coordinated research support, in recent years nanomaterial and nanomedicine research are increasingly beset by debates concerning 'delivery problems', a 'reproducibility crisis' and the challenges of standardising a diverse array of research materials and modalities. In this context we develop an account of the ways the concept of magic serves to animate both the social and political constitution of nanomedicine and the material composition of laboratory experimentation. We close by speculating on the ways in which an interrogation of the magical qualities of novel materials – and nanomedicine research more generally – provide a vantage point for how the promissory and speculative logics of contemporary technoscience might be torqued to divergent and democratic ends.

Session Organizers:
Sandra Soo-Jin Lee, Columbia University
Janet K. Shim, University of California, San Francisco
Chair:
Sandra Soo-Jin Lee, Columbia University

316. Polities of European Science
8:00 to 9:40 pm
virPrague: VR 03

An insight that has oriented work across science and technology studies is that solutions to problems of natural knowledge are simultaneously solutions to problems of social order (Shapin and Schaffer 1985ff). By attending to practices that are at once technical and social, scholarship across STS has described how the epistemic status of scientific knowledge depends on the organization of specific social forms that are, in turn, grounded in agreements about what constitutes authoritative knowledge. This panel takes up this classic insight, exploring the coproduction of science and society through historical, sociological, and anthropological

attention to organizational structures and evaluation practices of Europe's most prestigious scientific funding agency today, the European Research Council. In designing funding instruments and distributing applications among evaluation panels, the ERC constitutes categories of scientific activity and gives contours to the material forms these activities can take. In the evaluation of applications, it delimits the scope of legitimate research problems and projects. European scientists at every career stage write proposals for specific funding streams, conceptualizing research projects and scientific lives within categories and conditions established through social and political practices of the ERC, which remain in flux and under negotiation. This panel investigates specific organizational and evaluation practices through which the ERC shapes what counts as science in Europe today, how European scientists funded by the ERC compose scientific social orders, and how the ERC itself acts as an instrument of European integration.

Participants:

Classification and Standardization in a Europe of Knowledge: The Role of Executive Agencies *Sarah Glück, Zeppelin Universität gemeinnützige GmbH*

Together with the massive extension of EU research funding over the past two decades, the European Commission has implemented an ambitious organisational structure of executive agencies. They have become crucial infrastructures at the nexus between European Policy, research and society. The main task for these agencies is to communicate specific demands for scientific knowledge to academic stakeholders as well as to liaise with different intermediaries between research and research policy, to assess grant application and to decide which applicants will receive competitive grants, to distribute funds, to monitor and to evaluate supported research projects. The work involved in these administrative activities consists in practices developing, running and communicating classificatory systems, their underlying principles and objectives. This paper develops a framework drawing on the works of Bowker and Star on classification, standardization, and boundary objects as well as on Andrew Barry's investigations into the governance of contemporary technological societies with a particular focus on his concepts of technological zones and political situations. Empirically this paper looks at the ERC executive agency under the developed framework. The ERC programme claims like no other within the EU to be a bottom-up, blue sky funding line. Therefore the ERC executive agency finds itself in a highly contested environment in which the question what is ground breaking and excellent science in Europe is constantly negotiated. How established systems of classification and standards frame these negotiations and how independently the ERC executive agency can act in that realm are substantial questions to be answered.

Constructing Social Minds *Cameron Brinitzer, History & Sociology of Science, University of Pennsylvania*

In 2013, three cognitive scientists at the Central European University and a primatologist at the Max Planck Institute for Evolutionary Anthropology (now at St. Andrews) were awarded a Synergy Grant from the ERC when the funding scheme was in its pilot phase. The ERC aims to foster European social and scientific integration, and it reserves Synergy Grants for small groups of scientists who can "bring together complementary skills, knowledge, and resources, in order to jointly address ambitious research problems" which they could not tackle alone (ERC 2020). The CEU-based group, "Constructing Social Minds," aims to integrate theories and methods from cognitive neuroscience, developmental psychology, primatology, and evolutionary anthropology in order to produce interdisciplinary knowledge about how evolutionary histories of primate communication and coordination have made human minds naturally social. Drawing on participant observation with the Constructing Social Minds group, this paper explores organizational forms and social practices which the group has composed to facilitate interdisciplinary integration and to produce scientific knowledge about what makes humans unique—two objectives that are never separated. As the Constructing Social Minds group enters its last year of Synergy funding, the CEU begins its move from Budapest to Vienna, following the Hungarian government's expulsion of the

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university from Hungary on grounds of protecting the nation's traditional culture from an international network of liberal activists. This paper considers practices of ordering a scientific social and of producing knowledge about the nature of human sociality in the context of political contests over the composition of European society.

Innovation Constrained: How the ERC Synergy Grant Funding Scheme Came Into Being *Thomas König, Institute for Advanced Studies, Vienna*

The "Synergy Grant" funding mechanism has been set up by the European Research Council (ERC) to fund research based on promising ideas from several scientists. The mechanism is significantly different to the other main funding mechanisms by the ERC. While the latter are deliberately limited to fund individuals based on their excellent track record, the Synergy Grant's programmatic scope is to create "synergy" by applying rigorous standards of evaluation and distributing extra-large chunks of money. Thus, it is based on a revised interpretation of what can be called the ERC's internal funding philosophy that relies on three catch words: "frontier research", "excellence", and "keep it simple". As the ERC is commanded by scientists (and not policy makers and professionals from the European Commission), its funding philosophy is closely tied to the convictions and experiences of researchers. This presentation asks, and aims to answer, two specific questions: first, why did ERC managers and strategists deem it to be relevant and timely to introduce the new funding mechanism in the first place; and second, how was its purpose shaped by a re-interpretation of the ERC funding philosophy? Based on a unique access to a set of historical records from within the ERC's decision-making body, this analysis examines how, over a period of almost two years, the researchers-turned-funding strategists struggled to invent something new and innovative.

Session Organizers:
Thomas König, Institute for Advanced Studies, Vienna
Sarah Glück, Zeppelin Universität gemeinnützige GmbH
Chair:
Cameron Brinitzer, History & Sociology of Science, University of Pennsylvania
Discussant:
Richard Rottenburg, University of the Witwatersrand

317. Emerging uses of underground space
8:00 to 9:40 pm
virPrague: VR 04

FLIPPED Session This panel brings together international scholars whose work addresses technologies, practices, and forms of knowledge related to the Earth's subsurface. The topics of the panel link in manifold ways to the conference theme, notably to questions of continuities and discontinuities and material legacies that built into sociotechnical infrastructures and those of processes of localizing geopolitical, economic and epistemic globalization. This session focus on emerging uses of underground space. The underground has a growing number of uses – capture of drinking water, urban infrastructures, waste storage, mining, geothermal energy use, energy storage, climate technologies such as carbon capture and storage, and more. These call for integrated and comprehensive planning and monitoring. All papers address one or several of these uses and shed light on related conflicts, policies, processes of knowledge production (e.g. in underground laboratories), and reflect on the role of STS researchers.

Participants:

BECCS And Fracking Discourses: A Comparative Case Study *Karolina Trdlicova, University of Nottingham*

For the UK to achieve net-zero carbon emission by 2050, prioritising rapid cuts in GHG emissions-largely though the adoption of low-carbon energy will be necessary. Prior to the recent moratorium, fracking was considered as a part of the UK's net-zero carbon transition and BECCS (bioenergy with carbon capture and storage) was also featured in various UK government plans, as an essential part of that transition. Both energy technologies have not reached the intended scale of use, as fracking remained in exploratory stages and the CCS part of BECCS is yet to be realised and is currently being investigated at Drax power station. Both energy technologies, although having lower CO_2 emissions than conventional fossil fuels, also have the potential to have worse environmental effects than conventional fossil fuels and also share controversies with regards to the use of underground space. Fracking is associated with groundwater pollution and BECCS is only then of use as an emission mitigating energy technology if the carbon can indeed be stored indefinitely without leaking. Further shedding light on the related tensions with regards to the uses of underground space, this paper will present the rationale for comparing BECCS and fracking discourses (Hajer, 1997) against the backdrop of the ongoing low-carbon transition, using results from a secondary data analysis of UK newspapers (ongoing), collected as a part of comparative case study of fracking and BECCS discourses, for which the main fieldwork will commence in Spring 2020 and will be ongoing during the time of the conference.

Environmental Impacts of Deep Seabed Mining: Between Knowledge and Ignorance *Bruno Gabriel Costelini, Durham University*

Scientific knowledge of the deep sea has always been limited by geographical and technological limitations, with research heavily dependent upon State sponsorship and interests (Chandra Mukerji, 1990). A new avenue opened up with the establishment, in the mid 1990s, of the International Seabed Authority, an intergovernmental organization whose mandate includes managing and regulating the access to the seabed, as well as promoting marine scientific research and caring for the conservation of that environment. The Authority has been effective in drawing up regulations and signing contracts for prospecting and exploration of mineral resources, but research that addresses the impact of mining has been lacking. So while it currently discusses a "mining code" that will allow the exploitation phase to commence, a lot remains to be known about the potential harm to the marine environment. In this paper I will argue that knowledge on deep seabed mining follows the idiom of co-production of science and social order (Sheila Jasanoff, 2004). Furthermore, that the continued absence of knowledge, or ignorance (Linsey McGoey and Matthias Gross, 2018) of some key environmental aspects of the activity have served the purpose of advancing plans for exploitation with little opposition, due to the institutional configuration and mechanisms through which the Authority exerts its powers. These arguments are based on archival research, as well as participant observation at the public sessions of the Authority for the past two years. It aims to provide a case study of an ongoing process that can benefit from STS scholarship insights.

Pushed, Opposed, Cancelled!? – The Fates of Carbon Capture and Storage (CCS) Projects across Europe *Danny Otto, Department of Urban and Environmental Sociology, Helmholtz Centre for Environmental Research-UFZ*

Carbon capture and storage (CCS) is seen as a technological option to mitigate the emission of CO_2 into the atmosphere. It is important to the IPCC's calculations for a global temperature rise below 1.5 °C and is a key part of the European Commission's strategy to reduce greenhouse gas emissions. Various CCS demonstrations projects were initiated across Europe supported by (supra)governmental funding programs. However, the ambitious goals connected to CCS have not been achieved. To date only few of these demonstration projects reached prototype state and even fewer are operating industrially. Though there is environmental and social scientific research that has tried to explain this development, only few studies examined the interactions of public controversies, policy problems and environmental challenges linked to CCS as a controversial use of subterranean spaces. This paper aims at this lacuna of research by comparing CCS projects across Europe – not only in regard of the success of the projects but also looking at human and non-human influences on the processes of research, development and deployment. My key questions are: Who or what influenced the success or failure of CCS projects? How do different political, societal, technical and environmental contexts factor in the deployment of CCS? And: How can we conceptualize these interconnections theoretically? To answer these questions, I employ content analyses of relevant social scientific literature, project related reports and policy documents on CCS across

Europe. I propose an Actor-Network Theory-based framework to grasp the heterogeneous associations connected to the success or failure of CCS projects.

The Role Of Vocabulary For Governance Of The Urban Subsurface *Loretta von der Tann; Marilu Melo, UNSW*

An increasing amount of urban functions is claiming space underground. In particular, physical infrastructure often depends on is location in the subsurface. In dense cities, if additional infrastructure routes are deemed necessary, the underground might even be the only option, 'congesting' this dimension. A vocabulary to govern these functions, capturing their materiality and the resulting conflicts that might arise, is still missing. Functions are currently classified to fulfil the purpose of a specific plan, legal question, or scientific publication. This paper discusses the role of the language chosen in governing the urban subsurface. This discussion is put in context of a wider consideration about how the functions placed in the subsurface should be governed; Could, or indeed should, the available space be governed as a commons, when some of the embedded functions are considered public, and others private? Given that ownership attribution is usually fixed in local law and the difficulty to access the space, the underground escapes the definition as a 'common good'. However, managing the underground as a commons appears expedient in the context of it being described as a 'congested' space. For a 'fair' use of underground space, a balance needs to be sought between the two extremes of fixing allocation of space for specific uses and allowing flexibility for arising spatial needs. The vocabulary used for subsurface functions influences the current discourse, and an agreed classification of subsurface functions appears necessary.

Session Organizers:

Alena Bleicher, Helmholtz Centre for Environmental Research - UFZ, GmbH

Roopali Phadke, Macalester College

Abby Kinchy, Rensselaer Polytechnic Institute

Chair:

Abby Kinchy, Rensselaer Polytechnic Institute

318. Re-emerging Psychedelic Worlds: Altered States, Altered Subjects, Altered STS? (2)

8:00 to 9:40 pm
virPrague: VR 05

After decades of repression by governmental and intergovernmental bodies, psychedelic substances such as psilocybin, LSD and MDMA are being studied scientifically for their potential to tackle widespread mental health issues including depression and anxiety disorders. Psychedelic science, the mainstreaming of psychedelics (in Anglo-American contexts in particular), and the globalization of (indigenous) plant medicines - most notably with the Amazonian psychedelic plant brew ayahuasca - can all be seen as responses to a variety of crises, including the opiate crisis, mental health crisis, and environmental crisis. Simultaneously, the psychedelic movement is encountering its own crises, seeing its core values threatened by capitalist interests, the tension between science-led medicalization and grassroots-driven decriminalization, and identity politics forcing a confrontation with power inequalities within the movement itself. STS analyses are essential in aiding and complicating the responsible (re)integration of psychedelics into society. This panel seeks to bring together STS psychedelic researchers in order to address the following: • Which ways of being, seeing, and doing STS can contribute to psychedelic worlds that are emerging and continue to flourish in indigenous, scientific, underground and therapeutic contexts; • How the cultural and socio-political dimensions of altered states of consciousness can be studied from STS and related perspectives; • How non-ordinary states could inform STS sensibilities, alter researchers' subjectivities and theories, and potentially re-shape the field of STS. We particularly invite people, presentations and performances that reflexively attend to their form, style and content as necessarily entangled with, rather than apart from, questions of consciousness-changing practices and substances in society.

Participants:

Ayahuasca, Incarceration, And The Healing Of Dialectics In A Brazilian-Amazonian Prison NGO *Zach Levine, Duke University*

This talk draws on research I conducted in Porto Velho,

Rondônia (Brazil), on the treatment of incarcerated violent offenders with energy healing, including—in a recent project— the indigenous entheogen, ayahuasca. My dissertation asks how ayahuasca and its initiation of the subject into a universe of sovereignty far beyond bourgeois statecraft alters or denatures the modern prison. It draws on my long-term participation at Acuda, a carceral NGO dreamed up in 2001 by a Spiritist medium whose work with ayahuasca sent him to conduct energy healing with prisoners. My talk focuses on these inmates' experiences, attempting a theory of power that stems from this complex conjunction of carceral state power and entheogenic force as it contacts "plants of power" like ayahuasca. Like Taussig's use of yagé to theorize together the nervous system, the mythopoetic cowriting of history and the body, and the originary violence of colonial statecraft, I argue that ayahuasca radically re-envisions the modern carceral project—to complex ends. While taking ayahuasca as an actant that radically reconceives the social matter of incarceration, crime, and statecraft, my paper strives for a kind of double-vision through the dialectical critique of such a reconceptualization, one I recognize both as a technique of "sobriety" or temperance but also as mutilating. While for Taussig yagé reveals the dialectic as the ontological atom of worlding, I understand ayahuasca healing as the unspooling of the subject's dialectical sensing and thinking. Thus I approach Acuda's idiosyncratic conjunction of incarceration and healing both dialectically and from the perspective of an entheogen that, I insist, heals from dialectics.

Traditionalizing global forms: ethics in mind-altering vegetalista practices of the Peruvian Amazon *Olivia Rose Marcus, University of Connecticut*

In the last two decades, the Peruvian Amazon has gained increasing recognition as a place for healing, spiritual seeking, and personal development, largely due to rising global awareness of ayahuasca, a psychedelic tea traditionally prepared among forest-dwelling societies. Traditionally ayahuasca has a variety of uses, yet there is a growing global interest in its potential therapeutic benefits, particularly for mental health conditions such as depression, anxiety, and trauma. Novel approaches to psychotherapy are emerging to address the needs of ayahuasca users to prepare as well as to guide them in 'integrating' their powerful psychedelic experiences, yet there is little discussion on the ethical frameworks that may structure these therapeutic processes or the social and cultural assumptions that influence the re-qualification of ayahuasca as a medicine. Based on ethnographic fieldwork in San Martín and Loreto, I examine the varied social meanings and uses of ayahuasca in the Peruvian vegetalista tradition and the potentially conflicting ethical implications among shamanic practitioners, mental health practitioners, and ayahuasca retreat centers. The plurality of healing approaches in the context of ayahuasca shamanism and associated psychotherapeutic practices have given form to a therapeutic milieu with intersecting ontological, and therefore ethical, configurations that lack a common worldview. Therefore, practitioners and ayahuasca centers are left with navigating globalized concepts of ethics while attempting to remain authentic to local ontologies of healing, care, and safety. Is it possible to produce a cohesive ethical framework informed by science-led medical ethics, or does the lens of animistic ontology and the asymmetrical power dynamics between West and Other preclude such a future?

What Drugs, What Uses? *Uri Shwed, Ben Gurion University of the Negev*

The translation of current psychedelic research into policies is hindered by the legal status of these substances, as well as their reputation as members of the illicit drugs category. This project employs STS sensibilities and positivist methods to provide an insider's challenge to the science of illicit drugs. I offer a critical empirical investigation into the kinds of uses drug-users report, in order to inform perceptions and challenge entrenched categories. Current studies consider drug use as abuse, while a minority of qualitative reports or survey data suggest that some drugs, in particular psychedelics, are used for spiritual and therapeutic reasons. This project examines drug uses at an unprecedented comprehensive analysis of substances, exploiting the biggest corpus of drug experience reports, the Erowid Vault.

The analysis uses supervised machine learning algorithms to identify every experience report (culminating in more than 25,000) as referring to a recreational, spiritual, therapeutic, and/or habitual use. Coding of the "wild" Erowid data is validated against human coders, as well as reports from other sources (i.e. narratives from biomedical trials or ceremonies). The analysis suggests distributions of use-profiles for different substances. These distributions provoke a discussion on the ways substances are used in science vs. in the wild, as well as on possible alternative categorizations of these substances. As such, this is an STS excursion that informs scientific worlds with the practices of wider psychedelic worlds; It will likely contribute to our understanding of how cultural and socio-political dimensions of altered states interact with science.

Digital Methods and the Evidence for Psychedelic Medicine: A Historical and Epistemological Review *Emma Stamm, Virginia Polytechnic Institute and State University*

My paper examines the "evidential cultures" of psychedelic drug research. The concept of "evidential cultures" explains how social differences between groups of scientists affect what counts as "knowledge" within and beyond their respective investigations. Evidential cultures are established by political, cultural, and economic values, among other factors. My paper chronicles the historical relationship between social precepts, individual beliefs, and the values which determine contemporary psychedelic studies. Drawing from data collected at a notable psychedelic research archive, my paper begins with the field's earliest years and continues to its current revival. My historiography reveals that the advent of digital methods was a catalyst for new psychedelic evidential cultures. I write that, while the spread of digital technology has impacted all fields of scientific inquiry, it presents unique challenges to psychedelic studies. By most accounts, the effects of psychedelic ingestion are particular to each individual and atypical of ordinary experience. Multiple scholars have noted that digital epistemic virtues — including positivism, quantifiability, and standardizability — are in contrast to the therapeutic mechanisms of psychedelic experience, which are notably subjective. The difficulties of digitizing the subjective dimension of psychedelic treatment have led groups of scholars to critique the rote applications of digital methods, while others have embraced a digital-first strategy which deemphasizes more interpretative, mixed-methods approaches. After I indicate the ways in which the digital turn has led to fragmentation in the criteria for significant evidence in psychedelic science, I suggest that this field crystallizes debates in technoscience studies about evidence and replicability.

Session Organizers:
Tehseen Noorani, Durham University
Claudia Schwarz-Plaschg, University of Vienna
Chair:
Claudia Schwarz-Plaschg, University of Vienna

319. Conceptualization and Evidence of Social Innovation: Frameworks, Experiences, Practices and Application
8:00 to 9:40 pm
virPrague: VR 06

In recent decades, several international organizations such as the Organization for Economic Cooperation and Development, the World Economic Forum and the European Commission have stated that nation's progress must be understood in a broader set of ideas, including not just technological innovation but also social innovation. The importance of social innovation has increased because it represents an alternative to the conventional top-down assistance approach of some governments to face the social, economic, political and environmental challenges of the 21st century. Unlike such an approach, social innovation implies the active participation of society in the solution of its own problems. That is to say, we understand social innovation as the intentional change of social practices aimed at the solution of collective problems, through the active participation of a community. In other words, social innovation means social change, especially that intentional change of social practices. Despite its known relevance and conceptualization, several authors point out that social innovation still lacks a coherent theoretical structure and that more empirical research is necessary to understand and promote it. In response to

this concern, through this panel we invited STS scholars to join a conceptual discussion on social innovation, helping to define its actors, conditions, potentials and possibilities. Likewise, an additional purpose of the panel is to present results of empirical investigations that show evidence of social innovation processes of particular cases. In summary, we will discuss several frameworks to study social innovation as well as the emerging practices, experiences and applications on the field.

Participants:

Concepts and experiences of social innovation: a literature review *José Francisco Romero-Muñoz, Benemérita Universidad Autónoma de Puebla - Dirección de Innovación y Transferencia de Conocimiento*

This document provides a literature review related to social innovation, with the purpose of reflecting on its meaning, distinguishing its main characteristics and knowing documented experiences. That is, we propose to answer the questions: what is social innovation? how can we distinguish it? and where can we "see it"? The methodology includes a systematic search of arbitrated academic publications in the EBSCO database from November 2018 to August 2019. The main results refer to the existence of a wide range of meanings about social innovation. They refer to the solution of collective problems through the active participation of a community, the creation of businesses that provide solutions to social problems, the application of scientific research results in the care of social needs, the development of technology based on the participation of one or several communities, among other meanings. These concepts represent some of the most important conceptual tendencies in the literature. They usually distinguish social innovation from technological innovation (or other forms of innovation) arguing that it provides benefits in the field of population welfare, quality of life and the proper functioning of services. Unlike technological innovation, which is aimed exclusively at improving productivity, business competitiveness, production costs and market rates. Although social innovation is little known, it represents an emerging field of practice that requires a solid conceptual discussion. Therefore, the major contribution of this document to the field of science and technology studies is the critical discussion about the conceptions of social innovation and the documentation of implementation evidence.

In Which Ways Do Makerspaces Contribute to Social Innovation? *Öykü Sorgun*

Makerspaces are workshop areas where individuals collaborate together and make things fast and cheap with an easy access to digital fabrication tools. Also, makerspaces support communities to share knowledge in an open source way. According to my argumentation, makerspaces can create a fertile atmosphere for social innovations by lowering the barriers in access to knowledge and tools and by improving the dialogue among various partners. In this on-going Masters thesis, I aim to discover which roles do makerspaces play in social innovation. I interviewed 4 makerspaces, established in Turkey, which are the pioneers of Maker Movement in the region. The collected data will be compared with the social innovation literature along with the interviews with platforms working on the area of social innovation in Turkey. As the studies on social innovation are still in early stages, this research aims to understand how social innovation is being practiced through makerspaces while contributing to the understanding and analysis of social innovation.

Social Innovation in the framework of Social and Solidarity Economy under the Community Economies perspective *Effie Amanatidou, University of Manchester; Georgios Gritzas, Aristotle University of Thessaloniki; Eirini-Eryfili Tzekou, Aristotle University of Thessaloniki*

Experience shows that the value of social innovation is context-related. Social innovations take different forms and have diverse impacts depending on the context they are placed in. Yet, almost all conceptualisations of social innovation have emerged in the context of the market-driven, growth-based economy. Understanding how social innovation forms, roles and influences change depending on the socio-economic context is valuable in searching for alternative solutions to the societal challenges of

today. This will be the main contribution to STS that can help better understand what type of innovations (or combinations) are best suited to meet current challenges. The context for STI policies is changing given the societal and environmental challenges (Schot and Steinmueller, 2018) that oppress the current growth-based economic paradigm. In an a-growth, post-development framework innovation can be pursued through monetary but also non-monetary means, while being socially, environmentally and ethically responsible (de Saille and Medvecky, 2016). This brings attention to the concepts of 'social economy' and 'community economies' that refer to an alternative way in development, transforming people in key agents of social change and promote collective action (Gibson-Graham, 2006; et al. 2013), thus sharing features with social innovation (Gibson-Graham and Roelvink, 2009). In this context it would be interesting to study 'What are the processes and factors for emergence and sustainability of social innovation in the social-economy, post-development context?' The methodology will apply a mixed-method, approach consisting of literature review, questionnaire surveys and in depth interviews of selected social innovation and social economy initiatives in Greece.

Session Organizer:

José Francisco Romero-Muñoz, Benemérita Universidad Autónoma de Puebla - Dirección de Innovación y Transferencia de Conocimiento

Chair:

José Francisco Romero-Muñoz, Benemérita Universidad Autónoma de Puebla - Dirección de Innovación y Transferencia de Conocimiento

320. Taking Data Into Account 2

8:00 to 9:40 pm

virPrague: VR 07

As ubiquitous data technologies seep into public services, news feeds, schools, workplaces, political campaigns, and urban living around the world, the effort to hold them accountable has become a topic of public concern. From computational audits to citizen activism, from public shaming of companies to policy proposals, activists, academics, journalists, technologists, and lawmakers have been trying to account for these emergent systems that appear to be inscrutable. Using the analytical tools of STS, this panel offers empirical and theoretical analyses of how these automated, data-driven technologies become "accountabilia – objects mobilized to enact relations of accountability" (Sugden 2010; Ziewitz 2011), and in what ways accountability is forged and put in practice in a range of fields that are now driven by data.

Participants:

On the Genealogy of Datasets as a Field of Inquiry and Practice

Emily Denton, Google; Alex Hanna, Google; Andrew Smart, Google; Hilary Nicole, Google; Razvan Amironesei, University of San Francisco

In recent years, the field of machine learning has seen a rapid proliferation of new machine learning methods, model architectures, and optimization techniques. Yet, data -- which remains the backbone of machine learning research and development -- has received comparatively little research attention. In this paper, we outline a research program investigating how foundational computer vision and natural language processing datasets have been created, what and whose values influence the choices of data to collect, and the contextual and contingent conditions of their creation. This includes questions around data provenance, conceptualization and operationalization of the categories which structure these datasets (e.g. the labels which are applied to images), methods for annotation, the consent regimes of the data authors and data subjects, and stakeholders and other institutional incentives involved. Often these processes lack thorough documentation and dataset creators and curators are not forthright in how a given dataset was constructed, nor do they serve as grounds of contestation. A research program around the genealogy of these datasets should be attentive to the constellation of organizations and the plurality of stakeholders involved in their creation; the reflective or unreflective intent, data practices, norms, and routines that structure data collection and the implicit or explicit

values operative in their production; the veiled or specific assumptions of their authors and curators; the relation between the intended goals of original authors and their actual outcomes; the adoption of datasets and the related practices of contestation by subsequent researchers.

Measurement and Counting are Two Different Things, Goddammit! An Epistemology of Quantitative Data. *Petter Grytten Almklov, Norwegian U. Of Science And Technology (NTNU)*

I discuss the differences between data that are made by measuring and data that are made by counting and some of the consequences of these differences as the data are aggregated, combined and used in other contexts than their origins. If I measure that I am 90 kilograms, it is an approximation, a result of the interaction between my body and a technology constructed to let variations in the external world trigger internal variation, typically along a quantitative scale. If I have 90 coins in my pocket, this is an exact quantity. My vantage point is previous work on the epistemology of sensor data in the petroleum industry, studies of sociomaterial practices involved in making sensor data represent something. I have argued previously that interaction between the sensor and its surroundings can be understood as an epistemological boundary, a shift in logical types similar with the map/terrain distinction (Korzybski). A thermometer is part of the room it measures, but still it creates representations that are about it. As data, sensor data are never accurate. Their representative value is fleeting, contextual. Interpreting them is often a matter of understanding context, including the materiality of the sensor and information infrastructure it is part of. Data based on counting, in contrast, can be precise and stable because they refer to previously delimited objects. They do not cross the map/terrain boundary. Objects are symbolic entities before they are counted. I discuss some consequences of this using examples from the petroleum geology and from other areas of data science.

Politics, Pathos, and Power: Community Mobilizations of Data *Roderic Crooks, Informatics, UC Irvine; Lucy Pei, University of California, Irvine*

In this paper, we report early findings of an ongoing project which explores how community-based organizations that serve minoritized communities in California mobilize data to demand accountability from state and corporate actors. We analyze the websites of 25 community organizations that work with data and conduct follow-up interviews with staff involved with the use of data. We catalog the great variety of data practices within organizations, how they acquire, collect, maintain, analyze, store, preserve, and visualize data to pursue organizational and political objectives. Among our cases, data were made to account for the experiences of minoritized communities via rhetorics that position data as discrete, authoritative, and scientific, even in cases where data are known to be of questionable validity or fidelity or are produced via deeply subjective or idiosyncratic processes. In contrast to these appeals to the putatively objective aspects of data, community organizations incorporate forms of manual, embodied, and affectively charged labor in their data practices. The organizations studied here employ similar strategies for mobilizing data in the form of charts and other kinds of visualizations in order to reinscribe the pathos of individual and community stories in pursuit of bureaucratic accountability.

The need to introduce contextual factors for assessing innovation processes *Veronica Paulina Morales Arevalo, Escuela Politécnica Nacional*

Innovation plays an important role in society development based on knowledge, so the "triple helix" (Academy: Research, education, human talent; Government: Political; Productive Sectors: Economy, Market) represents the fundamental model for promoting a innovative ecosystem. On the other hand, the "Development of countries" is driven to meet the historical and current needs and limitations of local societies (endogenous determination); in addition to being guided (alienated) by the vision of the hegemonic economies of the moment (political, military and/ or economic) (exogenous determination). Then, innovation is reflected in results conceived from a social process

and a combination of capabilities, which are influenced by the context where they have been developed, used or adopted. Consequently, measuring innovation and their determinant elements is a way for assessing one of the dimensions of development in divers scales (national, regional, sectorial, organizational). However, the inclusion of contextual variables in innovation measurement methodologies is a hard work, in reason that "measures" as quantification technologies are not are not neutral objects to paradigms, ideologies and political processes that surround them. The purpose of this study is to propose a methodology for measuring the potential of an organization to became an innovative organization, considering in the constructs to be measured the introduction of measurable factors of the context where innovation is developed, used and adopted.

Session Organizer:
Burcu Baykurt, University of Massachusetts Amherst
Chair:
Burcu Baykurt, University of Massachusetts Amherst

321. Infrastructures of Care: Independence, Self, Exteriority

8:00 to 9:40 pm
virPrague: VR 08
Participants:

Synchronizing Autonomies: Study Of An Independent Living Service For People With Down Syndrome In Spain *Joan Moyà-Köhler, Open University of Catalunya; Israel Rodríguez-Giralt, Fundació per la Universitat Oberta de Catalunya*

The «I'm going home» is an independent living service of the Catalan Down Syndrome Foundation. The service has 20 support staff members in charge of attending ninety users for a few hours every week. It is a model built on the precepts of quality of life and social normalization that facilitates that people with Down Syndrome (DS) decide with whom, where and how they want to live. In fact, this is one of the pioneering services in Spain. Drawing on an 18th month ethnographic engagement with this service, and building upon STS premises and concepts, this paper explores what it means to become an "autonomous subject" for a person with DS. That is, it unpacks how this independent living program facilitates, through a complex and heterogeneous assemblage of actors, spaces and technologies, the synchronization of two different notions of autonomy that circulate within the field. On the one hand, the idea of "emancipated autonomy" –to find a space for self-realization–, and, on the other, an "ensured autonomy" –to provide a safe place for living–. Through different examples, we describe how the service articulates these two notions of autonomy, configuring a very specific and demanding regime of action, usership and subjectivation. The paper ends with a discussion about the role of this service in reshaping what it means to live independently for people with DS. That is, how the service manages to redefine what is to live with DS and what the world should expect from people with DS.

Self-Care In Disabling Times – A Disability Studies Perspective On Young People's Narratives Between Work And Welfare *Inga Julia Reichelt, University of Leeds*

This paper interrogates the usefulness, limitations, and dangers of self-care as a tool for disabled people's liberation. It draws on key concepts from disability studies and wider anarcho-communist and black feminist literature on self-care, and connects these first on a theoretical level, before applying them to the life stories of self-defining young disabled people growing up in England during times of austerity. While digital technologies are marketed towards the mainstream non-disabled audience as products of convenience and luxury, disabled people frequently do not have access to enabling technologies that would ensure their autonomy, since their dependency on other humans is culturally naturalised, while disabled people are simultaneously often being portrayed as burdensome for requiring human assistance. Notions of emotional labour and psycho-emotional disablism are used to explain how an imperative to practice self-care can be used to obscure the additional labour disabled people need to do to secure their equal participation in society. In interaction with social class and gender dynamics, this rhetoric can turn into victim-blaming, by making people believe that they are responsible for overcoming their own oppression. At the same time, self-care can also be an empowering tool to resist the age-old paternalistic attitudes disabled people have been subjected to by the medical profession, the care sector, and its associated industrial structures, whose claims of expertise are frequently used to delegitimise disabled people's perspectives on their own lives. We must build a model of mutual aid, solidarity, and community care that listens to disabled people.

Thresholds of the ab/normal: Ethnography of movement in residential institution *Radek Carboch, Faculty of Humanities, Charles University*

"Home on the Hill" is a residential institution providing services to people identified as mentally disabled. The space of the institution consists of a historic chateau, farm, large park open to the public and a new three-storeyed building. In our ethnographic research of practice of maintenance and care realized in and through the Home, we explore the emerging configurations of autonomy in different modes of ordering (Law 1994) of ab/normality. We focus on the agency of subjects, whose "normality" and ability to act autonomously is questioned by reference to their "mental impairment". The space of the Home and the ab/normal subjects inhabiting it are not given once and for all. Instead, they are re-enacted in the practice (Nord, Högström 2017; Mol 2002) of providing services. To capture the re-enactments, we focus on movement, its regulation, and specifically on the thresholds governing and structuring the space-time of the residents' lives. When and where the different modes of ordering of ab/normality produce thresholds structuring movement? When and where the movement of ab/normal subjects does become an autonomous act? The thresholds have their purposes, materialities, temporalities and guardians. We describe rules for their semi-permeability and the limits they define for the autonomous action of ab/normal subjects.

Claiming Autonomy in Relations of Interdependency: Ritual, Precious Objects, and Uncharted Engagements *Patrick Devlieger, KU Leuven; Christine Verbruggen, KU Leuven; Mar Gil Alvarez, KU Leuven; Laurence De Backer, KU Leuven*

The paper describes and analyzes three ethnographic cases of caring with people with disabilities. The spaces of care-giving and receiving are situated as interdependent and requiring performance, and are prone to stigmatization. Autonomy is being claimed in these spaces of interdependency, through various articulations which can be described as ritualized, engaging with precious objects, and opening up new possibilities of well-designed objects. In the first case we look into the secular ritual of leaving the home, in which kinship relationships are articulated in such a way that offset stigma of mutural dependency. The second case involves exchanges in both kinship and professional relations with precious objects as opposed to objects that stigmatize and place the focus on dementia. The third case involves uncharted engagements with a well-designed object, in this case a table, that can nevertheless be perceived as restraining and thus stigmatizing. We will argue that in these care relations, practiced both inside and outside of kinship relations, autonomy can be claimed and stigmatization be dissolved through ritual that involves the autonomy of both giver and receiver of care, precious objects that reinstate a history of valuation, and engagements with well-designed objects that open up claims for autonomy. The contribution to STS of this paper is in introducing care, stigmatization, and articulations that involve ritualization with everyday practices, (re-)inserting history into objects, and un-designing objects through subjective engagements.

Session Organizers:
Laura Mauldin, University of Connecticut
Emily Lim Rogers, New York University
Helena Fietz, UFRGS
Chair:
Helena Fietz, UFRGS

322. STS Approaches to Social Epigenetics and the Developmental Origins of Health and Disease
8:00 to 9:40 pm
virPrague: VR 09

Over the past decade, social epigenetics and the developmental origins of health and disease (DOHaD) have been enthusiastically mobilised to argue for more equitable and just environmental and social policies. At the same time, science studies scholars and others have raised concerns about these fields. These include the human rights impacts of using individual epigenetic information in insurance, forensics and immigration decisions, and the technical, ethical and policy challenges of protecting epigenetic data and privacy in multi-omic research. Further, feminist scholars have documented how DOHaD-based approaches to research, health prevention and policymaking often blame women and perpetuate marginalisation, stigmatisation and discrimination despite their promise. These concerns call for ongoing attention given the continued focus on individual responsibilities for health, expansion of personalised medicine, and growing availability of direct-to-consumer epigenetic tests globally. This open panel invites scholars working across various disciplines to engage with questions about the social and ethical dimensions of social epigenetics and DOHaD research, including its practices, promises, and potential futures. We welcome papers that explore how STS scholars can intervene in and counter the reductionist power of social epigenetics and DOHaD, ethnographic studies that develop innovative methods to rethink classic criticisms and imagine how things might be otherwise, and scholarship addressing the biologisation of environments and social structures. Discussions may touch on expectations of postgenomic research, promissory and cautionary discourses, epistemological and empirical implications of the new 'biosocial' genome, the unequal embodiment of location and time, and lived experiences of epigenetic and DOHaD research across different communities.

Participants:

Charting the Political Epistemologies of Epigenetics and DOHaD *Luca Chiapperino Chiapperino, University of Lausanne, Faculty of Social and Political Sciences; Francesco Panese, University of Lausanne, Faculty of Social and Political Sciences*

Drawing from Maurizio Meloni's 'political epistemology' (Meloni 2016), in this paper we attempt to answer the following question: in what ways are different ontologies of the developmental and multigenerational origins of health conditions also intended as alternative moral and political undertones of DOHaD and epigenetics? Building upon the observations of distinct theoretical and experimental programs, we detail, first, how constructing the developmental origins of health and disease entails producing specific ontologies of the continuities between bodies and their environments. Competing epigenetic and DOHaD research programs produce indeed alternative material constituents and entities accounting for the entanglements between biology, contexts and lifecourses. These ontologies, we argue, vary substantively in (basic and/or clinical) experimentation, and should be cast as layered constructions of biosocial patterns that are situated across distinct temporalities (e.g. evolutionary, intergenerational, developmental, lifetime, metabolic) and materialities of the living (e.g. cellular, organismic, molar, social). Second, we focus on the moral and political purchase of these alternative ontologies of the biosocial nexus at the basis of health conditions. Social contexts, chemical environments, 'pre-', 'peri-natal care', paternal/maternal peri-conceptional care, etc. constitute, we argue, views and strategies of intervention that, from variables of experimentation, turn into alternative objects for public health, biomedical practice and individual/collective agency. In doing so, our paper wishes to further expand on STS analyses of the deeply entrenched politicisation of post-genomic research practices, and offer a cartography of the contingent practices where the political options of biosocial thinking in STS could meet the scientific language of DOHaD and epigenetics.

Living with Well Trauma: Centering Resilience in the Epigenetics of Early Life Adversity *Martha Kenney, San Francisco State University; Ruth Müller, MCTS TU München*

Environmental epigenetics explores how material exposures and social experiences affect gene expression. A key tenet of the field is that exposures that happen early in life can have health effects across the life course. Numerous labs today study the epigenetic effects of "early life adversity," prominently featuring research on the role of trauma and stress for long-term physical and mental health. In our previous work we argued that this research tends to focus on harm and lasting damage with little discussion of resilience and recovery. Consequently, while researchers often emphasize prevention, they offer few suggestions for how communities and individuals can find ways to live well with trauma and its effects on health and development. Seeking out alternative visions, we have been investigating initiatives in the fields of trauma-informed care and restorative justice that draw on insights from the epigenetics of early life adversity, but apply a framework that emphasizes the biosocial capacity for resilience – not as a way of erasing the experience of adversity, but to allow for learning, growth and well-being despite and with adversity. Drawing on our ongoing fieldwork in the Western U.S., we highlight novel practices designed to build "community resilience" in schools, juvenile corrections facilities, and beyond. We propose that these practices are not only important for responding well to trauma and early life adversity in social institutions and communities, but that they can also be resources for reorienting research in the lab.

From cellular memory to the memory of trauma: Social epigenetics and its public circulation *Michel Dubois, Gemass - CNRS - Sorbonne; Catherine Guaspare, Gemass - CNRS*

Trauma is associated with the appearance of the concept of 'accident' as a social and legal entity, as well as with the successive discoveries of surgery, psychiatrics, and psychoanalysis. Today, epigenetics has redefined trauma as an extreme form of social adversity. Because of the exceptional nature of the events studied and also the social and political significance of its results, the social epigenetics of historical trauma has received undeniable public success. This talk investigates the general dynamics of this research front, as well as the forms and consequences of its public circulation. We highlight the specificity of the circulation modes associated with social epigenetics and the myriad ways it has been used socially and politically. This talk addresses four registers of action in particular: to attest, to repair, to intervene, and to treat. The social circulation of the epigenetics of trauma is as influenced by the public's willingness to see it as socially and politically relevant as it is by the ability of researchers to prepare this collective appropriation through different forms of public engagement.

Struggling with Biosocial Complexity: How Researchers in the Field of Developmental Origins of Health and Disease Engage with the Social Aspects and Implications of their Research *Michael Penkler, Technical University of Munich*

Biomedical approaches that highlight the role of environmental factors in physiological processes have recently received growing attention. One example is the field of Developmental Origins of Health and Disease (DOHaD). DOHaD increasingly draws on epigenetic insights that provide new explanations for how environmental experiences during critical life phases may shape health and disease over the entire life course. Because of its promise to offer a 'biosocial perspective' on health and disease, DOHaD has encountered broad interest from STS scholars. While some have embraced it as an opportunity to bring questions of social justice into biomedicine, others have warned that it may reproduce gendered stereotypes and lead to new forms of environmental determinism. In this paper, I discuss how DOHaD researchers themselves engage with the social and political implications of their research. Many DOHaD researchers are reflexively concerned with the 'translation' of DOHaD into society and policy and motivated by concerns about inequity. At the same time, they struggle with the limitations that institutional contexts, research infrastructures and existing knowledge cultures impose on their capacity to articulate DOHaD in a way that embraces a social justice agenda and that avoids what they see as potentially problematic implications. Based on ethnographic fieldwork with two DOHaD research groups, I trace the articulation of critique from within the research field and different strategies that DOHaD researchers

employ to deal with these issues. I discuss how this opens new opportunities for collaborations between DOHaD researchers and STS scholars and report on past collaborative experiences.

Unsettling the Singularity of Postgenomic Time in the Australian Colonial Context *Henrietta Byrne, The University of Adelaide; Megan Warin, University of Adelaide*

This paper explores how the intersection of epigenetics, intergenerational trauma, and Indigenous knowledge provides an opportunity to unsettle the ways in which time remains tethered to linearity in developmental origins and epigenetics discourses. Social scientists have been drawn to the conceptual apparatus of DOHaD and epigenetics as they blur biosocial boundaries and collapse time – folding the past, present, and future into each other. However, this shifting conception of time drifts back into a more linear, chronological time, as DOHaD work continues to focus on more conventional moments of intervention on the child (which in a settler colonial context is a familiar narrative), positioning early life (the First 1000 Days) as a 'window of opportunity' for 'intervention'. We argue that this slippage back into dominant frameworks of narrow, individual bodies and solutions which occur within bounded time frames can be challenged by situating time in context. Using Indigenous approaches to DOHaD and epigenetic science in Australia as an example, we consider how time has multiple realities – the slow violence of colonial time, embodiment and discourses of collective trauma, and Indigenous ontologies of time (ordinary, Dreamtime). These understandings of time turn attention to 'healing' as an ongoing temporal process, challenging the notion of a single 'intervention' for future wellbeing. We propose that by considering multiple registers of time, we can cleave away from the normative and dominant models of chronological, linear time that DOHaD and epigenetics revert to in their rush to find molecular mechanisms and opportunities for intervention.

Session Organizer:
Megan Warin, University of Adelaide
Chair:
Charles Dupras, McGill University
Discussant:
Martine Lappe, California Polytechnic State University, San Luis Obispo

323. Aesthetic Interventions: Exploring Emerging Worlds Through Art II – Explorations & Collaborations

8:00 to 9:40 pm
virPrague: VR 10

This panel explores art interventions into sociomaterial worlds and their implications for STS. It draws on the assumption that the complexity of emerging worlds requires innovative modes of approaching and engaging with these worlds. Building on recent discussions of the potential of art in exploring the nexus of science, technology, and society (Salter, Burri & Dumit 2017, Sormani, Garbone & Gisler 2019), we aim to further this conversation. The visual and aesthetic dimensions of scientific knowledge production have been discussed in STS for a long time. More recently, art in particular has attracted more attention by STS scholars who have addressed connections and boundaries between art and STS, relations between science, art, publics, and democracy, and project collaborations between scientists and artists. In this panel, we explore art in/as STS research. Art may serve as a way to express feelings of unease, confusion and powerlessness while at the same time has the potential to critically reflect sociomaterial developments and challenge power structures. By engaging with such issues, art interventions into emerging worlds are a form of "acting now". In this panel, we aim to discuss in what ways art may open up grounds for realigning and adding to STS practices. We welcome contributions that reflect on the potential of art in exploring emerging sociomaterial worlds. We are interested in both theoretical papers discussing the implications of art in/as STS research, and presentations of art practices / projects / interventions that examine science and technology driven realities of our times.

Participants:

Sharing Embodied Perspectives, Exploring Interacting Minds *Andreas Roepstorff; Dorte Bjerre Jensen, Aarhus University; Anna Engberg, Studio Olafur Eliasson; Sophie Erlund, Studio Olafur Eliasson; Andreas Løppenthin, Copenhagen University; Cordula Vesper, Aarhus University; Joseph Dumit, UC Davis*

We describe the outcomes of Sharing Perspectives, a research intervention into the Olafur Eliasson retrospective exhibition In Real Life, at Tate Modern, London. Building on feminist STS and contact improvisation practice-based research, the Sharing Perspectives score invites participants to explore the exhibition space and share it with another participant in a sequence of careful open-ended activities that purport to allow for embodied cognition, shared reflections, and material co-construction. Based on analysis of dialogues with participants as well as on their writings, we find that the score provided for a set of surprising embodied experiences that, in turn, allowed shared meaning-making that came to constitute the data for the research project. The explorations not only engaged with issues of identity and differences, but also with the particular characteristics of the gallery space. Our findings suggest that art-science collaborations can establish activities, characterized by experimenting, experiencing and reflecting, which may open a precious window to an experience of interacting minds and bodies. This points to the potential of the interface between research practices and aesthetic practices to be a space of exploration that not only engage the practitioners but also involve participants in novel ways.

Semiotic Provocations of Olfactory Art *Ksenia Fedorova, Humboldt University Berlin; Natalia Fedorova, St. Petersburg State University*

The paper will discuss a number of projects created together by artists and scientists and devoted to the issue of communication through smells. Due to the volatile nature of its objects, olfactory perception is not as well studied, as vision and auditory perception. Among the problems addressed by the field of sensory studies in regard to olfaction are those related to its emotional effects, i.e. strong evocative potential and appeal at the preconscious, physiological level, but also those to do with the production and circulation of knowledge about this sense. Exploring projects such as "To Bee" by Natalia Fedorova, Elena Nikonole and Tatiana Zachepilo, "Osmodrama" by Wolfgang Georgsdorf, work by Lauryn Mannigel, and "Inspiration" by Saša Spačal, as well as creative spaces like Smell Lab in Berlin, we aim to demonstrate how art can help to sharpen and reconfigure understanding of the phenomenon of olfactory perception and to point in an original way at the complexities of communication about it. One of the problems associated with smells is that inhaling the smell means taking inside the lungs the property of the objects inhaled. There remains a fateful contrast between the formal kinds of description of the chemical compounds and how they are actually felt by a human or a nonhuman organism. Sociology of scent distinguishes between pleasant and unpleasant smells, and the unpleasant ones are usually more frequent (marking danger: not edible or contagious). Comparison of perception of smell among different species breaks or interrupts the logic of such "negative" semiotics. One of our examples, "To Bee" is a semiotic interspecies pheromone communicator between humans and bees. Being confronted with the experience of the same smell by another species provokes the state of being outside of what you are, an experience of sensory perception as if you were this other entity. Artistic practice, including educational initiatives for the general public, goes beyond the boundaries of scientific laboratories or commercial research. It reverses the principles of research for marketing goals (where public opinion is exploited), giving the participants the power and freedom to generate new objects and to experiment with their experiences and judgments.

Exhibiting the Anthropocene: a contract between the Anthropocene Working Group and the Haus der Kulturen der Welt in Berlin *Alexander Damianos, London School of Economics; Clémence Hallé, Ecole Normale Supérieure*

The Anthropocene Working Group (AWG) began the ongoing effort to formalize the Anthropocene as a geological unit in 2008. However, their first grant was received only in September of 2018, from the Berlin contemporary art institution the Haus der Kulturen der Welt (HKW, or House of World Cultures). A million euro grant from the German Parliament will be put

towards the identification and extraction of the Anthropocene GSSP (or 'golden spike'), the layer of strata wherein geologists argue lies the stratigraphic evidence of Earth's departure from the Holocene. But how did a contemporary art institution find itself funding chronostratigraphic research? How does their involvement intervene in ongoing debates concerning the characterisation of a formal Anthropocene unit? This paper explores two organising devices at the heart of this unusual collaboration: a contract for the production of an artistic piece and the search for a geological 'golden spike'. Although it is traditional for a "golden spike" to be marked by a monument, it has never been connected with a tender for an artistic piece. However, according to the grant contract, the HKW commissions the AWG to provide them with an artefact, a geological core to be displayed at an exhibition on the AWG that will be held at the HKW next year: this artefact is a perfect hybrid of geology and art. Observing these devices from two angles - an ethnography of the AWG scientists on one side, the HKW's curatorial politics on the other, our paper reflects on how the ongoing effort to formalise the Anthropocene crystalises the mutual interventions of the worlds of geology and art, materializing the Anthropocene as a boundary object, providing insights into contemporary knowledge production in troubled ecological times.

Multiplicity and Space for the Unspeakable: Art, Lifeworld, and the Limits of Narrative in Psychosis *Suze Berkhout, University of Toronto; Eva-Marie Stern, University of Toronto/artandmind*

The notion that a biomedical worldview produces a certain kind of "epistemological narrowing" (Squier 2007) is by now commonplace amongst STS scholars. This concern of narrowing is ultimately both epistemic and ontological and motivates what has been called a narrative turn in a range of critical methodologies. But what if a different kind of narrowing likewise occurs within research practices that rely upon verbal speech communication? In this paper, we explore the limits of narrativity in understanding lived experience in psychosis. Through findings from a three year-long ethnographic study contrasting historical, biological, and experiential narratives of first episode psychosis, this paper will draw on critical disability studies and feminist STS to discuss how themes ambivalence, disorientation, perplexity, and confusion in psychosis were constrained in their explication, even within a reflexive, dialogical research frame. We go on to describe a collaborative visual arts-based workshop developed within the project in response to these themes, which explored the ways in which diagnostic practices and therapeutic interventions in the clinic were sociomaterial accomplishments that shaped the lifeworlds of those living with experiences labelled as psychotic. In particular, we discuss how, when experiences of psychosis were unspeakable, they overwhelmed the ability to order, describe, or categorize them. In contrast, these experiences were reflected with greater depth and nuance through multimedia and visual art works created within this novel group setting. Multisensory modes of study spoke to partial truths, truths in the telling, and multiplicity in realities—lived experiences that were "uncontainable by words."

Session Organizers:
Regula Valérie Burri, HCU - HafenCity University Hamburg
Joseph Dumit, UC Davis
Chair:
Regula Valérie Burri, HCU - HafenCity University Hamburg

324. Animals and their Humans
8:00 to 9:40 pm
virPrague: VR 11
Participants:

Multispecies Memory: Alzheimer's, Pets, and Capital *Brad Bolman, Harvard University*

In recent years, studies of Alzheimer's disease have repeatedly found that earlier proposed causes for the diseases cannot explain its complicated progression. The previously popular "amyloid cascade" hypothesis has been discarded and recent research has suggested that the singular disease is, in fact, an umbrella of plural conditions. But research with animal models of Alzheimer's, including beagles, has offered an alternate approach to understanding the condition: dogs and other creatures that have been converted into models for memory loss have shown how Alzheimer's has meaningful environmental causes; that Alzheimer's may even be the product of certain configurations of technocapitalist life in modern homes. This paper shows the snaking route of research on the beagle as a model for cognitive deterioration, tracing debates about whether other animals can "get" Alzheimer's, and exploring how research in the pet industry has produced a novel base of data to understand the loss of memory. I draw on interviews, archival, and media analysis to offer directions for a new theory of multispecies memory and memory loss that breaks from the narrow, biomarker-centric approach of much contemporary research.

The Domestication Triangle. How Humans, Animals And Technology Shape Each Other In Automated Milking Systems *Terje Finstad, Dept. of Interdisciplinary Studies of Culture, NTNU; Margrethe Aune, NTNU*

This paper investigates how robotic milking machines, commonly called automated milking systems (AMS) has been integrated into a small selection of farms in Norway. The data material consists of AMS brochures, instruction manuals and web sites from producers, farmer organization web sites, and in-depth interviews and our theoretical point of departure is domestication (Lie and Sørensen, 1996; Sørensen, 2006). The paper first looks at the main features of the machine and how the domestication process is anticipated by producers of AMS. Then we analyze how domestication takes place at the farm. We follow a triangle of actors consisting of humans, cattle and technology and show that when animals participate in the process of domestication, it becomes an intricate collective process dominated by learning in many forms. The aim of the paper is twofold: Empirically we provide some examples of the challenges when integrating AMS in Norwegian farms. Our theoretical ambition is to expand domestication theory by introducing a more varied understanding of learning that take in other perspectives on learning than the cognitive, we thus introduce learning as something relational, embodied and continuous.

The Logic of Diagnostic Practices: Drivers of the Use of Rapid Diagnostics to Reduce Antimicrobial Use in Animal Farming in the UK *Kin Chan, University of Exeter; Henry Buller, University of Exeter*

Rapid diagnostic testing has played a crucial role in ameliorating antimicrobial resistance (AMR). Current studies on antimicrobials (AMs) focus on perceptions and behaviours related to using AMs in both human and veterinary medicine; however, there is a significant lacuna in the study of the diagnostic practices which shape the use of AMs in farm animals. This study adopts an in-depth interview approach to the examination of the logic underlying veterinary surgeons' diagnostic practices and how their habitus influences their uptake of particular diagnostic technologies. Drawing on 30 farm vets' diagnostic practices and their respective social fields for their uptake of diagnostic technologies across UK, we argue that vets' behaviours are shaped by 'best practices' which tie them to the maintenance of a 'good vet' identity and strong vet-client relationships, which in turn encourage the 'prudent use' of diagnostic tests and AMs. Additionally, it is argued that vets internalise the values of veterinary pedagogy (e.g. list of differentials) and corporate culture and that this shapes their decision making as regards using diagnostics and AM treatments. Furthermore, vets' decision making is affected by the 'geographies' of diagnostics, particularly the by the perceived optimal times and spaces for delivering accurate and cheap diagnostic testing results. The findings of this research contributes to the understanding of the socio-economic, cultural and professional factors that influence the role of diagnostics play in applications of AMs in animal farming in the UK.

Session Organizer:
Kin Chan, University of Exeter
Chair:

Kin Chan, University of Exeter

325. Teaching interdependent agency I: Feminist STS approaches to STEM pedagogy

8:00 to 9:40 pm
virPrague: VR 12

The first of 3, this panel discussion of STEM graduate training brings together insights from feminist theory with social studies of science to address deep bias in scientific research to suggest methods and frameworks that produce more accountable, accurate and responsible scientific research. This panel is interested in talking about how feminist STS (fSTS) scholars are using, or exploring the use of, the critique of objectivity to address biases in science. How are we engaging with STEM graduate education to teach a more nuanced "situatedness" (Haraway 1988) in culture and history to produce more responsible and accountable science? Research in STEM education suggests that integrating socio-cultural context and communal values into STEM education can increase recruitment and retention of women, under-represented minorities (URMs), and first-generation students in STEM. Building on the contributions of Jenny Reardon, Karen Barad, and Banu Subramaniam's to feminist approaches to STEM pedagogy, this panel invites papers addressing how feminist STS can move STEM graduates toward greater engagement with social justice, as well as deep collaboration with social sciences and humanities. What sort of curricular changes could lead to a transformation of STEM research and the diversity of researchers conducting it? How can STS scholars use pedagogy to empower STEM researchers to be agents of social transformation even in the face of anti-science discourse, and anti-women, racist, anti-trans and anti-LGBTQ cultural politics?

Participants:

Accept Only: Framing the Compulsory, Citations as Syllabus in Trans- Feminist and Queer Data Studies *T.L. Cowan, University of Toronto*

In a world suffused with corporatized, militarized "big data" practices and exploitative, extractive artificial intelligence (AI) systems, how might we reimagine data practices and pedagogies that are aligned with intersectional feminist processes? And how might we decenter data methods that privilege corporate, academic, and engineering interests, to center vulnerable populations and community needs? How might these re-centered methods be mobilized as pedagogical strategies in our interdisciplinary classrooms? The Feminist Data ManifestNO is a collaboratively authored set of principles, created by the Feminist Data Workshop in the summer of 2019. It offers a set of declarations and commitments, refusing harmful data regimes and reimagining, and working towards reforming and remaking new data futures. This presentation calls attention to the explicit and implicit citational practices of the Feminist Data Manifest-No as a critical data studies syllabus, and imagines the genealogies of feminist thought primarily in the disciplines and activist manifestations of gender studies, sexuality studies, critical disability studies, decolonial and anti-colonial studies, and Black and ethnic studies. I discuss the genealogical method that I use in my PhD Seminar, "Critical and Interpretive Methods for Media, Technology and Cultural Studies," which works to build critical capacities with Faculty of Information students from across the sciences, social sciences, engineering and arts and humanities. I lead feminist STS engagements with data studies, for example, through the critical concepts in sexuality and critical disability studies. I conclude with a short discussion about how ideas of "compulsory" regimes have been developed by feminist, lesbian, queer and crip scholars—ie. 'compulsory heterosexuality' (Rich); 'compulsory hyper- able-bodiedness' (McRuer)—and how these can usefully shape our cross-disciplinary rejections of, and commitments to, participation in big data as a compulsory regime.

Building Feminist Science Pedagogies: Reflections on Teaching the Power of Metaphors in STEM Research on Mars *Maya Cruz, University of California - Davis*

Contemporary technoscientific research and practice in the United States increasingly aims towards Mars, as government agencies and big tech companies alike actively pursue the development of space programs for Mars colonization. This paper draws on feminist science studies informed by the humanities, and especially Ethnic Studies, to first name these practices as part of the enduring legacies of imperialist technoscience, before considering how feminist science pedagogy can meaningfully intervene. This paper thus presents a new feminist science Teaching Module as a case study to consider the potential for feminist science pedagogies to shift the imperialist cultures and practices of STEM, and especially of those relating to Mars research. This Teaching Module is designed to teach those working in Mars research programs across the STEM fields to identify and understand how the metaphors that structure their scientific research and practice reflect the enduring imperialist legacies of technoscience. This paper thus argues that such a pedagogical approach can meaningfully resist the reproduction of imperialist technoscience and suggest its undoing, while also building a shared language that can facilitate conversation and collaboration between those in the STEM fields and those in feminist science studies. This paper will thus also reflect upon the promise and potential of this Teaching Module for modeling a feminist science pedagogy that can bridge the divides traditionally held between STEM fields and the humanities, and especially Ethnic Studies, towards building an interdisciplinary, collaborative, and practice-oriented approach to feminist science that centers accountability to the histories of science as empire.

Curriculum as Futurism: Towards a Liberatory Computing Education *Sanaa Khan, UC San Diego*

Popular discourse around STEM education is often limited to efforts that aim to increase diversity in the field through expanded access to computing education. These surface-level critiques ignore racial histories that built computing, and how modern computing reproduces social oppression. Discourse around STEM diversity ignores how under-represented minorities are already participating in, creating within, and responsible for modern computing. Technology companies, in particular, spend millions of dollars in massive investment in diversity initiatives for STEM education, and explicitly link their lack of computer scientist diversity with efforts to expand access to computer science in the primary, secondary and college levels. This influence is a concern because these companies dictate what computer science millions of minoritized students have access to. Drawing on the critical race theory concept of interest convergence and curriculum theory, this paper will examine the economic and political forces that shape computing curricula in primary and secondary schooling. Curriculum, as the institutionalized object of learning, can become a source of possibility and a kind of speculative narrative which allows for students to learn forms of computing that exist beyond the needs of industry or economy. A critical computing curriculum moves away from the idea of the "diversity problem" in computing and towards an embrace of diversity of purpose and resistance within computing education. Computing and information technology - embedded as they are with the legacy of colonization, capitalism and white supremacy - have shaped the modern world, and will continue to shape the future unless we can imagine liberatory computing.

Refusing Settler Coloniality in Queer Design *Jasmine Rault, Faculty of Information, University of Toronto*

In a world suffused with corporatized, militarized "big data" practices and exploitative, extractive artificial intelligence (AI) systems, how might we reimagine data practices and pedagogies that are aligned with intersectional feminist processes? And how might we decenter data methods that privilege corporate, academic, and engineering interests, to center vulnerable populations and community needs? How might these recentred methods be mobilized as pedagogical strategies in our interdisciplinary classrooms? The Feminist Data ManifestNo is a collaboratively authored set of principles, created by the Feminist Data Workshop in the summer of 2019. It offers a set of declarations and commitments, refusing harmful data regimes and reimagining, and working towards reforming and remaking new data futures. This presentation takes up principles from the ManifestNo to consider how they might contribute to curricular and pedagogical strategies for (1) reckoning with the settler colonial values and orientations of our STEM and trans* feminist queer STS research; and (2) designing research and technology that adds value to rather than extracts value from Indigenous

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lifeways (which include knowledges, scholarship, lands and territories). I will draw specifically from my own experiments in teaching a graduate course on "Queering Design" – bringing together STEM and Arts (or STEAM) students from multiple departments/faculties across the University of Toronto to revisit and reimagine the fields of architecture and design, both material and digital. I reflect on pedagogical strategies and curricular shifts to centre Indigenous scholarship (Tuck & Yang 2012; TallBear 2014; Audra Simpson 2014; Leanne B Simpson 2017; Duarte 2017) in queer design.

Thriving and Struggling Towards Decolonial Futures: The Technoscience Research Unit's Lab Guide *Kristen Bos, University of Toronto; Lindsay LeBlanc, University of Toronto*

The Technoscience Research Unit (TRU) is an Indigenous-led research lab at the University of Toronto that draws together social justice approaches to Science and Technology Studies (STS), with particular research strengths in the areas of environmental and data justice, Indigenous STS, decolonial feminist STS, and queer STS. The TRU was founded by director, Michelle Murphy, along with former graduate student Brian Beaton in 2007. Now composed of postdoctoral fellows, research fellows, graduate students, affiliated faculty, and community members, the TRU is a feminist collective of cocollaborators and coconspirators striving to create a decolonializing, justice-oriented, and feminist research community. As a collective, we follow decolonial land protocols, strive to make good relations, and hold space for Indigenous, Black, People of Colour (IBPoC), queer, trans, 2S, and and non-binary researchers. In 2017, we created the first version of our lab guide: a living manual of our values, guidelines, and protocols. Our guide is as much a technoscience research guide as it is a guide to living well together through solidarities and times of struggle. We update our guide on a continual basis through conversations and co-writing sessions, which can focus on manifesting our different responsibilities to the laws, agreements and treaties that govern the land on which our lab operates as stewards, guests, and settlers in Tsi tkarón:to (Toronto); to developing protocols for good relations with our more-than-human relations, both in the lab and in the technosphere; to updating our "Coffee Manifesto" and beyond. This talk shares some of the values, protocols, and concrete practices that we have developed together as we work towards decolonial technoscience futures.

Session Organizers:
Kalindi Vora, University of California Davis
Anita Say Chan, University of Illinois, Urbana-Champaign
Maya Cruz, University of California - Davis
Chairs:
Kalindi Vora, University of California Davis
Anita Say Chan, University of Illinois, Urbana-Champaign
Maya Cruz, University of California - Davis

326. Transformations And Tensions In Academic Publishing - Part I
8:00 to 9:40 pm
virPrague: VR 13
This panel invites contributions that explore practices of writing, reviewing and editing academic literature, particularly in light of recent transformations in its technological, institutional, and commercial formats. In the course of the last decades, digital technology has for example created new possibilities for circulating and reviewing academic research through pre-print archives and post-publication peer review platforms. Debates around Open Access and policy initiatives like Plan S in Europe in turn have re-emphasized unsolved questions regarding the political economy of scholarly publishing. Moreover, practices of writing and reviewing academic literature across all fields are shaped by relentless publication pressure, growing numbers of submissions to established journals, and the constitutive effects of citation metrics like the journal impact factor. We are interested in what these diverse developments mean for different actors in the scholarly publishing system. For example, how do researcher select journals and organize their publication strategies around intended audiences and career goals? How do practices of peer review and selection of manuscripts from an editorial perspective change in light of growing numbers of submissions? What defines publishability and originality in the context of increasingly crowded and stratified journal landscapes? How do relations with commercial publishers affect the outlook of editors on their journals, and how do scholarly communities react in turn? The panel invites studies based on qualitative, quantitative, and mixed methods.
Participants:

Managers or Gatekeepers? Competences and Work of Editors in Chemistry Journals *Marianne NOEL, Université Paris-Est*

Although academics are quite talkative about the editorial work they do, limited scholarship exists on the role of the scholarly editor. In STS literature, the metaphor of the "gatekeeper" has influenced the perception of his potential role(s), suggesting that editors are merely maintaining boundaries, rather than recognizing the countless ways of editing. The proposed communication focuses on the competences and work carried out by editors in chemistry, a discipline that is organized into a large "rhizome" network (Bensaude-Vincent, 2018). Based on interviews of editors and document analysis from journals published by a commercial publishing house and a learned society, I first illustrate that the role of editor covers a large range of realities in a distributed but interconnected market. In journals that are part of the Nature Research portfolio, in-house editors, who are no longer active scientists, not only help develop the fields they handle but also shape their representation in powerful associations with scientists. Besides tasks they describe "as really the same as they were 100 years ago" as they mostly handle manuscripts, editors read scientific literature, interact with members of the editorial board, travel conferences to advertise their journals and encourage submissions, visit labs where researchers can pitch their work or ask questions. In both settings, publishing houses partner with institutions to offer events (ACS on Campus, Nature Masterclass) that university can host freely or buy, with workshops covering all aspects of manuscript preparation. I also show these periodicals, whether part of a non-for-profit or commercial enterprise, are locked into a logic of catalogue where the journals are not necessarily competitors and have an assumed place and hierarchy. I argue that more empirical work on how these collective assemblages (of people, knowledge, technologies and spaces) act could help us improve our understanding of engagement in scholarly publishing.

The Courage to Continue: The Division of Reading Labor at an American University Press and the Social, Emotional Dimensions of Reading Intellectual Works-in-Progress *Joshua Silver, The University Of Chicago*

This ethnographic study is premised on an observation, unfortunately under-acknowledged, about knowledge production: it is hard work. Professional scholarship involves multiple mediations, often frustratingly lengthy, between author and reader. The stuff of journal articles and academic books thus requires the activation of emotional, social, and embodied resources as much as intellectual talent - for both authors and associated knowledge workers. Conceptualizing a division of reading labor helps us understand how specialized expert readers both populate and lubricate the tough-turning wheels of the knowledge-production process. Prior anthropological work on reading practices has alternatively theorized the interior, hermeneutic reading of "interpretive communities" or the social, spatial reading of "ordinary" readers. This ethnography follows the social practice of reading at a university press, centering on the work of acquisitions editors and the flow of documents and correspondence around them. Working abductively, this study reports on the finding that non-author individuals perform emotionally creative, knowledge-shaping intellectual work through the act of reading, curating and framing texts. The hermeneutic/ordinary dichotomy, as such, obscures a wide range of professional reading practices. Within this range, I elaborate one possible alternative conception of reading, that of "interactional expert reading," analogically derived from the work of sociologist of science Harry Collins (2004).

Infrastructuring "openness": Key tensions in building an Open Access world in academic publishing *Elena Šimukovič, University of Vienna*

The announcement of the "Plan S" in September 2018 has sent a

shock wave in broad academic circles. Behind this code-name, a group of European research funders (including the Wellcome Trust, the Dutch Research Council and the Austrian Science Fund, among others) unveiled the intention to require scientific publications resulting from their grants to be published in compliant Open Access journals or on compliant platforms only. As of January 2020, the grantees of these funding agencies were said to face sanctions for non-compliance such as withholding the payout of funds. While this was not the first attempt to induce an Open Access transition in academic publishing – similar requirements were either piloted or mandated in many funding policies for a number of years already – "Plan S" has arguably caused most heated debates both in favour and against it. After facing strong resistance and more than 600 feedback statements collected during a public consultation, its effective date has been postponed by one year to January 2021. But also some fundamental issues have been raised, reaching as far as defending academic freedom, the role of science in society or the power relations and hierarchic structures in academic life-worlds. In this contribution, I propose to conceptualise the tensions that emerged in response to "Plan S" as sites or moments of "breakdown". Drawing on insights from infrastructure studies, I will further show how treating academic publishing as a socio-technical infrastructure can help understand the battles around Open Access and the resistances that they cause.

Standardizing STS? Academic Publishing as a Form of Research Coordination *Wolfgang Kaltenbrunner, Centre for Sciencs & Technology Studies (CWTS), Leiden University; Kean Birch, York University; Thed van Leeuwen, Leiden University*

We present preliminary findings from an ongoing research project on changes in the STS publishing landscape over the last 25 years, drawing on scientometric methods and interviews with editors, editorial board members, referees, authors, and other relevant actors. Our guiding conceptual assumption is that specific publishing formats – academic articles, monographs, or blogs for example - are not simply a medium for communicating scholarly knowledge, but themselves a principle of coordinating the work of scholars. Hence, we expect that changes in publishing formats also manifest themselves in changes in the epistemic and social configuration of a field. We specifically focus on a rather clear trend in STS publishing in the last decades, namely the increasing centrality of journal articles indexed in the Web of Science (WoS). Concurrently, the format of the journal article has become increasingly homogeneous, converging around a standardized length of roughly 20 pages and a reference list with roughly 50 entries that increasingly refer to other articles of the same type. We contextualize this development in terms of broader shifts in the technology and political economy of publishing, and we discuss epistemic and social implications for STS research. Does the increasing dominance of a specific standardized format enable or constrain certain forms of research coordination, such as collective and shared theory, methods, topics and practices? What forms of research practice are thereby facilitated or rendered more difficult? What does the increasing dominance of the standardized journal article mean for diversity and widening participation in STS scholarship and communities?

Session Organizer:

Wolfgang Kaltenbrunner, Centre for Sciencs & Technology Studies (CWTS), Leiden University

Chair:

Wolfgang Kaltenbrunner, Centre for Sciencs & Technology Studies (CWTS), Leiden University

327. Crafting Critical Methodologies in Computing: Theories, Practices and Future Directions (C)
8:00 to 9:40 pm
virPrague: VR 14
Participants:

Software-As-Process: Using Design Documents For Critical Software Studies *Irina Zakharova, University of Bremen; Juliane Jarke, University of Bremen*

It has been widely accepted that data do not provide a window to the social world and represent independently existing phenomena, but rather produce them. Within critical data and software studies, scholars aim to uncover how data enact (social) realities and to what extent these realities (re-)produce (new) inequalities. One way to investigate the emergence of digital data (structures) is to consider the software design process itself. By and large there exist two types of studies: design ethnographies which observe software-in-the-making and studies which investigate the use (practices) of (specific types of) software. Most studies follow the second approach due to access and resource restrictions. This is however problematic because such studies can only attend to those aspects that came to be inscribed into a software and its data structures, but miss the ones that were omitted in highly contingent design processes. Sanders and Stappers (2008) called this 'the fuzzy front of end of design', a phase in which it is negotiated what problem(s) the software ought to solve and what phenomena data ought to render visible. Once the software design process leads to a product, all ambiguity is written out. Data structures and software become 'black-boxed' (Latour 1987). This paper demonstrates a methodology for attending to software (design) as a continuous process and assemblage of not only code but a diversity of design documents (e.g. legal, technical, marketing, user guidelines). We reflect on different types of knowledges produced by analysing these documents through network-, process- and discourse-based research artefacts.

Infrastructure and Imagination: pursuing alliances in practices and studies of computational capacity building *Eric Snodgrass, Department of Thematic Studies - Technology and Social Change, Linköping University*

With their infrastructural rallying cry of "Ferries not Frontex", the interventionist infrastructures of several groups working to aid movement across the Mediterranean Sea (e.g. Watch the Med, Alarmphone) provide an instructive example of sustained transnational attempts to imagine and work towards new collective horizons. This paper presents a discussion of these examples, with the dual aim of contributing to studies on infrastructure within STS, as well as working to engage with the push from several fields to draw from a greater range of perspectives, knowledges and critiques for addressing questions of power and possibility as they relate to current practices of computing. Imaginaries have long been shown to play an important role in the conceiving and realising of infrastructural endeavours, but often in narrowly conceived or predictable ways. In response, this paper asks: what has it meant to imagine in an infrastructural register? What paradigms of computing help and hinder the work of interventionist efforts such as these? How easy is it to imagine alternative technological constellations when pressed with the urgent work of intervention and capacity building? And what alternative infrastructural imaginaries and practices of infrastructuring might be privileged and learned from? Especially for those hoping to constructively engage with the study and practice of building computationally-informed infrastructures that challenge some of the dominant and oppressive paradigms of the present. References: - Ramon Amaro. "As If". e-flux - Nikhil Anand, Akhil Gupta, Hannah Appel. 2018. The Promise of Infrastructure - Eden Medina. 2011. Cybernetic Revolutionaries: Technology and Politics in Allende's Chile

Patterns of re-cognition *Waltraud Ernst, Johannes Kepler University Linz*

Modern European Science and Technology has been obsessed from the beginning with elaborating categories of differentiation, discrimination and hierarchization, especially regarding sex, gender, sexuality and race. Although already challenged in the twentieth century by feminist, decolonial and queer STS, these categories have entered computing often unconsciously as patterns of re-cognition. So, contrary to the promises of high-tech advocates, the mathematical models constituting algorithms and "artificial intelligence" (AI) do not necessarily provide more objectivity when pervasively installed as automated assistance or even sole method for decision making and discernment in everyday life. Instead, they are accused to reinforce

discrimination concerning e.g. schooling, loans, health insurance and even threaten democracy as "weapons of math destruction" (O'Neil 2012). Automation is analyzed as encoded inequity and amplifying racial hierarchies while appearing neutral (Benjamin 2019). Actually, algorithmic profiling is criticized of discriminating job seekers through privileging (some) men by predicting lower chances for other groups differentiated via demographic data (Allhutter et al. 2020). The paper asks how feminist and decolonial epistemology can contribute to critical computing and change these problematic patterns of re-cognition. The paper explores and discusses participatory methods for confronting and eventually overcoming tendencies in programming algorithms and systems of AI which perpetuate and amplify biases present in big data sets. The goal is to contribute to a conceptualization of becoming an interdisciplinary high-tech anti-discrimination activist collective.

Speaking Nearby: the forgotten past of black computational thought *Romi (Ron) Morrison*

As algorithmic models increasingly assist, judge, and manage human life, a growing amount of scrutiny, criticism, and backlash has ensued, calling into question the inequality of such powerful applications, demanding a renewed focus on bias, ethics, and governmental regulation (O'Neil 2016; Noble 2018; Eubanks 2017). Yet, what remains unchallenged is the hierarchy of power and authority cohered through claims of rationality and universality from which data-based metrics speak, foreclosing the possibility for what feminist theorist and filmmaker Trinh T. Minh-ha calls "speaking nearby." Reflecting on her practice as a filmmaker to deemphasize the objectifying power of the lens to reduce subjects to axiomatic objects, Minh-ha states: "I wish not to speak about, only to speak nearby" (Chen 1992, 87). This paper attempts to speak nearby contemporary discussions in critical computation studies, by returning to non-coercive practices of computation that fall outside of the canon and are vested in the diaspora practices of black people. In particular, I center the Freedom Quilts, a clandestine system of mapping escape routes for enslaved black people, as a vital form of computation that forces us to rethink what computing can be when freed from its dependence on colonial pursuits of managing bodies, spaces, and resources. Viewing the Freedom Quilts in this way works from the assumption that futurity is never a point of arrival but always a looming horizon, not linear, but a collection of various temporalities situated in the forgotten past and not yet conceived future that allow us to move outside of the paralysis of an intractable present. By returning to the forgotten past of black computational thought this paper works to bring forth a different history of computation that emphasizes fugitive socialities, cultural encryption, and indeterminancy. I argue that appeals to ethics- and rights-based discourses misread the harm caused by algorithmic violence, providing ill-fitting avenues for reproach. Moreover, I question gestures toward repairing the tools of analysis, metrics, and quantification to redress the very violences they engender without questioning their underpinning logics, asking: what are the limits to the visions of justice these approaches suggest? This paper is an attempt to work in excess of these limitations. It calls for uncovering a forgotten lineage of computing that brings forth acts of refusal, imagination, and invention enabling us to act in the present moment. This establishes the boundaries from which productive reason and certainty are able to speak, no longer with singular authority, but from a proximal place, not speaking about but nearby, bringing about the end of the world (as we know it) to ensure survival beyond it.

Session Organizers:
Goda Klumbyte, University of Kassel
Claude Draude, University of Kassel, Germany
Juliane Jarke, University of Bremen
Chair:
Loren Britton, University of Kassel

328. States of Planetary Environmental Knowledge II
8:00 to 9:40 pm
virPrague: VR 15
This panel explores the politics of planetary-scale environmental

knowledge production. In convening scholars from across the methodological spectrum, we seek to ask: what, and whose, politics come into play when local knowledge is scaled up or planetary/global knowledge is localized? How is difference maintained or collapsed in the making and governance of global environmental knowledge? What forms of governance and/or infrastructure emerge out of planetary/global knowledge? Possible themes may include: Geographies/spatialities of planetary environmental knowledge How localized environmental knowledge is scaled up, aggregated, and/or made relevant at planetary and global scales How models about the global environment are assembled Questions of the planetary commons and climate governance Experiments, simulations, and models for producing planetary knowledge The limits of knowability, certainty, and quantification

Participants:

Scaling the Planetary: Environmental Knowledge, Resistance, and Governance of Outer Space, 1958-1977 *Lisa Ruth Rand, Science History Institute*

Although popularly understood as a lifeless void, following the launch of Sputnik I outer space rapidly transformed in specialist and mainstream discourse into a sensitive, limited natural resource requiring order and management. The planetary scale of this resource, as well as its inaccessibility and fragility, rendered it an early site of negotiation of global environmental governance beginning in the early 1960s. In the second decade of the Space Age, Earth orbit also became a locus of resistance to the extension of neocolonial technocratic hierarchy beyond the boundaries of the biosphere. This paper historicizes current debates about the sustainable governance of the regions beyond Earth's atmosphere—a porous, tenuous boundary itself—by tracing the international rise of outer space environmentality alongside contemporaneous shifts in scientific politics and postcolonial resource policy. By calling attention to the uneven risks and benefits inherent in the construction of the satellite infrastructure, and in questioning the permeable boundaries between terrestrial and extraterrestrial environments and sovereignty regimes, nations and communities at the periphery of the central Cold War conflict participated in shaping environmental knowledge and governance of outer space—and criticized its terrestrial equivalents. This paper addresses Olson and Messeri's call to expand studies of anthropogenic change to include environments typically categorized as external to the human world (2015), as well as Hecht's scalar revision of the dimensions and temporalities of the Anthropocene (2018). Tracing the environmental history of near-Earth space reveals the extra-global, extra-planetary nature of environmental knowledge and governance in the 20th and 21st centuries.

Developing Nature: The World Bank as an Agent of the Global Environment *Gloria Marthalena Samosir, KTH Royal Institute of Technology*

This paper aims to examine how the World Bank—an organization originally premised on a singular preoccupation with economic enterprise—came to explicitly attend to "the environment" as a basic element of its regular operations. The World Bank, founded in 1944, is commonly regarded as a pillar of the post-World War II progress-oriented global economic order; a financial intergovernmental mega institution, which, through its propensity to provide loans, technical expertise, and administrative assistance for the pursuit of large-scale infrastructure projects, has held formidable sway over the direction of development in countries throughout the world, particularly in the Global South. The World Bank's early influence in international deliberations concerning the state of the planetary environment was, I contend, instrumental to bolstering the link between environmental preservation and economic development within the dominant framework of global governance. This paper focuses on key figures that composed the World Bank's board of directors and management around the formative period of global environmental knowledge (1950s-1980s), and traces their backgrounds, the diverse interests they held, the ideas that bound or repelled them, the negotiations they conducted, and the personal and institutional relations they forged. In so doing, it seeks to unpack the constellation of contingent events and interactions that have brought forth an understanding of the environment that is bound up with the

imperative of development, and which has formed the basis of a potent set of regulatory regimes.

Flows of Global Climate Finance Knowledge to the Local: Epistemic Implications and STS *Kirsty Anantharajah*

Climate finance, flows of public and private finance from developed to climate-affected developing nations, is heralded as a transformative market innovation: by harnessing the private sector and financial markets, it potentially meets huge financing gaps for much needed climate-resilient and low-carbon technology. Whilst STS has engaged with markets as both obliterators and 'prolific producers' of environmental knowledge, there has been little engagement with the effects, epistemic or otherwise, of climate finance.   In the Pacific, the transfer of climate finance is accompanied by flows of knowledge, and 'best-practice' regulation and governance models. Yet despite this 'expertise', the operation of climate finance has been marred by dysfunction including failure to translate finance into climate aligned projects. This paper argues that this dysfunction in part stems from colonial and hegemonic narratives and materialities (often neglected by STS as well as climate finance studies) filtering down, determining what constitutes the 'ideal' regulatory and governance environment for climate finance, rendering invisible what is local. In response to other approaches that situate climate finance research at global level, this paper locates it at the local, drawing from sustained empirical and ethnographic research conducted in Fiji, using Fijian methodologies.   Here, we observed radical epistemic reconceptualizations of climate finance regulation and governance. The successes within these local approaches enliven discussion of both counter-hegemonic appropriation and cognitive justice. Questions raised for STS include how can these examples of climate finance success at the local be translated back up to the global?

Peat and the plantationocene: Postcolonial techno-science and the politics of expertise in Southeast Asia's oil palm economy *Jenny Elaine Goldstein, Cornell University*

The politics of knowledge and expertise are fundamentally intertwined with plantation expansion globally and have shaped how land becomes disciplined for agrarian capitalism. Conceptualizations of knowledge within agrarian capitalism are often bifurcated into categories of scientific/indigenous, local/global, and colonial/post-colonial: categories that highlight the unevenness of knowledge regimes within capitalism but do not fully explain the relationship between knowledge politics and the plantation as a development regime in an age of ongoing climate crisis. I argue that knowledge produced through and for the global "plantationocene" transcends and subverts these categorical dualisms. I draw on work from the political economy of science, postcolonial techno-science, and the materiality of land in political ecology to analyze an ontological conflict over peat soil-based oil palm plantations as a form of "sustainable development" in Southeast Asia. In Indonesia and Malaysia, mono-crop plantations for oil palm now produce over 80% of the world's palm oil; 30 million hectares of this production is on peatlands, carbon-rich wetlands that emit vast amounts of carbon into the atmosphere when drained for plantation agriculture. Yet in order for the Malaysian and Indonesian states to maintain the plantation as a backbone of their national development programs, they have made claims of environmental stewardship and carbon mitigation through intensively managing peatlands' volatile materiality through soil compaction, water table maintenance, and intensive hydrological infrastructure. Such ecological disciplining pushes back against foreign scientists' expertise— and existing assumptions about postcolonial techno-science— that appeals to global climate change as justification to halt plantation expansion.

Scaling up indigenous knowledges? forest monitoring programs and indigenous autonomy in the Amazon basin *Sylvia Rocio Cifuentes, University of California, Santa Barbara*

In recent years, forest monitoring programs have become widespread in Amazon basin countries. Using GPS artifacts, smartphones, drones, and other technologies, international environmental organizations (IEOs) promote them as tools to stop deforestation and so for climate change mitigation. These programs also allow IEOs to partner with indigenous organizations, responding to calls to include them—and their knowledges—in climate governance. I analyze forest/territorial monitoring programs created by the Coordinator of Indigenous Organizations of the Amazon basin (COICA) and its member organizations in Ecuador and Peru. While STS perspectives in climate governance discuss local/global knowledge, few analyze them considering projects on the ground. Conversely, postcolonial STS has yet to fully engage with climate initiatives. My methodology incorporates a political ecology of scale perspective and indigenous methods. This includes open-ended interviews, volunteering and participant observation with COICA and its member organizations at national, sub-national and communal scales. I discuss how monitoring programs are increasingly important for these organizations to plan, zone, and defend their territories. I further argue that an integral ontology of territories—a conception of territories as indivisible entities that encompass multiple relationships between humans and more-than-humans—and indigenous knowledges (re)shape the objects, implementation and purposes of these programs. However, indigenous leaders are concerned about the ownership and control of information, and the implications for surveillance, safety and autonomous decision-making. Conclusions discuss both the emancipatory possibilities and the limits of monitoring technologies, as they simultaneously localize climate science and scale up indigenous knowledges.

Session Organizers:
Jenny Elaine Goldstein, Cornell University
Leah Aronowsky, Columbia University
Chair:
Leah Aronowsky, Columbia University

329. Contextualizing Algorithms in Time and Space
8:00 to 9:40 pm
virPrague: VR 16

The last decade has seen a proliferation of research on algorithms - algorithms, alongside the diverse socio-technical assemblages that surround them (Roberts, 2018; Myers-West, 2018; Seaver 2018) were shown to affect people's identities (Cheney Lippold 2017), choices (Pasquale, 2015; Gillespie, 2014), imagineries (Bucher, 2017; Beer, 2018), and even their freedom and autonomy (Rouvroy 2011). Accordingly, algorithmic power was widely theorized, and its ties to contemporary capitalism were insightfully discussed (Zuboff, 2019; Couldry & Mejias 2019). But while the power of algorithms is unquestionably global, the exact temporal and spatial trajectories through which algorithms operate, and the specific socio-cultural contexts from which they arise, have been largely overlooked. This panel aims to address these gaps, and uncover the complex spatio-temporal contexts through which algorithms operate. We will ask: What is the role of locality, temporality, and culture in the creation and implementation of algorithms? How algorithms become localised to create 'personalized' experiences? What types of data are being used to contextualize people's lives through platforms? And what gets filtered out in the process of datafication, and why? As the talks in this panel will show, delineating algorithms' perpetual movement across time and space can better our understanding of their power, and contextualizing them can shed light on the effects they have on people across the globe.

Participants:

Algorithmic time regimes: From chronological real-time to kairological right-time *Taina Bucher*

Facebook's goal with their "News Feed is to show everyone the right content at the right time so they don't miss the stories that are important to them". In a mediated environment obsessed with real time - of near instantaneous content production and delivery - the question of what constitutes right time has curiously been overlooked. In this paper I argue that the notion of right time presented in the above mission statement is reflective not just of Facebook's algorithmic workings but also of a new temporal regime produced by an increasingly algorithmic media landscape. This paper contributes to a long-lasting debate on various 'media times' (Kaun et al. 2016), suggesting that what has long been characterized as the temporal regime of new media – real-time – has been replaced by the logic of 'right-time' characteristic of algorithmic media. Drawing on a variety of sources such as patent documents, blog posts, and public discourse, this paper

builds on the idea that devices have a performative role in structuring temporality. Relying on conceptualizations of time from social theory, media studies and rhetoric, this paper argues for the existence of an 'Eigenzeit' (Ernst, 2013) of algorithmic media that hinges on the classic Greek notion of 'Kairos' (Smith, 1969), understood as an opportune time, timeliness, or indeed, right time. The paper shows how kairologic right-time does not eliminate real-time but incorporates it as a function of relevance. What is right might include nowness, but the now is never enough to make it right.

Data Orientalism: On the Algorithmic Construction of the Non-Western Other *Dan M. Kotliar, Department of Communication, Stanford University*

Research on algorithms tends to focus on American companies and on the effects their algorithms have on Western users, while such algorithms are in fact developed and used in various geographical locations. That is, the spatial trajectories through which algorithms operate, and the distances and differences between the people who develop such algorithms and the users their algorithms affect remain overlooked. Moreover, while the power of big data algorithms has been recently compared to colonialism (Couldry & Mejias 2019), the move from the colonial gaze (Yegenoglu 1998) to the algorithmic gaze (Graham 2010) has yet to be discussed. This paper aims to fill these gaps by exploring the attempts to algorithmically conceptualize "the Other". Based on the case study of an Israeli user-profiling company and its attempts to sell its services to East Asian corporations, I show that the algorithmic gaze – algorithms' ability to characterize, conceptualize, and affect users – stems from a complex combination between opposing-but-complimentary perspectives: that it is simultaneously a continuation of the colonial gaze and its complete opposite. The ways in which algorithms are being programmed to see the Other, the ways algorithmic categories are named to depict the Other, and the ways people who design such algorithms describe and understand the Other are all different but deeply interrelated factors in how algorithms "see". I accordingly argue that the story of algorithms is an intercultural one, and that the power of algorithms perpetually flows back and forth – between East and West, South and North.

Optimizing for personalization: Ordering people's behavior to create a personal experience *Elinor Carmi, Liverpool University, UK.*

This paper explores the way 'personalization' is sold to us as the optimized way to experience platforms, and how it is developed and operated according to digital advertising logic. The paper examines the way Facebook orders people's experience according to its Ad Auction running in the back-end to sell the 'real-time' and personal experience in the 'front-end'. The paper analyses the recently leaked documents of Six4Three company vs. Facebook's court case in California. Analysing these documents allows us to understand the way the company operates and its rationale, which are usually hidden from most people. In order to examine the way Facebook optimizes different components of its platform to produce personalization the article proposes a new framework of media power that uses sound concepts - processed listening and rhythmedia. The first concept describes the way media companies tune into different sources through the media apparatus, by using several tools, in different temporalities, to produce different kinds of knowledge for various purposes. The second concept - rhythmedia - describes the way media companies use the knowledge in the dynamic database to tempo-spatially order and regulate people and objects, through multi-layered communication channels.The paper argues that using 'personalization' as the preferred interface design and engagement is meant to serve several functions: 1) Create profiles which can be sold as part of the digital advertising market; 2) Try to influence people's tempo-spatial experience to change their behavior towards more value; 3) De-politicize people's experience and understanding of platforms by 'un-crowding' and de-anonymizing them.

Algorithms and their discontents: making the global work locally *Anna Jobin, Université de Lausanne*

Google's websites and services are sought out billions of times every day all over the world and, like other technologies, these algorithmic systems need to be made to work on local levels. Their 'affordances' (Hutchby 2001) are created simultaneously by technological capacities and human interpretation. Existing scholarship on algorithms tends to focus either on so-called end-users or, though less frequently, on engineers and computers scientists on the sites and contexts of "production". However, as sociotechnic systems, algorithms are interpreted, maintained, performed and promoted by many different people in various contexts. This paper therefore presents the often-overlooked work of web search advertising agents, who cooperate -- but also content -- with Google's global algorithmic system to do localized web search advertising on behalf of their clients. Drawing on ethnographic interviews (Seaver 2017) I show how local contexts surface in very succinct ways the limits of Google's global algorithmic system. Advertising agents interpret and work with the technological capacities of the algorithmic system and, in this manner, contribute to creating its affordances (cf. also Bilić 2018). Yet, if they want to make the global algorithmic technology work the way it is supposed to, they need to mobilize important local knowledge of specific linguistic and geographic circumstances. Automation and scale, for instance, are crucial properties of web search advertising, but how much they are leveraged in a local context depends on advertising agents, who have to understand and achieve them in practice.

Session Organizers:
Dan M. Kotliar, Department of Communication, Stanford University
Elinor Carmi, Liverpool University, UK.

Chair:
Dan M. Kotliar, Department of Communication, Stanford University

330. Categories of Hatred: Unearthing algorithmic cultures of hate groups, marginalization, and surveillance of minorities 1
8:00 to 9:40 pm
virPrague: VR 17
Participants:

'A Unique Educational Experience': Logics of Security and Vulnerability in the University of Farmington Case *Levin Kim, The Information School, University of Washington; Anna Lauren Hoffmann, The Information School, University of Washington*

In January 2019, a university located in suburban Michigan was revealed to be a Department of Homeland Security (DHS) sting operation targeting potential abusers of international student visa policies. Specifically, the fake school had touted itself to prospective students as a 'nationally accredited' STEM (science, engineering, technology, and math) institution authorized by the Student and Exchange Visitor Program (SEVP) to admit foreign students, claimed to offer students "a unique educational experience." The operation led to the arrest of around 160 students—mostly Indian—who had registered and paid tuition to the so-called University of Farmington. As internet researcher Tarleton Gillespie has noted, algorithms need not be software—broadly, they represent encoded procedures for transforming inputs into desired outputs. This project explores the algorithmic logics of vulnerability and security that underwrite the Farmington case. The concept of STEM—and 'STEM' institutions—is a category of activity inseparable from national identity and the exertion of state power. As a case study of this relationship, it points us toward the "foreign-born student" as an increasingly salient category of social and political vulnerability, subject to ever-increasing surveillance, scrutiny, and irrational violence. In particular, the Farmington case shows how the rise and continued dominance of STEM in educational, state, and other contexts informs an ideal type of a "foreign-born student." In turn, this normative ideal affords new opportunities for identifying, surveilling, and exerting power over an illegitimate "other"—in this case, the foreign student seeking an employable degree, and a legitimate way to cross into and stay in the US.

The Devil in the Default: Structural racism in research systems *Jasmine McNealy, University of Florida*

Categorization, organization, and labeling form the bases of research methods – the strategies, processes, and techniques used to collect and analyze data. Algorithmic decision systems, research methods themselves, use the same labeling, categorization, and organization techniques to parse data. The products of these algorithms have been shown to disparately, negatively impact individuals from traditionally marginalized and vulnerable groups. Most scholarship has focused on the data used to train machine learning systems, often collected in racist, sexist, and other systems that lead to over- or under-representation of certain attributes used to categorize individuals. This focal point is undoubtedly important, as demonstrated in the continued unfair results from algorithms used in search, finance and loan products, health care, and bail and sentencing, among other contexts. This research takes a different focus, and examines the structural racism in the processes of organization and categorization of data itself. Algorithmic systems are systems of representation or "different ways of organizing, clustering, arranging and classifying concepts, and of establishing complex relations between them," as defined by Hall (1997). But these systems, particularly those in the West, center whiteness and maleness, thereby creating a default that all other data are measured against. In investigating the construction of the default, this research also evaluates those data categories classified as the deviations, and considers methods of rethinking labeling and categorization to produce different artifacts of representation.

The Pronouns Project: Developing Software for Sharing and Tracking Personal Pronoun Data *Tristan Gohring, Indiana University - Bloomington; Mary L. Gray, Microsoft Research/Indiana University; Es Braziel, Microsoft*

In this paper we consider the problem of developing software tools to enable people to disclose their personal pronouns as part of their email bios in the workplace. Personal pronouns (e.g. he, she, or they) are data from the perspective of technical systems, but they are also deeply social and imbricated in issues of gender classification, transgender visibility, and gender-based harassment and discrimination. Therefore, it is necessary to consider personal, cultural, and political implications when deciding whether/how to create new ways to collect, store, and use data about people's pronouns. Software designers, in conversation with stakeholders, must decide how to address simultaneous, urgent desires for visibility and safety. We use ethnographic methods to study the product development process at a large software company, including participant observation with the product team and qualitative interviews with transgender and cisgender users of the company's email software. We find many users and developers advocate for fast product development because they believe broadcasting their pronouns will normalize correct pronoun use and reduce the frequency of being misgendered. Others hesitate to develop such products, worrying about the potential to cause discrimination and violence against trans people. These narratives reveal multiple imaginaries about the roles of email communication and pronoun disclosure. We discuss how these imaginaries relate to the development process within larger sociotechnical systems of digital communication and gender classification, and consider the promises and risks of developing software based in these imaginaries for a project with high stakes for trans people's lives.

Policing the Body: The Effects of Trump Administration Policies on Transgender People in the United States *Isabel Krakoff, York University*

This paper seeks to explore how the Trump administration's immigration policies in the United States, primarily designed to identify undocumented immigrants, have translated to a disciplining of transgender bodies, regardless of their immigration or citizenship status. These policies are examined from the perspectives of homonationalism and queer necropolitics, wherein white, middle class, patriotic members of the LGBTQ community are accepted as "good" citizens while others are excluded and effectively erased. The Trump administration has increasingly used such policies to exclude transgender individuals from (homo)nationalist narratives, mirroring tactics that characterized the post-9/11 period. I argue that transgender people are forced into a paradoxical relationship with the state in which they must be illegible as transgender on the one hand, but are forced to disclose their transgender identity due to immigration policies that rely on a rigid deployment of gender norms. In conclusion, without changing the mechanisms through which transgender people are legally able to legitimize their gender identity, members of this community will continue to be marked as enemy "others" who do not fit into United States definitions of citizenship and nationalist identity.

Session Organizers:
David Nemer, University of Virginia
Melissa Adler, Western University
Chair:
David Nemer, University of Virginia

331. Maintaining and (Re)Making Sociotechnical Worlds I
8:00 to 9:40 pm
virPrague: VR 18
Participants:

Everyday life and the army headquarters culture: Two regimes of maintenance/knowledge practices in an asylum *Michal Synek, Univerzita Karlova, CTS; Dana Hradcová, Faculty of Humanities, Charles University; Radek Carboch, Faculty of Humanities, Charles University*

The residential Home F for people identified as "mentally impaired" is a state within a state, with own citizens, government, economy and with its own rules, managerial procedures and values. Like Goffman's asylums (1961), it houses big number of inmates, providing for most of their basic needs. Out of the many "things" which need to be taken care of to allow the Home F to function, we focus on the "building", understood not as a physical structure, but as an emerging socio-material network. While at the first glance the "building" seems to be a single phenomenon shared by all, it changes with the practices by which it is kept and used. We describe two sets of such maintenance activities – the practices of everyday life (Certeau 1984), through which the so-called "service users" appropriate their immediate living space, and the army headquarters culture, administering the whole institution. These two ways of using the Home F build on different strategies and experiences acquired through different means. We ask how the maintenance/knowledge practices of the maintenance men equipped with the universal keys, CCTVs and other high-tech devices relate to the experiences of the inhabitants eking out a living in a world of unalterable rules and barriers. Through exploring how practices typical of the two maintenance styles (Denise, Pontille 2017) influence, exploit and enable (or not) each other, we hope to shed some fresh empirical light on the tensions between everyday life and conditions of possibility and between democratic and totalitarian institutions.

Explorations and recompositions: the lively alchemy of urban maintenance *Jérôme Denis, CSI - MINES ParisTech; David Pontille, CNRS*

Maintenance offers rich empirical sites to pursue the reflections of speculative realism (Puig de la Bellacasa, 2017) and new materialism (Cool & Frost, 2010) by exploring the ways matter's vitality (Barad, 2003; Bennet, 2010) is dealt with in most mundane situations. To illustrate that, furthering several works in maintenance and repair studies (Jackson, 2014, Denis & Pontille 2015, Domínguez Rubio 2016) we will draw on the case of graffiti removal in Paris which we investigated by analyzing its regulatory, contractual and technical documents, interviewing its main protagonists, and shadowing workers during their removal interventions. While graffiti removal may appear as a straightforward operation consisting in maintaining public order by erasing unwanted inscriptions from building facades, we will show that this activity goes through the uncertain exploration of an "ecology of materials" (Ingold, 2012) during which maintainers compose with a variety of substances whose properties, agency and interaction are experienced in the course of the intervention. Following "flows of matter" (Deleuze and Guattari, 1987), "removers" tackle the alchemical and ontological challenge of separating the graffiti from its inscription surface. Far from externally disciplining the material

fabric of the city, though, maintainers fully take part in this ecology. Their bodies are directly involved, as are their tools, the use of which they constantly adjust, and the numerous products they spray or apply. Maintenance does not stop the life of things, nor does it bring them back to a "previous" state. Much more modestly, performing transformations to ensure their permanency, maintenance participates to their alchemical becoming.

Hacking vs. Maintenance: Epistemic Practice, Technology and the Emergence of the New *Sebastian Dahm, Bielefeld University*

The analytical lens of maintenance has shifted academic attention towards "broken world thinking" (Jackson 2014), thereby deemphasizing innovation and the creation of novelty in favor of the (presumably) mundane efforts of preservation. The emergence of 'repair studies' gives testament to this shift as they emphasize practices of repairing, caring and sustaining as a primary locus of creativity. In my paper, I want further this line of thinking. Maintenance implies multiple trajectories of relating with technology. However, the epistemic qualities of such engagements are often overlooked. Drawing upon my ethnographic fieldwork in various hacking communities, I am going to present my conception of hacking as an epistemic practice. I am going to show, how hackers engage with technological artifacts as decidedly epistemic objects, favoring practices of playful experimentation over those that engage artifacts primarily in terms of their "usefulness". As such practices dissolve the boundaries between use and non-use, they uncover heterogeneous ways of relating to technology that move beyond utilitarian conceptions. Hacking therefore becomes a useful lens for further theorizing the aspects of technological engagements that the concept of maintenance opens up.

Session Organizer:
Michal Synek, Univerzita Karlova, CTS
Chair:
Michal Synek, Univerzita Karlova, CTS

332. Ethea Alternativa: Undoing Capital's Techno-Economic, Exploitative Thrall over the Earth

8:00 to 9:40 pm
virPrague: VR 19

In their book Capitalist Sorcery, Isabelle Stengers and Philippe Pignarre persuade us that a thorough-going disruption of the thrall of Capitalism and its practitioners' praxis of and faith in endless growth requires an equally magical response, a powerful counter-spell, rooted in practice. This surprisingly is not unlike what is often heard from Indigenous peoples in their land protection actions, but is not restricted to Indigenous collectives alone, and is extending to all manner of earth-concerned, eco-social collectives. This panel, simply put, seeks papers and interventions that propose, document, or enact, such counter-magics and counter-spells in-practice with any such concerned collectives. We seek to contour the displacement of capitalist valuations, practices, violences and milieux in a range of areas. Stengers remarks of "the inseparability of ethos, the way of behaving peculiar to a being, and oikos, the habitat of that being and the way in which that habitat satisfies or opposes the demands associated with the ethos, or affords opportunities for an original ethos to risk itself". We will entertain proposals that offer decolonial and/or emancipatory possibilities on this very point, of an ethos (singular), or ethea (plural) affording opportunities to risk themselves and the habitats in which they reside. We have in mind proposals that could attend, for eg, to Climate action and transition movements, global and regional human movements affecting marginalized folk and their relation to or potential to redirect eco-social and economic and policy forces, Indigenous peoples' resurgence actions, interruptive, grounded art praxes, disruptive genomic, micro- and alter-biologies that speak-with rather than over marginalized, Indigenous or grassroots experience, unexpected anti-capitalist and grounded alliance techniques and mediations with concerned human, or more than human, collectives – or otherwise surprising, risky moves starting from and committed to a livable earth, with political and cosmopolitical collectives that dispose and/or promise to gradually replace the anti-ecologies and anti-socialities of our planet-wide times.

Participants:

Treaty Praxes with Crows, Coyotes, Humans, Genomes: Inter-Peoples / Inter-Species Relations and Making Other

Practices Matter *Brian Noble, Dalhousie University*

What would happen if we sought peaceful co-existence of – and interchange between – what problematically are spoken of as "incommensurable" modes of worldly knowing between humans, animals, and other non-humans? What if we then took alternative modes of relations with the living world – of Indigenous peoples and Biological Scientists – and brought them into Political Inter-Peoples Dialogue – Treaty? I will lay out the unfolding of such a decolonial, territorially-responsive, Inter-Peoples project bringing together Knowledge holders from three First Nations – Mi'kmaw, Piikani Blackfoot and Secwepemc – with a collective of Biologists, Metagenomicists, Political Anthropologists, and GIS Technologists. Our locus of shared interest are human symbiotic, societal, political, holobiontic, and intimate relations with Corvids and Canids – notably crows, coyotes, ravens wolves. Crows and Coyotes, like humans, are considered ecological generalists – they can exploit a remarkable range of food sources, often living in close ecological proximity (intimates) — and all further enmeshed by the microbiomic inter-lacings of their ecological interchanges. They display considerable resilience in the face of ecological change – climatic and watershed alterations, ecosystem disturbance, biochemical contamination. Many Indigenous peoples in North America sustain ceremonial-political relations with Crows and Coyotes – often described as Treaty relationship with these animals, paralleling Treaty relationships with Human political collectives. I discuss early finding on how this animates a consummate "treaty ecology" of mutual protection, promising to displace the vicious cycles of capital with connected cycles of reciprocity, sharing, responsiveness – as a potent stay against climate and ecological crises induced by the seemingly endless extractivist ethos of the unbridled Capitalist impulse.

Learning to live well together: Redefining sustainable community development by centering locally-based understandings of wellbeing *Marisol Campos-Navarrete, Trent University; Asaf Zohar, Trent University*

This article critically examines the case for an intercultural approach to 'sustainable community development' for project design and policy making as a pathway to a more inclusive and holistic practice of community wellbeing. We explore Indigenous-based concepts of wellbeing, including Sumak Kawsay, Comunalidad, Lekil Kuxlejal, and Neltiliztli, and discuss their current use and influence in policies and projects oriented to sustainable development. Based on these findings, we propose alternative approaches to the mainstream western discourse of 'meaningful engagement' in the pursuit of community wellbeing. These approaches are presented as promising points of departure for collaboration between different Nations (Indigenous and non-Indigenous) that strive to engage in sustainably harmonic cohabitation. We suggest that instead of trying to 'bridge' the space between the Indigenous and Western thought worlds (an approach that to date has often marginalized and alienated Indigenous ways of knowing), collaborative efforts should start by centering locally rooted understandings of intercultural wellbeing. We argue that the first stage of reframing our understanding of sustainable development requires moving away from Western binary ideas of Indigenous vs. Non-Indigenous identity as a precondition for the meaningful inclusion and normalization of Indigenous ways of knowing. This approach can potentially generate innovative directions for a locally-rooted, intercultural approach to those that currently dominate the mainstream discourse.

Regenerating Decolonial Computing Futures *S. Rose O'Leary, University of California, Irvine; Benedict John Turner, University of California, Irvine*

The ethical orientation of the Earth as relative has been the position of many Indigenous peoples across the globe for centuries, not the least, many (if not all) of the Indigenous People's of Turtle Island (North America). This ethical orientation also tells us we must develop and nurture respectful, reciprocal relationships with all of creation (Bang, 2014). It is from this root, as well as the long history of Turtle Island philosophies and scholarship that we operationalize Indigenous and land-based pedagogies to imagine and push towards a future

that dismantles capitalist colonialist frameworks in all venues but particularly in digital spaces and in digital technology mediated relationships. We also draw upon work from non-Indigenous scholars such as Donna Haraway, Anna Tsing, Maria Puig de la Bellacasa, Nick Couldry & Ulises A. Mejias to point out the intersections from many and varied fields that have come to similar conclusions: we need to change our ethical frameworks and make practical choices for a decolonial, anti-capitalist and regenerative future. We offer two methods to this end: desettling and the regenerative narrative.

Macroscopy of a massive intervention in the south of Mexico *Agustín Mercado, UAM Cuajimalpa*

Massive environmental intervention projects have been put in the foreground as potential solutions to contemporary problems. Such projects have been recently taken more seriously, not only because of newly available technical innovations, but also because of the possibility of generating, processing and analizing scientific data. The sheer scale of the proposed interventions brings about a series of issues in terms of justification; for they mobilize interests from a series of positions that must be taken into account, not only in order to make a decision to intervene, but to determine the possible consequences for different societies. I propose to consider a society not merely as a collection of independent human agents that may be at odds or in agreement, but as a complex plane in which each heterogeneous social node, not necessarily completely open to all dialogues, is defined by a particular commonality. How are the so-called scientific propositions to be deployed in this plane? How is a diplomatic action (in Isabelle Stengers' sense) possible, facing this overwhelming complexity of asymmetrical relationships? In short, how can Science be deployed as a necessary ingredient of the diplomacy of massive endeavors? These questions are instrumental to form an ethical and political mode of behavior facing environmental challenges. My particular interest is to deploy any conclusions derived from this analysis to conceptually interrogate the massive projects that are being currently pursued by the Mexican government to intervene the southern part of the country, and which have vocal critics in different social nodes.

Session Organizer:
Brian Noble, Dalhousie University

Chair:
Brian Noble, Dalhousie University

333. Marxist STS 3 (Case)
8:00 to 9:40 pm
virPrague: VR 20

In this subsession of the panel "Marxist STS", the papers do case studies on science and technology from a Marxist perspective.

Participants:

Precarious Academics As "Cognitariat": On The Political Economy Of Academic Labour *Vlad Schüler-Costa, University of Manchester*

Based on twelve months of fieldwork in an Artificial Intelligence and Robotics laboratory within a British University, as well as personal experience and political engagement, in this paper I discuss the precarious positions that early career academics occupy in the university labour market. Drawing upon Bifo Berardi's (2005) notion of "cognitariat", Marx's (1887) concept of "reserve army of labour", Weber's analyses of "vocation" (1917, 1919, 1920), as well as David Graeber's (2018) study of "bullshit jobs", I discuss how the neoliberalisation of the university has brought forward the existence of a class of precariously-employed, poorly-paid, highly-skilled, and over-qualified workers who are, however, "personally invested" in their academic careers. This paper intends to contribute to the discussion of the political economy of the university system within STS and Critical University Studies, adding ethnographic depth to current discussions in those fields. I conclude by arguing that although academic precarity has its own particularities, it is fruitful to compare it to other kinds of labour precarity seen elsewhere.

Indicators and Metrics in the Social Sciences and Humanities:

How Quantification Shapes SSH Research *Florian Bayer, University of Vienna, Department of Science and Technology Studies*

Recent transformations in scientific systems have been criticized in terms of academic, cognitive and epistemic capitalism (Slaughter & Leslie, 1997; De Angelis & Harvie, 2009; Hoffman, 2011; Hackett, 2014; Fochler, 2016), related to neoliberalism (Lave et al., 2010; Nik-Khah, 2017) and to audit and evaluation practices (Power, 1997; Strathern, 2000; Dahler-Larsen, 2012). Neoliberal forms of governance (Shore, 2008) have been accompanied by an growing output orientation of scientific funding systems (Hicks, 2012; Gläser & Laudel, 2016) and the emergence of new technologies and practices of quantification leading to growing concerns about the presence and use of quantitative indicators to evaluate scientific performance and output (Burrows, 2012; Fochler & de Rijcke, 2017; Hicks et al., 2015; Wilsdon et al., 2015). I try to connect these different strands of analysis by turning to Marx (1867, 1885, 1894) in the tradition of Critical Theorists like Karl Korsch (1923), Georg Lukács (1923), Max Horkheimer and Theodor W. Adorno (1944) and more recently Moishe Postone (1993), Michael Heinrich (1999) and Gerhard Stapelfeldt (2014). Based on a qualitative case study of three SSH fields (History, Political Science, Area Studies) within an Austrian university I aim at reflecting quantification and the presence of indicators and metrics as a social relationship that is operating at different scales and throughout all sorts of practices: recruitment and hiring, reading and publishing scholarly work, valuing and (e)valuating scientific results as well as choices and decisions within the research process.

Pedagogies of abstraction: learning, coding and outsourcing in Cluj *Oana Mateescu, University of Bergen, Norway*

Dreaming of becoming the East European Silicon Valley, Cluj-Napoca (Romania) hosts a growing IT industry that thrives as an outsourcing market in constant need of cheap labor. Information technology, the engine of local creative economies, has become key to personal as well as urban development. This paper explores two IT sites in Cluj for the paradoxes they reveal about contemporary concatenations between knowledge, technology and economy: an informal school offering IT introduction classes geared towards professional reconversion and a start-up working in the area of front-end programming automation. In the first case, participants drawn in by the compelling mirage of well-paid IT jobs strive to become initiated in the basics of algorithmic thinking and computer programming. In the second, developers and tech visionaries aim to provide a "mental exoskeleton" for creative workers in the shape of an AI powered, collaborative platform for the design of user interfaces. I study these contexts in an ethnomethodological vein, but I analyze them through the lens of Marx's Fragment on Machines (arguing implicitly for the need to consider both ethnomethodological and Marxist roots of STS). Invested with famous optimism in the postoperaismo tradition as well as in recent proposals of postcapitalism and accelerationism, the Fragment has provoked much debate about the shape of value, but less so about the shape and distribution of knowledge. Approaching these two cases as pedagogical sites for the recalibration of abstraction allows me dwell on the uneven cognitive formatting of humans and machines in an outsourcing economy.

Do Money Have Politics? Technocracy And The Future Of Money *Adam Marcisz, Adam Mickiewicz University in Poznań*

In his famous essay Langdon Winner distinguished two ways for technological artifacts to have political properties: when their design "becomes a way of settling' an issue in particular community" and when they are inherently political, therefore related to "particular kinds of political relationships" (Winner, 1980, 123). The aim of this presentation is to find an answer whether or not we can apply this framework of analysis to money. This question is motivated by an ongoing debate about the nature of (modern) money and how it affects economy. Variety of studies have been discussing the role of the state in money creation as maintaining hegemony (Wullweber, 2019) or mutual relation of co-creation within the society (Beggs, 2016).

The most noticeable debaters are proponents of Modern Monetary Theory (e.g. Wray, 2015) who claim that we are able to make policies transforming society for better with the proper understanding of how the money works in contemporary capitalism. Based on a recent literature I want to discuss the political agency of money from the perspective of social ontology. I want to raise a question whether or not can object dictate policies and what could it mean for democratic decision making, but also if it changes our conceptualization of the rationality of technocracy. In my attempt to answer those questions I will be looking on the intersection of technocratic decisions and ontological recognition of the multilayered space of modern money.

Session Organizer:

. Maxigas, University of Amsterdam & Lancaster University

Chair:

Vlad Schüler-Costa, University of Manchester

334. Governing Natures by Data

8:00 to 9:40 pm

virPrague: VR 21

Participants:

Governing What Exists In a (Modelled) Forest: Darwinian Demons and the Algorithmic Life of Numbers *Felipe Mammoli, UNICAMP*

Attempts to better represent the world's vegetation through computer simulations have led models to include adaptation and evolution dynamics in their innerworkings. These dynamics, though, reintroduces classical ecological issues to these models, especially on how evolution of fitness relates to diversity. In vegetation modelling, this re-emerging figure is the Darwinian Demon, a speculative organism that, by becoming so well adapted to its environment, is able to outcompete any other organism and ends up colonizing the world. If this conceptual organism cannot exist in the natural world, due to biogeochemical limits, the digital environment is a much more favorable place. A central activity of modeling, thus, is to produce spaces opened enough to unexpected adaptation and able to suppress perfect solutions. This is regulated by tradeoff mechanisms, algorithms based on the notion that resources are limited, that establishes negative relations of proportion between disparate, and usually incompatible, measurement datasets of plants characteristic. Based on my ethnographic work about the development of a vegetation model for the Amazon Forest, what I proposed is to explore the making of these tradeoff mechanisms and how they produce presuppositions of ecological relations based on possibilities of connecting different dataset. First, I present a recollection of the Darwinian Demon concept, its relation to problems of counting and its material effects. Then, I explore how modelling practices connect different datasets through algorithm building and, to conclude, I present how these computational-ecological transformations affects the very numbers they rely on to describe what can exist inside the model.

Architectonic Studies of Radio Signals: Reorganizing Archives of Data/Natures In Their Own Terms *Selena Savic*

As we slowly accustom to thinking about planetary issues through the notion of 'assemblage' (Tsing, Latour, Hayles) rather than that of the 'system', we get better at acknowledging complex entanglements between living and inert, between social and technical. This paper presents a critical reflection on the use of machine learning techniques to support reasoning about natural phenomena. It engages data/natures by focusing on data radio signals: a phenomenon that pertains to both culture (telecommunications) and nature (atmospheric lightning discharges). Signal Identification Guide Wiki, a rich archive of signals observed and documented by a community of radio enthusiasts is the starting point of this study. In order to articulate alternative ways to study and engage with radio signals, I develop 'digital observatories': new methods for organizing and navigating abundant digital information based on critical use of self-organising map algorithm. I present a study of distribution patterns and clustering of signal qualities, when signals are reduced to spectrograms (visual representation of signal frequency composition). This 'digital observatory' aims to facilitate speculation on the connection between signal representation and technical communication protocols, by enabling the observer to identify criteria of similarity, and intervene in this organised space by adding new (real or imaginary) data. The project contributes to the fields of STS and experimental design research with an interest in the digital, unsettling the dichotomies previously described and providing avenues for recognition of the entangled nature of matter and information, of human and other-than-human, beyond simple ontological distinctions.

Experimenting with the Social Life of Homes: Sensor Governmentality and Mundane Frictions *Martin Tironi; Matías Valderrama, Pontificia Universidad Católica de Chile*

Smart devices are invading everyday spaces like our bedrooms and living rooms, making it possible to conduct new participatory and real-world experimentations. An example is the National Housing Monitoring Network (Red Nacional de Monitoreo, ReNaM). By installing networked sensors in homes in different cities in Chile, ReNaM seeks to generate a large public database on the environmental behaviour of homes in real life conditions and throughout their life cycle, in order to make data-driven decisions and regulations on sustainable building. Real-world experiments with digital sensors like ReNaM are moving towards a 'sensor governmentality' or a mode of regulation of household behaviour at a distance, recomposing the relationship that the State establishes with its population. Instead of relying on what people declare about their home environments, this governmentality provides 'massive' and 'realistic' knowledge based on continuous and recursive feedback from sensors installed in domestic spaces. But this expected 'sensor governmentality' is multivalent in practice and the planned engagement with users clashed with the actual entanglement among home inhabitants, sensors and their domestic contexts. Analysing the scripts and frictions that emerge between diverse ways of materializing this sensor network from above and below, opens up the notion of real-world conditions and participation to analytical scrutiny. The success of these experiments in the real-world would be to control the environment and the inhabitants' participation to ensure 'natural' behaviour. But at the same time, the multiple and lively realities react to these experiments, shaping what is defined as the 'real' conditions of the world.

On Arctic microbes and augmented promise: The digital turn in bioprospecting *Ana Delgado, Ana Delgado/ TIK-centre, University of Oslo*

How do certain forms of life, and bioactivity, come to count as promising? This paper, addresses this question by reporting on biodiscovery activities carried out in three major bioprospecting platforms along the Norwegian coastal line. In the last two decades or so, the Norwegian state has claimed bioprospecting of Arctic and subarctic waters to be a strategic activity. In particular, the Arctic marine microbial biodiversity has newly appeared as a source of wealth for the future of the nation, in a bioeconomy to follow after the golden years of the oil economy. Accordingly, substantial amounts of public funding have been invested in the development of a national infrastructure for bioprospecting, in order to 'unlock' the unknown secrets of such rare and extreme environments and forms of life.Drawing on STS scholarship, this paper explore how infrastructural work enacts promise. I follow scientist work to 'unlock' the potentials attributed to Arctic and subarctic microbes. This is infrastructural work that increasingly relies on gene libraries, online data-basis and software for data-mining. I show how as bioprospecting goes digital an increasing sense of access and acceleration is produced, that also creates a sense of augmented promise. Microbial forms of life that before could not be studied, appear now as sites of potential, as data-mining is advocated to enable more predictive and effective analysis of the forms of bioactivity that they produce. However, in the move from physical to digital collections, the Norwegian marine microbial biodiversity may also get escalated from local nature to global resource.

Session Organizer:

Ingmar Lippert, IT University of Copenhagen

Chair:
Tahani Nadim, Museum fuer Naturkunde

335. Grotesque Epistemologies: Processes

8:00 to 9:40 pm
virPrague: VR 22

This series of presentations centers around theoretical and historical engagements with such processes as variably described as degradation, decomposition, rot, putrefaction, and fermentation. Common themes weaving between the presentations include engagements with elemental, fungal, and bacterial enactments through human cultivation of and resistance to the aforementioned processes

Participants:

Exemplary Decay: Saprophytes and the Chemical Cycles of Life *Charles A. Kollmer, Princeton University*

Since antiquity, humans have seen fermentation and putrefaction as expressions of matter's essences. By the eighteenth century at latest, it was apparent to naturalists and philosophers that fermentation and putrefaction mediated transfers of matter between the animal, vegetal, and mineral realms. During the second half of the nineteenth century, novel instruments and techniques made it possible, in the words of Louis Pasteur, to pursue "through rigorous experimentation […] the physiological role […] of the infinitely small in the general economy of nature," assigning agency in these processes of decay and renewal to microorganisms. This paper reconstructs microbiological studies of saprophytes, organisms that consume dead organic matter, conducted by botanists, plant physiologists, and microbiologists in Western Europe during the late nineteenth and early twentieth centuries. Where historical treatments of microbiology in this era largely focus on efforts to isolate and combat pathogens, attention to saprophytes and their domestication as laboratory organisms reveals an underappreciated facet of microbiological research: its contribution to a new cosmology, which situated microbes as key agents in the chemical cycles that sustain life on Earth. The paper argues that such studies manifest a persistent tension between, on the one hand, an imperative to isolate and control microbial life and, on the other, a recognition that interspecies relationships possessed complexity irreducible to the artifice of laboratory cultures. In so doing, the paper contributes to ongoing conversations in STS on the modes of attention humans accord other organisms and the ways that attentiveness constitutes different possible worlds.

Decomposing Computing *Benedict John Turner, University of California, Irvine*

Starting with Haraway's call to consider the implications of thinking through the "humus-ities" rather than the humanities (Franklin, 2017) , this paper will consider what happens what we utilize soil, with all its putrefaction, inter and intraspecies relationships, temporal complexity, and multi-scalarity, as the main frame to analyze computational capitalism. Our current conceptualizations of what digital computers are and what they can be are heavily couched in the logics of colonial capitalism. Given the global ecological crisis and rising inequality, it is imperative we can come to think through them differently to help us trace radical and realizable alternatives. Humans have long lived beside soil and have developed a multiplicity of practices and concepts to do so – which have, as Puig de la Bellacasa (2019) notes, been both damaging and exploitative, but also generative of reciprocal care. From European conceptions of ownership, to microbial biology, to pedology, to edaphology, industrial and small-scale composting, to many different Indigenous conceptions of land as relative, we have a smorgasbord of engagements with soil, which clearly include but go far beyond the human. This project is an attempt to theoretically contaminate computational scholarship with soil to see what, if any, generative moments this brings. This paper will closely consider composting practices and the ways in which this particular infrastructure of putrefaction helps us come to reframe conversations about data collection and analysis due to its combined engagements with communal practices of care, but also how rot is a framework that is comfortable with the boundary reshaping that constantly occurs with data analysis.

Tropicalizing the Portable Radio: Air, Fungal Deterioration, and Media Technologies in World War II *Boyd Ruamcharoen, Massachusetts Institute of Technology (MIT)*

During World War II, the U.S. military unexpectedly found that its equipment and materials rapidly deteriorated in the tropics, thanks mainly to fungal activities. To counteract "tropical deterioration," it enlisted U.S. scientists and engineers to devise techniques of "tropicalization." This paper zooms in on the tropicalization of portable radio equipment. Drawing from archival research, it tracks the changing materialization of air in electrical engineering at its intersection with biology. Though designed to miniaturize the radio to enhance its portability, the compact arrangement of electronic components inside created confined atmospheres conducive to fungal growth. Repeating a trope in the Euro-American discourse of tropicality, U.S. scientists and engineers regarded robust fungal growth as evidence of accelerated temporality of nature in the tropics, which threatened to degrade materials and equipment at a faster pace than wartime mobilization of production could churn them out. As a result, ambient air came to be seen as part of the dangerous tropical environment from which radio technologies must be protected. If air had hitherto moved between the technological apparatus and its ambient environment and thereby entangled them, the paper argues that hermetic sealing—which became the gold standard of tropicalization—evinces the cultural imperative to separate neatly technology and the environment, so that engineers only needed to concern themselves with air inside airtight containers. This case study suggests that attention to biological degradation can contribute to the scholarship on media technologies and the environment.

Session Organizer:
Lee Nelson, RPI

Chair:
Lee Nelson, RPI

Discussant:
Joanna Radin, Yale University

336. Science, Technology and Sport

8:00 to 9:40 pm
virPrague: VR 23

While sport studies scholars have established sport as a key site of cultural meanings and social relations, fewer scholars have engaged these issues within technology and science studies frameworks. This intersection of critical sport, science, and technology studies is key to understanding current and future collisions and impacts, particularly in this moment of increasing technological proliferation. This panel invites papers broadly concerned with social and cultural inquiry into the intersection of science, technology and sport. Potential topics include, but are not limited to: sport analytics, data science, algorithmic culture and the quantified self; issues related to medicine, risk and sport; performance enhancement and bioethics; sporting labs and scientific practices; elite, professional and commercial sporting practices in relation to digital objectivity, player performance, injury prevention, player valuation, etc.; public understandings, consumption and perceptions of sport technology (e.g. decision-aids); professional gaming and eSports;(new) media and other representations of science, technology and sport; science, technology and sport in relation to (dis)ability, gender, race, class, and sexuality; infrastructure, sustainability and sport; and (digital) sporting futures.

Participants:

The Hidden Curriculum of Athletic Data *Daniel Greene, University of Maryland*

US intercollegiate athletics is a multibillion dollar industry wherein elite performance is compensated with scholarships, rather than wages. Inevitably, the work required of student-athletes, particularly in high-revenue sports such as football and basketball, conflicts with their studies. Student-athletes, along with their coaches, trainers, and nutritionists, must manage these conflicts while still maintaining an elite level of performance. So they turn to data: Relentlessly tracking health, diet, distance, trajectory and more, with everything from basic spreadsheets comparing GPS-based movement data to $30,000 BodPods analyzing body fat percentages. The management and circulation of these data teaches student-athletes how to think about

themselves, their bodies, and their behavior; informal lessons distinct from the formal ones in lectures or film review. Education scholars call these implicit lessons a 'hidden curriculum.' This paper uncovers the hidden curriculum of athletic data through 40 interviews with student-athletes and staff across two "Power 5" universities. The collection, aggregation, and analysis of student-athlete's personal data acculturates these young people into the demands of intercollegiate athletics, teaching them to adjust their identities, bodies, and behaviors for maximum productivity. But this is a contested process. Competing interpretations arise, mediated by organizational hierarchies and different kinds of scientific expertise. Such interpretive conflicts create opportunities for student-athletes. Continuous engagement with their data prompts informal learning that would be recognized as data science were it happening in a classroom or startup. And years of experience with the hidden curriculum reveals the true shape of the organization, giving student-athletes new tools to contest their position in it.

(Trans)gendering Science: Examining World Athletics' 2019 Transgender Athlete Eligibility Policy *Anna Posbergh, University of Maryland, College Park*

In recent years, international sporting organizations have sought to demarcate an athlete's gender classification through scientific definitions, particularly through setting blood testosterone limits as a metric. For example, World Athletics' (formerly known as the International Association of Athletics Federations) 2019 female eligibility policy defined an admissible female athlete (in specific events) as having no more than five nanomoles per liter (nmol/L) of testosterone. While problematically reducing the complexity of sex, World Athletics soon released new eligibility regulations for transgender athletes, which extended the five nmol/L testosterone limit to male-to-female (MTF) athletes, thereby maintaining 'consistency' across acceptable (trans)female athletes. However, several aspects of this transgender regulation—especially the focus on testosterone as a source of unfair sporting advantage in transgender athletes—lack scientific support to justify its authority and existence. Given the disparity between (trans)gender science and assumptions related to transgender athleticism, in this paper, I discursively analyze World Athletics' new transgender eligibility regulation to investigate rationalities and technologies underpinning the policy. Supplemented with interviews from experts involved in its creation and implementation, I illustrate the entanglement of science and biological essentialisms as manifest in (sport) policy, and how the translation of ostensibly 'objective' science into policy produces potentially harmful gendered and raced consequences. Considering the relationship between sport and society, this paper contributes on a broader societal scale toward understanding the role of science in shaping and privileging dominant ways of knowing, particularly with regards to gender, sex, race, and ultimately, human rights.

Gamification as a Socio-technical Synchronization Effort *Matthias Bottel, TU Berlin*

The raise of ubiquitous computing via smartphones and other information and communication technologies lead to new sociotechnical phenomena like Gamification. Gamification refers to the use of game design elements in non-game contexts to motivate certain behaviors. Recreational sports and fitness where among the first domains with a widespread use of gamification applications. These apps use the sensors and computing power of smartphones to digitally model the activity and enhance it by adding game elements. While current research implies that gamification indeed strengthens the motivation, there is little research regarding the social implications for the gamified context and its participants. For my PhD project I conducted qualitative interviews with users and artifact analysis of gamification applications in different contexts (sport, crowdsourcing, education) to answer the question how people engage with, use and practically integrate gamified technologies into their everyday life. In my presentation I will focus on my case study about "Zombies Run!" a gamified running application. I will show that gamification is reliant on a socio-technical synchronization process between the primary context and a secondary game layer and highlight the mechanisms that

individual and collective actors take to enable or constrain this synchronization of layers. This process leads to changed cultural meanings and social relations in this kind of augmented versions of sport, that might get more common with the further development of ubiquitous technology.

"She's Got Game": The WNBA and NBA 2K20 *Mary McDonald*

The introduction of Women's National Basketball Association (WNBA) players into the National Basketball Association (NBA) 2K20 gameplay was met with diverse public and media reactions. These ranged from indifference to narratives lauding the game as providing an important step forward in the march toward gender justice in sport. Another set of responses contained disrespectful discussions that characterized WNBA players as unworthy of inclusion in 2K20 with cruel racist and sexist suggestions that WNBA players instead "go back to the kitchen." The latter narratives stand in stark contrast to the generally low-key response that greeted the inclusion of WNBA players into NBA Live 18 (Good, 2019). However, the quality of the avatars in that version received public criticism as WNBA players often had generic faces and unusual body types, and did not engage in a full season of play (Mazique, 2019). In contrast the NBA 2K20 marketers praise the "realistic" feel of this later version. This paper draws upon feminist cultural studies, sport studies, and gaming studies literatures to explore and contextualize the affordances provided by NBA 2K20. In particularly the paper documents similarities and differences in how the NBA and WNBA players are introduced, animated, and stylized within NBA2K20. Read alongside the historical creation of sport as a site for the celebration of the extremes of the male body and the continuing presence of trolls denigrating the WNBA, this analyses reveals a much more complicated racialized and gendered state of play.

The Proof is in the Patents: De/Constructing the Algorithmic Sublime in Sport *Jennifer Sterling, University of Iowa*

Technologically-driven data collection and its analysis is increasingly a primary mode of operation for both participants and consumers in sport, exercise, and recreation. Thus, it is also a primary feature of the sporting industry looking to capitalize on an era of big data and increased computing power through novel implementation of innovative technologies. The development and patent protection of sport-related hardware and software inventions has been accompanied by concomitant patents on the processes – such as algorithms – that make meaning from these products. Drawing from the history of science and technology and critical data and algorithm studies, this paper asks "What's in a patent?" (Bowker, 1992) and "What kinds of work are done to make algorithms computable?" (Ames, 2018). This is accomplished through an analysis of patents from the United States Patent and Trademark Office (USPTO) that engage with both sport and algorithms in their claims, figures, and descriptions. The paper will first discuss the wide-ranging purposes these patents purport to serve in the sporting industry before concluding with a closer examination of process- rather than apparatus-focused patents in an effort to better understand how an algorithmic sublime is constructed, or deconstructed, through patent narratives and infrastructures, and the impacts thereof.

Session Organizers:
Mary McDonald
Gian Marco Campagnolo, University of Edinburgh
Chair:
Jennifer Sterling, University of Iowa

337. The Cultures of New and Old Technomedia II
8:00 to 9:40 pm
virPrague: VR 24
Participants:

The Technology We Choose to Create: Human Rights Advocacy and Anthropology in Internet Governance *Corinne Cath-Speth, Oxford Internet Institute*

Blanketed in obscure four-letter acronyms, the Internet Engineering Task Force's (IETF) work is crucial to the Internet's

functioning. It's participants, many of them computer scientists, engineers, and (self-described) hackers, are at the forefront of developing core Internet protocols like Transport Layer Secure (TLS), which encrypts your data on the wire. Yet, in spite of its outsized technical influence, most Internet users have never even heard of this organization. Eschewing the spotlight, the IETF prides itself on its technical prowess and has expressed discomfort with any discussion deemed too "political." Hidden in dense IETF acronyms are familiar questions to STS and digital anthropology scholars. One of the most important is whose values and knowledge are translated to technology and what role culture plays in this process. This paper provides some preliminary answers to these questions by presenting an account of the idiosyncratic world of IETF Internet standard setting. In particular, I focus on recent human rights advocacy efforts by a small group of civil society representatives, academics, and engineers. I am guided by the following question: How do IETF participants view Internet standards and how do their views shape human rights advocacy efforts aimed at code? By deploying ethnographic methods, including over 60 semi-structured interviews and 3 years of participant observation, I provide a detailed picture of how the engineering culture of the IETF shapes the inclusion of normative values in technology design. I also position my findings within STS literature on the inclusion of values in code.

Put yourself in their shoes: moral and affective frameworks in the gig-economy *Simiran Lalvani; Noopur Raval*

With the rise of app-based gig-economy platforms such as Uber, Ola, Swiggy, Zomato there has been substantial scholarship on the socio-economic impact of gig-work as paid labour. Most scholarship from the Global North has inherited and also furthered certain normative socio-economic, political and cultural worlds within which gig-work appears as empowering or exploitative. Even discussions around the 'Future of Work' have focused on economistic aspects of this work like employee classification, wage-theft, social security. Less has been said about how this technologically mediated form of work interacts with the underlying socio-cultural, moral relationships that shape work. Even though the introduction and proliferation of innovative, technologically mediated work of the gig-economy rests on an implicit social contract in the form of norms around responsibility, sociality, honesty. Contrary to the claims of novelty and disruption of gig-economy companies as mere technological intermediaries, and not employers, excavating the enactment and limits of such a social contract can help us understand how the "boss-less" gig-economy holds together at all. This paper is based on authors' qualitative, ethnographic fieldwork studies of app-based food-delivery workers, ridehailing drivers, platformized beauticians. As well as middle-managers in platform ecosystems, consumers, traffic police, security guards, cooks at cloud kitchens and current and former tech-workers at gig- work companies. We engage with the moral and affective economies of gig-work in urban India and render visible the relationships supporting participation at work and investigate the processes of inter-subjectification that lubricate the material and economic exchanges in gig-work.

In-formatization of architecture and construction: which visions come to matter? *Kathrin Braun, University of Stuttgart; Cordula Kropp, University of Stuttgart*

The construction industry is in a situation of multiple crises - a productivity crisis, a skills crisis, a profitability crisis, a resource supply crisis, an environmental crisis, a crisis in confidence and other – with the introduction of computer-based technological innovation regularly being promoted as the cure for its ills. Which crisis, however, is the most pressing, which solution preferable for what reason and to what ends is heavily contested. This paper presents results from an ongoing study, as part of a larger interdisciplinary research cluster, on the reconfiguration of architecture and construction in relation to computerization and roboterization, particularly with regard to actors' expectations and concerns, major narratives and visions, and techno-economic trends and regimes. We identify three major visions, partly merging, partly competing: one clustering around the values of productivity, competitiveness and control, another around user-centred customization, collaboration and open-source, modularized do-it-yourself systems, and one around improved environmental sustainability in construction. The chances of these visions, however, to actually materialize depend on global techno-economic trends and regimes in an industry ever more dominated by capital-intensive investors and processes. Under these conditions, we expect computer-based systems in construction to lead towards increased monitoring and control of processes, workers and resources, standardized plug-in planning tools, domination of high-investment (platform-) companies, globally optimized production chains, reduction of manpower and replacement of construction workers by robot operators. This may go along with reduced resource consumption but run counter to more collaborative, accessible, community-led, user- and worker-friendly planning and construction processes.

Contesting Modern Nature: Sonic Artefacts and Acoustic Hyperreality in the Practices of Acoustic Ecology *Anna Kvíčalová, Centre for Theoretical Study, Charles University/Czech Academy of Sciences*

The field of acoustic ecology has done much in pointing up the epistemic potential of sound in learning about the environment and in mediating and archiving its changes. While acknowledging the field's role in bringing attention to the still-marginal aspect of sound in the study of the environment, this paper will take a critical stance toward those practices, technologies and theoretical approaches in acoustic ecology today that have inherited a modern notion of nature being in opposition to human culture and industrialization. In response, this presentation will look at what I describe as "acoustic hyperreality", namely, those hybrid sonic artefacts that are being created in wildlife recordings, in which the boundary between terrain and laboratory is often blurred. The central challenge addressed here concerns how the medium of sound can be further developed both as 1) a tool for studying the state of a particular environment, as ecosystem ecology is attempting to do, and 2) as a rhetorical means for grasping complicated relationships in the Anthropocene, where the modern binary distinctions between the natural and the cultural, subjects and objects, and sciences and the humanities, are being effectively reconsidered. I will exemplify these points by looking at the practices of the Central European Network of Sonic Ecologies and the way it is being established at the crossroads of the sciences and artistic research into sound.

Session Organizer:
Corinne Cath-Speth, Oxford Internet Institute
Chair:
Corinne Cath-Speth, Oxford Internet Institute

FRIDAY, AUGUST, 21

338. Science and Technology Studies on Traditional, Complementary and Alternative Medicine (TCAM). Session two, focus on politics, legal aspects and knowledge production.
8:00 to 10:00 am
virPrague: VR 01

Biomedicine has been very successful in lengthening lives, curing diseases and enhancing the quality of life in numerous ways in contemporary societies. Yet, countless people across the globe choose to complement biomedicine with different non-evidence-based therapies, healing practices and technologies. Some people even use these as alternatives to biomedicine to go "back to nature", to resist medicalization and technologization by refusing vaccines and medications, or to simply express different lifestyles, worldviews and perceptions about good health. For STS scholars and sociologists of science, these practices and expressions do not only boil down to resistance or ignorance of medicine, but offer fruitful sites to analyse public understanding of science and biomedicine, to interpret relations between expert and lay knowledge(s), and to understand hidden and suppressed knowledges of subordinate groups such as women, migrants, Asian, South American and African traditional healers and practitioners in the postcolonial sense. The integration of traditional and complementary medicine into biomedical spheres, as therapies and objects of scientific study, also increasingly blurs

boundaries between these domains and has led to new concerns around knowledge colonisation. This panel seeks contributions that explore traditional, complementary and alternative medicines (TCAM) and practices from STS perspectives. In particular we invite papers that target the role of STS theories and methods in studying TCAM. For example, how can we understand aspects of TCAM use, knowledge production, professionalization, standardization, ethics, globalization, and integration of TCAM – if focusing on material practices, hybridity, actor networks, or boundary work?

Participants:

European Politics of Complementary and Alternative Medicine *Jenny-Ann Brodin Danell, Umeå university, Department of Sociology*

This paper focus on how complementary and alternative medicine (CAM) is understood – or translated – politically. Although CAM treatments are widely used and has gained increased acceptance they are often considered unscientific, risky, and put in contrast to established medicine. The aim of this paper is to analyze how actors (such as politicians, stakeholders, researchers) translate CAM in two interrelated political contexts; the European commission and the European parliament. What is considered as political problems? What goals and/or solutions are proposed? What is mobilized to support different kind of arguments? Empirically is this paper based on written documents from the EU commission and parliament, from the early 1990s to 2018. The documents have been analyzed with an actor network approach. The results suggest three main translations; CAM as products, CAM as professional activities, and CAM as health prevention. The political problems focus on limitations in consumers choices, hindering of free circulation of services and goods at the European market, unequal conditions among the member states, and public health issues like ageing populations, growing chronic illness and patient security. In general, CAM is defined in contrast to conventional medicine, but boundaries between CAM, food, and medical products are also targeted. Core values of the EU, especially regarding free markets and individual choices, as well as widespread use of CAM are mobilized to legitimize political interventions to improve availability of CAM. However, there are notable controversies regarding scientific and medical legitimacy of CAM, and a number of critical translations.

Through Thick And Thin: Semantic Abstraction And Contextualisation In The World Health Organization's Discourse On 'Traditional Medicine' *Fabian Winiger, University of Zurich*

A prestigious UN technical agency and bulwark of scientific rationalism, WHO seems like an unlikely candidate to take an interest in alternative healing practices. Drawing on a review of WHO literature on 'traditional medicine' published since the early 1970s, this paper outlines three distinctive rationales behind this interest: hopes that it would provide the 'manpower' needed for primary healthcare reform in developing countries; the political need of newly decolonised nations for cultural and economic independence, and the idea that indigenous herbal remedies provided a repository of 'active ingredients' that would reduce the cost of medical care. Each rationale, it is argued, produced a distinctive articulation of the inexplicable, 'spiritual' aspects of 'traditional medicine'. Building on Hanrieder's reading of Habermasian processes of institutional translation, this paper shows show how within WHO, the 'spiritual dimension' of 'traditional medicine' has undergone an - as-of-yet unsettled - process of conceptual de- and re-contextualisation.

Gendered boundary work within the Finnish scepticism movement *Pia Vuolanto, University of Tampere Research Centre for Knowledge, Science, Technology and Innovation Studies; Marjo Kolehmainen, Tampere University*

The scepticism movement is a world-wide social movement which aims at strengthening the status of science and scientific knowledge production. The movement positions itself as a 'watchdog' of scientific knowledge, and defines boundaries between science and non-science, i.e. does boundary work to protect science. One of the targets of the scepticism movement is complementary and alternative medicine (CAM). Within

scepticism movement, different forms of CAM are often taken as exemplars of violation against scientific thinking. In our study, we are interested in the gendered boundary work within the Finnish scepticism movement. In Finland, scepticism is a male dominated scene where natural sciences are well represented. By analysing articles from the Finnish Association of Sceptics' magazine Skeptikko from years 1988-2017, we trace out the gendered boundary work by asking: How is gendered boundary-work mobilised in the Finnish scepticism movement to draw a boundary between science and non-science? What forms of gendered boundary-work can be traced in the publications by the Finnish scepticism movement? We have tracked down six forms of gendered boundary work: 1) Science as masculine, 2) Questioning women, 3) CAM as feminine, 4) Debating the status of gender studies, 5) Gender within the scepticism movement, and 6) Supporting equality. In the presentation, we argue that in this kind of boundary work, gendered hierarchies are utilised and produced. Masculinist and colonialist narratives are being used to make boundaries between knowledge and beliefs, science and humbug, progressive and recreational tendencies as well as between individuality and the masses.

Session Organizer:

Jenny-Ann Brodin Danell, Umeå university, Department of Sociology

Chair:

Caragh Brosnan, University of Newcastle, Australia

339. Maintaining and (Re)Making Sociotechnical Worlds II

8:00 to 10:00 am
virPrague: VR 02

Participants:

Makeshift Engineering: Developing Design Rules-of-Thumb while Maintaining and Repairing Locally Manufactured Small Wind Turbines *Kostas Latoufis, National Technical University of Athens; Aristotelis (Aristotle) Tympas, National and Kapodistrian U. of Athens*

In the isolated Scottish peninsula of Scoraig, Hugh Piggott and his neighbors have been building 'windmills' over the last 40 years by reusing materials sourced at the local scrapyard. Picking up a technological thread from American farmers, who built 'windchargers' during the years of the Great Depression by reusing automotive parts of the Model T, the crofters of Scoraig have mastered, over time, the craft of small wind turbine making. The paper embraces the long-standing farm tradition of tinkering, while at the same time situating and sketching a precarious technical culture, which the authors call 'Makeshift Engineering', as a crafts-based 'process' that allows for thinking-while-making or designing-through-use, which yet transcends the intuitive design practice of craft into a 'low-tech high-science' engineering universe, where design rules-of-thumb are developed through trial-and-error fixes during maintenance or during the repair of machines in the face of 'crises', which in turn craft intimate relationships entangling humans, machines and other non-human worlds. Based on interviews and other primary sources, ethnographic and historiographical approaches are combined using the 'Biographies of Artifacts and Practices' framework, while by employing a 'Participatory Action Research' process, the authors immerse empirically in technological networks of locally manufactured small wind turbines, attempting to experience the fluidity of locally (or proximally) built windmills and study their bricolage co-production from precarious wind patterns and repair practices, self-built tools and home-brewed experiments, recycled and up-cycled materials, and users'/builders' basic electricity needs, unique design/repair styles and temperaments, which result in a plethora of machines with queer aesthetics.

Middle Class Creativity, Post-repair Subjectivity and Motorcycles of Late Capitalism *Gabriel Jderu, University of Bucharest*

The subjectivity of post-repair digitized motorcycles is heavily intertwined with ideas about hygiene, cleanness and dirt. The expansion of motorcycling retail in the last two decades led to the emergence of many showrooms in Bucharest where motorcycles

sit in the spotlights, appearing shinny and clean. In contrast with this, the maintenance, repair and customization sites are spaces that ostensibly lack precisely that kind of hygiene. Dirt and grease, therefore, are material-semiotic clues about social and moral hierarchies inside motorcyclists' world. 'Blue-collar creativity' and autonomy are often expressed through material intimacy with dirt, as is often the case with customization of cars and, in this case, motorcycles. Against that background, I describe an unexpected class inversion among the post-repair subjectivities, whereby middle-class, white collar males seek dirt and blue collar labor as a hobby. They actively seek to embed themselves in garage spaces and befriend blue collar workers. In order to tackle this issues, I use as an entry point a comparison between a showroom of major American motorcycle producer where repair activities unfold under the clinical gaze of managers and an independent garage where motorcycles are customized and clients are allowed and tacitly encouraged to participate. These changing cultural politics of dirt in repair activities are located at the intersection of motorcyclists' gaze, post-consumption practices, and the search of meaning in a world made increasingly opaque by digitization and black-boxing of technology for most bikers.

The Art of Film Maintenance: Patchworks of Care at Tate London *Dirk van de Leemput, Faculty of Arts and Social Sciences, Maastricht University*

Recent research on care and maintenance in STS has focused on maintenance practices as stabilising objects or systems. In (art) objects that incorporate media technologies, the maintenance of an object can involve the maintenance of a complex system. This leads to a complex patchwork of diversified care practices. This paper investigates the care practices around Tacita Dean's Disappearance at Sea, a 16mm film artwork in Tate's (London) Collection. This artwork depends on the availability of 16mm film technology. This technology was claimed to be disappearing several times in the past two decades, but re-stabilised in recent years. Using participatory observation, interviews and document analysis, I study how diverse actors in the artworks network – projector technicians, the museum's conservators and gallery technicians, film lab technicians, the artist and her team and the artwork itself– care for 16mm film technology, and how this contributes to a (relative) re-stabilisation of 16mm film. It shows that these actors care for different aspects of 16mm film technology, ranging from individual installations, through printing film and maintaining projectors, to supporting the whole system of film technology. From these positions and practices, emerge different versions of what sustaining 16mm film technology is, as well as related senses of control, authority and hope. Based on these findings I argue that in the case of Disappearance at Sea and 16mm film, care is distributed across a diverse network of actors. Care and maintenance in this case is not a centrally organized unidirectional activity, but a patchwork of partly overlapping, partly contrasting practices.

Session Organizer:
Gabriel Jderu, University of Bucharest
Chair:
Gabriel Jderu, University of Bucharest

340. Digital Phenotyping II: Unpacking Intelligent Machines For Deep Medicine And A New Public Health
8:00 to 10:00 am
virPrague: VR 12

Digital phenotyping has become a popular practice in the world of data-driven health research. It has developed into a tool to syphon structured health data from online populations. As a practice, it is hailed to refine the classification and understanding of psychiatric, infectious and chronic conditions. A new phenomics is developed to match the genomics of previous years and close the gap between the genotype and phenotype. In the widest sense, digital phenotyping has become identified with a medical knowledge production entirely based on the analysis of digital borne data, providing new ways of knowing disease with more granular insights from digital data. Digital phenotyping schizophrenia, dementia, the flu or Parkinson's disease is supposed to overcome vague and unstructured clinical observations and to offer new, highly standardised pathways towards a complete symptomatology. Conceptually, the digital phenotype

has been shaped with reference to Dawkins' elaborations on the 'extended phenotype' while its practices are strongly aligned with the 'deep medicine' movement, which seeks to build and to exploit vast datasets of different kinds to achieve novel insight into drivers of disease. Underlying this new conceptual tool are a series of imaginaries that we like to unpack in this panel. We invite contributions that engage the impact of digital phenotyping in mental health research, that reconstruct historical genealogies of such infrastructures and which engage the phantasies of total insight, vast understanding and deep comprehension build into this budding tool at the bleeding edge of digital medical research.

Participants:

Personalised anti-retroviral treatment for HIV as example of artificial intelligence in medicine *Renate Baumgartner, Eberhard Karls Universität Tübingen*

Current choice of antiretroviral HIV treatment is based on a multi-step assessment of physicians and virologists. Usually the viral genotype sequence is used to assess which drugs may be effective in keeping virus load low, the golden standard being an undetectable viral load. Lab results can tell which active pharmaceutical ingredient the virus may be resistant to and thus should not be used and which ones may have a sufficient potency against the virus and thus are recommended for treatment. This recommendation by virologists is the basis for physicians to decide together with the patient on the optimal treatment. Different tools based on artificial intelligence are available for virologists to assess which active pharmaceutical ingredient may be suitable. Some of the tools are rules-based ("HIV-GRADE"), others rely on machine learning ("Geno2Pheno" or "HIV-TRePS"). Geno2Pheno comprises a family of tools based on machine learning that either learn from lab data or digital data from databanks like EuResist. The recommendations provide results with explanations which amino acids the assessment was based on, serving also the explainability of the tool. While HIV-GRADE as well as Geno2Pheno provide their recommendations based on input of the patient's viral nucleotide sequence, HIV-TRePS claims that recommendations are possible solely based on virus load and previous treatment. This talk will explore the modes of digital phenotyping of HIV treatment optimisation tools (TOS) like Geno2Pheno and others. Secondly it will provide thoughts how these TOS may be a fascinating example to conduct research on artificial intelligence in medicine.

From risk factors to big data: sensing the social, managing value and measuring risk in public health *Rachel Rowe, University of New South Wales, Sydney*

Amidst the climate of crisis surrounding the rise in opioid-related overdose in the USA, early in 2019 Deloitte and Google launched 'Opioid360'. Pushing beyond digital epidemiology's focus on predicting viral outbreaks, here came a platform offering to predict addiction risk. Opioid360 combines Google Analytics data with over thirty public datasets, comprising over 5,000 elements, processing web-browser search, financial, transport, crime and other social data to make predictions. This paper attends to the significance of such developments by tracing the genealogy of modes of risk prediction in public health: from traditional risk factor epidemiology to algorithms applied to big data. At the heart of its analysis is a concern with how different approaches to risk measurement refract fundamental understandings about contemporary threats to social reproduction, and how these open or foreclose responses. Through exploring how the new mode of risk is presented at health technology and informatics conferences in the United States and Australia, this paper takes concern with the ways in which the concept of 'social determinants of health' is being reshaped. This traverses digital phenotyping, individual risk scoring and the movement of data science expertise across finance, insurance and public health. We should see public health's evolving approaches to risk as something productive, not only for elevating Silicon Valley companies' brand images but also for formulating new terrains of social data to anticipate and hedge risks across populations.

Drawing the Body: Skill, Embodiment, and the Senses in Anatomy Training *Rachel Vaden Allison, Faculty of Arts and Social Sciences, Maastricht University,*

Anatomy training, together with its elemental practice dissection, has historically been considered a cornerstone of Western medicine and medical education—indeed, often deemed a rite of passage within the latter. Anatomy continues to hold a prominent position with European medical education programmes, often serving as a foundational course within preclinical training, providing novice physicians with their first impression of, and orientation in, the human body. In this paper, I take a step back from contemporary debates surrounding the ethical or practical use (and acquisition) of cadavers, along with any evaluation of the efficacy of high-tech or digital approaches to dissection, and instead explore the use of another prolific, yet often overlooked, pedagogical practice: drawing. Here, I discuss the different forms anatomical drawing takes—including as the 'simplification' or 'schematisation' of anatomical structures; for the visualisation of 'virtual space'; to illustrate difficult to manoeuvre areas of the cadaver's body, such as the pelvic region; and as a means to convey movement and temporality—along with its link to muscular dexterity and memory. In so doing, I provide room to consider the multisensory and embodied nature of skill, learning, and knowledge translation, which drawing affords, showing enskillment outside of (or, at least, alongside) the use of human bodies within anatomical education, and pushing back against cognitive models of medical training and the move toward 'digitalisation' in anatomy courses. This paper draws on ethnographic fieldwork conducted during the 2017/2018 academic year at Semmelweis University's Department of Anatomy, Histology, and Embryology, in Budapest, Hungary.

Session Organizers:

Ger Wackers, UiT The Arctic University of Norway
Lukas Engelmann, University of Edinburgh

Chair:

Ger Wackers, UiT The Arctic University of Norway

341. Defining the Patient In Biomedicine- Part I (Redefining and Redefining)

8:00 to 10:00 am
virPrague: VR 13

Examining historical as well as contemporary debates over patients in light of buisiness, scientific and cultural placement, the ongoing acts of defining and social construciton of the role/category of patients is seen to be ongoing and effecting of both patient and expert experience.

Participants:

Curb your enthusiasm: The patient in the context of surgical simulation *Cecilie Våpenstad; Jenny M Bergschöld*
This presentation explores the figuration of the patient in the context of ongoing controversies surrounding simulation training in laparoscopy, and highlights how laparoscopic simulators obscure how patient rights and perspectives remain undebated rather than solve them. The analysis draws on a multi-sited ethnographical study performed during the last five years. These sites included surgical environments in operating rooms, at skills labs, at courses, at national and international surgical conferences, and at companies that develop and offer surgical simulators. In the field of laparoscopy, simulators and virtual reality simulators, are often framed as unproblematic solutions to a wide variety of problems. For instance, ethical issues related to the use of patients for training, issues related to surgical training of psychomotor skills and increased pressure on resource efficiency in the operating room. Problems that supposedly can be solved by moving surgical training out of the operating room and into skills labs with simulators. This presentation illustrates how surgical simulators do not simply remove such issues but instead translates them and sometimes causes new concerns. For instance, by turning the patient into both a passive advocate for the protection of their own ethical rights and being reduced into a docile object that can be turned on and off at the wish of the operator as the simulator is turned on and off. Therefore, we argue that simulators are far from the technological fixes that they so often are framed as, but rather, devices that obscure how patient rights and perspectives are left undebated.

The social shaping of a diagnosis in Next Generation Sequencing *Janneke M.L. Kuiper, KU Leuven - CeSO;*

Pascal Borry, KU Leuven; Danya Vears, KU Leuven; ine van hoyweghen, University Leuven
Although Next Generation Sequencing (NGS) has increased our ability to test and diagnose, the type of data that is generated by NGS techniques and their interpretation leaves room for a considerable amount of uncertainty. NGS not only generates a vast amount of data, the results are often not very clear-cut. In many instances, analysis does not reveal a straightforward diagnostic cause for the symptoms, requiring a more complex interpretation and negotiation process. The type of delineation work this lack of clarity necessitates is not uncommon in medicine: diagnostic definitions and criteria change over time, which allows new diagnoses to arise and others to be lumped together, split or dissolved. In NGS, the boundaries of what counts as 'evidence' for variant interpretation, what is relevant to report to patients, and what constitutes a diagnosis is continuously reshaped in everyday practice. In this early implementation phase of NGS, in which standardization efforts are not yet solidified, the boundary struggles are particularly visible in clinical practice and encounters. To explore the complexities in the social shaping of diagnosis in NGS settings, we critically review the literature on the sociology of health and illness, sociology of diagnosis, and science and technology studies on the meaning and social construction of diagnosis. We then assess the current state of NGS practice through this lens. We discuss what it entails for a patient to receive a diagnosis using NGS, how this differs from diagnoses identified through more 'traditional' diagnostic technologies, and what role uncertainty plays in this.

Six Patients in Search of a Disease: Medically Unexplained Symptoms and Autonomic Imbalance in Taiwan *Jia-shin Chen, Institute of Science, Technology and Society, National Yang-Ming University*
Patients with medically unexplained symptoms (MUS) are by definition a challenge to clinicians. They are either ignored or sent to psychiatric care because objective examinations show nothing wrong. Recently, there has been a term used in Taiwan to accommodate these troubling symptoms: autonomic imbalance (自律神經失調, zilushenjing shitiao). It refers to various disorders caused by a dysfunctional autonomic nervous system. The presentation is based on a qualitative study that aimed to examine the ways in which this term is perceived and used in clinical and social settings. It found that autonomic imbalance is accepted amongst patients with MUS and practitioners of Western medicine and Chinese medicine who treat them, albeit for vastly different reasons. For physicians, autonomic imbalance is a translation for those not-yet-well-classified functional symptoms. It is not a legitimate diagnosis but a euphemism for stress-related illnesses. Treatment targets at the stress, and heart rate variability (HRV) is measured to validate the presence of imbalance. For patients with MUS, the term indicates a bona fide disease that is not 'all in their heads'. Autonomic imbalance is treatable but prone to recurrence. The conception about the illness relies more on subjective feelings than on objective examinations such as HRV. Medications play a vital part in illness treatment, but changes in lifestyle and the self are considered equally important. Thus, autonomic imbalance acts as a rhetorical replacement for MUS that facilitates cooperation without consensus between patients and physicians.

Session Organizer:

Gareth A. F. Edel

Chair:

Jia-shin Chen, Institute of Science, Technology and Society, National Yang-Ming University

342. Articulating and Relating to Different Forms of the Good in Bad Situations I

8:00 to 10:00 am
virPrague: VR 14

Unsafe healthcare, climate disasters, migration threats, scientific misconduct – all tend to steer our focus towards fear and critical analyses of things that are overwhelmingly and singularly bad. With our present day challenges requiring urgent action, how to not get carried away by the

urgency to act? How not to overlook everyday, situated efforts of forms of the good already going on and ways in which we can articulate the good in its different guises? What would happen when we analyse 'wicked problems' by picking out the forms of goodness and badness that are inscribed in such calls for alarm? And even more intriguing: what good might these challenges also bring? In this panel we explore how forms of the good are constantly shaped and articulated by the people and things we study, and also by ourselves as researchers. What imaginations and repertoires for acting and doing research can such articulations open up? How does it transform understandings of how we might act, and in what terms could this be labelled as 'good'? And how difficult is it to act or not to act with forms of the good? How can empirical ethics be a way to tell a different story than the stories of overwhelming alarm for problems that clearly exceed individual agency? We welcome contributions that focus on good care, good (environmental) living, good education or good science, and also explicitly welcome contributions from other empirical domains and 'overwhelming' problems.

Participants:

Affirming The Possibility Of Excess: Might HIV Be More Than Just 'Bad'? *Bryan Lim, Goldsmiths, University of London*

This paper seeks to contest the excessive power given to an overly fixed image of HIV as 'bad' to represent reality by asking: might HIV be more than just 'bad'? Narratives of HIV as a scourge, crisis, and disaster have been instrumental in mobilising resources in the 'global battle' to eliminate HIV, but these (hi)stories also point to the presence of a particular kind of microbiopolitics of HIV. Bequeathed to us by the emergence of 'immunological thought' in the 19th century, the immuno-microbiopolitics of HIV narrowly conceives of interspecies relations as aggression/defence. Yet, given recent technological advances in the form of antiretroviral therapy which has rendered HIV infection into a chronic disease that attacks life, but does not necessarily kill it, can we approach HIV in terms of interspecies familiarity, rather than alterity? If we respond to the question of organismic identity not as a given, but as something to be explored, how else might HIV be brought-into-being? Subsequently, if HIV is always multiple, how then do these novel assemblages of human-technology-virus imbricate with the more familiar – HIV-as-enemy? Drawing on HIV prevention research and my auto-ethnographic study of men who have sex with men in London, this paper is an attempt to think with their life experiences, such that other possible stories of 'living with' HIV might be told. By Illustrating how immunological thinking is but just one aspect of the microbiopolitics of HIV, this paper is an initial foray into the symbiopolitics of enacting a world in which the negativity of HIV is not overdetermined so that we might 'live with' HIV differently.

(Un)making of infelicitous objects: Enacting "mental impairment" in institutional dining *Michal Synek, Univerzita Karlova, CTS*

At residential Home Z, care workers, clients and various technologies enact multiple "mental impairment", reiterating it through repertoires of care. Its various versions – "mental impairment" as a medical condition, an object of care, an opportunity for inclusion, wickedness of the man-child or an object of critical attitude – could be neither coordinated into a coherent whole, nor distributed into clearly delineated areas of application (Mol 2002). "Mental impairment" enacted at the Home Z is less than one and more than many, as none of its versions acquires coherence of a useful whole and every practice of constructing it further multiplies incompatibilities. Because it does not allow for the felicity conditions (Austin 1962; Latour 2013) of its individual version to be met, it is, contrary to most objects multiple described so far in STS, an infelicitous object, creating ethical and practical difficulties as well as frequent failures of cooperation. Inspired by empirical ethics (Pols 2015) and diplomatic ethnography (Latour 2013; Synek 2018), this paper analyses situations where documenting intra-normativities of various care practices and their effects calls for critical intervention. Should the harmful versions of "mental impairment" be described as productive institutional arrangements with their own socio-materialities and values? Should ghosts be invoked and time unfolded (M'charek, Oorschot 2020) so that the past utilities' grip upon the present

can be made manifest? And what impact such moves have on cooperation between the researcher and his/her partners and on the lives of those whose subjectivities are shaped through connection with infelicitous objects?

From Mattering to Mattering More: Performative Relations between Multiple 'Goods' and 'Bads' in Ageing *Carla Greubel, Utrecht University*

Statements about the 'grand challenge of ageing populations' can be understood as articulating another of several 'bad futures' our societies face today. Various researchers have traced a 'crisis account of ageing' in innovation and policy discourses that is closely entangled with the socio-technical solutions proposed. This paper explores the performative powers at play: What are the assumptions underlying the 'goods' and 'bads' inscribed in ageing and innovation discourses? And more importantly, how do they configure – or are reconfigured by – the 'goods' and 'bads' enacted in local contexts of health and ageing innovation projects? That is, how do stakeholders resolve tensions between assumptions underlying calls for alarm at the socio-political level and the particularities they face in their specific care innovation contexts? To address these questions, I analyse goods and bads in EU and national (UK and Spain) ageing policy documents. I then investigate their (non-)performative relations to goods and bads enacted during co-creation workshops and stakeholder interviews at seven implementation sites in a European large-scale pilot on (digital) innovations for ageing-in-place. The research contributes to an ongoing (2019-2023) ethnographic study into phenomena that structure dynamic and dynamic-resistant connections between enactments of 'good ageing' over different sites and times. Inspired by Mol's multiple ontologies and Barad's agential realism I explore: Assuming a world of multiple ontologies, how do not only some enactments of good ageing come to matter while excluding others, but how do some come to matter more than others? What happens when conflicting goods and bads in ageing meet?

Session Organizer:
Sonja Jerak-Zuiderent, Amsterdam University Medical Centers

Chair:
Sonja Jerak-Zuiderent, Amsterdam University Medical Centers

343. Situating antimicrobial resistance (AMR) 1: locations, spaces and borders

8:00 to 10:00 am
virPrague: VR 17

'Antimicrobial resistance' (AMR) is increasingly figured as an international priority through activities by the World Health Organisation and European Union among others. A prominent slogan 'bacteria do not respect borders' also draws attention to the apparently global nature of the issue. In response, this panel calls for papers that situate the policies and practices of AMR – exploring how the issue and responses are framed in different institutions and locations; in different national contexts though stewardship or infection control policies and regulations; and in border regions and spaces like airports. Papers might address emerging practices for screening, surveillance, quarantine and antibiotic use in different contexts and cultures, or experiences of groups including ethnic minorities, immigrants and those with different infections. In ethical terms it is suggested that AMR is often understood as a site of tension between the individual needing treatment in the short term and a collective interest in preserving antibiotic efficacy in the longer term, but this does not hold for all situations. In clinical medicine as in other social practices people do not have equal abilities to claim and receive treatment. Others become the focus of additional surveillance and control through the notion of potential risk. When and how are people's vulnerabilities acknowledged or ignored in relation to antibiotic use or stewardships, and which groups are more affected by interventions? We invite scholars to discuss how AMR is shaping actions in specific locations, and how multiple framings co-exist or relate below the appeal to international standards or solutions. Catherine Marijke Will, University of Sussex; Alena Kamenshchikova, Maastricht University; Cristina Moreno Lozano, University of Edinburgh; Iona Walker, University of Edinburgh

Participants:

Can stories of microbe's actor networks reassemble antibiotic prescription practices? *Ida Lillehagen, University of Oslo*

Antimicrobial resistance (AMR) is said to be one of the biggest health threats facing mankind. AMR development is driven by use of antibiotics, so reducing wrongful or unnecessary use of such medications has been addressed as a key measure to slow it down. Antibiotic stewardship refers to evidence based interventions and methods to reduce and improve prescription of antibiotics. In discourses of sustainability calling upon evidence informed action, as in health care, human agents bear responsibility to create change. In antibiotic stewardship, the prescriber becomes morally responsible for improving prescription behaviour for the sake of the future and global good. Accordingly, modest results of interventions are often explained with the moral dilemma of the clinician: refraining to prescribe antibiotics requires willingness to accept increased risk for the patient at hand. The explanation invokes "a social level", where the relationship between human actors creates «closeness» to the patient at hand, whereas other entities, futures and "worlds" are taken to be more "distant". ANT is known to mediate stories about actor networks, where human and non-humans are granted agency, stemming from translations and associations. In this paper, I seek to analyse the stories of antibiotic prescription offered to us by antibiotic stewardship literature. Tracing the actor networks that they mobilize, I ask if and how microbes, organs, evidence, doctors, patients, and other entities can be reassembled in ways that generate novel understandings about antibiotics prescription practices.

Clinicians' And Older Adult Patients' Narratives Of Chaos And Control: The Affective Dimension Of Oversprescribing Of Antibiotics For Urinary Tract Infections *Paula Saukko, Loughborough University; Emily Rousham, Loughborough University*

Research has observed that older adults are frequently overprescribed antibiotics for urinary tract infection (UTI) in hospitals in the context of changing guidance. Previous qualitative research has illuminated many key drivers of inappropriate antibiotic prescribing in hospitals, such as risk perceptions and social interactions. However, we contend that this research does not capture the affective, embodied and emotional dimension of diagnosis and prescribing in hospitals, grounded in assemblages of events, interactions and infrastructures that direct clinicians' and older adult patients' actions. We further contend that forms of narratives in interviews (how stories are told) bring to the fore the affective dimension of experience. Drawing on Arthur Frank's classic work on types of illness narratives and interviews with clinicians and older adult patients (n=41) in two UK hospitals we identified two main narratives. First, some clinicians and older adult patients articulated jumbled up chaos narratives about repeated UTI diagnoses and courses of antibiotics, sensing something was wrong but being caught in repetitive onslaught of multiple diagnostic tests, ambiguous illnesses and people in complex hierarchical relations and being unable to act differently. Second, other clinicians and patients articulated control narratives about UTIs being frequently diagnosed and antibiotics prescribed to restore patients' health, echoing confidence and security, even if the processes described typically did not follow current guidance. Analysing clinicians' and older adult patients' experiences through the lens of affect and narrative forms this presentation offers empirical and methodological insights on antibiotic prescribing that complicate notions of individual clinicians overestimating risk or patients pressuring for antibiotics.

Optimising Antibiotics: protocols for antimicrobial stewardship in Spain *Cristina Moreno Lozano, University of Edinburgh*

In 2011, the chartered societies representing infectious disease experts, hospital pharmacists and public health experts in Spain published a "consensus document" (Rodríguez-Baño et al. 2011). This document outlined the main principles that characterise an antimicrobial stewardship programme in a healthcare facility in Spain. These programmes are known as 'Protocolos de Optimización de Antimicrobianos', or PROAs. The 2011 PROA protocol ´consensus document´ seems to have served as a

standardising model, setting out a vision for what antimicrobial stewardship would become, and outlined the actors, practices and materials resources needed to set up a PROA. In this document, experts identified the aims of PROAs (in order of priority) as: a) to improve patient's clinical results, b) minimise adverse effects (including emergence and dissemination of resistance) and c) guarantee cost-effectiveness in treatment. In the last nine years, coordinating "PROA leading teams" have been set in dozens of hospitals (and recently, also in primary health centres), with the aim of enacting standardised antimicrobial stewardship activities. I draw on a substantial tradition of STS literature that has studied medical protocols, standards and care practices in clinical settings (e.g. Berg 1997, Timmermans and Berg 1998, Mol and Berg 1999) to frame PROA protocols as "infrastructuring" tools that situates AMR as a problem within healthcare settings, and assists in tailoring care practices for resistant infections in hospitals today. Ultimately, my interest lies in investigating the "optimising" logic underlying antimicrobial stewardship. In this paper, I aim to present an early schematic view of my methodological approach (combining historical and ethnographic methods) to these PROA protocols in Spain.

Antimicrobial Resistance as a Problem of Values? Responsibility, Opportunity, Solidarity *Katherine Kenny, The University of Sydney*

Much has been written about the problem of antimicrobial resistance (AMR) and the action required to rein in this emerging global health threat. Addressing AMR is often operationalised as requiring 'behavior change' of clinicians and of patients, in combination with improving the drug development pipeline. Few have approached AMR as a challenge fundamentally embedded within the cultural fabric of modern societies and the (varied) ways they are organised economically, socially and politically. Here, drawing on a decade of work across a range of health contexts, we approach the problem of AMR as one of values and culture rather than of individual behavior. We reframe AMR as a social and political concern resulting from a confluence of factors and practices including: temporal myopia, individualisation, marketisation, and human exceptionalism. To effectively tackle AMR, we advocate solidaristic models that espouse collective responsibility and recognise relative opportunity to act rather than a continuation of the individualistic behavioural models that have, so far, proven largely ineffective.

Session Organizers:
Iona Walker, University of Edinburgh
Cristina Moreno Lozano, University of Edinburgh
Alena Kamenshchikova, Maastricht University
Chair:
Catherine Marijke Will, University of Sussex

344. Making & Doing - Friday show

8:00 to 8:00 pm
virPrague: VR M&D

Lineup of meetups: 8:00-8:40 Making Food Futures Accessible Across Ages: Emerge 2020 – Eating at the Edges 8:40-10:00 Sustainability Futures of Innovation using TRIZ '9-windows' tool 10:00-10:20 Open Educational Resources for STEM: Stimulate Reflection on Gender in Science and Technology (FLIPPED session: check the digital object beforehand at https://www.4sonline.org/md20/post/open-educational-resources-for-stem-stimulating-reflection-on-gender-in-science-and-technology) 10:20-11:00 Technologies for inclusive employment; from technical prostheses to the transformation of work 11:00-11:40 The Gig Lane 11:40-13:00 Data session on policy and business Pitching 13:20-14:40 Materialities of Post-Evidence-Based Practice 14:40-16:00 Detecting and Communicating Responsible Innovation Practices - Downey and Peschke 16:00-16:40 Drawing Spatial and Bodily sensitivities - a training kit 16:40-18:00 STS Strategies for Instituting: Sustainability in Academia and STS Associations 18:00-19:20 Lab From A Chip See https://4sonline.org/md20 for details of the meetups. And don't forget to engage with the fascinating digital objects in the gallery which are available during the whole conference and after: *For Novelty Use Only: DIY Methods of Assessing Sexual Health Microbiomes *Crash Theory *"Making and Doing TopEndSTS – on country… and online?" *Crafting Medicine: A Sensory Exhibit of Three Medical Schools *Is Another World Possible? Imagining a Post-Automobility Future Through an Anti-Motor Show *Exploring Ethical

Decision Making in Video Games *Robocops, flowers and stones: technologies and arts of repression, resistance and protest *Giving birth as a struggle between bodily experience and medical practice

Participants:

Making Food Futures Accessible Across Ages: Emerge 2020 – Eating at the Edges *Christy Spackman, SFIS - Arizona State University; David Guston, Arizona State University; Ed Finn, Arizona State University; Cynthia Selin, Technical University of Denmark; Jake Pinholster, ASU; Ruth Wylie, Arizona State University; Bob Beard, Bob Beard; Stephen Christensen, ASU; Joey Eschrich, Arizona State University; Nina Miller, ASU; Eliza Robinson, ASU; Rebecca Pringle, ASU; Melissa Waite, ASU; Diana Ayton-Shenker, Leonardo/ISAST; Cindy Ornstein, Mesa Arts Center*

Sustainability Futures of Innovation using TRIZ '9-windows' tool *Vairaj Arjune, Centre for Studies in Science Policy, Jawaharlal Nehru University; Krishna Tripathi, Centre for Studies in Science policy, Jawaharlal Nehru University, New Delhi*

Open Educational Resources for STEM: Stimulating Reflection on Gender in Science and Technology *Goede Both, HU Berlin; Smilla Ebeling, HU Berlin; Sigrid Schmitz, HU Berlin*

Technologies for inclusive employment; from technical prostheses to the transformation of work *Mike Grijseels, Athena Institute, VU University, Amsterdam; Teun Zuiderent-Jerak, Athena Institute, VU Amsterdam; Barbara Regeer*

Data session on policy and business Pitching *Ilkka Arminen, University of Helsinki*

Materialities of Post-Evidence-Based Practice *Morten Sager, Department of Philosophy, Linguistics and Theory of Science; Isabella Pistone, Department for Philosophy, Linguistics and Theory of Science, University of Gothenburg; Allan Lidström, Department for Philosophy, Linguistics and Theory of Science, University of Gothenburg; Teun Zuiderent-Jerak, Athena Institute, VU Amsterdam; Thomas Schneider, Bräcke Diakoni and Jönköping University; Lena Eriksson, Department for Philosophy, Linguistics and Theory of Science, University of Gothenburg; Ingemar Bohlin, University of Gothenburg*

Detecting and Communicating Responsible Innovation Practices *Robin Ann Downey, Bilkent University; Lutz Peschke, Bilkent University*

STS Strategies for Instituting: Sustainability in Academia and STS Associations *David Zavoral, Czech Academy of Sciences; Ingmar Lippert, IT University of Copenhagen*

Lab From A Chip *Ross Dalziel, Lancaster University, UK*

Chair:

Ludek Broz, Institue of Ethnology of the Czech Academy of Sciences

345. Living In The Laboratory - Session 1: The Spectrum Of Experimental Zones

10:00 to 11:40 am
virPrague: VR 01

Notions of "laboratories," "experimentation," and "zones of exception" are presently gaining wider currency, far beyond the traditional confines of S&T and the narrow focus on lab science. From evidence-based policy-making using controlled trials, to living labs, test beds and regulatory sandboxes, all the way to design labs, urban labs, policy labs, social innovation labs, and legal labs – experimental approaches are being deployed across countless social and political settings. These labs promise to tackle social problems more inclusively, playfully, innovatively, and effectively, while at the same time invoking elements of scientific rigor, controlled experimentation, and the promise of scalability. They frequently lower regulatory burdens and overtly enrol populations into the making and testing of immature technologies, suggesting that business as usual will not produce the right solutions and that the effects of these experiments can be contained and tested before releasing them onto society at large. This session aims to explore how broad the spectrum of experimental zones is and what common themes can be identified.

Participants:

Crowd dynamics, Co-creation, and Values in technology innovation: A case study in robotics facilities *Gianluigi Viscusi, Imperial College Business School*
This article aims to study innovation facilities with a specific focus on crowd dynamics, thus providing an understanding of how those dynamics eventually shape collective co-creation activities (Brandsen & Honingh, 2018; De Jaegher, Peräkylä, & Stevanovic, 2016; Lember, Brandsen, & Tõnurist, 2019; Ramaswamy & Ozcan, 2018), either enabling or bounding their capacity of scaling. Furthermore, I am going to investigate the connection between those dynamics and the values informing or rather forming the outputs of co-creation initiatives, with a specific focus on technology innovation (Shilton, 2013; Snyder, Shilton, & Anderson, 2016; Stirling, 2008). In particular, the different dimensions and perspectives on values are questioned from an STS perspective in their difference through the shapes that co-creation practices may assume once moving from, e.g., value intensive setting of local groups and communities to a population assuming the dimension of anonymous crowd in co-creation practices characterized by seriality (Sartre, 1960; Viscusi & Tucci, 2018; Young, 1994).The theoretical arguments will be developed empirically through the analysis of the case study of a Robotics Innovation Facility (RIF) based in Italy, where an ethnography has been carried out in 2018-2019. Finally, the facility is questioned as a space where various actors from different territories can "encounter" innovation, thus pointing out, for the specific case considered, the need for a social appraisal to inform the commitments to a robotics driven technological path (see on these issues Stirling, 2008).

Life in Laboratory Urbanism: Repression, Suspension and the Politics of Innovation *Karl Palmås, Chalmers University of Technology*
This paper examines the "labification of everything", focusing on how this is enacted in urban spaces. Using previous ethnographic work on "laboratory urbanism" (Eriksson & Palmås, 2016) as a point of departure, the argument will first outline three key underlying tendencies that underpin the cultivation of experimental zones in the built environment: The "reinvention of invention" (Thrift, 2006), the rise of "neuroliberal" modes of governance (Whitehead et.al., 2017), and the more long-term shift from managerialism to entrepreneurialism in urban governance (Harvey, 1989). In the second part of the paper, the argument moves on to put this labification in the context of previous accounts of creativity and playfulness in urban spaces. Specifically, the paper will argue that these experimental zones upset commonly held assumptions about tactics, strategy and power, originally introduced by de Certeau (1984): In laboratory urbanist sites, playful tactics are no longer effective routes for circumventing strategic power. The third part of the paper introduces an alternative approach to define the political stakes of life in urban experimental settings. Drawing inspiration from artist Liam Gillick's treatment of the politics of creativity in contemporary art institutions, the argument suggests that political creativity in experimental zones involves avoiding situations based on "repression" and/or "suspension". Here, repression implies situations that foster the experimental, but does not imply an actual high-stakes experiment. Conversely, suspension implies a state of permanent excitement among participants, which never resolves into an actual change or innovation. Thus, the paper contributes to STS's treatment of space and (urban) politics.

Time Interferences between Experimental Urbanism And The Climate Change Agenda *Claudio Coletta, University of Antwerp*
The agenda set by climate change is urgent and accelerating, and cities are leading the way to respond to climate change effects, to harness the resources for sustainable transitions and to adopt long-term policies and strategies for viable urban futures by 2030-2050. At the same time, existing networked data

infrastructures allow the everyday management of cities (e.g. mobility, energy, water) and also interact with the efforts to achieve the climate targets. Yet, most recent scientific evidence shows that the sustainability efforts are jeopardised by existing infrastructures and a further effort is needed already by 2030 to stop irreversible damage from climate change. Subsequently, cities need to revise their climate plans, anticipating their actions and aligning their sustainability goals to the new scenarios. The tensions between the urgent agenda of climate change, the testing of sustainable urban futures and the actual ICT infrastructures already in place for automated urban management produce multiple temporal interferences that influence the paths towards sustainability: How are urban futures operationalized in urban experimentations? How How is time inscribed in and performed by automated urban management? How does the climate change agenda interact with such temporalities? In addressing these questions, I will combine my previous work on new public procurement and experimental urbanism in Dublin with my newly started research on time, urban transitions and sustainable smart urbanism. Drawing on infrastructure studies, my aim is to explore the (re-)temporalization of urban experiments in relation to the climate crisis, with particular attention to the issues of irreversibility, urgency and realtimeness.

Making Futures Plausible: How Living Labs (De-)stabilize Smart Energy Pioneers *Julia Renninger, Munich Center for Technology in Society, Technical University of Munich*

In Germany, an increasing amount of research and innovation efforts are dedicated to 'smart grids' to solve common issues in an energy system based on renewables. To sort out the technical, economic, social and regulatory aspects of a 'smart energy transition', living labs have become the go-to innovation method to test, and demonstrate novel smart energy visions in a 'mini real-life setting'. Buildings, neighborhoods, and entire cities thus become part of a trial-and-error approach to demonstrate yet unapproved smart energy futures as 'desirable' and worth investing in. Making use of a co-productionist lens from the field of Science and Technology Studies (STS) and the concept of 'sociotechnical vanguards', this paper seeks to better understand the multiple ways in which emerging smart energy pioneers and living labs co-produce one another. This includes the examination of how their visions of the future impact the local context on the ground and transform through their very materialization. Instead of taking a common approach in innovation studies to ask in retrospect 'how well' innovation practices forward certain visions, this paper aims to uncover the complexities and difficult negotiations within two current living lab practices: One smart city lab in Hamburg, and a provincial micro smart grid at Lake Constance. The contrasting analysis suggest that living labs serve as platforms for checks and balances between smart grid vanguards and society, moving their often-articulated purpose of 'tailoring innovation to the needs of society' to the core of the innovation practice.

Session Organizer:

Thomas Buocz, University of Graz

Chair:

Arzu Sedef, TU Wien

346. Alignment Work in/for the Distribution and Localization of Knowledge

10:00 to 11:40 am
virPrague: VR 02

This panel contributes to inquiries into longer term continuities and discontinuities and material legacies of modernity, especially to the distribution and localization of knowledge. We want to bring a sensibility for the work associated with applying and maintaining standards – and in particular, interprofessional standards – to studying the movement of knowledge. Standards contribute to resolving the tension between local and global as Star and Ruhleder famously put it – or, perhaps, rather the tension between different kinds of local. But this tension may not always be resolved completely by standards. With inspiration from Vertesi, who draws attention to the "seams" between infrastructures with different standards and "how actors skillfully produce moments of alignment" (2014: 268), we want to talk about alignment work. This is the the continuous work that is (and has historically) performed around these

standards in order to facilitate the movement of knowledge. That is, seamlessness is a fleeting, repeatedly (re-)produced state. Alignment work may be performed publicly or in relative seclusion, and it may complement, maintain, or substitute interprofessional standards, but it is nonetheless work that is repeatedly and systematically being done in order to ensure that knowledge objects move stably across epistemic cultures. In other words, it is an essential part of continuously resolving the tension between different kinds of local and thus of the distribution and localization of knowledge.

Participants:

Between Standards and Voluntariness in Maternity Care *Jenny Gleisner, Department of Thematic Studies - Technology and Social Change, Linköping University*

Maternity care in Sweden is voluntary but offered to all pregnant women. It is organized in accordance with an interprofessional standardized program with national and global goals in which midwives do pregnancy check-ups and inform about matters surrounding pregnancy, childbirth, and becoming parents. But a standardized program does not that easily apply to individuals' wants and needs. This is why this paper explores the continuous work done by midwives to facilitate the movement of knowledge by asking: what are the different practices used by midwives to make this knowledge project work? Through analysis of interviews with midwives and observations of parental classes, the paper explores the tension that arises between standards and voluntariness of midwifery care and the often invisible alignment work midwives do of making knowledge accessible, applicable and appealing to parents-to-be.

Aligning for Profitability: Occupational Health Services on the Market *Hannah Grankvist, Department of Thematic Studies - Technology and Social Change, Linköping University*

This paper discusses how Swedish occupational health practitioners translate evidence-based guidelines and standards into practice in their everyday work. Occupational health practitioners work within a framework of conflicting interests. There is not only the different and sometimes contradictory interests of employers and employees, but also professional expertise and different scientific fields involved. In addition, they also work within a framework of profitability since they are private actors on the market. Given this, occupational health practitioners must take different practical complexities into consideration. Based on interviews, this paper, then, discusses how occupational health practitioners align evidence-based guidelines and standards with local conditions and prerequisites in order to establish and maintain the movement of knowledge between different contexts while at the same time fulfilling the task given to them by laws and regulation.

Aligning Epistemic Cultures – Laboratory Standards and Crime Scenes *Corinna Kruse, Linköping University*

This chapter discusses the alignment work performed by Swedish crime scene technicians. In order to ensure that forensic evidence-to-be travels from the crime scene through the laboratory and the investigation to the court without loss, crime scene technicians are taught standardized ways of recovering different kinds of traces. However, crime scenes do not come standardized; in addition, there are always limitations to standards. This chapter, then, discusses how crime scene technicians align crime scenes with standards (and vice versa) to recover traces as fruitfully as possible, at the same time striving for as much forensic evidence as possible and maintaining the criminal justice system's standards.

Session Organizers:

Corinna Kruse, Linköping University

Jenny Gleisner, Department of Thematic Studies - Technology and Social Change, Linköping University

Hannah Grankvist, Department of Thematic Studies - Technology and Social Change, Linköping University

Chairs:

Lena Eriksson, Department of Public Health Sciences, Stockholm University

Jenny Gleisner, Department of Thematic Studies - Technology and Social Change, Linköping University

Hannah Grankvist, Department of Thematic Studies - Technology and Social Change, Linköping University

347. Dilemmas relating to use, uptake, and views of science and scientific expertise - Session 3

10:00 to 11:40 am
virPrague: VR 03
Participants:

Public Officials and the 'Imaginary Publics' in Science Policy: A Study of Advisory Committees *Tadafumi Kubota, Science and Technology Studies, University College London*

Despite arguments for public engagement in science and technology, there is still a struggle for the coexistence and coordination of public insights and scientific advice in the actual national-level science policy arena. STS has successfully explicated lay expertise which is equivalent to expert scientific knowledge in policy-making (Jasanoff, 2003; Wynne, 2003; Jones & Irwin, 2010). However, such a dualistic view of science and publics has paid little attention to civil servants or other public officials; they often tend to be either muddled with scientists and labelled as an oppositional monolith, or treated just like machinery in policy-making processes. Nevertheless, in consideration that such officials have a considerable political presence especially in some countries such as Japan and the UK (Tsuneki, 2012; Page, 2013), the commitment and influence of them should be individually considered. Reflecting on a comparative case study of policy discourses regarding ethical and regulatory issues around emerging germline intervention technologies in Japan and the UK, this research illustrates different sorts of technopolitical imaginaries of the publics and of science possessed by the actors around the scientific advisory committees including public officials in each country. Also, it uncovers how such imaginaries are constructed and how they affect policy outputs, in association with 'sociotechnical imaginaries' (Jasanoff & Kim, 2009). These non-adversarial descriptions regarding the relatively ignored characters of policy drama can provide more detailed structures of science policy-making in these countries, which might suggest a possible novel approach to the democratisation of science policy.

The Ascending and Fading of a Progressive and Science-Based Policy Instrument: the Climate Change Factor in Southern Germany *Melani Pelaez Jara, Albert-Ludwigs-Universität Freiburg,University College Freiburg*

The Climate Change Factor (CCF) is a precautionary instrument for technical flood protection introduced in Southern Germany in the early 2000s. The CCF was designed as a surcharge value to be added to all new technical flood protection facilities such as dams, protection walls, and retention areas. This paper deconstructs the conditions and processes that led to the creation of this new policy instrument. Following the Instrument Choice Framework, the paper analyses in a heuristic manner the institutions, actors, discourses, and decision context that were part of this process from the early 1990s to 2004, when the instrument was introduced. Decisive for the process and introduction of this flood risk instrument were disruptive scientific publications on the connections between climate change and extreme floods events, and the science-policy interface KLIWA - Cooperation Project Climate Change and Consequences for Water Management, where the CCF was designed and explicitly recommended as science-based policy advice. Even though it was constructed and discursively presented as a pioneering flood risk and climate change instrument, the implementation, accountability and follow-up of the CCF has been rather timid. The article closes with an assessment of the CCF concluding that the innovativeness of this instrument faded once the overarching sectoral paradigm had shifted from technical flood protection to more comprehensive flood risk management. Keywords: Climate Change Factor; flood risk management; instrument choice framework; Germany; precautionary principle

Majority of German and US citizens support policy advocacy by climate researchers *Viktoria Cologna, ETH ZURICH; Reto Knutti, ETH Zurich; Naomi Oreskes, Harvard University - History of Science; Michael Siegrist, Institute of Environmental Decisions*

Scientists' role in outreach and advocacy has been debated extensively, but empirical evidence on its perceived legitimacy is scarce. We contacted scientists researching climate change to investigate predictors of scientists' engagement, as well as expectations regarding political and public engagement. We then compared how scientists (N = 1,107) and German and US citizens (N = 884) view scientists' engagement. We find that perceptions differ across countries, with scientists perceiving more strongly than the public that scientists should politically and publicly engage. However, the public agrees that scientists should engage, and that they should increase these efforts. The majority of citizens agrees that scientists should advocate for climate-related policies and work closely with policy-makers to integrate scientific results into climate-related policy-making. Further, openly supporting climate policies does not adversely affect public perception of scientists' credibility. Based on these findings, scientists should not be reticent to advocate for climate policies, especially in the US, for fear of losing credibility with the public.

Researchers' dealings with dilemma's: navigating reflexive aspirations and institutionalized traditional logics on policy evaluation *Hilde Brouwers, Athena Institute, Vrije Universiteit Amsterdam; Evelien de Hoop; Lisa Verwoerd, Athena Institute, Vrije Universiteit Amsterdam; Barbara Regeer*

This paper examines how researchers in evaluation-based advisory sciences deal with dilemma's with regard to legitimacy, accountability and transparency that emerge in the context of conducting reflexive policy evaluations. The PBL Netherlands Environmental Assessment Agency, an internationally renowned independent governmental advisory body, is a frontrunner in this move towards reflexive research. It currently conducts three reflexive environmental policy evaluations, which were all commissioned by the Dutch ministry for Agriculture, Nature and Food Quality and are assisted by academic who specialize in reflexive evaluation (Vrije Universiteit Amsterdam). The three evaluations seem similar in terms of actor composition and field (environmental policy) and have a shared, albeit somewhat rudimentary, understanding of what such an evaluation entails. Despite these commonalities, all three projects are shaping up very differently in practice as they engage with core dilemma's with regard to transparency, legitimacy and accountability in very different ways. This setting provides a unique opportunity to understand how researchers come to address these dilemma's. We find that researchers transitioning from modernistic policy advisory science styles towards more reflexive modes of knowledge production often encounter deeply institutionalized traditional logics on what advisory science 'is' and 'should' do. We particularly distinguish between the roles played by discourses, institutional rules and norms, and the wider organizational set-up in allowing researchers to practice reflexive research or constraining this transition and rendering falling back into familiar modernistic research routines to be the easiest or only option.

Expert Involvement and Competition between Science and Politics in Post-Disaster Response: A Case Study of the Korean Humidifier Disinfectant Disaster *Jinyoung Christine Park, Seoul National University, Republic of Korea; Sun-Jin Yun, Seoul National University*

Korea's humidifier disinfectant disaster is considered the world's worst biocide disaster. As of February 2020, 1,528 deaths and 5,209 other victims were reported. The unidentified lung disease in victims was attributed to a humidifier disinfectant sold from 1994 until its ban in 2011. Since then, the government, scientific and medical experts, civil society, and media have suggested several responses. In this context, this study aims to analyze the roles of scientific and medical experts, whose research, involvement in government committees, and advocacy significantly influence policy decisions for victim compensation and follow-up procedures. We conducted a literature review and interviewed 13 experts who have participated in the response to

this disaster. The proposed damage relief and recommendations differed depending on the academic backgrounds (epidemiology and public health, medicine, or toxicology) of the experts. Clinicians (doctors) tended to restrict the scope of damage recognition. The government has implemented the recommendations of an expert committee and classified victims in four levels of damage. Most victims are classified in levels 3 and 4 corresponding to limited damage compensation. The government espoused the conservative assessment of clinicians and deweighted the views of other experts who indicated a wider range of damage. Our study implies the role and influence of experts in policymaking, particularly for disaster response and environmental health. The relationship between expert judgement and government decision-making and between science and politics warrants attention. Also, this study result implies the government justifies its policy position under the name of expertise based on selected experts' position.

Session Organizer:
Sebastian Linke, University of Gothenburg
Chair:
Sebastian Linke, University of Gothenburg

348. Politics of Anticipation: entanglements between STS and climate modeling
10:00 to 11:40 am
virPrague: VR 04

Climate researchers and policymakers rely on computer simulations (such as Integrated Assessment Models - IAM) to determine the strategies for tackling climate change. IAMs are used to generate pathways for climate-change mitigation that are consistent with global temperature targets and to define the discursive possibility corridor within which political actors deliberate and make decisions. Their use, usability and political impacts and implications remain contested. In his case study on the IIASA Energy System Program, Brian Wynne concluded in 1984 that global energy models are more symbolic vehicles for gaining authority for policy conclusions than objective technical statements suggesting to make 'the climate safe, and manageable'. In his critique, Wynne anticipates the fundamentally 'social character' of model practices understood epistemically as an organizing basis for a broader coalition of motivations, meanings and social, ethical and political concerns. A variety of case studies shows how current modeling and scenario practices originate in a vast array of strategic foresight techniques that emerged in the aftermath of Second World War and have played and still play a critical role in informing, enabling and stabilizing the climate regime complex. These findings, however, have been systematically ignored by mainstream modelling communities. This panel seeks to summarize what lessons can be learned from STS scholarship in order to bring down the debate on BECCS/ NETS 'down to earth' and to render it more reflexive. Therefore, we addresses the relationship between pathways and political choice in two dimensions: as an object of a reconstructive analysis and an active engagement in modeling experiments.

Participants:

Who gets to claim "residual emissions"? *Wim Carton, Lund University Center for Sustainability Studies (LUCSUS); Holly Jean Buck, University at Buffalo*

"Residual emissions", or continued emissions from particular regions and sectors, are implicit in net-zero climate pathways and are set to be a core concern of climate policy. This paper first looks at the history of the concept of residual emissions, exploring when and how it emerged, and whether and how the focus on net-zero targets has changed talk of residual emissions. It traces this in UN negotiations, intergovernmental agency reports, and reports from the private sector. The paper analyzes both the suggested or implicit spatial and sectoral allocations of residual emissions, and the justifications for these claims. It identifies the specific form of governance by which residual emissions are (likely to be) allocated, and highlights potential tensions with idealized climate pathways. Finally, it suggests some avenues for developing a more just, transparent, and public method of allocating residual emissions would be — both in terms of procedure, and in substance.

Geopolitics, geopower and geofutures: power and pathways in Earth systems governance *Duncan McLaren, Lancaster*

University

The co-production of conceptions of governance and knowledge about geoengineering is here explored through the analysis of 'geofutures' as expressions of 'geopower'. We outline the construction and implications of competing world-making imaginaries (or geofutures) in which socio-material techniques, including geoengineering, are both constitutive of and tools to exercise 'geopower' – a new dimension of world politics oriented to governing, and responding to, powerful Earth systems. In particular, we consider what alternative mechanisms for constructing and considering geofutures imply for the politics of climate geoengineering. Empirically, we draw on interviews with modellers to identify a rationalist, idealised, 'peer-reviewed' geofuture, reflecting the IPCC information base. We highlight the perceived academic, publishing, and disciplinary incentives that shape this space, and consider the extent to which such modelling knowledge conditions options (and assumptions about mechanisms) in ways that limit the bounds of a rationalist geofuture. We contrast this with the ways modellers and other stakeholders present future expectations, and develop or respond to narrative political scenarios, drawing on interviews with activists, UN negotiators, and deliberative workshops with stakeholders in carbon geoengineering techniques. We discuss the methods used to generate unsettling political scenarios for these deliberative workshops and highlight the ways in which such political scenario exercises act to open up possibilities, taking account of both international and industrial interests in ways that modelling does not. In conclusion we speculate on future developments in geopower and geopolitics, and offer some suggestions for the responsible conduct of modelling, scenario building and pathway deliberation about alternative geofutures.

Climate Modelling as a Technique of Futuring *Jeroen Oomen, University of Utrecht*

Climate models have become a central feature of climate politics and policy. Through the institutionalisation of climate knowledge, predominantly via the IPCC and the UNFCCC, model-based climate scenarios now definitively shape climate policy. Where General Circulation Models (GCMs) have become the primary entrypoint of understanding the climate problem, Integrated Assessment Models (IAMs) now provide optimal policy paths towards the globally agreed 1.5 and 2C targets. Model-based scenarios are not just describing possible worlds, but actively bring those worlds into being. This performativity, the political effects in the social world, of GCMs and IAMs is not in debate. A host of academic literature shows how model-based scenarios shape climate politics, both through representation and through 'non-policy prescriptive' advice. However, the social processes through which these model-based scenarios attain performative effects in politics and policy remain under-explained. In this paper, we analyse GCMs and IAMs as techniques of futuring (ToFs), 'practices bringing together actors around one or more imagined futures and through which actors come to share particular orientations for action' (Hajer & Pelzer 2018: 222). In this analysis, we ask not just how and why climate models become privileged input for orientations for actions, but also what the social processes and practices are that allow IAMs and GCMs to bring actors together.

Scientific assessment practices in-the-making: Carbon Dioxide Removal in IPCC's SR15 *Felix Schenuit, Center for Sustainable Society Research & CLICCS, University of Hamburg*

This article investigates the IPCC assessment practices with regard to the issue of Carbon Dioxide Removal in the Special Report on 1.5°C Global Warming (SR15). By providing a systematic analysis of CDR relevant text passages in all drafts and the final version of the report, as well as an analysis of the review comments and developments in the references, the article aims at tracking lines of CDR-relevant conflicts at different stages of the assessment processes as well as their resolution in the development of the final report. In addition to official IPCC documents, the article is also based on expert interviews with authors and other relevant stakeholders. Based on this material, the article aims at identifying lines of conflicts and tracking their resolution in the final assessment in order to provide insight into

actual assessment practices of a rather contested issue such as CDR. More generally, the analysis aims at providing an empirical case study of how the IPCC author teams deal with IPCC's maxim of being policy relevant but not policy prescriptive. In particular, the article aims at identifying whether and, if so, how the ambiguity inherent in this maxim shaped the CDR-relevant text passages of the final assessment.

How do policymakers use climate mitigation scenario information? *Erlend Hermansen, CICERO Center for International Climate Research; Bård Lahn, CICERO Center for International Climate Research Oslo*

The number of Integrated Assessment Models (IAMs) and mitigation scenarios produced by IAMs have been steadily growing since the first IPCC assessment report, and scenarios have become increasingly influential in climate policy debates, not only at the international level, but also at the national level and local level. IAMs – developed at universities, research institutes, and government agencies – contribute with scenarios to the IPCC reports and the academic literature. In addition, several organisations and companies such as the IEA, Equinor, BP, and Shell, use their own models and methods to produce scenarios that meet the Paris goals. While there is an extensive and growing literature on scenario analysis (e.g. Hausfather and Peters 2020), and some literature on intended users of scenarios (Parson 2008), there is a striking gap in the literature when it comes to how scenarios are actually used by different actors, not least across different contexts. Knowledge of how scenarios are used in practice is critical for establishing much needed learning loops between (so-called) users and producers of scenario information, thus improving institutional reflexivity and taking seriously the "politics of anticipation" (Beck and Mahony 2018) implicit in scenario modelling. This paper seeks to fill this knowledge gap through a comparative study investigating and analyzing how two dozen Norwegian and UK policymakers across different governmental bodies use scenario information.

Session Organizer:
silke beck, UFZ Leipzig
Chair:
silke beck, UFZ Leipzig

349. Engaging Health Activism, Sexual Politics and STS 2
10:00 to 11:40 am
virPrague: VR 05

The relationship between activism, biomedicine and sexual politics has been a focus in STS since Steven Epstein's 1996 book Impure Science: AIDS Activism and The Politics of Knowledge. In focusing on how patients, citizens and organisations mobilise to transform biomedicine and healthcare, STS has taken a particular focus on public/expert entanglements, such as how health advocacy groups collaborate with healthcare professionals and mobilise citizens' experiences to influence health practice (Akrich et al. 2014). In this panel we want to combine this focus on health activism with recent calls to address the possibilities afforded by a greater attention to pleasure and to sexual bodies in STS (Race 2019). Here we also include an attention to the ways sex and sexuality are mobilised in political engagements with health and illness. As digital technologies open new possibilities for doing politics, sex and intimacy, and uncertain and turbulent times raise new problems for health programming and notions of expertise, we hope to explore the analytical generativity of doing STS research at the intersection of sex, sexuality, health and activism. We welcome contributions that engage with 'health activism and sexual politics' in various ways, and from a range of empirical areas. This might include: Public/expert entanglements Sexual bodies, affect and pleasure The enactment of 'biosexual citizenship' (Epstein 2018) in health activism Continuities and discontinuities: troubled pasts (Murphy 2012) and possible futures Health activism and LGBTQ movements (Roberts & Cronshaw 2017) Categorisations, standards, risk and politics of (sexual) inclusion Engagements with Queer Theory

Participants:

Viral Entanglements: Disease Paradigms, HIV/AIDS, and the Emergence of a Contested Illness *Emily Lim Rogers, New York University*

In 1984, Robert Gallo announced the discovery of a virus that caused AIDS. Six months later, a dozen patients—mostly white, female, middle-class, and heterosexual—came down with mysterious symptoms in the resort town of Incline Village, Nevada. Over three decades later, the entity known as chronic fatigue syndrome (CFS) is diagnosed in hundreds of thousands of sufferers across the US, yet has no known biomarkers, no FDA-approved drugs, and receives the least amount of NIH funding per disease burden than any other entity in the US (Dimmock et al. 2015). This paper considers how one disease's paradigm can enable another. The virus-to-syndrome model simultaneously created the conditions of possibility for CFS's emergence—at the same time that it led to an ultimately fruitless search for a single, viral pathogen. Meanwhile, the distinct patient profiles of these diseases created different modalities of patient advocacy and activism (cf. Epstein 1993). I consider archival materials from the late 1980s through mid-1990s in an American gay and lesbian magazine that held CFS to be "heterosexual AIDS," to ask whether sexuality may be considered a "ghost variable" (Jordan-Young and Karkazis, 2017; Carlin and Kramer 2020) in formations of contested illnesses, in particular. Through a discussion of ongoing ethnographic work with the contemporary CFS patient movement, I consider how patient profiles create diverging forms of patient activism and how these profiles mediate the uptake of disease into Western biomedicine—contributing to disability studies' ongoing reconsideration of the medical versus social models (Kafer 2013).

Wearing a Liberatory Body: The Politics of Tampons and Doing Feminism in Contemporary Urban China *Liting Ding, Cornell University*

Entering the twenty-first century, a woman's relationship to her menstrual cycle has been increasingly mediated through medical technologies, communications media, and consumer markets. In the second decade of the twenty-first century, the growing popularity of tampons in urban mainland China has challenged the mainstream menstrual practices and the social imaginary of a woman on her period. Meanwhile, many young Chinese feminists have invested efforts in tampon advocacy as a form of grass-roots activism in their everyday feminist practices. This paper aims to address a lacuna in the study of Chinese feminism in the midst of a general government crackdown and illustrate a way by which technologies can be rendered feminist. By conducting an archival study of the changing idea of menstrual health, a narrative analysis of online tampons ads, and six semi-structured interviews with young Chinese feminists, I investigate how young feminists from urban mainland China perceive the menstruating body, why they advocate tampons, and what feminist values are embodied by tampons. I argue that young feminists have envisioned the liberatory power of new menstrual technologies and the emancipated female bodies entailed. Engaging in dialogue with third-wave feminism's emphasis on the everyday, young Chinese feminists have incorporated tampons advocacy into their "micro-activism" featuring tactics different from Euro-American menstrual activism. By unfolding tampons' political capacity, young Chinese feminists are striving to increase women's self-knowledge and choice and to facilitate changes in the culture of menstruation.

Session Organizers:
Lisa Lindén, Departement of Sociology and Work Science, University of Gothenburg
Emily Jay Nicholls, London School of Hygiene and Tropical Medicine
Chair:
Lisa Lindén, Departement of Sociology and Work Science, University of Gothenburg

350. Institutionalizing more participatory science: a cross-case reflection from the field of regulatory science
10:00 to 11:40 am
virPrague: VR 06

As society is supposed to become more participative, there are more and more calls for new approaches in science. This holds especially for the field of "regulatory science", where science builds the base for policy-making. While the opening up of science is fairly well studied, less is known about how regulatory science has implemented participatory changes. This panel will bring together in-depth studies of participatory practices at leading

European organizations: ranging from the engagement policies at the European Food Safety Authority, over reviewing a heterogeneity of practices followed by different French agencies to public dialogues at the UK Food Standards Agency and consensus conferences at the German Federal Institute for Risk Assessment. In an interactive approach we will reflect, together with the audience, on questions such as: •How have interactions between regulatory scientific organizations, stakeholders and citizens changed? •How do scientists perceive such change? What are their interests? Are there enrolment mechanisms that can guarantee their involvement? •What are the effects on knowledge production and science communication? What are the associated epistemological, methodological and political stakes?　　　　•What are the challenges for deeper institutionalization •Is it possible to identify quantitative and qualitative criteria to analyze the effectiveness of the engagement processes promoted? By identifying joint causalities in the answers to these questions, this timely panel will contribute to both the academic and research policy-making debates around the participatory opening of science.

Participants:

Engaging citizens in the complexity of food risk, engaging scientists in the complexity of citizens: reflections on participative methods in the UK FSA *Michelle Patel, Food Standards Agency; Joanna Disson, Food Standards Agency; Laura Laura Broomfield, Food Standards Agency*

The development of new and emerging food technologies and their applications is a fast-moving area. Consumer understanding and appetites are influenced by increased generational change, media coverage, marketing practices and changing attitudes to global issues such as climate change. The UK Food Standards Agency's (FSA) legislative remit to protect consumer interests in relation to food means it must understand and keep up to date with consumers' views as well as understand the heuristics by which they are formed, drawing on a range of quantitative and qualitative methods. In 2015 the Food Standards Agency undertook public dialogues to explore consumers' hopes and fears for the future of food. The public dialogues revealed the tensions between convenience and connection, trust and transparency, risk perceptions and technology. Evaluation has indicated that while the process itself met the criteria set at the time, the impact of the exercise was more challenging to establish in a changing organization and political context. However, there have been other, unforeseen impacts, including implications for the future research agenda, some of which have taken several years to emerge. This contribution to the panel session will outline the findings of the independent evaluation of the public dialogues collected through observation, feedback and two rounds of interviews, as well as new evidence from a small number of semi-structured interviews with practitioners and policymakers involved in the public dialogues to identify the challenges and enablers in institutionalizing participation on an organizational level of the food system, including previous successes and failures.

Engaging citizens through consensus conferences: legitimacy evaluations of a German consensus conference on genome editing *Leonie Dendler, German Federal Institute for Risk Assessment, Department Risk Communication*

Especially within contested fields of emerging technologies, consensus conferences have become a prominent tool to enhance the legitimacy of (regulatory)science based policy making. Mobilizing concepts of input, throughout and output legitimacy, this presentation will analyze a recent consensus conference on genome editing initiated by the German Federal Institute for Risk Assessment. Drawing upon surveys and semi-structured interviews with participating citizens, scientists, organizers and invited stakeholders, the presentation will illustrate difficulties in ensuring inclusive input from across society, especially if the engagement method is restricted to face-to face interactions and regulated by latest data protection rules. From a processual, or "throughput" perspective, the presentation will point to the challenge of establishing consensus within increasingly contested science-society-policy interfaces. It will also emphasize the key role of the moderator – an aspect which has remained a "black box" in most STS studies. In terms of output, the conference showed its greatest impact on the personal learning of participants and their immediate surroundings. Resonating with

previous findings, ensuring an impact on wider policy-making emerged to be more challenging, especially considering the difficulties in establishing and presenting a citizen consensus. Reflecting on these findings, our case raises questions regarding the methodological suitability of this prominent engagement tool in the context of changing technology, regulation and, not least, wider discursive developments. Placing our findings in the context of the wider participatory opening of BfR and other regulatory scientific organizations, this methodological contribution will be supplemented by a reflection on potential future paths and challenges for the institutionalization of more participatory practices in regulatory science.

Heterogeneity in models of opening to society in French regulatory agencies: identifying institutional change clues *Lucile Ottolini, UMR Lisis*

Twenty years ago, several French regulatory agencies embarked on policies to open up to society. Since then, the number of agencies moving toward openness policies has continued to grow, as have the areas of public expertise concerned. In 2020, around ten agencies have a strategy of openness in the fields of sanitary and health protection, environmental monitoring and chemical risks assessment, nuclear safety, water monitoring and biodiversity conservation. We argue that STS has a crucial role to play in addressing the need to analyze these growing incidences of openness policies. In particular, STSs can provide critical categories for analyzing institutional experiences from different perspectives: e.g. from the point of view of involved scientists and experts, associations or trade union representatives. STS perspective is also propitious for analyzing organizational change with the creation of new positions, epistemic changes at the level of scientific issues or social changes in the way society can interact with scientific experts.　The presentation will synthesize the main results of a 4 years field-work working as a social scientist embedded in three French regulatory agencies. A comparison of the results shows a certain heterogeneity in the engagement approaches that is contingent on the institutional history and the sectoral issues addressed by the agency. Nevertheless, it is possible to identify joint models that argue in favor of overall institutional change. This is the first description and comparison of the participatory turn taken by regulatory agencies in France.

Session Organizer:

Leonie Dendler, German Federal Institute for Risk Assessment, Department Risk Communication

Chair:

Leonie Dendler, German Federal Institute for Risk Assessment, Department Risk Communication

Discussant:

Pierre-Benoit Joly, Lisis

351. No Time to Not Know. Bottom-up Expertise, Grass-root Authorities, and Agency in the Age of Digital Knowledge
10:00 to 11:40 am
virPrague: VR 07

Recent developments and the widespread adoption of various ICTs across societies, predominantly the Internet, have significantly contributed to both sustaining and augmenting the visibility of various forms of knowledge as well as various forms of knowledge production practices. The Web engages millions of users world-wide every day, and they all take part in its co-creation, making the Internet a bricolage of their agency and creativity. Whatever their social and cultural capital, everyone contributes, even just "by sharing anything to anyone" – to paraphrase Facebook's Mark Zuckerberg. As a result, the Web is polyphonic, ever-changing, and extremely diverse, offering contemporary information consumers (seemingly) fast and easy access to a somewhat infinite number of information coming from countless sources. The Internet caries a promise of empowerment, presupposing that more information means more (situated) agency, that can challenge and reconfigure traditional areas and historically hegemonic knowledge hierarchies. This panel aims to inquire into how the Internet influences the status quo. We ask, how do users navigate the Web for knowledge in various contexts? Does the Internet make them feel more empowered? How do they "do their research", self-educate, become bottom-up "experts" or "authorities"? With an aim to answer the above questions, we have invited papers that provide empirical

insights into knowledge-related practices in relation to ICTs, touching upon the relationship between knowledge and agency, focusing on issues such as: – knowledge seeking, production, and exchange, – bottom-up expertise, – collaboration, knowledge activism, – online truth-making and trust-building.

Participants:

"Taking Charge of your Fertility": Practices of Knowing and Caring of Users of Fertility-Tracking Technologies *Ellen Algera, Amsterdam Institute for Social Science Research, University of Amsterdam*

Birth control? There's an app for that! Over 100 fertility-tracking applications (apps) directed at pregnancy avoidance have been launched over the past decade, some of which have been downloaded over a million times (Kindara, 2017). Effective birth control apps use existing medical knowledge regarding fertility symptoms and employ various techniques (wearables, statistics, symptom self-checks) to help determine a user's fertile window. Users, in turn, can translate this knowledge into adjusted sexual behaviour to avoid or achieve pregnancy, or monitor their hormonal health. In addition, these technologies are inviting users develop online epistemic communities, epistemic practices (Akrich, 2010; Pols, 2014; Rabeharisoa, Moreira, & Akrich, 2014) and self-care practices. In these practices, users seek to understand their bodies, to manage their fertility and/or general health conditions. Online they share experiences and cross-check findings. In this presentation I will share my first empirical insights into the daily knowledge and care practices of users of digital (contraceptive) fertility-tracking technologies. I have chosen a praxiographic approach that combines interviews, online ethnography, and diary material to study the epistemic and care practices of users. By doing so, I hope to generate a grassroot view on the daily negotiations of the user with their devices, their bodies and others (human actors such partners, other online community members, their healthcare provider).

Body hacking. Identifying a health-related sense-making practice between the 'quantified self' and 'the qualified others. *Ane Kathrine Gammelby, Aarhus University*

Over the past two decades, seeking health-related information online and engaging with various forms of digital health apps as means of improving one's personal health, preventing future illness, yet enabling oneself to lead the best and most inconvenient life possible despite being endowed with an unruly body, have become increasingly common in many western countries. In this paper, I propose the concept 'body hacking' as a way of referring to the rather profound human sense-making practice that many contemporary media users engage in when they, reflexively and tentatively, engage in pro-active, self-directed, and often extensively digitally coordinated or inspired attempts to bridge current knowledge gaps of 'authorized knowledges' (Jordan 1991) on health and illness, when these gaps are experienced as inconvenient from their embodied perspectives. More specifically, with grounding in a larger ethnographic research project on how everyday media users engage with Facebook-groups that organize themselves around health-related notions such as 'migraine' or 'medical marijuana', I propose that it might be – with regard to identifying the 'constitutive rules' (Swidler 2001) that extensively structure various forms of mundane health-related engagement with specific digital technologies – to employ body hacking as a lens for analyzing how contemporary media users move through increasingly ambiguous health informational landscapes, and how they gradually refine and negotiate their situated understandings of the "code" that determines their bodies' performance, yet how they attempt to "fix bugs in the system", by means of iteratively combining introspective trial and error hypothesis testing with externally retrieved, often digitally derived knowledge perspectives.

Digital Self-knowledge – cybernetic subjectivities in self-tracking *Eryk Noji, FernUniversität in Hagen*

The production of self-knowledge depends on the use of media and these shape the self-thematization accordingly by instructing them and thus contributing to the construction of social figures, ideal images and subject designs (Fröhlich 2018). In this context, digital self-tracking represents a new quantitative form of knowledge production about the self that alternates between self-exploration and self-construction (Meißner 2016). While a wide variety of knowledge offers can be found on the Internet for each subject area, they also often contradict each other and cause uncertainty. Many users find self-tracking empowering, not because it provides them with general knowledge, but because it enables a specific mode of engaging with knowledge. Self-tracking enables a "reflexive self-scientificization" that makes users experts in themselves and allows them to deal with contradicting knowledge by combining knowledge available on the net with everyday experiences (Zillien/Fröhlich 2018). Against the background of qualitative interviews with self-trackers, the paper follows the thesis that these practices are made possible by the promotion of cybernetic subjectivities which are characterized by feedback, regulation and optimization. Optimization can be understood as an attempt to make the best of the given conditions in a permanent movement of compromise formation. (Duttweiler 2016) Understood as movement, compromise formation and modification, self-tracking can be understood as a cybernetic orientation operation, as an operation that is supposed to enable stable movement in an overly complex world. References Duttweiler, Stefanie (2016): Körperbilder und Zahlenkörper. Zur Verschränkung von Medien- und Selbsttechnologien in Fitness-Apps. In: Stefanie Duttweiler, Robert Gugutzer, Jan-Hendrik Passoth und Jörg Strübing (Hg.): Leben nach Zahlen. Self-Tracking als Optimierungsprojekt? Bielefeld: Transcript (Digital society), S. 215–245. Fröhlich, Gerrit (2018): Medienbasierte Selbsttechnologien 1800, 1900, 2000. Vom narrativen Tagebuch zur digitalen Selbstvermessung. Bielefeld: transcript Verlag (Kulturen der Gesellschaft, Band 31). Meißner, Stefan (2016): Selbstoptimierung durch Quantified Self? Selbstvermessung als Möglichkeit von Selbststeigerung, Selbsteffektivierung und Selbstbegrenzung. In: Stefan Selke (Hg.): Lifelogging. Digitale Selbstvermessung und Lebensprotokollierung zwischen disruptiver Technologie und kulturellem Wandel. 1. Aufl. 2016. Wiesbaden: Springer Fachmedien Wiesbaden GmbH; Springer VS, S. 217–256. Zillien, Nicole; Fröhlich, Gerrit (2018): Reflexive Selbstverwissenschaftlichung. Eine empirische Analyse der digitalen Selbstvermessung. In: Thorben Mämecke, Jan-Hendrik Passoth und Josef Wehner (Hg.): Bedeutende Daten. Modelle, Verfahren und Praxis der Vermessung und Verdatung im Netz. Wiesbaden: Springer VS, S. 233–250.

Session Organizer:
Magdalena Halina Góralska, Koźmiński University in Warsaw
Chair:
Magdalena Halina Góralska, Koźmiński University in Warsaw

352. Ethnography of legitimate knowledges
10:00 to 11:40 am
virPrague: VR 08
Participants:

Law-in-action as a Technology of Government: An Ethnography of the Implementation of Nationality Law *Djordje Sredanovic, Université Libre de Bruxelles*

Socio-legal studies have long recognised that law becomes law-in-action, a practical variation based on different kinds of knowledge, when applied in everyday government. In this presentation I propose a convergence between the Foucauldian concept of technology of government and STS reflections on knowledge to explain the different approaches to law I found in ethnographic fieldwork with institutions involved in the implementation of nationality law in the UK and Belgium. The institutions deciding on nationality applications (local magistrates in Belgium, the Home Office in the UK) took opposite approaches on the role of the local authorities that receive the initial application: a request to interpret whether the application met the local requirement in Belgium, and a formal prohibition to do so in the UK. Moreover, I found different reactions when asking the actors about specific points of law. While most interviewees underlined the respect of the law, local authorities in Belgium described their work as "just applying the law", local authorities in the UK and Belgian magistrates

underlined the need to interpret the law, and the Home Office was more attentive to aspects on which the law was silent and had to be managed otherwise. I argue the need to reflect not only on who has legitimacy in discussing the content of the law, but also on the methodological issues of matching the researcher's questions about law with different versions of law-in-action.

Making and Unmaking Expert Knowledge in Design *Sarah Owens, Zurich University of the Arts*

In design, prestigious knowledge is rarely formalized but instead often attributed to individual actors via notions of talent and creativity. The social uses of and the power relations resulting from the governing of expert design knowledge are thus obscured; furthermore, it is rendered inaccessible to non-experts. At the same time, various areas within design have in the past decades undergone steady democratization through a widespread availability of digital production tools and the exchange of knowledge aided by digital platforms. Based on a study of expert and non-expert visual designers, this paper considers the approach of an ethnographer (who is an expert designer herself) of unlearning her expertise and positioning herself between expert and non-expert, in order to arrive at new insights about the social functions of legitimate design knowledge. It takes a close look at the discourse surrounding knowledge in design, and the ways in which expert knowledge is hidden, embedded or filtered (e.g., in design thinking) in order to stabilize a power asymmetry that has been contested by an ongoing democratization. It also re-examines notions concerning non-expertise within this discourse that reinforce dichotomous distinctions, for instance in relation to modes of making and thinking, or gender, ethnicity and ability. The paper contributes to STS by exploring the role of unlearning expertise in the production of ethnographic knowledge, and by inquiring into the negotiations aiming to define and handle expert knowledge in a domain experiencing rapid technological change.

Science and the Ethnographic Gaze *Fatima Elfitouri, King's College London*

The ethnographic gaze has traditionally meant a disciplining, asymmetrical gaze. One that orders, classifies and speaks with authority about another's culture. This gaze is a powerful one and has had deep political and social implications. Audre Lorde has famously said 'the master's tools cannot dismantle the master's house'. However, these tools are not without purpose. In this paper I argue that the ethnographic gaze as a tool can function as a generative area of inquiry in understanding the construction of systems of which these are co-constitutive. Ethnography and the ethnographic gaze have evolved and have been retooled time and again to demonstrate the invisible workings of powerful institutions, hegemonic ideas and unequal hierarchies. Grounded in an ethnographic study of scientists at the Centre of Molecular Immunology in Cuba, the paper self-reflectively grapples with the discursive production of knowledge about a powerful group located in the Global South. The tensions created in contextualising scientific production against interlocutors adamant on de-contextualising their work to gain legitimacy on the one hand. And on the other, to write within a discipline that has struggled to assert a dominance that was once firmly in its grasp will be explore here.

Session Organizer:
Cinzia Greco, University of Manchester
Chair:
Cinzia Greco, University of Manchester

353. Locating & Timing Governance in STS and Universities III: Challenges in university knowledge making
10:00 to 11:40 am
virPrague: VR 09

For generations universities have been institutions of higher education and research. Now they are expected to contribute to local and global economies by commercializing research and spurring innovation, while addressing grand social challenges like climate mitigation and social disparities. They also must engage successfully in mass higher education and outreach with a variety of publics. This means that universities now occupy a strategic place in re/shaping society by circulating research and knowledge through teaching and professional expertise. Meanwhile universities have become subject to increased auditing practices and austerity policies, locally and globally. Universities turn to experts in branding and commodification for strategies in defining and representing their work as successful. STS provides resources for understanding such dis/continuities in the making and circulation of knowledge while the study of universities in dynamic ecologies is vital to addressing unexamined assumptions in STS about the relationship between research, teaching, and society, as well as the governance of that relationship.

Participants:

Synergy and Interdisciplinarity in Extra-scientific Collaborations *Loet Leydesdorff, University of Amsterdam, ASCoR*

When policy-makers call for "interdisciplinarity," they often mean "synergy." The objective of priorities is to combine normative with scientific perspectives and to generate synergy. However, scientific excellence is organized along (sub)disciplinary lines, and these structures are resilient. Whereas advances have been made in the operationalization and measurement of "interdisciplinarity" (e.g., Stirling, 2007), the evaluation of "synergy" in extra-scientific relations (e.g., Triple-Helix relations) has remained a puzzle. How can the gaps between disciplinary organization and social relevance be bridged to the benefit of both science and society? The measurement of "synergy" requires a methodology very different from the measurement of "interdisciplinarity." Synergy is generated when the whole offers more possibilities than the sum of its parts. I will first discuss recent advances in the measurement of "interdisciplinarity" and then propose a methodology for measuring "synergy" based on information theory: an increase in the number of options above the sum of the options in subsets can be measured as redundancy; that is, the number of not-yet-realized options. Increasing redundancy reduces the relative uncertainty; for example, in niches. The operationalization of the two concepts—"interdisciplinarity" and "synergy"—as different outcome indicators enables us also to distinguish between the effects and the effectiveness of interventions in research priorities. The number of options still open to an innovation system is more important for its viability than past performance. The evaluation of synergy thus changes the perspective of research evaluation. References: Stirling, A. (2007). A general framework for analysing diversity in science, technology and society. Journal of the Royal Society Interface, 4(15), 707-719. Ulanowicz, R. E. (2014). Reckoning the nonexistent: Putting the science right. Ecological modelling, 293, 22-30.

Relying on Relay: Norwegian biotechnology scientists struggling with ideas of convergence *Maria Bårdsen Hesjedal, Institute for Interdisciplinary Studies of Culture. NTNU; Heidrun Åm, Norwegian University of Science & Technology (NTNU); Knut H Sørensen, NTNU Norwegian University of Science and Technology*

Transdisciplinarity emerged in the latter part of the 20th century in response to concerns about increased specialization and compartmentalization of knowledge (Bernstein 2015) and has since the 1990s featured as an increasingly important strategic concept in research policies in the EU and the US. The concepts of transdisciplinarity and convergence are used to describe the envisioned approach arguably needed to overcome universities' disciplinary specialization. It is also assumed to bridge the perceived gap between science and society by combining different forms of knowledge in order to address the complex challenges of the world. The consequences of such policy demands, as well as how these concepts and policies are translated into practice are, however not clear. In this paper we ask: what kind of research practices are generated through policy expectations of disciplinary transgression? The aim is to gain a better understanding of how scientific practices change at universities and other research institutions. We study scientists in biotechnology, which receives a lot of policy attention and where policy expectations are clearly articulated. The paper is based on qualitative interviews, participant observation and document analysis in the context of the Centre for Digital Life Norway (DLN). DLN is a national biotechnology research centre established in 2015. We analyse empirically how transdisciplinarity is managed in three DLN projects. In sum, we

contribute to the panel by examining the interrelation between transdisciplinarity and convergence and investigate how these policy concepts are translated into science practices.

"If I'm the First Author, I Don't Care about the Rest...": Junior Researchers Ascribing Worth to their Contributions *Vera Ulmer, Research Platform Responsible Research and Innovation in Academic Practice, University of Vienna*

A young researcher's location on a list of authors gives not only insight into the context-specific authorship practices but also tells us something about the ascribed value of various contributions to a paper. Depending on, for example, the supervisor's conception which kind of contribution legitimizes co- or even first-authorship, the aspiring scientist's efforts can translate into authorship – or not. Such recognition of their work matters for the researcher's positioning within academia and can even be seen as a first step into independence when first-authorship is granted. Moreover, by being part of the more or less explicit negotiations centering on authorship, junior researchers undergo a socialization process. In my presentation, I will discuss the identity formation of young scientists in the context of actual authorship practices, which often fundamentally differ from those described in guidelines regulating good scientific practice. These tacit value orders experienced by junior researchers through gaining a specific place as author of a publication will be the main focus of my presentation. This makes certain contributions visible and valuable, while leaving others widely unacknowledged. Building on data from discussion groups on research integrity with mostly junior researchers from the sciences as participants, I will outline their situated perception of authorship practices and how that reflects the orders of worth that impact their careers and lives in science. At the same time, making first authorship so dominant as a value to aim for, devalues others forms of contributions and care which are essential to the production of scientific knowledge.

Mapping and Diagnosing Mental Health in/and the UK University Sector *Leon Rocha, University of Lincoln; Felicity Callard, Birkbeck, University of London; Philip Garnett, University of York; Dimitra Kotouza, University of Lincoln*

In recent years, we have witnessed radical changes in the UK university sector: tuition fees increased to £9,250 per year; higher education turned into a metricized marketplace of qualifications; rapid institutional expansion made possible through unprecedented levels of borrowing. At the same time, the mental health and well-being of staff and students are reported to have rapidly deteriorated. Three strikes have taken place within the last 24 months over pay, pension, casualization, stress and working conditions—74 UK universities are participating in a 14-day walkout in February/March 2020. There have been few attempts, however, to develop methods to investigate the relationship between the transformation of UK universities and mental health. In our Wellcome-funded project, we are producing the first systems/network analysis to map actors and organizations with significant influence on the well-being in/of UK higher education. The network, assembled using a Neo4J graphic database, allows structures of power and conflicts of interest to be tracked longitudinally and visualized. In tandem, we collectively assess policies and documents surrounding staff and student mental health, which are supported and promoted by lobby groups such as Universities UK and regulators such as Office for Students. Where do they locate causes of mental ill-health and poor well-being? Which approaches and interventions (e.g. whole system; mindfulness; peer-to-peer apps) are being used to ameliorate the situation? Which private businesses are being contracted to deliver them, and how are they connected with university management? Our paper combines methods and insights from STS, Psychosocial Studies, and Critical University Studies.

Session Organizers:
Knut H Sørensen, NTNU Norwegian University of Science and Technology
Sharon Traweek, UCLA
Chair:
Knut H Sørensen, NTNU Norwegian University of Science and Technology

354. Disciplining The Senses 2
10:00 to 11:40 am
virPrague: VR 10

Many disciplines in the natural sciences still privilege the idea of an external physical reality that human sensory perceptions are mistrusted in revealing. Thus, sensual perception has been largely written out of scientific work and delegated to instruments that can produce standardized measures of physical reality. Much work in the social studies of science and technology has analyzed this whole arsenal of devices, experimental set-ups and technologies mobilized to circumvent reliance on human senses and deemed to produce "objective" data. While the focus of classic studies has been to show the ways in which experimental systems, disciplinary logics and epistemic cultures contribute to fact-making, less attention has been paid to scientists' own sensory engagements with their research materials and resulting more-than-human affective dynamics. This holds true even as newer scholarship has grappled with sensory practices distributed across a widening array of sites, materials, and organisms. This panel addresses how the training and equipment in specific academic disciplines also "discipline" the senses and their affective potentials. It invites us to unravel the role of "disciplining" in enhancing, limiting, or distilling olfactory, tactile, gustatory, acoustic, visual and/or other multisensorial experiences in knowledge-making practices. It further asks whether and how the ways in which science is practiced in specific sites and geopolitical locations contributes to disciplining or challenging sensory perceptions. Which and whose sense perceptions are modified in the scientific endeavor? By exploring these questions, this panel seeks to drive conversations about underexplored connections between sensory experience, affect, and epistemic cultures.

Participants:

Refining tuning forks and ears: Building a network of precision in early twentieth-century phonetics *Fanny Gribenski, CNRS-IRCAM; David Pantalony, Ingenium: Canada's Museums of Science and Innovation; Pavel Šturm, Charles University, Institute of Phonetics*

In 1921, the Czech phonetician Josef Chlumský went to Paris to supervise the fine-tuning of 13 tuning forks for speech research modelled on Abbé Rousselot's collection at the Collège de France. Replicating forks involved an investment in precision that required months of repetitive tests and fine-tuning in the workshop. Chlumský documented this process in detail, and his notes offer a window into the sensory engagement of a scholar with his instruments and, through them, the broader network of experts, tools, and places of acoustic knowledge to which the instruments belonged. By comparing textual sources and surviving material collections in Paris and Prague, our paper reveals a process of reciprocal disciplining of the instruments and ears of practitioners and their broader academic and professional communities. As scientists were sometimes skeptical about phonetic analyses based on human audition, they turned to ever-more precise tools and techniques to secure the legitimacy of their activities. At a time when acoustic research relied increasingly on visual and electrical methods, Chlumský's experiment reveals that the elusive nature of speech continued to justify also mechanical and sensory approaches to sound. Addressing deep methodological insecurities in phonetics, this hybrid network of forks and ears had an impact far beyond the walls of laboratories. It was part of contemporary efforts to refine national identity through speech studies and carried this quest for precision into various domains of academic and social life, from dialectology, to hearing loss evaluation, to education.

Underground Exploration: Measurements, Distances and Embodied Engagements Producing Geological Knowledge in Chilean Andes *Martín Fonck, Rachel Carson Center for Environment and Society*

This presentation analyses the sensorial engagement of geologists exploring underground phenomena in Chilean Andes. From mining companies' point of view, underground spaces are lifeless phenomena, waiting for potential animation through specific knowledge practices, such as geological exploration. During the last century, geology was established as an official epistemic culture, with the capacity to identify potential resources

measuring underground phenomena as an external reality. Such approach coincides with a general trend in modern science to access knowledge through an epistemic distance from nature. Contrary to this image, geologists produce knowledge using their body to measure geological phenomena. However, these sensorial engagements during data collection are usually distilled in order to present a valid knowledge. I have explored these interactions during my ethnographic work with geologists studying the "Liquiñe Ofqui fault" in Andes mountains (the most active geological fault in Latin America). As I show in this contribution, tactile and gustatory senses are used continuously by geologists to analyse the texture of rocks, following the traces of geological faults. Similarly, visual representations, such as photographs within study-sites, include the presence of the body as a unit of measure, scale and spatial context to geological observation. However, measurements practices to represent underground phenomena produce and face different limits (e.g. body exclusion, geological timescales, spatial limits, national boundaries, etc.), that go beyond sensorial perception, creating new distances. In this contribution, I aim to discuss the negotiation process between sensorial engagement and the role of (in)visibility and absence in the production of geological knowledge.

Arts of handling and seeing: molecular biology in Uganda
Sandra Calkins, Free University of Berlin

In the molecular biology lab in Uganda, where I did ethnographic fieldwork, scientists were daily exchanging tips and tricks about how to make their work easier. What struck me was how words alone often proved to be too limiting to convey an idea. Researchers simply had to use gestures or demonstrate the procedures in question. Starting from the question what a hand knows, this paper reflects on sensory dimensions of everyday scientific practice in a Ugandan biotech laboratory and adjacent trial fields, where researchers are working to create nutritionally improved banana plants. Molecular biology as a discipline is premised on creating visual evidence through laboratory procedure. In its everyday routines at workbenches, it is however mainly a practical, manual activity, involving skilled hands in latex gloves that work upon organic materials, pipettes, tubes, devices etc. I analyze how the epistemic culture of molecular biology schools scientists' sensory engagements in the lab in a setting of resource scarcity and in the field trial, where they collect plant samples. Apart from learning to see, Ugandan biologists refer to their acquired skills in "handling." I use this as a heuristic to explore their affective and sensory engagements with a variety of materials and plants, beings that respond to touch and can be undisciplining presences.

Knowing from the surface: haptic articulations of sameness and difference in craniofacial identification practices *Lisette Jong, Amsterdam Institute for Social Science Research, University of Amsterdam*

In the context of the research project Race Matter: The Absent Presence of Race in Forensic Identification I studied the practice of making forensic facial depictions based on the skull of an unidentified individual. During ethnographic fieldwork with experts in craniofacial identification and forensic art, touch as a mode of knowing and relating to/with bodies appeared instrumental in teaching and learning craniofacial anatomy, everyday practice in the lab, and engaging the audience during public events. Building on these instances, I explore how sameness and difference are articulated through touch. Grounded in Haraway's (1997) relational ontology, I propose a notion of diffractive engagement to analyze the multi-sensorial becoming-with of bodies in practice. In such diffractive engagements, e.g. the practitioner using their own body as reference material to learn about another body, these bodies materialize through one another as parts of situated and shifting collectives. Touch was however notably absent in other places: academic publications and the presentation of forensic facial depictions. While visual and haptic creativity is an integral part of everyday practice, it is 'disciplined' in academic settings as to allow for successfully performing expertise. While the erasure of touch and the body of the practitioner serves the successful materialization of an individual face in the presentation of a forensic facial depiction.

Session Organizers:
Sandra Calkins, Free University of Berlin
Marianna Szczygielska, Max Planck Institute for the History of Science
Chair:
Sandra Calkins, Free University of Berlin
Discussant:
Helen Verran, Charles Darwin University

355. Digital Phenotyping I: Unpacking Intelligent Machines For Deep Medicine And A New Public Health
10:00 to 11:40 am
virPrague: VR 12

Digital phenotyping has become a popular practice in the world of data-driven health research. It has developed into a tool to syphon structured health data from online populations. As a practice, it is hailed to refine the classification and understanding of psychiatric, infectious and chronic conditions. A new phenomics is developed to match the genomics of previous years and close the gap between the genotype and phenotype. In the widest sense, digital phenotyping has become identified with a medical knowledge production entirely based on the analysis of digital borne data, providing new ways of knowing disease with more granular insights from digital data. Digital phenotyping schizophrenia, dementia, the flu or Parkinson's disease is supposed to overcome vague and unstructured clinical observations and to offer new, highly standardised pathways towards a complete symptomatology. Conceptually, the digital phenotype has been shaped with reference to Dawkins' elaborations on the 'extended phenotype' while its practices are strongly aligned with the 'deep medicine' movement, which seeks to build and to exploit vast datasets of different kinds to achieve novel insight into drivers of disease. Underlying this new conceptual tool are a series of imaginaries that we like to unpack in this panel. We invite contributions that engage the impact of digital phenotyping in mental health research, that reconstruct historical genealogies of such infrastructures and which engage the phantasies of total insight, vast understanding and deep comprehension build into this budding tool at the bleeding edge of digital medical research.

Participants:

Casting long shadows: phenotyping dementia and the making of the digital ageing subject *Natassia Brenman, The University of Cambridge; Alessia Costa; Richard Milne, University of Cambridge*

In recent years, the relationship between living subjects and their digital counterparts, or 'data shadows', has become the focus of much sociotechnical analysis (Goriunova 2019). This mapping of persons to digital phenotypes produces a particular kind of 'objective subject formation' (Dumit, 2013), characterised by the use of multiple data sources, capturing passive, often 'silent' (a-symptomatic) data over time. Our paper enquires into the making of the digital ageing subject in the growing landscape of digital methods for the early detection cognitive decline or dementia. Drawing on several forms of ethnographic engagement with this field, and inspired by Venturini and Latour's (2009) intervention into micro-macro distinctions in digital research, we draw out a paradox of scale when it comes to 'big' data and the digital shadows it casts. At the point of data collection, digital phenotyping is expansive, embedding the ageing individual in their environment and social world (within and beyond 'smart homes'). Yet digital shadows are distinctly narrow, boiling down to disease biomarkers located within individual bodies, casting long into a future that currently holds no treatment options. This observation prompts us to delve deeper into the tensions between claims of ecological validity and the extended phenotype, and the notion of bounded individuals it reproduces. Finally, we explore how digital ageing subjects could be constructed in more distributed ways, to support rather than simply measure and predict changing lives.

Deep Medicine and Total Pathology *Lukas Engelmann, University of Edinburgh*

Digital phenotyping for "deep medicine" (Topol 2018) has become a rallying call for entrepreneurial disruptors in the digital health sphere. Advocates of a "human phenotype project" (Robinson 2012) have for a while envisioned the complete replacement of clinical observation with precise and

comprehensive information about all "phenotypic abnormalities." A team of physicians seeks to resolve the field of social epidemiology as the entirety of "social determinants of health" is laid bare through digital phenotyping of social network data, offering access to the "source code for nurture" (Abnousi et al 2018). Digital epidemiologists promise the real-time visibility of epidemic events, automatically inferred from the digital exhaust of the global society. Regardless of the expected failure of such claims for instant and complete insight into the world of human pathology, this paper seeks to reconstruct the epistemic implications of the deep medicine movement. Revisiting recent scholarship in mental health research and global health, I take digital phenotyping as a novel techno-political device, with which data is collected and re-purposed to invest into the production of the vision of a total archive of pathology. As I will show, this vision mounts at least two formidable challenges to the western epistemology of health and disease. First, it renders much of medical semiology obsolete, as it presumes for any and all information to hold potential value for the re-classification of pathological entities. Second, this vision risks to introduce normative understandings of health, which threaten to render individual experience of dis-ease into noise.

Fitness trackers of the mind: digital phenotyping from biology to psychoinformatics *Ger Wackers, UiT The Arctic University of Norway*

Scientists and engineers in psychoinformatics are developing new ways to capture changes in mental conditions through data (typing kinematics, speech dynamics, a.o.) generated from people's interaction with smartphones. Patterns in these data are correlated with a wide range of other variables, ranging from self-report inventories to promotor genes for oxytocin receptors and the volume of the nucleus accumbens in the brain. Borrowing from evolutionary biologist Richard Dawkins' 1982 work on the extended phenotype, researchers in this field have adopted and adapted this biological notion into psychoinformatic's concept of the digital phenotype. They refer to the activity of generating and analyzing digital data from human-smart device interactions as digital phenotyping, on the assumption that information about unobservable mental phenomena can be extracted from these data. In a biologically oriented reader, the concept of phenotype invokes the notion of genotype, phenotype's partner in the conceptual couple. Despite Dawkins writing about genetic effects beyond the traditional boundaries of the organism, the literature on digital phenotyping is silent about the complex relationships between genotype and phenotype. Using anti-deterministic notions of genotype this paper asks questions about the generative matrix underlying the ontogeny of mental and behavioral phenotypes, focusing on implicit concepts of causality, information, operationalism, inverse inference and reification. As practitioners of a highly correlative science and practice these fitness trackers of the mind are the epistemic inheritors of the biostatistics movement initiated around 1900 by Galton, Pearce, and for psychology, Spearman.

Towards automating human doctors? Contested futures of artificial intelligence in healthcare *David Kampmann, London School of Economics and Political Science*

This paper sets out to critically examine entrepreneurs' promises that Artificial Intelligence (AI) will replace doctors with intelligent machines in the future, which have attracted immense investments in digital health start-ups. The paper seeks to contribute to our understanding of how those futures of AI are constructed, institutionalized, and contested by other actors, building on recent work in STS (Jasanoff & Kim, 2015) and sociology more broadly (Andersson, 2018; Beckert & Bronk, 2018). This study is a multi-sided ethnography which takes the UK-based digital health start-up Babylon Health as a case study to explore how futures of AI in healthcare - enacted in the start-up's medical AI chatbot - are imagined differently by entrepreneurs, venture capitalists, policy makers, civil society organisations, doctors and patients. By drawing on data from 41 semi-structured interviews, industry and policy documents, as well as participant observation at conferences, this study shows how Babylon and other actors from the tech industry, investment

sector and the UK Government mobilize AI futures to legitimate and reinforce different logics of privatization or "market sensibilities" (Neyland, Ehrenstein, & Milyaeva, 2019) such as competition or investment risk/return in the healthcare sector, as well as to justify the construction of new data infrastructures to enable the "datafication of health" (Ruckenstein & Dow, 2017). In contrast, doctors and civil society organisations challenge such AI futures not only by referring to lacking capabilities of AI systems and detrimental impacts of privatization on UK healthcare services, but also by questioning the very act of predicting "the future" itself.

Session Organizers:
Ger Wackers, UiT The Arctic University of Norway
Lukas Engelmann, University of Edinburgh
Chair:
Lukas Engelmann, University of Edinburgh

356. Defining the Patient In Biomedicine- Part II (The Marginal and Special Case)
10:00 to 11:40 am
virPrague: VR 13

Within the field of definitions and discussions of what and who 'patients' are, the medical definition points to significant differences between subjectivity as existing in a state of exception, addiction, being 'over' weight, and other factors defined patients categorically as other. This panel looks at the complexities of medical roles and definitions in the formation of patients as complicated medical cases.

Participants:

Insist on making it complicated: psychiatry and the narrative of disorder *Gemma Lucy Smart, University of Sydney*

Atypical mental experiences and behaviour require creative methodology that fosters the kind of insight only possible through contextualized and 'thick' understandings of disordered individuals. Some psychiatric disorders can be understood using the analogy of a crystal: as single ontological entities possible to be viewed from multiple directions. Others are better understood as loosely construed concepts that are socially and historically constructed multi-ontological categories. To capture the heterogeneity of atypical mental phenomena, methodological approaches to psychiatric disorders need to respect their inherent complexity. Bringing together diverse approaches requires a multidisciplinary approach to understanding mental phenomena, one that STS is well placed to accommodate. A pluralistic approach is necessary as no one way of considering a psychiatric disorder is inherently 'correct'. I will use the case studies of emerging classifications in addiction and delusion to consider the tension(s) present in current methodological approaches in critical studies of psychiatry and attempt to develop a research method that can handle and retain the complexity of psychiatric disorders, rather than privilege simplicity in both methodology and explanation. I argue that an effective way to incorporate pluralism into our methodology is by beginning with and returning to the narrative(s) of disorder. This requires a radical and complex contextualization of the patient, and of the science of medicine.

Knowing Patients: Discourses of Knowledge in the Post-Weight-Loss-Surgery Community *Katherine A. Tyrol, New Jersey Institute of Technology*

In order to qualify for weight loss surgery (WLS), prospective patients are paradoxically required to be heavy enough to be classified as "in need" of the procedure but small enough to satisfy institute weight limits on medical equipment, historically incapable of weight loss thereby justifying the procedure but recently successful at enough weight loss to demonstrate their capacity for compliance with extensive dietary restrictions. WLS recipients, already dehumanized in the medical system and the larger social landscape, are further rendered abnormal and abject by these paradoxes. In my ethnographic research with recipients of weight loss surgery, patients responded to this dilemma through the deployment of knowledge in fluid and innovative ways. This allows them to stake claims for their personhood and regain access to power that was lost over the course of a series of pre-operative medical encounters which function to discipline the

prospective WLS patient. This paper explores these strategies of knowledge deployment and envisions how such strategies could be generalized in the health care arena to center the patient - as a whole person - in medical interactions.

New Patient's Definition Shaped by Preventive Properties of HIV Drugs *Noëllie Genre, STSLab, Université de Lausanne*

In 2008, Switzerland was the first country to officially recognize the effect of antiretroviral drugs on HIV transmission where the treatment of an HIV-positive person protects his or her partner from infection (Vernazza and al. 2008). This publication officialised a first shift in HIV contagion - from this point forward medication allowed to prevent contagion, rather than only treating it – but also in "HIV patient"'s clinic definition. Swiss physicians now recommend regular HIV tests for partners of patient on treatment, bringing seronegative people in medical follow-up according to their couple's situation. Another important shift in prevention and patient's definition of HIV happened in Switzerland in 2016, when a federal commission for sexual health edited a recommendation for Truvada° in prophylaxis, (Office Fédéral de la Santé Publique 2016). This publication recognized the preventive effect of Pre-Exposure Prophylaxis (PrEP), to prevent contamination. Men who have Sex with Men (MSM) became the main target audience for this use of drugs, a reconfiguration that has transformed both medical follow-up practices and the MSM's experience of it. My study builds on qualitative data collected through ethnographical observations and semi-directive interviews with PrEP users and health professionals, in French-speaking Switzerland. I consider drugs as social objects, which means that medications are constructed by social practices and vice versa. I identify several reconfigurations shaped by the use of antiretroviral drugs. In particular, discourse analysis allows me to describe how the preventive use of such drugs leads to the emergence of new forms of patients, not only linked to their serological status but also with their drug uses.

Patient organizations and the biomedicalization of substance use in Norway *isa dussauge, University of Oslo*

This paper explores how substance users, ex-users and relatives' have been forming interest groups and patient organizations in Norway in the past forty years. Why organize? With which core activities, which agendas and in which relation to medical actors in the field? Using and promoting which understandings of addiction, substance users, and their rights? The 2000s have seen the formal attribution of patient status and patient rights to addicted substance users, and the establishment of substitution treatments for heroin users since 1998 (Skretting 2012). This suggests a re-medicalization following earlier configurations of criminalization/(de-)medicalization in the Norwegian governance of substance use. New patient organizations were created in the wake of the early 2000s reforms. However, the first users/ex-users and relatives' organizations were founded in the 1980s and 1990s already. This paper is based on a preliminary analysis of interviews with activists from seven organizations of users/ex-users and relatives in the field of substance use in Norway. The analysis uses and expands the topology of patient organizations' strategies proposed by Vololona Rabeharisoa (2003): an "auxiliary model" placing patient authority alongside (and under) that of health professionals; an "emancipatory model" challenging medical authority; and a "partnership model" characterized by the scientization of patient expertise and the movement's ownership of its scientific agendas. These interviews provide maps of the changing landscape and governance of substance use, and of the role of marginalized groups in ongoing biomedicalization processes.

Session Organizer:
Gareth A. F. Edel
Chair:
Gemma Lucy Smart, University of Sydney

357. Articulating and Relating to Different Forms of the Good in Bad Situations II
10:00 to 11:40 am
virPrague: VR 14
Unsafe healthcare, climate disasters, migration threats, scientific

misconduct – all tend to steer our focus towards fear and critical analyses of things that are overwhelmingly and singularly bad. With our present day challenges requiring urgent action, how to not get carried away by the urgency to act? How not to overlook everyday, situated efforts of forms of the good already going on and ways in which we can articulate the good in its different guises? What would happen when we analyse 'wicked problems' by picking out the forms of goodness and badness that are inscribed in such calls for alarm? And even more intriguing: what good might these challenges also bring? In this panel we explore how forms of the good are constantly shaped and articulated by the people and things we study, and also by ourselves as researchers. What imaginations and repertoires for acting and doing research can such articulations open up? How does it transform understandings of how we might act, and in what terms could this be labelled as 'good'? And how difficult is it to act or not to act with forms of the good? How can empirical ethics be a way to tell a different story than the stories of overwhelming alarm for problems that clearly exceed individual agency? We welcome contributions that focus on good care, good (environmental) living, good education or good science, and also explicitly welcome contributions from other empirical domains and 'overwhelming' problems.

Participants:

Science as collaboration: interactive care in the chemical lab *Jonna Brenninkmeijer, Amsterdam UMC*

Science policy increasingly steers us towards applauding individual excellence. We follow individual tenure tracks, apply for individual funding, win individual prizes, are evaluated on our individual performances, and reprimanded on our individual mistakes. This, while most researchers will acknowledge that science is predominantly a collaborative process. In this paper, I want to emphasize the intense collaboration in scientific practices. Using my ethnographic fieldwork in organic chemistry as an example, I argue that not individual research skills, but intense research collaboration is what make scientific practices good. I will demonstrate that "making molecules" is a socio-material practice of care between researchers, materials and technologies. This care is interactive: chemical researchers do not only care for each other, and for their tools, materials and molecules – tools, materials and molecules also care for the people: for example, by protecting their safety, analyzing their work, and finally with their function in curing illnesses. Studying science as a collaborative and caring practice will not only provide insights in how good science is constituted, but also in the elements that might interrupt this collaborative process.

Entanglements of good care and harm: An ethnography of pressure ulcer prevention *Els Roding, London School of Hygiene and Tropical Medicine*

Pressure ulcers (PUs) emerge after prolonged pressure on the skin combined with underlying factors, such as poor nutrition or vascular disease. As such, they are a constant threat for people who are ill, frail, or whose mobility is impaired. The United Kingdom's National Health Service launched the Harm Free Care campaign in 2014 to promote patient safety by preventing four common 'harms,' one of which is PUs. It has generated widespread attention for prevention efforts. In this paper, drawing on my ethnography of PU prevention and management practices in hospitals in the UK, I will unpack how normativities are enacted in three PU prevention practices. Firstly, during interdisciplinary team meetings when PUs are categorised as a harm, but one that is also enacted as a positive opportunity to learn and improve care. Secondly, in practices aimed at generating awareness among staff, patients and families by making PUs present to achieve their desired absence. And thirdly, by celebrating the invisible result of prevention efforts in ward awards. In each case, the danger and distress associated with PUs is accompanied by moves to establish something positive and productive. Good care is not just preventing PUs, but doing so with positivity. The normativities in the Harm Free Care campaign which at first seem clear cut are negotiated in practice through which new, creative forms of good care come about. While PUs are a common iatrogenic effect of hospital care, the prevention practices show that good care is entangled with its potential harm.

Doing wickedness. Disoriented behavior in the Netherlands *Violet Petit-Steeghs, Erasmus School of Health Policy and*

Management; Roland Bal, Erasmus University Rotterdam; Hester van de Bovenkamp, Erasmus University Rotterdam

"Dangerous lunatics [that form a menace to society] should be put on a list." "70 percent of people feel that cuts on mental health affect the most vulnerable people in society." Two lines from articles in the same Dutch right-wing newspaper published not too long after one another. How should we deal with such conflicting bads, the one individualizing and categorizing 'problematic' behavior, the other protecting the same people from a failing government? The problem of 'disoriented behaviour' in the Netherlands presents itself not just as a 'wicked' problem, but one in which different conceptualisations and normativities are played out against each other, different conflicting legal, financial and institutional regimes are at stake, and professional practices clash. Working 'from the ground up' through ethnographic research in neighbourhoods and analysing stories from persons showing 'disoriented behaviour' we analyze how people do wickedness and what goods and bads are evoked in doing so. We particularly focus on projects part of a national program on 'disoriented behaviour' which tries to find 'intelligent ways' of dealing with wickedness, showing the layered and fragmented character of the issues at stake and how caring for these issues becomes a struggle in itself. We also analyse our own role in these efforts in interaction with professionals, managers and policymakers, emphasising the relational nature of the goods and bads of wickedness.

Different Versions Of 'Doing Good' iCBT: Stories From The Field *Stine Rath Hansen, Aarhus University, Denmark*

In terms of the national political agenda calling for cost reduction in the Danish healthcare system, digitalization of healthcare practices has become a solution to do more care with lower costs. Policy papers refer to the digitalization strategy as 'quality enhancing', while others might describe the cost reduction as 'a bad situation' (The Government, LGDK and The Danish Regions, 2016). Recently in 2019, internet-based cognitive behavioral therapy (iCBT) has been rolled out on a national scale in Denmark. iCBT concerns home-treatment of anxiety and depression through a computer program. Over 12 weeks, the patients work themselves through a standardized set of exercises, which are specially designed to make them recover from their illness. During the treatment, technologies such as phone calls but primarily text messages mediate the contact between psychologist and patient, while videoconferences are made before and after the course of treatment. As such, the radical parts of treatment with iCBT, is both that the psychologist and patient never meet in real life, but also that the computer program 'do the treating', whereas the role of the psychologist is to support this goal (Reindahl Rasmussen et al. 2016). In this regard, empirical ethics (Pols, 2014; Pols, Pasveer, Willems, 2017) are used to explore the emerging field of iCBT by following how different actors shape and question 'good iCBT'. Accordingly, this paper will answer the question: How do patients, psychologists, leaders, engineers and technology developers frame different versions of doing good iCBT?

Machines as doctors: the goods and bads of AI in Personalized medicine *Dick Willems, Amsterdam UMC*

Personalization is the current buzzword in medical science. Paradoxically, making medicine personalized is taken to involve the processing of huge amounts of data, often using artificial intelligence (AI). Large and heterogeneous collections of data, involving medical as well as everyday data related to things like social media use, shopping behaviour etcetera, get processed using AI, into prediction models for both the risk of disease and the choice of treatment and care. Some say that only with the help of AI, medicine and health care can become truly personalized. Promises are large and hopes are high, and so are the associated fears: two examples. First, there is the (slightly paradoxical) fear of depersonalization in the sense that personal contact will be replaced by feeding data into machines. Second, AI has proven to amplify existing social and ethnic differences leading to discrimination. It is not hard to see a description of good and bad within these stories about personalization. For example, 'One size fits all' is clearly bad (where has equality gone?), while precision and specification are clearly goods.

Personal contact is a good, being dependent on algorithms is a bad. The paper will articulate the bads and goods in two large EU big data projects I am involved in as a 'parallel ethics' scholar. The first is about predicting risk for sudden cardiac death and the other tries to develop personalized use of internal cardiac defibrillators (ICD); both use data from diverse sources and machine learning.

Session Organizer:

Sonja Jerak-Zuiderent, Amsterdam University Medical Centers

Chair:

Sonja Jerak-Zuiderent, Amsterdam University Medical Centers

358. Democracy in the Making I: Practices of Doing Democracy

10:00 to 11:40 am
virPrague: VR 15

Praxeological study of various ways of representing the will of the people

Participants:

In search of a good demos: inquiry into two large scale experiments in democratizing science and technology *Lotte Krabbenborg, ISiS, Radboud University*

In this paper I will zoom in on two longer-term and large scale initiatives in the Netherlands to include individual citizens and civil society organizations as new dialogue partners for scientists and technology developers in decision making processes regarding the development and governance of new science and technology. On case study is the Dutch Societal Dialogue on nanotechnology (2009 and 2011) and the other one is Dutch Research Agenda (2015-ongoing). Both initiatives can be framed as a democratic situation, as the demos, in this case citizens of the Netherlands, are stimulated to actively participate in policy making processes regarding research and technology developments. However, how such democratic experiments are actually designed and orchestrated, influences in what way(s) citizens are expected to participate and to what extent their issues and concerns are or can be taken up in policymaking processes. To learn about democracy as a situated practice, in particular with regard to citizen participation in the governance of new science and technology, I empirically studied the design and outcomes of both initiatives. I will show how the Dutch government and other organizations involved (intentionally or unintentionally) set restrictions with regard to 1) who could participate; 2) the kind of participation that was seen as legitimate and 3) the type of outcomes that could be produced. This empirical data is used to interpret, tentatively, the different models of democracy that were put forward by the organizers along the way.

Making Neighbourhoods: Enacting Relational Identities Between Assemblies And Associations *Andy Yuille, Lancaster University*

Neighbourhood Planning in the UK is a striking example of the turn to participatory decision-making, in a climate where dissatisfaction with formal representative democracy has never been higher (Foa et al, 2020). Its promoters portray it as a straightforward transfer of power from state to community. However, its legitimacy relies upon complex, hybrid forms of representative, participatory, and epistemological authority that operate alongside and in tension with formal representative democracy. This paper, based on four years' ethnographic fieldwork with two neighbourhood planning groups in the North West of England, explores how neighbourhood planning produces different instantiations of 'the people'. It generates both an 'assembly' (the neighbourhood, the imagined constituency and subject of representative claims), and an 'association', the collective acting as spokesperson for and making representative claims on the neighbourhood assembly (Della Porta, 2013). However, following Latour, I note that the assembly and the association are thoroughly material as well as social, that 'the neighbourhood' exceeds 'the people'. The representative claims made by the association rely on the enactment of multiple relations with this sociomaterial assembly. I trace the claims made through these different relations and the tensions and

conflicts that arise between them. I show how this way of constituting the neighbourhood with a particular will and agency simultaneously enables and undermines insider understandings of neighbourhood will and agency. I conclude by speculating about interventions in this practice which could help remake it in a more open and reflexive mode, more firmly grounded in the multiple relations of place.

Citizen engagement in an urban park: performing street-level democracy *Sanne Raap, Maastricht University, the Netherlands*

Drawing on both STS and Urban sociology, this paper aims to contribute to the understanding of citizen engagement as experiments in democracy, through an analysis of interventions aimed to revive a local park as a public meeting place. In STS, authors have stressed that public engagement does not simply offer tools for representation but 'enact a certain version of the world' (Law & Urry, 2004). Through the development of public engagement devices (Voß & Amelung, 2016) researchers engage in 'ontological politics' (Mol 1998), performing new realities through their research practices. In participating, citizens develop knowledge on specific issues, but also experiment with their own role in society (Felt, 2010). This aspect is crucial for understanding the democratic underpinnings of interventions. Lessons can be learned from citizen engagement experiments in urban settings in which the types of togetherness of citizens as part of publics takes centre stage (Sennett, 2018). In this paper, we explore the development of tools to create mini-publics in an urban park. Based on ethnographic research in three low-income neighbourhoods in the Netherlands, we present an analysis of two interventions to engage inhabitants in exploring how the park could become a destination rather than a passage from one neighbourhood to another. We analyse how these interventions enacted multiple (micro-) publics and explore which interventions were 'felicitous', collectively turning individuals into active participants. Finally, we will return to the question of democracy and ask what kind of epistemic subjects and democratic imaginaries the interventions performed.

Whose publics, what (energy) democracies? Diverse and co-constructed publics in the Dutch heat transition *Toyah Rodhouse, Delft University of Technology; Udo Pesch, Delft University of Technology; Eefje Cuppen, TU Delft; Aad Ferdinand Correlje, TU Delft*

It is widely acknowledged that publics will increasingly play a role in energy transitions. There is a recognised need for more public participation in development of energy infrastructures. Some governance actors go further and present counter-visions to technocratic organisation of energy, endorsing 'energy democracies' in which publics are imagined as owners of energy and driving forces of decarbonisation. While energy-in-society researchers apply the concept of imagined publics to explain how publics become constructed in governance, they often focus on particular imaginaries: publics with deficit and threat characteristics, that become imagined around specific technologies or projects. This is insufficient if we want to understand the normative heterogeneity of publics imagined in transitions. To systematically identify publics imagined by governance actors in the Dutch heat transition, we conducted a Q study and found five imaginaries: 1. "Deliberating citizens in a diverse society" 2. "Strong and engaged communities in the lead for change" 3. "NIMBYs threatening the transition" 4. "Vulnerable households at risk of losing out" 5. "Individual responsibility and the facilitation of the hassle-free consumer" These are diverse and heterogeneous imagined publics. These results also reveal that imagined publics are co-constructed, firstly, with specific understandings of democracy (deliberative, representative, material) and economy (socialist, liberalist); secondly, with biases towards expert-based or local knowledge; and thirdly, with physical-material infrastructural arrangements. We conclude that imagined publics serve as legitimizing audiences for political, economic and socio-technical order and discuss which of these imaginaries limit the ability of real-life publics to grant legitimacy on their own terms.

Towards a Theory of Appropriate Collaboration for Urban Energy Transitions *Silver Sillak, Technical University of Denmark - DTU*

Cities are increasingly becoming the hot spot of transitions towards zero carbon and 100% renewable energy based societies. However, technocratic and top-down planning of large-scale urban energy projects has often deviated from the interests of local citizens and communities while having little to do with actual environmental sustainability. This has led to situations where municipal planners, technology suppliers and developers experience increasing public resistance to new energy projects while citizens and communities feel a lack of democracy and public engagement in planning. The tendency to rely on pre-given managerial notions of participation (e.g. public consultation) to achieve social consent for a pre-established outcome of a planning process has limited our understanding of the multiple ways in which local people could become meaningfully engaged in urban energy transitions. In this paper, I follow the call from Chilvers & Longhurst (2016) to „open up" the wide variety of possible forms of collaboration between municipal planners, technology suppliers, developers and citizens to find more appropriate ways of planning for energy transitions in an urban context. By drawing on literature from the fields of energy transitions, urban planning and smart cities, I break the whole process down into basic parts by distinguishing between key actors (who?), issues (what?) and forms (how?) of collaboration. I then propose a flexible framework for rearranging the parts into context-specific and appropriate collaborative models of urban energy planning that focus on the empowerment of local citizens and communities and the representation of their values and interests.

Session Organizers:
Jan-Peter Voß, Berlin University of Technology
Jason Chilvers, University of East Anglia
Chair:
Jan-Peter Voß, Berlin University of Technology

359. Experimental Food Design Methods
10:00 to 11:40 am
virPrague: VR 16
Participants:

What if everything was edible? *Danielle Wilde, University of Southern Denmark*

Foodstuffs are socio-culturally potent and materially fantastic. Our engagements with food nourish us, shape our identities and cultures; and the base ingredients of foods are perishable and thus compostable – at their foundation affording engagement with transformation and change. The human food system impacts all 17 of the UN World Sustainability Goals and is the key driver of climate breakdown and ecology collapse as our agricultural, food distribution and waste practices lead us beyond Earth system tipping points. This radical interconnectedness of food with individual, collective and planetary flourishing, suggests it is high time that food became the material of choice for design. I present a series of methodological experiments that co-opt bio-design, speculative gastronomy and experimental ethnography, to develop food-oriented approaches to participatory, speculative, critical design. These methods ask: what if everything was edible? They leverage food as a starting point for thinking; enable collective reflection to speculate seductive, desirable, regenerative futures and back-cast to radical new 'implementable nows': realisable practices that are personally meaningful, contextually relevant and ecologically impactful. They enable designers to reconfigure design development to be more sustainable, by collaborating with natural systems, rather than dominating materials, e.g. working with living entities and perishables in place of plastics and other materials that do not biodegrade until long after their usefulness is gone. I discuss the methodological impact of food as bio-design material in contexts ranging from healthcare to situated food and design practices, using edibility as the guiding criteria to shape tasty, empowering futures for all.

Datafication on the Farm: The Emerging Role of the Precision Agriculture Software Platform *Sarah Marquis, University of Guelph*

As the world contends with a digital revolution, technology is transforming the way Canadian farmers interact with the environment. Precision agriculture, for example GPS technologies, robotic milkers and yield mapping, allow farmers to use technology to tailor management to different fields, or different livestock. These digital technologies can generate, collect, store and analyze vast amounts of diverse and disparate agricultural Big Data about microclimates, yields, soil composition, livestock health and many other parameters on the farm. Analyses of these data, performed by precision agriculture platforms, can transform data into economically valuable insights. Precision agriculture, and the subsequent datafication of farming, is framed as an optimization of the food production system, enabling it to be competitive, contribute to feeding a growing global population, while at the same time reducing environmental impact. However, with the rise in popularity and use of precision agriculture software platforms on farms across North America, questions arise around the issues of agricultural data storage, privacy, and governance. Through surveys and interviews with Canadian farmers and precision agriculture industry representatives, my research explores the ways in which agricultural Big Data is an emerging knowledge production system in the Canadian crop farming industry. I also examine how different levels of access to this system are experienced by different stakeholders, and how these conditions have the potential to impact food production systems and supply chains. My work also contributes to critical scholarship that challenges the assumed objectivity of agricultural Big Data and interrogates whether or not it is enabling a sustainable food system.

"It's about mass production": Making Sense of CRISPR-CAS9 Food Futures in Bavaria *Amy Louise Clare, MCTS, Technical University of Munich; Ruth Müller, MCTS TU München; Julia Feiler, Technical University Munich (TUM)*

Discussions about the future of food frequently feature the novel gene editing technology, CRISPR-CAS9. Historically, genetic modification in agriculture has been controversially discussed by the public and subjected to strict regulations in Europe. With the rise of CRISPR-CAS9, however, there is a novel push to investigate the potential use of genetic modification in agriculture in Europe. In Germany, this momentum is accompanied by diverse activities to consult the public regarding their perspectives on CRISPR-CAS9. Our research draws on interactions with multiple publics as part of a transdisciplinary research project that explores technical and societal possibilities for CRISPR-CAS9 in Bavarian agriculture. Here we discuss how these various publics made sense of CRISPR-CAS9 as a possible technology for human food production. We draw on focus groups and group interviews with three different publics: urban publics, semi-rural publics, and practicing farmers and breeders. While these publics ultimately had different takes on if and how CRISPR-CAS9 should be used, there was one overarching theme that connected all group discussions, which centered on a critical assessment of contemporary patterns of food production for human consumption and the (lack of) value assigned to food and those who produce it. This shows that the assessment of a new technology like CRISPR-CAS9 is inevitably entangled with evaluations of the current socio-technical and economic assemblages of food production. How these evaluations play out, however, is shaped by the specific relationships different publics have with agricultural practices, with those who produce food in small-scale settings often occupying particularly vulnerable positions.

Session Organizer:
Ferran Altarriba Bertran, UC Santa Cruz
Chair:
Denisa Reshef Kera, University of Salamanca

360. Situating antimicrobial resistance (AMR) 2: locations, spaces and borders
10:00 to 11:40 am
virPrague: VR 17
Antimicrobial resistance' (AMR) is increasingly figured as an international priority through activities by the World Health Organisation and European Union among others. A prominent slogan 'bacteria do not respect borders'

also draws attention to the apparently global nature of the issue. In response, this panel calls for papers that situate the policies and practices of AMR – exploring how the issue and responses are framed in different institutions and locations; in different national contexts though stewardship or infection control policies and regulations; and in border regions and spaces like airports. Papers might address emerging practices for screening, surveillance, quarantine and antibiotic use in different contexts and cultures, or experiences of groups including ethnic minorities, immigrants and those with different infections. In ethical terms it is suggested that AMR is often understood as a site of tension between the individual needing treatment in the short term and a collective interest in preserving antibiotic efficacy in the longer term, but this does not hold for all situations. In clinical medicine as in other social practices people do not have equal abilities to claim and receive treatment. Others become the focus of additional surveillance and control through the notion of potential risk. When and how are people's vulnerabilities acknowledged or ignored in relation to antibiotic use or stewardships, and which groups are more affected by interventions? We invite scholars to discuss how AMR is shaping actions in specific locations, and how multiple framings co-exist or relate below the appeal to international standards or solutions. Catherine Marijke Will, University of Sussex; Alena Kamenshchikova, Maastricht University; Cristina Moreno Lozano, University of Edinburgh; Iona Walker, University of Edinburgh
Participants:

How International Bacterial Transmission Challenges the Notion of National Borders? *Alena Kamenshchikova, Maastricht University*

Travelling and human mobility is considered to be a major factor for transmission and dissemination of antimicrobial resistance (AMR) globally. Modern technologies of resistome analysis allow microbiologists to track the movements of bacteria accompanying human travellers from one part of the world to another. However, microbiologists map not only the process of acquisition and transmission of bacteria, but also human practices of travelling and hygiene, policies and health practices in countries of origins and countries of destinations, and they map borders between different countries and species, as well as between clean and dirty, and safe and dangerous spaces. To understand these different mappings and their implications for AMR prevention, I conducted a discourse analysis of 10 articles published in microbiology between 2016 and 2018. These articles were focused on the acquisition of multidrug-resistant Enterobacteriaceae (MDR-E) in healthy travellers. The analysis shows how by following bacteria, microbiological articles map interconnected networks between different territories, travellers, local populations, health policies and standards, bacteria, and medicines. These networks are conceptualised through the metaphors of risk and prevention, colonisation and de-colonisation of travellers from bacteria, as well as metaphors of import and transport of bacteria. In the presentation, I will reflect upon those metaphorical conceptualisations and their potential for alternative imaginings of national borders, health security and prevention.

Scenes From The Many Lives Of Escherichia coli. A Play In Five Acts *Mark Erickson, University of Brighton; Catherine Marijke Will, University of Sussex*

Escherichia coli is a Gram-negative coliform bacterium, found in a variety of environments including the human gut and a multitude of microbiology and other laboratories. E. coli has many forms; historical, as one of the first microbes isolated and named, environmental, as a component of human effluent and an indicator of water purity, medical, as an (alleged) agent of urinary tract infections (UTIs), and in formal scientific research, as a model organism in experiments across many disciplines. This multi-located and multifaceted existence makes E. coli a significant actor in our lives, but also an elusive one. Finding E. coli depends on many situational factors, and when we do find it E. coli is constructed according to characteristics that observers expect. The resulting descriptions of E. coli are used by agents to progress analyses and experiments, but such one-sided descriptions hide much, are at times misleading and may not be the best way to proceed. In this paper we draw on our recent ethnographic studies, and on the tradition of new literary forms in STS, to see E. coli as a (bacterial) actor in five different settings:

in history, in a water quality laboratory, in a hospital laboratory, in an AMR molecular biology laboratory, and in a public health laboratory. Allowing E. coli to 'speak' across these environments, to take on different roles and voices, and to explain to us how it is working with(in) and against us reveals how actors are making up, and making with, E. coli.

Reimagining AMR: Ethnographic Methods for Microbial Entanglements *Iona Walker, University of Edinburgh*

As conventional therapies to 'kill bugs' decline in effectiveness, research increasingly asserts the integral role of microbiome and non-human ecologies for maintaining human health. This creates a tension between accepting the fundamental microbial entanglements integral for human wellbeing while being unable to guarantee this relationship through antibiotics. I argue that this tension offers a unique opportunity to interrogate human-microbe relationships at this critical juncture. In the 'post-antibiotic era' global health needs new tools to account for, locate, create and understand bodily boundaries, navigate borders at micro and macro level for our microbially entangled lives. In this paper I will reflect on my upcoming laboratory fieldwork in Edinburgh and Boston and the ways in which I am hoping to use multispecies ethnography in conjunction with multisensory ethnography and conceptual frameworks drawn from the arts. Respiratory infections and sepsis are leading causes of morbidity and mortality worldwide. My ethnography would focus on a research lab in Edinburgh which researches respiratory infections alongside a comparative analysis of experimental drug resistance research in Boston. My ethnographic project aims to understand how scientists working on microbiome and AMR in western high-tech laboratories come to investigate and produce knowledge around the microbiomes of humans in the context of rising drug resistance. I seek to understand how this knowledge creation leaves the lab to create new narratives around human/microbe life for the AMR era.

Session Organizers:
Iona Walker, University of Edinburgh
Catherine Marijke Will, University of Sussex
Alena Kamenshchikova, Maastricht University
Chair:
Cristina Moreno Lozano, University of Edinburgh

361. Accommodating A Plurality Of Values When Engaging Emerging Technologies In Sustainability Transitions – On Designing For Safety And Security In A Warming World I
10:00 to 11:40 am
virPrague: VR 18

Climate change is a wicked problem, which many hope technological innovation will effectively resolve. Technologists themselves frequently claim their work will help pull off sustainability transitions successfully, e.g. to keep the temperature rise within acceptable limits or feed the 10 billion people projected to inhabit Earth by 2050. However, many factors complicate technologists' hopeful stories. Firstly, techno-scientific developments will interact reciprocally with perceptions of societal values and needs, whether associated with climate change or not. Insofar as these perceptions diverge, so will the acceptance of technologies, affecting their potential impacts. Secondly, technological developments' shape and direction is contingent on market and political constraints. This can compromise future technologies' capacity to serve public interests well, irrespective of any good intentions behind them. Finally, technologies that serve one specific goal – such as mitigating climate change – risk (unwittingly) justifying all means. Solving one problem then potentially means creating others. Contributions to this session shed light on how to resolve value conflicts that arise where emerging technologies feature in sustainability transitions, e.g. to sustainable agriculture or a circular- or bio-economy. While focusing on accommodating safety and security to sustainability, values like democracy, equality or justice are not excluded. We welcome contributions using transdisciplinary (possibly arts-based) methods geared towards bridging gaps between science, society, policy and industry. Since technologies cannot realize sustainability transitions by themselves, we stimulate contributions presenting novel narratives of change, while refiguring the problem space of safety, security and sustainability.

Participants:

Ambiguous & Wicked: Integrating energy, adaptation, and climate Intervention governance *Elisabeth Graffy, Arizona State University*

It has become obsolete and self-defeating to continue to treat energy transitions, adaption, and climate interventions as separate agendas or competing alternatives, but these constitute the policy choice set for humans as they strive for socio-ecologically, socio-economically, and socio-politically sustainable and resilient futures. An emphasis on decarbonized, renewable forms of energy (like wind and solar) reflect shared scientific consensus and growing cultural mobilization about the need for renewable power, electric vehicles, and other green market innovations. Adaptation has gotten traction, with climate action plans and resilience hubs arising in many communities. However, climate assessments conclude that these strategies alone will not avert the dangerous effects of climate heating. Most indicate that a combination of energy transitions, resilience-oriented adaptations, and intentional climate interventions (solar radiation management and carbon dioxide removal) will be required to achieve carbon balancing that keeps the planet "livable." This radically departs from widespread public assumptions and the scope of city and state policies. Public views have generally deemed geoengineering as too risky and outlandish, or too speculative, to take seriously. Yet, reliance on its eventual technical and economic feasibility, together with social acceptability of negative emissions technologies, in particular, is baked into mainstream scenarios as the only path for averting the most catastrophic model predictions. Several problems in this scenario are of concern from an STS perspective. First, the disconnect between public and expert perspectives on the nature of the climate crisis, and its solutions, holds a wicked snarl of mismatched imaginaries, compounded by epistemological and perhaps ontological differences that pose real impediments to the development of adequate sociotechnical responses. These seem incompatible with assumptions about accelerating just, sustainable transitions. Second, while differentiation among mitigation, adaptation, and climate intervention into multiple areas of expertise reflects their historical emergence, such silos can result in a sort of intellectual fragmentation that prevents integrated governance through science-policy processes at a time when navigating these highly ambiguous and wicked problems already strains social capacities. Third, the qualities of ambiguity that pervade the climate crisis as an object of decision-making make it harder and less feasible for societies to respond constructively, particularly on an accelerated timetable. In all three areas, STS offers the possibility of more precise and insightful approaches to disentangling such complex sociotechnical issues and orienting more productive partnerships between experts and publics, scientists and policymakers, and humans and nature.

Diversity in Climate Engineering Research *Nils Matzner, Technical University of Munich; Andrew Lockley, University College London; Cory Clark, Durham University*

Consideration of climate engineering (CE) technologies results from the ongoing climate-political crisis. Proposed socio-technical scenarios include particle injection into the stratosphere, or electricity generation using bioenergy with carbon capture and storage promise. These techniques can limit global temperatures, while introducing new risks. The research community behind CE has been dubbed the "Geoclique" (Kintisch). We analyse the structure of this community, using a primarily bibliometric approach to look at gender and other differences. We consider co-authorship, discipline, countries of research, publication productivity and further metrics. We identify substantially lower participation among women, and somewhat lower survivorship. However, we do not identify different productivity levels between genders.

Facilitating Value Discussions in Multidisciplinary Research: A Case Study of Vertical Farming *Essi Ryymin, Häme University of Applied Sciences; Laura Lamberg, Häme University of Applied Sciences; Sami Paavola, University of Helsinki; Annukka Pakarinen, Häme University of Applied Sciences; Libov Vetoshkina, University of Helsinki*

Vertical farming is a novel practice that is expected to supply

food to cities sustainably or value-added biomass for the industry [1]. Häme University of Applied Sciences (HAMK) has recently started a multidisciplinary and sustainability-oriented research project on vertical farming, implementing data analysis in optimizing the biomass production in controlled conditions of a container farm. Research in controlled cultivation environment enables various possibilities from finding solutions to fight against hunger in a changing climate or to optimizing growing conditions of plants to produce specific antimicrobial compounds. Strategic goals of the project call for responding to megatrends of digitalization and climate change. The sky is the limit, and perhaps that is exactly wherein the challenge lies. Our paper suggests facilitated workshops as a practical strategy for defining research paths and deliberating differing values at the early stages in novel vertical farming research project. The paper is based on two workshops in 2019. The aim of the first workshop was to kick-start the ideation process. The aim of this second workshop was to a) reflect on the strategic goals of the research project (digital and climate smart bioeconomy) and b) prioritize ideas with the aid of a digital platform. The participants of the workshops represented multidisciplinary research teams of HAMK. Preliminary analysis points to following results: 1) differing values (e.g. commercialism, sustainability, local impact) were discussed in the open, 2) prioritizing forced the process from diverging ideation towards convergence, and 3) as 'outsider' facilitators were able to bring up 'simple' but foundational questions. [1] Al-Chalabi, M. (2015). Vertical farming: Skyscraper sustainability?, Sustainable Cities and Society, 18, 74-75. https://doi.org/10.1016/j.scs.2015.06.003.

Session Organizer:

Megan Palmer, Center for International Security and Cooperation, Stanford University

Chair:

Pim Klaassen, Vrije Universiteit Amsterdam

362. Living In The Laboratory - Session 2: Focus On Mobility

12:00 to 1:40 pm
virPrague: VR 01

Notions of "laboratories," "experimentation," and "zones of exception" are presently gaining wider currency, far beyond the traditional confines of S&T and the narrow focus on lab science. From evidence-based policy-making using controlled trials, to living labs, test beds and regulatory sandboxes, all the way to design labs, urban labs, policy labs, social innovation labs, and legal labs – experimental approaches are being deployed across countless social and political settings. These labs promise to tackle social problems more inclusively, playfully, innovatively, and effectively, while at the same time invoking elements of scientific rigor, controlled experimentation, and the promise of scalability. They frequently lower regulatory burdens and overtly enrol populations into the making and testing of immature technologies, suggesting that business as usual will not produce the right solutions and that the effects of these experiments can be contained and tested before releasing them onto society at large. This session focuses on case of experimental zones in the area of mobility.

Participants:

Experimental Sprawl and Negotiating Public Good: Laboratory Expansion with the Development of Connected & Automated Vehicles *Lieselotte Nilce Niebch, MCTS Technical University Munich; Mathieu Baudrin, CSI-Ecole Des Mines De Paris*

Recent works in STS have thematized the use of experimentation in public space as politics through other means. In particular in the development of connected and autonomous vehicles (CAD) this has become a trend, which impacts road infrastructure. Building a laboratory in the city and on public roads is different from the laboratorization which Latour described. It is not dictating and scaling up the conditions of the laboratory onto the outside world – rather the conditions of the laboratory have to be negotiated from the very inception with public authorities. In our empirical data of the implementation of CAD testbeds in France and Germany we have observed, that this is not only a matter of authorization, but a real negotiation between experimental control, technological development and public interests of safety, privacy and reasonable interference into day-to-day life. We have also observed that this results in situated experimental zones,

which might be tied together by a corporate or public financed project background or emerging independently in concurrence with each other. We propose to call this uncontrolled proliferation of different experimental zones "experimental sprawl" and we will show how this dynamic results from situated challenges and negotiations with the public. Additionally, we see potential in exploring how companies, public institutions and independent testbeds involved and responsible for the experimental sprawl make sense of it.

Local development of regulatory sandboxes for sustainable (urban) mobility in Germany *Juliane Haus, Wissenschaftszentrum Berlin für Sozialforschung*

Transport and mobility are important topics of current political and public discourse in Germany. A growing part of the population in the cities, but also in the suburbs and in rural areas is dissatisfied with the traffic situation. To improve this situation, new approaches and procedures for the transport of people and goods are required. In spring 2020, the Federal Ministry of Education and Research (BMBF) launched a major funding line for sustainable mobility in Germany. 49 municipalities from urban, suburban and rural areas were selected to develop concepts for regulatory sandboxes within one year, which suspend certain legal regulations for a limited period of time and space. The paper will provide insights into the accompanying social science research on this funding line. Based on document analyses, interviews and ethnographic observations, the paper will discuss how the municipalities proceed in developing their concepts. Of particular interest is the influence of different spatial types (urban, suburban and rural) on the development of these concepts, especially those with similar contents. In addition, the paper will show who are the local actors that drive the development and implementation of such experimental spaces, what local challenges they face and what role science can play to support local actors. In addition, it will be discussed how the classical approach of STS lab studies can be used for the investigation of such real-world laboratories and what further developments of the approach will be triggered by such an application.

The city, an exquisite corpse? Mobility experiments with and within cities *Bård Torvetjønn Haugland, Norwegian University of Science & Technology (NTNU)*

This paper probes the role of transportation experiments in stabilizing and destabilizing socio-technical order, asking whether technological approaches to urban experimentation take the city's characteristics for granted. To explore this question, I draw upon interview data and policy documents relating to two instances of urban experimentation. The first example is a self-driving bus tested by a public-private partnership in Stavanger, Norway. Rather than transforming the city, the partnership envisioned the technology to be capable of providing a more sustainable mode of transport while upholding current settlement patterns. The second example is the car-free urban life campaign in Oslo, Norway, where private cars cannot access the city core. Initially framed in terms of climate, energy and sustainability, the focus of the project has recently pivoted towards 'giving the city back to the people.' These examples represent two radically different approaches. The first sees the city as an unbending frame, with moving parts and practices being changeable. The second case suggests that while the physical organization of the city imposes certain limitations, the characteristics of a city might still be changed through the implementation of non-technological solutions. As opposed to self-driving technology, envisioned to uphold or even reinforce current socio-technical order, non-technological solutions might prove more effective in destabilizing socio-technical order. This highlights the usefulness of STS perspectives on urban organization: by viewing the characteristics of the city as malleable rather than static, we can ask whether we should continue to experiment with technology within cities, or experiment with the cities themselves.

Session Organizer:

Arzu Sedef, TU Wien

Chair:

Thomas Buocz, University of Graz

363. China, Technology, Planetary Futures: Lessons for a World in Crisis? 3) Building Ecological Civilisation
12:00 to 1:40 pm
virPrague: VR 02

Two issues are set to become increasingly central in coming decades. First and foremost, amidst the Anthropocene, are issues of environmental crisis at planetary scale, and what this means for a global economy and associated model of science and innovation premised upon ever-accelerating exploitation of natural resources. Secondly, and in comparison a highly neglected issue in mainstream (still largely Western) social science, is the rise of China. But how these two issues will come together and shape the 21st century receives even less attention, even as their conjunction is likely to prove increasingly influential. This is both an increasingly problematic oversight and a missed opportunity for insights that do not merely confirm relatively established, i.e. Euro-Atlanticist and short-termist, readings of the state of the 'world'. STS has much to contribute to the development of this missing analysis, not just because the construction of new environmental, infrastructural and technological (and, in particular, digital) innovations from and in China is already evident as a key dynamic. But also because of STS's capacity to draw on empirical exploration that does not take theoretical categories as given but pursues development of new illuminating concepts adequate to a constantly changing socio-technical landscape of uncertain futures. This panel thus invites contributions studying Chinese socio-technical projects (in China or overseas, e.g. via the Belt Road Initiative (BRI)) for insights into how these two 'mega-trends' may be coming together; and what may be learned from China, positively or negatively, to confront the current apparent impasse(s) regarding global crisis.

Participants:

The Social Life of a Chinese Bike Highway *Thea Marie Valler, Norwegian University of Science & Technology (NTNU)*

In record time, even by Chinese standards, a bike highway was constructed in the Haidian district of Beijing. It is a bike highway in a double sense. Firstly, parts of it is elevated above street level. Secondly, it is secluded from the surrounding urban infrastructure and can only be accessed on a limited number of places controlled by security guards. While at first glance appearing as a continuation of Chinese top-down city planning, it should not necessarily be understood as such. Looking at this piece of infrastructure through the lens of sustainability transitions research opens for a broader analysis of the context in which the bike highway was created. This framework helps to shed light on issues such as the role of data in urban planning, political pressure at local level, relations between private and public actors, and the changing role of cars in Chinese cities. In this presentation, I take the bike highway as a starting point for analyzing broader changes in the urban Chinese transport system. While large-scale projects may gain considerably more attention, the way in which environmental issues are being handled at a local level and structures everyday practices are central to understand and learn from China. Through qualitative interviews, I aim to understand the negotiations between private and public actors in the urban transport sector, and how these negotiations in turn interplays with physical and digital infrastructure.

Terraforming Beautiful China: Island-Building and Chang'E Lunar Exploration in the Making of the Chinese State *Jonathan Galka; Laurence Bashford*

Chinese terraformation projects in the Paracel (Nansha) and Spratly (Xisha) Islands— widely disputed under international law—have been condemned as both geopolitically destabilizing and ecologically ruinous. Following years of escalating militaristic construction and propagandist tourism initiatives, China pivoted in January 2019 with the announcement of coral reef conservation efforts on several terraformed Spratly Islands. Days later, the Chinese National Space Agency made the first soft landing on the lunar farside. The Chang'e 4 Lander carried with it a lunar micro-ecosystem, conceived by schoolchildren and comprising a purportedly self-sustaining biosphere of living seeds and silkworm eggs. Soon after, the micro-ecosystem sprouted the first plant on the moon, whose brief lifespan was followed with rapt attention by the Chinese public, as livestream footage from inside the device disseminated across China's mediascape. We contend that PRC terraformation projects in the South China Sea and Chang'e 4 lunar biosphere project are related material-symbolic instantiations of a uniquely Chinese ideological paradigm. Partial narratives of South China Sea terraformation and burgeoning PRC space research initiatives figure Beijing's intentions as primarily antagonistic, and related to perceived growth in nationalistic sentiment. These accounts are necessary yet insufficient for understanding China's terraformation on Earth and beyond. We propose a retheorizing of Chinese terraformation that is co-constituted imaginatively, materially, and geophysically—collapsing space and time in the pursuit of a potential perfectible Chinese state within the rhetorical frameworks of Xi Jinping's ecological civilization and the China Dream.

Will China deliver urban 'ecological civilisation'? *David Tyfield, Lancaster University*

Urban China is pivotal global case study in contemporary efforts towards the expedited transition to sustainable and equitable modes of life that are urgently needed. On the one hand, the multiple wicked problems of proliferating complexity confronting the world coalesce in acute form around the issues of urbanization and urban transformation. On the other, the ongoing global rise of China, whether geopolitically, economically or techno-scientifically (particularly regarding digital technologies), and its sheer size, mean that what happens in China will most likely grow to have disproportionate impact globally. Taken together, moreover, China is in the midst of the largest process of urbanization the world has ever seen, and just beginning to proffer its services to burgeoning urbanizing societies across the global South. Finally, and by no means least, China has ambitious flagship policies and slogans aiming precisely to develop and then roll out such new sustainable models, under the title of 'Ecological Civilisation'. Debate on the prospects of Chinese (eco-) innovation remains (and promises only to become intensified as) essentially contested. To orient ourselves in this debate, however, we will consider a framework that enables insight into broad trajectories of socio-technical and socio-environmental change in ways that highlight and depend upon, rather than seeking reductively to minimize, issues of turbulence and uncertainty. From there, we can then highlight the strengths and weaknesses of Chinese innovation in urban mobility, focusing on three aspects of socio-technical change that are frequently neglected, namely issues of politics, culture and ethics.

Session Organizer:
David Tyfield, Lancaster University
Chair:
David Tyfield, Lancaster University

364. Robotics Innovation in Care: Ethical Considerations_Session 1
12:00 to 1:40 pm
virPrague: VR 03

Robots designed to accompany our elderly or to help people with Alzheimer; robots used in therapies with children with autism or to help them learn medication guidelines; robots to reduce the anxiety or pain of patients or to facilitate virtual assistance of hospitalized people; robots to feed or bathe people with limited mobility; robots designed to have affective and/or sexual relationships… Robotics innovation for care in daily live. We are living in an innovation framework in which development and technological application seem to have been previous or separated to the discussion on the moral, social, economic or political model that these innovations entail. Beyond usual debates regarding its alleged incorporation in daily life, and the utopian or dystopian scenarios that accompany its progressive introduction, the interaction with robots enacts controversies that require alternative forms of ethical reflection. In the same way, the ideation, design or commercialization strategies that are mobilized around this type of robots, suppose certain ways to conceptualize human-machine interactions, as well as certain ways to understand care and the role of care in our world. In these landscapes and dreamscapes, this panel has as main aim to discuss about ethical controversies that emerge (and disappear) with the development of robotics in care relations. We propose a multidisciplinary approach to this issue, from multiple and different perspectives: technological mediation, imaginaries, public controversies, risk identification…

Participants:

More Monitoring, Less Interaction? Social Robots and Reconfiguration of Care in South Korea *Heesun Shin, KAIST (Korea Advanced Institute of Science and Technology)*

As aging has become a serious social problem, an increasing number of countries are seeking new technological measures for healthcare of the aging population. Recently, robots are proposed as a new tool for the lonely adults. One prominent example is Hyodol, a toy-robot developed for the elderly living alone in South Korea. By offering various entertainments such as religious chanting and dementia-prevention quizzes, as well as daily reminder for medication, Hyodol is expected to serve as a companion and relieve depression levels. Caregivers from public health centers can remotely change the settings of the robot and monitor the elderly's activities through a specially designed app. Since 2017, over 1,000 units of Hyodol have been distributed to individual homes of the elderly nationwide. In this paper, I examine the development, design, and use of Hyodol through interviews with the robot developers, staff members at public health centers, and the elderly using the robots. How are the elderly expected to interact with Hyodol and what kind of responsibility are the caregivers assigned? How does Hyodol-mediated care simulate or differ from traditional elderly care? By examining the way in which Hyodol is utilized as a part of the public health care system in South Korea, this paper asks how the concept of care is reconfigured. I point out that care is understood as a one-way relationship, rather than mutual, in which the elderly is regarded as a recipient of continuous alerting and monitoring, not as a subject for human contact and interaction.

Improving Inclusivity in Robotic Design: An Experiment in Co-production *Stevienna de Saille, University of Sheffield; Eva Kipnis, University of Sheffield; Stephen Potter, University of Sheffield; Richard Gold, Vision4Health; Kate Halliwell, Community Philosophy Project; Lyuba Alboul, Sheffield Hallam University; Andy Bell, Advanced Manufacturing Research Centre, Sheffield; David Cameron, University of Sheffield; Peter O'Neill, Sheffield Hallam; Andrew Stratton, University of Sheffield; Calum Webb, University of Sheffield; Peter Winter, The University of Sheffield*

Recent evidence suggests that designing robots with the expectation that customers will find useful things for them to do tends to result in the machines falling into disuse once the novelty wears off. However, engineers fear that engaging with end-users at a much earlier stage (as co-production envisages) will not produce information they can take forward, given the limitations of the field. This dilemma becomes especially acute when designing robotic technologies for health-social care, where there is significant chance of misalignment between the lived experience and self-perceived care needs of disabled and elderly people and the realities of what robots can presently do. This paper presents the results of an interdisciplinary project investigating experimental methodologies for incorporating disabled people in the problem-definition phase of prototype design, before key decisions are made. Working in co-production with people who self-identified as having physical impairments, we contrasted focus groups using Community Philosophy (a collaborative discursive approach to problem-solving), Lego Serious Play (a hands-on method for creative exploration of values and ideas) and Design Thinking (a brainstorming and fast-prototyping method often used in this field). Participants were tasked with creating a 'blueprint' (literally or figuratively) for a useful robot. These were then evaluated by a focus group of roboticists and designers to determine which, if any, had yielded actionable insights which could be taken to the next developmental stage. The results demonstrate not just how science can embed in society, but how society can embed itself more productively in science.

Roboticists' Sociotechnical Visions Of Robots In Care And The Good Death *Alexander Lang, Institut für Höhere Studien – Institute for Advanced Studies Vienna*

Roboticists and other proponents of robotics in care identify different types of robots as means to address the challenges related to demographic change and a proclaimed elderly care crisis. They do not only state the necessity of such robots, but

envision futures of care with robots including expectations about social and care systems, caregivers and elderly, and the robots' use. Furthermore, they adapt and reproduce often-implicit normative notions of e.g. "good care". These projected futures can be understood as social phenomena that have the power to influence trajectories of technological developments. However, examining the roboticists' discourse forming these futures, it is striking that the process of dying and the inevitable end of life as specific care settings are almost entirely absent. This paper explores roboticists' visions of futures of robots in care and analyzes how these are interconnected to broader normative discourses around "good death". Drawing on an ongoing empirical study that collects and analyses documents created by and interviews with roboticists, the paper co-constructs a discursively reproduced common vision of robots in end-of-life care. It shows how roboticists not only anticipate future care and the role of (their) technology therein, but also how they relate to broader societal ideas and practices with regard to end of life, dying, and death. Furthermore, it discusses how the roboticists' expectations towards possible public controversies and ethical debates around their products shape their practices and interactions.

Imagining care fragmentation with robotics in daily life *Núria Vallès-Peris, Universitat Autònoma de Barcelona; Miquel Domenech, Universitat Autònoma de Barcelona*

In this presentation we propose the use of imaginaries as a tool to unravel ethical controversies that care robots entails. Inspired by a notion of imaginary close to the radical imaginary of Castoriadis, we developed a particular approach to explore alternative forms of ethical reflection to the discussion of the functionalities or risk identification of care robotics. Based on a set of interviews to roboticists, we explore their imaginaries on care and care robots. From the analysis we argue the idea that the imaginaries pre-inscribed in the robot are predominantly based on a process of care fragmentation. The possibility of transferring the industrial robot to the sphere of everyday care is closely linked to two trascental movements: One movement has to do with the possibility of placing a human and a robot physically together performing the same task, thanks to the development of the techniques of HRC, thus based on "the cult of domesticity". The other movement has to do with the need that, if humans and robots have to work in a collaborative way, the robots have to be placed in the "wild" daily life, only possible thanks to the advance of AI and the opposition of human caring to rational caring. We argue how fragmentations that these two movements entail are in tension with an approach that seeks to integrate the ethics of care in technoscience, and has relevant consequences for the ethical debate on care robotics and the political significance of care in our world.

Structural and disciplinary constraints in interdisciplinary care robotics research – Experiences from the ReThiCare project *Philipp Graf, Technische Universität Chemnitz; Lena Frnzkowiak, Bauhaus Universität Weimar*

We present first experiences and reflections of a research project designing assistive robotic technology for elderly care. Characteristic for the project is an integrated social science (STS/HCI) work package. As integral part of the team we conducted field ethnography and integrated the results into the design process. We reflect interdisciplinary cooperation, identify underlying assumptions of the methods used and create work processes by using new methods of interdisciplinary cooperation and participatory design methods. In the presentation we would like to draw a first interim conclusion and present the results of our deliberations on appropriate ethical principles in the development of care technology. The use of methods and a genuine interdisciplinary exchange necessitates taking care of group relationships, working cultures and translation processes. Differences in epistemic approaches or interpretations (Maibaum and Hergesell 2016) have to be reconciled at the beginning but also continuously and, if necessary, translated in order to ensure a common working basis and let an ethical position of the team emerge. Also the structural characteristics of research funding require flexible solutions to coordinate all the needs of a group, such as work processes and procedures. We would like to

highlight the macro-structural problem that a sustainable and responsible implementation of technology in the care sector would require more personnel in order to be able to deal with the resulting additional workload. This factor is difficult to influence and therefore creates particular structural barriers.

Session Organizer:

Núria Vallès-Peris, Universitat Autònoma de Barcelona

Chair:

Núria Vallès-Peris, Universitat Autònoma de Barcelona

Discussant:

Miquel Domenech, Universitat Autònoma de Barcelona

365. Epistemologies of Performance: "Re-Methods" in Arts, Crafts and Research

12:00 to 1:40 pm

virPrague: VR 04

Alluding to the 'end of the cognitive empire' (De Sousa Santos), this open panel focuses on how alternative ways of knowing are practiced in a variety of disciplinary, cultural, regional and historical contexts. In the humanities and social sciences mainstream research cultures are increasingly supplemented or amended by alternative epistemologies, questioning the dominance of propositional forms of knowing. In line with the agenda of this conference, these alternative 'knowing spaces' (Law) share an interest in the constitutive role of practices and things, in participatory and collaborative experiments that engage with matters of public concern, and in inclusivity with regard to the agencies and voices of the people involved in the generation of knowledge and understanding. What do 'knowledge' and 'discursivity' mean in these enhanced and performative epistemic cultures? And what consequences does this entail for the way people document, share and disseminate research? Through this open panel, we hope to advance these fundamental questions by tracing and discussing concrete knowledge practices and how they stabilize over time - or not - in research fields and traditions, ranging from visual ethnography and artistic research to the history of knowledge and 4E-cognitive sciences. We invite papers touching upon one or more approaches, including but not limited to re-enactment and reconstruction, citizen science and 'epistemologies of the South', co-creation and artistic work, enactivism and activism, with a focus on how knowledge and understanding are generated, stabilized and shared in these fields of investigation.

Participants:

How Site and Makers Matter: Epistemologies of RRR Research Practices *Sven Dupré, Department of History and Art History, Utrecht University, Utrecht, The Netherlands*

Performative methods are playing an increasingly prominent role in research into historical production processes, materials, and bodily knowledge and sensory skills, and in forms of education and public engagement in classrooms and museums. Such methods, which we refer to as Reconstruction, Re-enactment, Replication, Reproduction and Re-working (RRR), are used across fields in the humanities and social sciences, from history of science and technology to archaeology, conservation to musicology and anthropology, among other disciplines. Bringing together process and product-oriented RRR practitioners makes explicit the variant constellations of human agents and produced objects, thereby providing fruitful avenues for RRR research design. Moreover, confronting RRR in the historical disciplines with ethnographic experimentation allows RRR researchers to compare past and current creative practices rather than opposing the research agendas of historians and less historically inclined disciplines. We have adopted such interdisciplinary designed "Re-methods" to reconstruct lost colour worlds. Illustrated with examples of re-making red glass and black-dyed textiles, in this talk, I will reflect on the importance of site – the 'field' versus the laboratory – and the value of re-working with makers to the production of knowledge in RRR research practices.

Architect As Craftsman, Artist And Researcher: How Are The Voices Of The Inhabitants Involved? *Terezie Lokšová*

Inviting citizens to participate in (re)design of urban projects is in the post-socialist context still relatively novel approach. Among the architects, the local involvement serves as verification of understanding and prioritisation of issues at stake, releasing tension and mitigating conflict, and lastly, a tool to enhance continuity of the project beyond the design. Participative

approach is usually spread across Czech cities by various NGOs and educative platforms as a set of techniques, with main emphasis being on the lay participants and how to organise their involvement. Even though the involvement of new participants into the expert and political domains implies requirements for changes within usual ways of working for the professionals, too, these implications remain unaddressed within both architectural education and policy transfers. Building on Kurath's analysis of architectural epistemic culture, this presentation explores the way how architectural ways of knowing are enacted within and shape the invited participation projects. Architecture-making hovers on the intersections of art, craft and research. This lends the architects an authority of an artist – to which the constraints of the expert position need not apply. What spaces does the architectural epistemic culture creates for the voices of the inhabitants, over issues that matter (Marres)? Can we talk about alternative ways of knowing being enacted within the participatory interaction? The study is based on in-depth interviews (mostly with architects) from several case studies of participatory housing estates regeneration and redesign of public spaces in Czech cities.

On a Material Ethics of Conservation: Knowledges In-between Performance and Object *Helia Marcal*

Conservation has long been concerned with how things we currently call cultural heritage are made – the technique, the materials, the cultural contexts in where processes of making take place. The knowing spaces in which conservation has been operating so far have, however, been destabilised by cultural manifestations deemed performative. This is the case of process, performance, and conceptual art, or rituals that are performed in and through. But how are these forms of artistic and cultural practice making us reframe the material conditions in which knowledge takes place? In which ways is performance re-situating conservation practices of knowledge production? This paper will explore these questions while reflecting on the potential of re-enactment to re-frame the ways in which knowledges are created in cultural heritage institutions. Illustrated by three case-studies, and drawing on new materialist theories (particularly Barad, Haraway, and Bradiotti), the paper argues that processes of knowledge creation in conservation are inherently embodied, made of material-affective relationships involving humans, technology, and environment. This perspective will offer a critique of traditional conservation axioms - and how they are materialised in museum structures - which tend to operate vertically, following a logic that disregards what has been understood as "the repertoire" of cultural practices (Taylor 2003). In arguing for an ethical positioning of the conservation field akin to what Rosi Bradiotti calls "affirmative ethics" (2019), this paper will conclude by discussing what a performative approach to conservation can afford the museum and the collections it holds for present and future generations.

Session Organizer:

Sven Dupré, Department of History and Art History, Utrecht University, Utrecht, The Netherlands

Chair:

Henk Borgdorff, Leiden University

Discussant:

Peter Peters, Faculty of Arts and Social Sciences, Maastricht University, Maastricht, the Netherlands

366. Engaging Health Activism, Sexual Politics and STS 1

12:00 to 1:40 pm

virPrague: VR 05

The relationship between activism, biomedicine and sexual politics has been a focus in STS since Steven Epstein's 1996 book Impure Science: AIDS Activism and The Politics of Knowledge. In focusing on how patients, citizens and organisations mobilise to transform biomedicine and healthcare, STS has taken a particular focus on public/expert entanglements, such as how health advocacy groups collaborate with healthcare professionals and mobilise citizens' experiences to influence health practice (Akrich et al. 2014). In this panel we want to combine this focus on health activism with recent calls to address the possibilities afforded by a greater attention to pleasure and to sexual bodies in STS (Race 2019). Here we also include an attention to the ways sex and

sexuality are mobilised in political engagements with health and illness. As digital technologies open new possibilities for doing politics, sex and intimacy, and uncertain and turbulent times raise new problems for health programming and notions of expertise, we hope to explore the analytical generativity of doing STS research at the intersection of sex, sexuality, health and activism. We welcome contributions that engage with 'health activism and sexual politics' in various ways, and from a range of empirical areas. This might include: Public/expert entanglements Sexual bodies, affect and pleasure The enactment of 'biosexual citizenship' (Epstein 2018) in health activism Continuities and discontinuities: troubled pasts (Murphy 2012) and possible futures Health activism and LGBTQ movements (Roberts & Cronshaw 2017) Categorisations, standards, risk and politics of (sexual) inclusion Engagements with Queer Theory

Participants:

Body Literacy through Collective Tech Spaces *Marie Dietze, Weizenbaum Institute for the Networked Society; Marie Kochsiek, Bloody Health Collective & Heart of Code*

What happens if you invite feminist hackers, technologists, designers and researchers to speculate about health technologies and explore materials and production processes for rethinking body knowledge in the context of sexual health. We are exploring the potentials arising from free software and free fabrication infrastructures in the realm of gender to envision other possibilities of health technologies. Technological artifacts, that refer to a different kind of approach towards body knowledge and self-determination that doesn't exclude the collectivity, the social, cultural or even political entanglement of health, body and mind. The pledge of precision attached to quantification leads to a lack of trust in self-knowledge, own body awareness and the over-reliance on technology, which in turn makes users vulnerable. Self-observation and a vagueness of qualitative self-knowledge could serve as an alternative to the notion of universality and determinism. This paper reflects upon our practice-based research in a series of varying workshop settings, that stimulated interexchange on production of social meaning by materializing the contexts in which these discourses take place. The gatherings aim to encourage alleged lay people to engage with their bodies and getting knowledge specifically about menstrual and sexual health as techno-political territory. Demystifying technology in Do-It-With-Others spaces becomes a strategy to free oneself from knowledge hierarchies and production dynamics of the market. Narratives of technology can be appropriated to build artifacts that articulate dissent. The engagement with materiality is providing technology with one's own narratives and shifts agency of all these discourses and the production of meaning to the person that makes. At the end of the last millennium Haraway told us to look into the spectrum of the binaries between biology and technology, body and mind, nature and culture. We aim to look beyond dichotomies of expertise versus lay knowledge, quantitative versus qualitative data.

Sexual Risks and Pleasures: Gynaecological Cancer Activism and its Politics of Care *Lisa Lindén, Departement of Sociology and Work Science, University of Gothenburg*

In this presentation I draw upon an ethnographic study with a Swedish gynaecological – cervical, ovarian, vaginal, vulva and womb – cancer advocacy group I call "The Gynae Cancer Group" (GCG). I do so to attend to politics of care in the context of sexual health activism, and the versions of "sexuality" such politics enact, promote and marginalise. By drawing upon feminist STS "critical care" studies (Martin et al. 2015; Singleton & Mee 2017), I focus on two advocacy practices that enable different politics of care, and enact very different sexual practices. The first case is the GCG's activism around a new cervical cancer screening policy. Here I attend to how the GCG assembles and mobilises knowledge in order to provide evidence in favour of the replacement of the Pap smear by the HPV test. In mobilising public and sexual health evidence together with patient experiences of cervical cancer and cervical cancer risk, the GCG enacts a politics of care that dominantly is focused on sexual risks and an urgency to act now. The second case concerns advocacy practices focused on sex and intimacy after cancer treatment, and here care becomes a matter of sexual pleasures and finding ways of living well amidst life-threatening disease. By attending to differences both between and within these two

different advocacy practices, I explore the generative possibilities of "staying with" differences in a context of sexual health activism and politics of care.

The Cunnilingus-Analingus Modification Project *Anisha Gupta, King's College London; Carly Billing, Independent Researcher*

The use of barriers such as condoms, and to a lesser extent, latex gloves, is known to be an effective method of preventing sexually transmitted diseases during fellatio and digital penetration. However there is relatively little accessible information on using barrier protection methods for cunnilingus and analingus. These practices, whilst sometimes considered 'low risk', involve an element of body fluid exchange and thus present an opportunity for the spread of sexually transmitted diseases - including HPV, which is has been linked to the rising number of mouth and throat cancers, as well as cervical, penis and anal cancer. Whilst health organisations recommend the use of dental dams for cunnilingus and analingus, there is still a lack of advice on how to use them safely, effectively, and in a way that is pleasurable to both giver and receiver. Accessing or purchasing dental dams is difficult, and they are rarely stocked in clinics or retail pharmacies. The purpose of this project was to conceptualise and design a prototype for a single-use, disposable wearable device that utilises a dental dam-like barrier in a hands-free, comfortable and convenient manner, to provide an attractive, intuitive and safe sexual device, for people of all genders and sexualities. Additionally, the project worked to raise awareness of HPV related cancers amongst the public, and increase engagement with harm-reduction strategies. Existing technologies, drawn on for inspiration include textured latex male condoms, facial masks and retractor-dams used in dental surgery.

Molecular Technologies, Risk and Bodies - An Ethnographic Comparative Perspective Between The Combined Oral Contraceptive Pill And the Pre-exposure Prophylaxis *Marlyse Deberghh*

The combined oral contraceptive pill and the pre-exposure prophylaxis are two molecular technologies that are currently central in the promotion of sexual health. Both are taken at a preventive stage. The aim of these molecular technologies is to prevent a risk in the future. The risk avoided is that of getting pregnant for the combined oral contraceptive pill, and of getting infected to HIV for the pre-exposure prophylaxis. Despite their similarities, and their common importance for sexual health, these molecular technologies are mostly studied separately. Drawing on ethnographic research conducted in two sexual health institutions in the western part of Switzerland, this communication offers a heuristic comparison between the uses of these two molecular technologies. By making use of a sociocultural perspective of risk (Lupton, 1999) and of STS feminist studies, this research shows how these molecular technologies shape the promotion of sexual health within a framing of risk that (re)produces gender. Furthermore, this communication offers a broader reflection on sexual health inequalities, and on the political access to molecular technologies.

Session Organizers:

Lisa Lindén, Departement of Sociology and Work Science, University of Gothenburg

Emily Jay Nicholls, London School of Hygiene and Tropical Medicine

Chair:

Emily Jay Nicholls, London School of Hygiene and Tropical Medicine

367. AMR in Globalized Economies - Knowledge, Regulation, Markets
12:00 to 1:40 pm
virPrague: VR 06
Participants:

Structures, Practices, Understandings: Confronting agricultural Antimicrobial use practices in the UK, Thailand and

Tanzania *Henry Buller, University of Exeter*

Drawing on a number of different research projects currently being undertaken or recently completed, this paper confronts and contrasts antimicrobial use practices in livestock systems across three very different national and sub-national situations. While the rhetoric of a global AMR crisis is assembled and enacted at the international level, local farming systems in all three countries display levels of contextual variation that undermine the coherence of those emergent discourses that evoke a singular and unified 'health' and the possibility of access to it. National AMR strategies might embrace broad and largely generic reduction targets for antimicrobial use, and some may reach these through the harvesting of low, yet fulsome fruit. But beyond these easier, and often broadly comparable, targets, the significance of embedded practices and technologies, institutional and professional structures and collective understandings becomes a lot more telling. This paper looks at how transnational lines of force and influence (whether in the form of globally trading food companies, international agreements or cooperative research programmes) map across localised domestic economies and the often highly variable social meanings and practices associated with both human and animal health.

Generics Across the Ocean: A Framework for Exploring South-South Antibiotic Trajectories *Lise Bjerke, University of Oslo*

Antibiotics are some of our most precious medical technologies. However, due to rising antimicrobial resistance, there are increasing concerns that these potent products are losing their healing power. At the same time, global markets for generic antibiotics are rapidly shifting. Over the last 30 years, Indian and Chinese pharmaceutical companies have developed into world-leading antibiotic producers, increasingly dominating markets in the global South. Asian origin antibiotics are commonly available in African markets, but little is known about the trajectories of Asian origin antibiotics distributed to Africa, what enables these cross-border pharmaceutical flows, and how they are shaped by historical and sociopolitical processes and dynamics. How do antibiotics travel across the Indian Ocean, both through formal and informal distribution networks and channels? What are the institutions, actors and material factors that enable, restrict and shape the flow of antibiotics from Indian to Africa in practice? Drawing on biographical approaches to the study of pharmaceuticals, and medical globalization theory, this paper presents an analytical framework to open the 'black box' of factors that enable, restrict and shape antibiotic trajectories, using as its case the flow of Indian origin antibiotics to Africa. The paper provides preliminary thoughts based on a pilot study conducted in Mumbai and New Delhi in April 2020.

The Pivotal Role of Veterinarians in the Animal Drug Market. Towards an Economic Anthropology of Veterinary Medicines. *Nicolas Fortané, INRA - IRISSO, Université Paris-Dauphine; Florence Hellec, INRAE; Amandine Gautier, INRAE*

In many European countries, farm animal veterinary practices are nowadays facing a series of issues that are challenging veterinarians' professional and business models, that is to say their way of working, their relationship with their clients, the kind of services they deliver and their sources of incomes. Those issues are strengthened by the AMR problem and the policy responses to it, since the current decline in antimicrobial use strongly impacts the structure of the veterinary drug market and therefore the economic valuation of veterinary expertise (which was until now highly dependent on pharmaceuticals sales). This paper is based on a study about the evolution of veterinary business models in France (about 40 interviews with vets from various sectors) in the context of AMR policies. First, we observe a tendency of practices to regroup in bigger groups, which offer different working conditions to new generations of vets (part-time, office hours, staff such as secretaries or nurses to which they can delegate some tasks). Second, we notice the development of sales of new goods and services such as technical advice, farm audit, bacteriological analysis, hygiene and nutrition products (while, in the past, it was more about diagnosis, prescription and sale of medicines). This evolution comes with a

transformation of the veterinary business model as these practices have to invest in small manufactures and laboratories to be able to provide all these goods and services. But it also favors new forms of economic competition for veterinary practices which have to enter markets that are not protected by any professional monopoly (in particular advisory services and food and hygiene products). Third, we observe a restructuring of the veterinary drug market with the development of purchasing groups owned by several veterinary practices working together to negotiate better prices with the pharmaceutical industries and thus bypass the wholesaling companies. This trend seems to show how the veterinary profession is expanding its power and interests in the global veterinary drug market, by securing other forms of revenues despite the decline in sales of certain categories of pharmaceuticals such as antimicrobials. All in all, this paper highlights the growing and pivotal role of veterinarians in the animal drug market and claims for the development of an economic anthropology of veterinary medicines.

Who carries the burden of translation labor in antimicrobial resistance research and policy? *Gisle Solbu, Norwegian University of Science and Technology*

AMR is one of our time's most pressing health challenges, as evidenced by statistics documenting rising death rates. The spread of resistance is tied to global developments like trade, travel and economic inequality. Moreover, market failure is blamed for stalling antibiotics development internationally, since multi-national pharmaceutical companies can no longer derive a profit from the commercialization of new antibiotics. But at the same time as AMR is framed as a global phenomenon, it is also situated in local practices. AMR is a national concern that is addressed and negotiated within structures which are geographically bounded, like national health institutions and research programs. To that end, I will present empirical research that sheds light on how actors in the AMR field negotiate the translation between global and local contexts of concern. To do this, I draw on a case-study of AMR initiatives in Norway. By analyzing national strategies, action plans, and qualitative interviews with researchers working on AMR, I show how certain AMR initiatives ties into national discourses within health and research. In particular, I focus on Norwegian research efforts to develop new antibiotics to illustrate how actions towards AMR can represent tensions between national innovation objectives, pharmaceutical industry, global health concerns and personal careers. I argue that we see a new demand for translation labor that can open up the situated practices of knowledge and expertise to the broader context of AMR. This introduces an important question to STS analysis and AMR policies; who carries the burden of this labor?

Session Organizers:
Henri Boullier, INRA - IRISSO, Université Paris-Dauphine
Nicolas Fortané, INRA - IRISSO, Université Paris-Dauphine
Chair:
Henri Boullier, INRA - IRISSO, Université Paris-Dauphine

368. Race and Biomedicine Beyond the Lab 2: Bio/medical Technologies
12:00 to 1:40 pm
virPrague: VR 07
The panel builds on and expands the work of the emerging international network gathering around the theme of Race and Biomedicine Beyond the Lab (RaBBL), exploring how individuals and groups in wide-ranging contexts reimagine and seek to reconfigure racial futures. This panel (part two of a two-part panel) focuses on biomedical technologies in Brazil, Mexico, the United Kingdom, and the United States. Expanding on the scholarship on reproductive justice and technology, forensic genetics and human rights, recruitmentology, and biomedical knowledge production, each of the papers attends to the deployment of "race" and racial categorization in complex cases beyond the lab. This panel elucidates the various stakes that the State, collective social movement, and individual actors have in the simultaneous construction of race and science.

Participants:
Life's Continuation: Mobilizing Race and Biogenetic Affinity in Repro-tech *Nadine Ehlers, University of Sydney*

Assisted reproductive technologies (ART) open and simultaneously foreclose racial futurity and, thus, the guarantee of life's continuation. They can be used to challenge the notion that kinship is based on biology—calling instead on a donor to facilitate familial belonging. Simultaneously, however, ARTs can also be used to reaffirm the importance of 'genetic parentage': by choosing a donor who resembles the legal parent(s), users within the market of repro-tech reassert the importance of supposed biogenetic affinity. This paper examines the affinity ties of biological and familial whiteness in ART as evident in the 2014 Illinois Northern District Court case of Cramblett v. Midwest Sperm Bank—where a white mother filed a wrongful birth suit and sought legal compensation for losing perceived genetic similarity and giving birth to a 'black' child via donor insemination. Applying critical legal and critical race studies to the case and its surrounding media the paper explores how race is mobilized beyond the lab to "make family" and maintain systems of inequity. The paper considers how perception of genetic affinity—in this case, familial whiteness—can be deployed as a way to resecure the disparities of racial capitalism.

Serena Williams' Birth Story: Questioning Surveillance, Demanding Care *Anne Pollock, King's College London*

On September 1st, 2017, the tennis star Serena Williams gave birth to her daughter Olympia. As it is for too many Black women in the United States, the event was life-threatening. Her experience reveals the inadequacy of frequent explanations for high maternal mortality among Black women, such as poverty or failure to seek prenatal care. Even with all of the resources, expertise, and assertiveness that she was able to muster, Williams faced challenges in receiving the attention and intervention that she desperately needed. This paper puts Williams' account of her experience into the context of two intersecting elements: connections between Williams' birth experience and those of far too many Black women; and representations of Williams' body over the course of her career that have combined hypervisibility with dehumanization. Doing so highlights the ways in which Black women's bodies are simultaneously hyper-surveilled and inadequately cared for. In Serena Williams' articulation of her birth experience as a Black woman's experience, it is not Black women's bodies that are problematic, but the system that is, by failing to meet their needs. As a star within a neoliberal sport context, Williams is not an uncomplicated advocate for justice for Black women, yet there is rich potential for reproductive justice advocacy as she mobilizes her social media platform to call attention to racially stratified access to safe births and demand change.

Strategic mobilizations of forensic genetics in Mexico *Vivette Garcia Deister, UNAM*

This paper critically examines how forensic genetics is understood and strategically mobilized by state actors in Mexico as a governmental response to an ongoing human rights crisis. Informed by five years of fieldnoting and ethnographic research, I address the absence of a legal and material infrastructure for the deployment of forensic genetics. I argue that the still unfinished project of creating a national genetic database for human identification and its accompanying regulation provides a rare opportunity for scrutinizing the structural biases of genetic databases, especially those pertaining to race and class, and how they reflect the inequities of Mexico's society and judicial system. Finally, my examination provides a situated reminder of the discriminatory power of the tools to which we usually confer a high degree of objectivity.

Session Organizers:
Anne Pollock, King's College London
Melissa Creary, University of Michigan, School of Public Health
Chair:
Emma Kowal, Deakin University

369. Ethnography of medical knowledge
12:00 to 1:40 pm
virPrague: VR 08
Participants:

Ethnography in Biomedical Contexts: Between Legitimate and Subjective Knowledge *Cinzia Greco, University of Manchester*

This presentation focuses on the asymmetries of power and knowledge generated in fieldwork by the different prestige attributed to social studies of science and medical sciences. The hierarchy between these disciplines mirrors the epistemological hierarchy between the legitimate knowledge of medicine, which use quantitative methods and/or laboratory research and the subjective knowledge of so-called "soft sciences". The need to explore this issue arises from my own fieldwork experience in France and Italy and in the United Kingdom. In order to explore the complexities of living with cancer, I conducted in-depth interviews with patients, medical professionals and family members and participant observation in medical settings. My experience as a researcher led me to question the relationship between the knowledge produced by social scientists and biomedical knowledge, and the ways in which we social scientists use or interpret biomedical knowledge. Exploring the politics and the practices of the asymmetries of knowledge in the biomedical fieldwork can help us to understand the condition in which STS disciplines operate. How does the asymmetry of knowledge impact researchers and their work? What does it mean for social scientists to move between different regimes of knowledge, such as sociological and historical theoretical paradigms, medical expertise and patients' knowledge? This presentation will be an opportunity to discuss how, in fieldwork, differences in the prestige of knowledge can be turned into asymmetries of power and can reinforce pre-existing ideas of prestige and legitimation of specific form of knowledge.

Whose Side Are You On? Studying Contentious Legitimate Knowledge *Simon Carmel, University of Essex*

In this paper I reflect on researcher positionality in a research project to investigate an intense dispute about legitimate (medico-scientific) knowledge. The objective of the research was to provide a sociologically plausible explanation of "bitter controversy" (Mancebo & Antonelli, 2008) and "polarising" opinion (Finfer et al., 2008) within the field of intensive care medicine. The dispute, in the context of a clinical trial sponsored by a pharmaceutical company, concerned the evidence for or against a novel treatment for severe sepsis and was played out by two clearly discernible groups of protagonists: all intensive care doctors with academic and clinical credentials. I will compare the researcher's interactions with members of the different groups. While one group were generally friendly and welcoming, the members of the other group appeared deeply suspicious. For example, one refused a request for interview; another refused electronic recording; and a third, having once agreed to an interview subsequently refused, questioning the researcher's integrity. The paper's analysis draws on strong structuration theory (SST - Stones 2005), a conceptual and analytical resource which significantly enhanced awareness of the implications of the researcher's positionality. Despite the challenge presented by the very different attitudes of the research participants, an even-handed analysis of the dispute was facilitated by SST's normative commitment to respect for the intrinsic value of human agents. Specifically, some of the power asymmetries at work in this contentious dispute, hinted at in the appearance of deep-rooted suspicions, may not otherwise have been brought to the forefront of analysis.

The ethnographers positionality vis-à-vis legitimate knowledge in science *Séverine Marguin, Technische Universität; Cornelia Schendzielorz, Deutsches Insitut für Wissenschafts und Hochschulforschung/Humboldt Universität zu Berlin*

This contribution deals with the positionality of (women) ethnographers of science in middle-european context. We examine science as a field that is characterized by high demands and expectations to produce and generate legitimate knowledge. This entitlement is especially represented personified by leading scientific positions, such as professors and also habitually acted out through high staff of research funding agencies and policy makers. We would like to reflect on our position as internal ethnographer of science, working on/with bigger collaborative research projects from within, by addressing two

perspectives: first, ae methodological perspective, concerning challenges we are facing in daily ethnograpic fieldwork such as issues of proximity/distance, positionality, intervention, hierarchy, authorship. We will discuss our entanglements and how we are dealing with these together with those being researched. Second, we take on an institutional and political perspective : Based on our ethnographic observations, we shed light on the dialectic interdependences of expectations towards the produced knowledge and potential effects and impacts on current debates in science policy. Our analysis shows that the metaperspective of ethnography of science represents a technology for acute self-regulation of interdisciplinary and collaborative research constellations, with ethnographers of science functioning as mediators, translators and moderators. Thereby stuck in the middle in hierarchical power relations they may also adopt an evaluative perspective in regularly reporting, which puts them close to accompanying monitoring, both internally vis-à-vis supervisors and externally vis-à-vis funders.

Session Organizer:
Fatima Elfitouri, King's College London
Chair:
Fatima Elfitouri, King's College London

370. Hegemony, counter-hegemony and ontological politics
12:00 to 1:40 pm
virPrague: VR 09
Participants:

Ont* – Data Politics – a Theoretical Sociology of Verran's Ontics, Mol's Ontologies and Barad's Apparatuses *Ingmar Lippert, IT University of Copenhagen*
Ontologies, ontics, onto-epistem-ologies – these three words encompass at least four concepts, doubled even when paired with the notion of politics, at least in the work of STS scholars Mol, Barad and Verran. The concepts, in this conceptual space of ont*, are slightly overlapping, in complicated relations, but also afford different analytical work for problematising reality effects in more or less direct action. Empirically, I draw on an ethnography of data practices that, I will argue for, are both directly acting and intervening, but simultaneously (re)producing hegemonic relations. I set out from showing that with the conceptual space of ont*, I can bring forward in analysis how doing data in politically-organisationally situated moments is stabilising and destabilising hegemonic relations. I then analyse how the three scholars' various ont* concepts differ in analysing the political effects of mundane data practices. For that, I tell and reanalyse an ethnographic story of data work for, and with, each of the three scholars. I specifically explore reflexively how I nuance the affordances of Verran's concept ontics for a political analysis of effecting an open realness that matters across direct action and hegemonic relations. I conclude in terms of ont*'s affordances for STS analysis of hegemony and counter-hegemony.

Ontological politics of (in)visibility and dialectic of position and maneuver. Learning from "war on gender, "LGBT-free-zones" and other hegemonic struggles in Poland. *Andrzej Wojciech Nowak, Philosophy Institute Adam Mickiewicz University*
Visualisation is a powerful tool, as a part of the techno-scientific infrastructure (Haraway) makes visible (and thus susceptible to manipulation) what was hidden. I argue that the infrastructure of hegemony could be understand as comparable to technoscientific one but serves the opposite purpose: - serves to make what is visible (interests, power) invisible (and not susceptible to manipulation). As a theoretical background paper combines experimental practice (Papadoulous), ontological design (Nold) and multiple ontologies in practice (Mol) to expand a notion of an 'ontological imagination' (Nowak) and to create STS-inspired support for active onto-political interventions. Through the analysis of hegemonic fights in Poland, I want to ask about the infrastructural conditions of possibilities (at the state and system level) necessary to make the "crafting ontologies" postulated by Papadoulous possible. I will analyse how emancipatory movements uses the power of visualisation to make installed hegemonic infrastructures visible. Visibility is ambivalent, in the case of a well-established hegemony, power is strengthened by its visibility, but in the case of a hegemonic order-in-the-making it must be hidden. I will interpret this dialectic of visibility and invisibility through Gramscian metaphor of the war of position and manoeuvre. I'll illustrate referring to the case study: In Poland right wing think tanks, especially Ordo Juris, aims to "install" a fundamentalist political and social order using a strategy of stealthy takeover of the structures of state and law. As a counter-hegemonic activity, LGBT -activists use the strategy of revealing, visualizing this hidden hegemonic infrastructure (https://atlasnienawisci.pl, https://www.facebook.com/bartstaszewskiaktywista/).

Articulating Politics with Design and Technology: Public Space, Computation and Commoning *Selena Savic; Shintaro Miyazaki, Institute for Experimental Design and Media Cultures, FHNW, Basel*
If artefacts have politics (Winner, 1980), and scientific hypotheses are shaped by political forces (Prigogine and Stengers, 1984) where does this politics come from? Whether we are in autocratic politics or in horizontal decision making based on consensus, design and technology reproduce the principles of the socio-political systems in which they emerged. How does, in turn, design of space and technological artefacst shape the decision making processes in a community? While every kind of social order results in some form of hegemony, Chantal Mouffe (2005) reminds us, agonism reveals the very limit of any rational consensus. In this text, we contrast two extreme hegemonic positions: autocratic design of hostile architectures (unpleasant design) and the (quasi)participative data-driven city management (i.e. smart city); we then discuss an alternative to both, which is driven by a desire for self-organisation, independence and sustainability. In this scope, we discuss an ongoing research project that uses technological artifacts (computational modelling) to probe the agency of these tools in addressing complex topics related to decision making and self-organisation. Touching upon the different hegemonic positions as a starting points for articulating alternatives, we will discuss the connection between sustainable ways of living and technology developed with an emancipatory sensitivity. Working directly with three Swiss housing cooperatives, the research project poses the question of the measure and manner in which new technologies can be not only of use to community efforts but at the heart of their discussions and decision-making.

Whose infrastructural breakdown? Grassroots practices of infrastructural inversion *Guillen Torres, University of Amsterdam*
STS researchers often investigate infrastructures through two different methodologies: the analysis of infrastructural breakdown, when the sociotechnical components of the infrastructure under scrutiny are revealed to the researcher as malfunction interrupts their transparency, or what Geoffrey Bowker coined as "infrastructural inversion", a strategy to defamiliarize the components of infrastructure to force them to surface in front of us. This approach to infrastructures makes it possible to explore their various politics. Following the STS slogan of 'it could have been otherwise' (Law), we can explore the ontological politics of infrastructures by tracing how they are the result of trials of force. However, we can also explore the contentious politics of infrastructure by asking for whom they are infrastructures, that is, who gets to enjoy them as stable assemblages or mysterious instruments of panic (Harman) when they break. This paper explores specifically the contentious politics of infrastructural breakdown by analyzing what I call grassroots practices of infrastructural inversion. As a case study, I present the experience of a group of activists performing a social audit over a water treatment plant south-east of Mexico City. By analyzing the strategies implemented by activists to make visible the sociotechnical assemblage composing the water treatment plant --as well as the Mexican state-, I show how infrastructural breakdown is manufactured by activists through the analysis of public sector information and open data, and thus how infrastructural inversion can be used as a tool for political intervention.

Session Organizers:

Andrzej Wojciech Nowak, Philosophy Institute Adam Mickiewicz University
Christian Nold, University of the Arts London

Chair:
Andrzej Wojciech Nowak, Philosophy Institute Adam Mickiewicz University

Discussant:
Krzysztof Abriszewski

371. Disciplining The Senses 1
12:00 to 1:40 pm
virPrague: VR 10

Many disciplines in the natural sciences still privilege the idea of an external physical reality that human sensory perceptions are mistrusted in revealing. Thus, sensual perception has been largely written out of scientific work and delegated to instruments that can produce standardized measures of physical reality. Much work in the social studies of science and technology has analyzed this whole arsenal of devices, experimental set-ups and technologies mobilized to circumvent reliance on human senses and deemed to produce "objective" data. While the focus of classic studies has been to show the ways in which experimental systems, disciplinary logics and epistemic cultures contribute to fact-making, less attention has been paid to scientists' own sensory engagements with their research materials and resulting more-than-human affective dynamics. This holds true even as newer scholarship has grappled with sensory practices distributed across a widening array of sites, materials, and organisms. This panel addresses how the training and equipment in specific academic disciplines also "discipline" the senses and their affective potentials. It invites us to unravel the role of "disciplining" in enhancing, limiting, or distilling olfactory, tactile, gustatory, acoustic, visual and/or other multisensorial experiences in knowledge-making practices. It further asks whether and how the ways in which science is practiced in specific sites and geopolitical locations contributes to disciplining or challenging sensory perceptions. Which and whose sense perceptions are modified in the scientific endeavor? By exploring these questions, this panel seeks to drive conversations about underexplored connections between sensory experience, affect, and epistemic cultures.

Participants:

Learning To See The Teeth Through The Odontogram In Dentistry Training *Jorge Daza, Fundación Universitaria Autónoma de las Américas; Juliana Vargas, Fundación Universitaria Autónoma de las Américas; María Guapacha, Fundación Universitaria Autónoma de las Américas*

Developing perceptual expertise within a field of knowledge is not a problem of the capacity of the senses; instead, it involves cognitive, material and social processes that allow communication within a scientific field. Sensations thereby have to be translated into a technical language. This paper examines the disciplining of the senses in dental education through the odontogram, a two-dimensional chart that is used to map patients' teeth condition and treatment needs. We carried out an ethnography in the dentistry program of a Colombian city. We focus on how the odontogram was taught and discussed in classes, clinical practices, and faculty meetings. In classes, this device is taught via two-dimensional strategies such as digital images, drawings on the board, notes, and workshops. This situation involves a paradox since students are asked to "think" in three dimensions when they have never even seen the inside of a patient's mouth, making it an imaginative challenge. When students move into the clinical setting, they have to learn to make perceptual distinctions, for example, between caries and teeth pigmentation. To assist students in seeing, teachers train them on how to position themselves correctly in front of the patient to see the oral cavity, how actual teeth look like when they are healthy or diseased, and even how to feel the teeth tactilely by using dental instruments. Finally, in faculty meetings, there are discussions about the items that the odontogram must include because it shapes the clinical decisions that students are going to make.

Sensing Neuvo-Pangaea: Multi-species biologies through the transnational *Banu Subramaniam, University of Massachusetts Amherst*

One origin story for life on Earth can be traced back to Pangaea, a super-continent that fractured and drifted into our current continental configuration. With continued drift, continents will merge into a New Pangaea. This project attempts to theorize a transnational history and genealogy for multispecies ecologies across time. Species that emerged in Pangaea have dispersed across the globe, proliferated and evolved into dizzying new political configurations of "national" and global biota, only to once again be reunited in a New Pangaea. This differently temporal retelling of life on earth offers us new possibilities of imagining a transnational ecology and evolutionary biology .Drawing on transnational and decolonial queer movements, and indigenous cosmological imaginations, I explore new conceptual vocabularies for thinking about and sensing "place". These re-imaginations highlight the deep imbrications of human and plant worlds. They offer resplendent possibilities for re-imagined futures.

Learning to be Moved: On the Affective Entanglements of Touch in Medical Education *Andrea Wojcik, Maastricht University*

Within medical discourse, touch is often presented dualistically as either serving a diagnostic or an affective end (Kelly, 2019). Much of the traditional social science research on medical education, which theorized medical education as a process of learned detachment, would support such a dualistic understanding of touch. More recently, however, STS researchers have disrupted notions of detachment by showing that sensory knowledge is entangled with affect (Latour, 2004; Prentice, 2013; Myers, 2015), which suggests that learning to touch, even for diagnostic purposes, is also a case of learning to connect. In this paper, I focus on practices of learning to touch in medical education, drawing on ethnographic research at a medical school in northern Ghana, where I participated in physical examination classes and observed bedside teaching in hospital wards. Students learned to touch, and educators helped them to do so, by coordinating different materials and contexts—a grid drawn on a whiteboard, a gynecology manikin in a classroom, a simulated doctor-patient interaction amongst peers, a physical examination of patients on the ward or during assessment. Throughout these practices, students were confronted with experiences of concern, excitement, anxiety, pain, and pleasure, indicating that practices of learning diagnostic touch were also touching practices, in the sense that they moved students to differently relate to patients (real or imagined). This entanglement of learning to touch with learning to relate raises questions about sociotechnical arrangements within medical education, especially those that shy away from positioning students as active recipients of touch.

Session Organizers:
Sandra Calkins, Free University of Berlin
Marianna Szczygielska, Max Planck Institute for the History of Science

Chair:
Marianna Szczygielska, Max Planck Institute for the History of Science

Discussant:
Paul Wenzel Geissler, University of Oslo

372. Changing Regimes of Biomedical Knowledge Production: the Changing Face of Clinical Trials
12:00 to 1:40 pm
virPrague: VR 11

The randomized controlled trial (RCT) has long been considered the gold standard for clinical research; carried out to ascertain the safety and efficacy of health interventions. Recently, however, the authority of the RCT has become increasingly contested and is beginning to be substituted by alternative research designs. Concurrently, we can observe the emergence of new, apparently more flexible and pluralistic, standards and regulatory forms and an increasing fascination in biomedical research with the promises of personalized medicine and Big Data. This panel invites papers that explore how STS can interpret these developments and evaluate their implications. How is acceptance of different approaches to medical intervention testing as scientifically reliable and ethically sound enabled? What kinds of technological innovations facilitate new types of clinical trials and to what effect? We are especially interested in comparative and

historical perspectives on the rise and fate of RCTs. The panel speaks directly to the conference's interest in the fate of "alternative" approaches and futures, and encourages submissions exploring how novel clinical research formats can offer insights on transformations in the culture and the politics of biomedicine.

Participants:

Clinical Trials in the Second Half of the Twentieth Century: USSR in the Global Context *Pavel Vasilyev, HSE University St. Petersburg*

The issue of balancing knowledge reliability and ethical acceptability in clinical trials is complicated by that the notions of what robust evidence in (bio)medicine is and the ideas about how to ensure its (ethical) quality are not given or simply determined by existing technological possibilities but are also shaped by a plethora of social, political and cultural considerations. For example, before 1990s pharmaceutical drug testing systems differed dramatically and explicitly between the USSR and the U.S. Effectiveness and safety of pharmaceuticals in USSR were established without making use of the four-phase clinical trial model introduced in the U.S. in the 1960s and currently dominant in drug development globally. This model was not supported in the USSR since it was considered wasteful and too remote from clinical realities. The core characteristics of U.S.-based trials such as randomization, double blinding and use of placebo were rejected in the USSR as unethical and exploitative of research participant. Strict separation of research ethics and treatment ethics, introduced to normatively support the U.S. pharmaceutical drug testing system, was also not accepted in the USSR where knowledge of new treatment options was produced in treatment practice as opposed to laboratory-like experimental conditions of randomized controlled double blinded trials. This paper explores the evolution of Soviet regulatory approaches to clinical trials in the second half of the twentieth century and places them within a global Cold War framework.

Classification and pharmaceuticalization of affects: navigating and reproducing affliction in healthcare settings *Arbel Griner, Princeton University*

My research examines neuroscientific work on affectivity and how it has been appropriated by other fields, fueling a debate on the pharmaceuticalization of affects and contributing to the emergence of diagnostic categories in the clinic. The work argues that neuroscientific theories on affectivity, along with diagnostic processes and treatment protocols in health care services cooperate as pragmatic tools to reproduce a specific kind of citizenship. Drawing chiefly on the idea that "affects" and "emotions" are key elements to understand behavior and evolution, neuroscientific theories serve a discursive link that connects the survival of the human species to the reproduction of affective arrangements breeding the nuclear, heterosexual, child-centered, labor-like organized, liberal family. Based on a vast literature review, interviews with scientists, bioethicists and clinicians, and on an incipient fieldwork in a large psychiatric hospital, the research charts neuro-premises and practices that orient care toward a future tempo-spatiality, and examines the outcomes of this dynamics. In dialogue with a literature that explores connections between neurocultures and a biopolitical regime of futurity, the paper I wish to present engages with the subject and the "social" that are (re)produced by the appropriation of the neuroscience of affects by other fields. The work contributes to debates about subjectivity and government regimes. It asks how adequate diagnostic categories are in addressing affective disorders, how effective treatment protocols are in remedying contemporary afflictions, and probes the extent to which classifying categories are helpful in mobilizing populations under the oppressive idea of a threatful unknown.

Pregnancy, Expertise and RCT: Growing Together. *Julie Bønnelycke, Roskilde Universitet; Astrid Jespersen, University of Copenhagen; Maria Larsen, University of Copenhagen the SAXO institute*

The ongoing clinical trial FitMum is an interdisciplinary collaboration uniting medical and humanistic health studies in the production of different kinds of health knowledge. The traditional research subject is typically a white male, representing the 'generic body'. Female bodies, on the other hand, are subject to constant fluctuations, due to their hormonal cycle. Based on the work with pregnant women as test subjects, the the FitMum RCT produces knowledge based on notoriously 'unstable bodies'; test bodies that are in a constant state of transformation and inbetweenness. As such, the preconditions and experiences of participation changes, and so does the knowledge produced. As many of the scientists are also pregnant, their participation in the trial also changes, as boundaries are increasingly blurred, and the scientists 'grow' alongside the test subjects. FitMum creates a hybrid between laboratory science and everyday knowledge, where bodily experience, biomedical data, personal trajectories and scientist-test subject-relations mingle and blur traditional roles and knowledge forms. Authority is redistributed and shifted along the course of the trial, as motherhood and experiences of pregnancy and childbirth become hallmarks of expertise and authority alongside medical knowledge. The changing roles and positions in the trial suggest alternative ways of engaging, and co-creating knowledge with, the research subjects. The hybridity of FitMum serves as an onset for discussing possible alternative researcher-test subject relations in RCTs. It raises questions regarding how to handle the overspills and collateral outcomes of clinical trials as equally important and valuable results, and possible articulate body-emotion epistemes alongside the medical episteme.

Surgical placebo-controlled trials (SPTs) in regenerative medicine *Kayo Takashima, Kyoto University; Jusaku Minari, Kyoto University*

One of the key debates in the field of regenerative medicine is whether surgical placebo-controlled trials (SPTs) are ever necessary. This question results from potential differences between clinical research on regenerative medicine and conventional pharmaceutical trials; compared with pharmaceutical trials, clinical research on regenerative medicine tends to have a small number of possible candidates and involves highly invasive surgical procedures for participants. Moreover, this question is linked to the scientific and ethical validity of SPTs and different types of healthcare systems. For example, the appropriateness of conducting sham surgery on individuals with Parkinson's disease has been discussed over two decades; one report showed that researchers from North America tend to consider this conduct more positively than those from European countries. Based on these perspectives, it is possible that SPTs may never be essential in regenerative medicine, and this possibility requires careful reconsideration of the nature of SPTs. Accordingly, this study explores increasing tensions between scientific validity and the protection of participants' rights in SPTs in regenerative medicine, focusing on three specific points: 1) the pros and cons of SPTs, 2) the influence of different healthcare systems on SPTs and 3) the ethical debate surrounding SPTs, including the principle of clinical equipoise. This research initiative can provide supportive suggestions for the future development of clinical applications in regenerative medicine and other emergent fields in medical research.

The Pragmatic Turn and the Rise of the Real-world Paradigm in Clinical Trials *Olga Zvonareva, Maastricht University, Netherlands*

How does knowledge obtained in clinical trials apply to the actual treatment of patients? This question has recently acquired a new significance amidst complaints about the limited ability of trial results to improve clinical practice. Pragmatic clinical trials have been advocated to address this problem. In this talk, I trace the emergence of the pragmatic turn in clinical research, starting from the first mention of 'pragmatic trial' in 1967, and analyse the changes to how pragmatism has been conceived. Nowadays, pragmatic trial is understood as a randomised controlled trial (RCT) conducted under 'real-world conditions', that is under conditions considered usual in a setting where a tested treatment is to be used. Real-world conditions are what distinguish a pragmatic trial from a traditional RCT with its sanitised and orderly laboratory environment and what supposedly gives more relevance and applicability to pragmatic results. This conception of pragmatism is not innocent though. Conducting trials under real-world conditions entails extending the RCT's

methodological backbone into clinical practice settings to facilitate the integration of research with care. Focus on the real world here does not involve broadening the scope of admissible evidence types to include, for instance, patients' experiences. Nor does it necessarily encourage a more comprehensive assessment of the treatments tested, taking into account the diverse expectations placed upon novel health interventions. Rather, it opens up an avenue for laboratorisation of the real world.

Session Organizers:
Olga Zvonareva, Maastricht University, Netherlands
Anna Geltzer, University of Notre Dame
Chair:
Anna Geltzer, University of Notre Dame
Discussant:
Anna Geltzer, University of Notre Dame

373. Recruitment in the Making : Practices, Politics and Theory
12:00 to 1:40 pm
virPrague: VR 12
Participants:

Recruiting and Assessing Academics Across Geographical Borders : A Catch 22 ? *Marie Sautier, University of Lausanne/Sciences Po Paris*

Being mobile, working in transnational networks, publishing in international journals are few of the academic norms early-career researchers increasingly have to face. Yet, these norms widely vary across fields, institutional and national environments (Laudel, 2018; Herschberg et al., 2018). In this study, I consider the "internationalisation of academic careers" as an empirical fieldwork, starting with the Swiss case – a strongly internationalised academic market. Rather than tackling the internationalisation of careers through the sole lens of public policies, I explore this phenomenon through the actual work of various Search Committees, in charge of selecting the best candidates for a tenured position, out of dozens of applicants. Through an ethnography of about 40 of these Hiring Committees, I scrutinise how the academic procedures, tools, and practices of recruitment value, penalise, select or discard different manners of "being international" and of "being mobile". I delve into how such career norms are constantly subject to interpretation, negotiation, translation among committee members, and how they contribute to reshape the frontiers between a "globalised" scientific employment space and local recruitment markets.

The Top 5 as Judgement Device: Valuation Practices and Disciplinary Boundaries in Swedish Economics *Anders Hylmö, Lund University*

This paper is concerned with the evaluation practices involved in the recruitment of professors in economics, and the relations between evaluation practices and the stabilization of disciplinary boundaries. It draws on a qualitative analysis of expert evaluation reports from the recruitment of professors from four Swedish top universities over 25 years (1989 – 2014). The paper is structured around the three interrelated questions of how notions of research quality are conceived by reviewers, how evaluative practices have been transformed over time, and in what ways the quality notions and evaluation practices are linked to the disciplinary style of reasoning. It is theoretically informed by the sociology of(e)valuation and the concept of boundary work. During the studied period, academic quality judgement was to various extents transformed by a "metric tide" across academic fields. The analysis of this paper traces the particular transformation and specific ways in which metrics came to be used in evaluation practices in academic recruitment in economics. It shows how the Top 5 economics journals came to be employed as a particular judgement device, used both to categorize and legitimize outcomes by evaluators. I argue that conceptions of research quality and evaluation practices in economics are affected by its particular disciplinary style of reasoning. Evaluation practices and quality conceptions furthermore feed back into the stabilization of disciplinary boundaries with homogenizing effects, reinforced by the turn to top journal rankings. In this way the paper contributes to understanding the link between evaluation practices and boundary work.

Session Organizer:
Marie Sautier, University of Lausanne/Sciences Po Paris
Chair:
Julian Hamann, Leibniz Center for Science and Society
Discussant:
Julian Hamann, Leibniz Center for Science and Society

374. Negotiating knowledge of harm through affects, embodiment and trust 2
12:00 to 1:40 pm
virPrague: VR 13
Participants:

Scientific Literature in Service of the State: Knowledge Production Surrounding Childhood Thyroid Cancer after Fukushima *Elicia Mayuri Cousins, Northeastern University*

On March 11, 2011, the Great East Japan Earthquake triggered an immense tsunami that swept across the coast of northeastern Japan and flooded the Tokyo Electric Company's (TEPCO) Fukushima Daiichi Nuclear Power Plant. Eight years later, the health impacts of this disaster continue to be the subject of intense contestation. For instance, more than 200 cases of thyroid cancer have been detected to date among children in Fukushima prefecture, but there is little consensus as to whether these increases are related to the 2011 accident. Indeed, the dominant narrative, perpetuated largely by prefectural and national government authorities, displaces radiation and its health effects as a legitimate public concern. This paper focuses on peer-reviewed scientific research published in English and the extent to which it aligns with the state's narrative. It is driven by the following questions: 1) What is the role of scientists/scientific publications in determining national and international visibility and perception of the consequences of the Fukushima accident? 2) What accounts for the lack of consensus among studies that are ostensibly analyzing the same data? 3) How do author affiliations and funding sources for research contribute to research outcomes? I answer these questions through a content analysis of 97 peer-reviewed English-medium studies about the health impacts of the Fukushima disaster. Charted data will include author affiliations, funding sources, methodology, outcome measures, and conclusions—with a particular focus on whether there is an acknowledgment of a potential causal relationship between the Fukushima disaster and cancer incidence.

Trusting Addicts: The Knowledge Politics of Harm Reduction in Safer Injection Facilities *Derek Taylor Parrott*

Historically, most formal and informal responses to illegal drug use have been instances of the use reduction mode. That is, they aim to minimize the gross amount of drugs used by the population. In contrast, harm reduction focuses on the effects, rather than the act, of drug use. One form of harm reduction which has recently gotten significant attention (supportive and otherwise) is known by many names, most commonly safer injection facility, supervised injection site, and drug consumption rooms. I am interested in studying, ethnographically and intersectionally, the knowledge politics of harm reduction, using safer injection sites and their surrounding controversies as jumping off point. I'm interested in questions like: how do harm reduction strategies value and mobilize the experiences of people living with addiction differently than use reduction? How do assumptions about risk undergird truth claims about and policy responses to addiction and addicts? How do care and control relate to each other? How are drug users and their infrastructures of use "constituted as objects and subjects of knowledge" (Campbell, 2007)? For this panel, I am interested in the question of how harm and use reduction enact harm and risk differently. Harm reduction efforts understand drug-related harms as contextual, social, and systemic, affecting drug users and their broader communities. I argue that harm reduction trusts drug users in ways that use reduction does not, by recognizing them as legitimate producers of knowledge whose legitimacy comes from their bodily familiarity with and affectively charged experience of drug use.

The politics of harm and knowledge in vaccine-associated

narcolepsy *Venla Oikkonen, Tampere University*

The paper explores the politics of harm and knowledge in a specific case of vaccine injury: vaccine-associated narcolepsy. Vaccine-associated narcolepsy emerged among children and adolescents immunized with one of the 2009 pandemic vaccines, Pandemrix, used in Europe. Research has suggested that the mechanisms of vaccine-associated narcolepsy were highly complex, involving a genetic risk allele, unusually high quantities of viral nuclear protein in the vaccine, and an adjuvant that boosted the effects of the vaccine, resulting in an unexpected autoimmune reaction in some vaccinated bodies. The paper shows how the material complexities of vaccine-associated narcolepsy were negotiated by patient organizations. The analysis centers on the websites of patient organizations in three affected countries: Sweden, Ireland and the UK. The paper argues that the organizations invoke and redefine ideas of harm and knowledge to negotiate the responsibility of the state and pharmaceutical industry as well as narcolepsy patients' right to services, care and financial compensation. The paper also shows how the organizations invoke strategies used by vaccine critics while maintaining that their critique is focused on a specific vaccine, not vaccines in general.

Session Organizers:

Venla Oikkonen, Tampere University

Anna Durnova, Institute of Sociological Studies/ Faculty of Social Sciences

Chair:

Eva Hejzlarova, Faculty of Social Sciences, Charles University, Prague, Czech Republic

375. Articulating and Relating to Different Forms of the Good in Bad Situations III

12:00 to 1:40 pm
virPrague: VR 14

Unsafe healthcare, climate disasters, migration threats, scientific misconduct – all tend to steer our focus towards fear and critical analyses of things that are overwhelmingly and singularly bad. With our present day challenges requiring urgent action, how to not get carried away by the urgency to act? How not to overlook everyday, situated efforts of forms of the good already going on and ways in which we can articulate the good in its different guises? What would happen when we analyse 'wicked problems' by picking out the forms of goodness and badness that are inscribed in such calls for alarm? And even more intriguing: what good might these challenges also bring? In this panel we explore how forms of the good are constantly shaped and articulated by the people and things we study, and also by ourselves as researchers. What imaginations and repertoires for acting and doing research can such articulations open up? How does it transform understandings of how we might act, and in what terms could this be labelled as 'good'? And how difficult is it to act or not to act with forms of the good? How can empirical ethics be a way to tell a different story than the stories of overwhelming alarm for problems that clearly exceed individual agency? We welcome contributions that focus on good care, good (environmental) living, good education or good science, and also explicitly welcome contributions from other empirical domains and 'overwhelming' problems.

Participants:

Moral Passages and 'Good' Science: Women 'in' and 'of' Mathematics *Sonja Jerak-Zuiderent, Amsterdam University Medical Centers*

In current cultural mainstreaming of diversity, women and underrepresented minorities (URMs) are high on the agenda in the fields of science, technology, engineering, and mathematics (STEM). National chapters of associations of 'women in mathematics' flourish; and for programs for women and for those from underrepresented groups in mathematics, it is a tumultuous time – according to a recent president's report of the Association for women in mathematics soon accomplishing its 50th anniversary. 'Women in mathematics' as a movement seems to be an important exemplar to strengthen 'invisible work' (Star and Strauss 1999) to counter implicit epistemological-ontological hierarchies and normativities on what counts as 'good' science and how it matters. However, my interest in women 'in' mathematics got triggered by an exhibition on women 'of'

mathematics. Ethnographically studying this exhibition, I learn how two forms of diversity differ, strengthen, complement, but also obstruct each other: women 'in' mathematics draws on the common cultural trope that Leigh Star called 'more women in x' (1995); women 'of' mathematics is a collective attempt to foster a different, more relational 'how' of mathematics. Studying how 'women in mathematics' and 'women of mathematics' matter for socio-material practices of diversity as a form of 'good' science', this paper expands on Kathryn Pyne Addelson's notion of 'moral passages' (1994) to investigate and re-vive an old feminist concern on how morality and knowledge are collectively enacted in today's worlds.

Hospital Ethnography in Low Resource Settings and Complicated "Goods" *Adrienne E Strong, University of Florida Department of Anthropology*

In conducting fieldwork on maternal mortality in Tanzanian biomedical facilities, I have been pulled into situations that forced my own ethical choices in relation to local healthcare workers, patients, and their relatives. In seeking to maintain access to these sites, I negotiated variable demands on my presence through selective action and inaction. My participant observation has even included delivering babies, though I am not a medical professional. The local setting and its attendant forms of sociality necessitated this level of involvement, which Tanzanians with whom I worked accepted, often due to their own approach to empirical ethics. I often sought to do less but was called on to be present in ways that my fellow scholars may feel were inappropriate, unethical, or bad. In this setting, however, the urgency to act—to catch a baby or comfort a woman in pain—set in motion certain necessities and precluded other (lack of) action. How to negotiate presence and absence, care and withholding, ethical action and multiple versions of the good (in good care, good ethnography, good medicine, good ethics) in this setting? This paper asks these questions and encourages critical reflections on formal ethics and ethics reviews and their implications for local settings sometimes, or often, ruled by empirical ethics due to timelines that foreclose long deliberation and force choice. These choices and their after-effects hold implications for the conduct of research generally in this and similar settings, as well as for our ideas about good research ethics and good ethnography.

"Cooking" as to explore good care and bad surprises when living with sickle cell disease *Clément Dréano, University of Amsterdam - AISSR*

Sickle cell disease (SCD), a wide-spread genetic blood disease causes the red blood cells to "sickle", and to clot in the vessels, leading to a less efficient transport of oxygen in the body, to chronic anemia and potentially damaging organs. In recent years, efforts to respond to SCD have been mostly directed towards cure, prevention or standardized care, allowing very little space to explore what it takes to live day by day with this chronic condition. In this paper, I address how ethnographic methods can help stay with the daily socialities of living with SCD. Living with SCD can be a particularly difficult endeavor since the lives of people with SCD can be full of bad surprises and moments of crisis. A painful crisis might, for example, lead them with very little time to reach an emergency department. In this presentation, I build on ongoing fieldwork and cooking sessions with one of my fieldwork participants, a Ghanaian mother who cares for her children who have SCD. Cooking food together elicits pleasures and makes space for generative ways of talking about concerns of daily living with SCD. In the presentation, I attend to these cooking sessions as a methodological resource to explore socialities that do not explain away bad surprises and moments of crisis, but rather require to 'stay with the bad' in interesting ways.

Producing the Good(s): Art Works and Academic Writing *Catelijne Coopmans, Department of Thematic Studies - Technology and Social Change, Linköping University*

This paper offers a reflexive inquiry into how we might recognise and further strengthen forms of the good in our work as academic writers. At a time when questions of how to intervene in a troubled world are urgently posed while workloads and institutional pressures are, for many, high and mounting, how do

we balance the fear of 'not doing enough' with an understanding of what is (still, already) working? What forms of the good might we seek to locate and practise in our everyday work on academic texts? I suggest that we approach such an inquiry indirectly, by travelling on unusual terrain and in the company of strange bedfellows: art forgers who fancy themselves artists, and artist-coaches who support others in the doing of creative work. In contrast to the often unremarked work of academic writing, the preparatory practices, material arrangements, and embodied ways that facilitate creative production (indeed, that make it come off against the odds) are a prominent focus in both art forgers' accounts and the workshops and instructions of artist-coaches. Such methodological discussions and instructions harbour various guises of the good that tie everyday practices to notions of agency, contribution, and serving (or not) something greater than oneself. Tracing such connections and the similarities and differences in the way art forgers and artist-coaches orient to the figure of the 'artist/creator' may help each of us consider what we could and might want to recognise and practise as 'good' in how we go about our writing.

Session Organizer:

Sonja Jerak-Zuiderent, Amsterdam University Medical Centers

Chair:

Sonja Jerak-Zuiderent, Amsterdam University Medical Centers

376. Democracy in the Making II: Sciences and Technologies of Democracy

12:00 to 1:40 pm
virPrague: VR 15

Studies of expert cultures and epistemic practices engaging with practices of political representation

Participants:

Competing Versions of Trust in Infrastructuring Democracy
Christopher Gad, IT-University of Copehagen

It is a truism that trust in democratic processes, such as voting, is crucial for their legitimacy. But how trust is configured and what comes to count as trust are rather contested. In this presentation, I discuss different ideas about the configuration of trust, which I encountered as part of a larger interdisciplinary Danish research project DEMTECH (Democratic Technologies). The hypothesis of the project was that it was possible to "modernize" (ie. :digitalize) the election process without losing the trust of the people. Research agendas spanned from STS and ethnographic engagements with the organization and execution of the electoral process in Copenhagen municipality to research applying formal logics, cryptography, computer security and software engineering to voting in Denmark. Roughly speaking, computer scientist envisioned trust as achieved by specialized experts putting voting processes, protocols and laws 'on trial' through e.g. white hack hacking or the application of statistical tests. To the STS researchers in the project however, trust seemed rather to be located and produced in the socio-material set´-up of the voting process and by participants in the organizing and execution of voting, including voters. My aim with this presentation is not to overcome differences between versions or concepts of trust. Instead by contrasting computer science and STS ideas about trust, the purpose is to qualify reflections on how computer science expert assumptions and their application of 'methodological distrust' may influence what counts as 'legitimate voting' and hence, potentially, the future infrastructuring of democracy.

Deliberative democracy in the making: An ethnography of the emerging translocal expert community of mini-public promoters *Jannik Schritt, Berlin University of Technology; Volkan Sayman, Berlin University of Technology; Jan-Peter Voß, Berlin University of Technology*

The paper takes an ethnographic approach to understanding the emerging translocal 'instrument constituency' that promotes so-called 'mini-publics' as a 'democratic innovation' to counter contemporary trends of political apathy, populism and "fake-news" around the world. The basic approach of organizing mini-

publics is to pick an issue, compose assemblies of randomly selected citizens as representative samples of a population's diversity, and lead them through a moderated process by which they gather information and deliberate how the issue should publicly be evaluated and responded to. The desired result is a considered and informed 'view of the public' to be taken into account for formulating and legitimizing collective decisions. Doing mini-publics is understood as a way of furthering 'deliberative democracy', rooting collective decision-making in communicatively constructed public reason, rather than uninformed opinions and merely representing particular interests (as ascribed by its promoters to representative, participatory and direct democracy). Based on ethnographic research of two network meetings in Paris 2019 and Manchester 2020 as well as their online activities and publications, the paper aims at understanding this newly emerging constituency. It argues that while the community is deeply committed to values of diversity and inclusion in democracy, the community works against a diversity of forms to enact a 'demos multiple' (elections, referenda, participation, protest). Moreover, the current scientization of mini-public methods that is going on inside the network to produce evidence on best practice models and gain legitimization leads to new forms of exclusion (e.g. Africa).

Politics at distance: Infrastructuring transocal knowledge flows for doing 'mini-publics' *Jan-Peter Voß, Berlin University of Technology; Jannik Schritt, Berlin University of Technology; Volkan Sayman, Berlin University of Technology*

We analyze efforts at promoting 'deliberative mini-publics' as a 'democratic innovation'. We focus on ongoing work for constituting practitioner networks, online communication platforms and observatory devices like data repositories, comparative schemes, and mapping tools. These are to bring together locally distributed activities of developing mini-publics as model of deliberative public participation by enabling translocal learning, allying and showcasing of exemplary implementations. How does this work contribute to establish a space of translocally shared know-how in doing politics? We suggest two conceptual lenses to studying this work as infrastructuring the circulation of a specific know-how of doing politics: Centers of Calculation (Latour) and Scopic Media (Knorr Cetina). Conclusions discuss ontological decisions in the design of infrastructures by pre-defining specific purposes and functional forms of doing politics. We argue that further study is required to find out how it actually configures locally embedded practices of doing mini-publics around the globe.

Session Organizers:

Jan-Peter Voß, Berlin University of Technology
Jason Chilvers, University of East Anglia

Chair:

Jason Chilvers, University of East Anglia

377. Extractivism Revisited: STS Perspectives

12:00 to 1:40 pm
virPrague: VR 16

Extractivism has been key to the emergence of climate change and the rest of the symptoms of the unprecedented environmental crisis. Extracting coal, oil, gas, uranium, as well as all kind of metals and other materials, from gold to all sorts of substances used in the manufacturing of, for example, electronic devices, was never so developed and, at the same time, so problematic. This open panel invites attention to the STS study of the co-shaping of science/technology and extractivism. Focusing on the politics, economics and ideologies embedded in (and advanced through) the science/technology of extractivism, it aims at a conversation with studies that have so far focused on the explicit political, economic and ideological dimensions of the various versions of extractive activities. We propose a closer look at the socialites privileged by the very design of the technologies that extractivism is based on, which are concealed/black-boxed by the way the artifacts involved in extractive activities -engines, motors, other machines, devices, machine ensembles, platforms, mechanical and other technoscientific processes and apparatuses- are constructed and communicated. In this context, we are further interested in the way the advance of this design interacts with the emergence of a special kind of an expert, one that is preoccupied with extractivist initiatives. Contributions that experiment with STS approaches to the integration of

electronic computing and related technologies (automation, control, telecommunication, etc) to extractivist technologies are especially welcomed. By inviting attention to the scientific-technological materialities of extractive enterprises, and to the construction of the expertise linked to them, we aim at a critical revisiting of what we know about the complex workings of extractive explorations and operations worldwide. The panel welcomes contributions that attempt to open the "black box" of the technology of extractivism from any of the fields that contribute to STS (history, philosophy, sociology, anthropology, economics, policy, etc).

Participants:

Contested Regimes of Safety at a Chinese-Operated Coal Mine in Zambia *Justin Lee Haruyama, University of California - Davis*

The last two decades have seen rapidly increasing investments by Chinese companies and entrepreneurs in the Zambian mining sector, with an accompanying wave of mine managers, surveyors, and engineers who have come from China to supervise and run Zambian mines. Such involvement by Chinese actors in Zambian mines has proved controversial, however, as many in Zambia have accused the Chinese of demonstrating insufficient care for the health and well-being of their workers. I conducted two years of ethnographic fieldwork at Summers Coal Mine in southern Zambia, where a daily battle is fought between Chinese and Zambian management staff over what exactly constitutes best practices and safe conduct in the underground shafts of the mine. Zambian and Chinese supervisors operate in parallel management structures that claim different bases of authority over the behavior of workers and which draw on different cultural expectations and norms concerning what constitutes "safe" mining practice underground. In this paper, I explore how the very concept of "safety" comes to be constructed through the material-semiotic resources, discourses, and embodied practices these different actors. I argue that these conflicting regimes of technological and bureaucratic practices around "safety" are enactments of competing conceptions of social obligations within South-South capitalist relations. My paper thus brings an STS approach to the burgeoning literature on China-Africa studies and South-South capitalist development.

Extractive Infrastructures: Exerting Power and Making Political Claims Through Networks of Coal Technologies in Australia *Samuel Jude Gaffney, UC San Diego Department of Communication & Design Lab*

In recent years, environmental and indigenous activists have criticized the centrality of coal in the Australian energy system, arguing that the use of coal is ecologically irresponsible and unsustainable. At the same time, coal extraction and exports have increased, new coal mines continue to be approved, and state governments provide billions of dollars of subsidies to the coal mining industry. Contestations over mining projects like the Carmichael Coal Mine and Rail Project have brought coal to the forefront of Australian political discourse. While it is important to keep in mind the various actors involved in contestations over Australian coal mining projects, this paper aims to shift focus to the infrastructure that both enables the functioning of the industry and enables/constrains actors' abilities to exert power and make political claims through extractive technologies and infrastructures. Drawing upon industry reports, documents at the state and federal levels of government, and multi-sited ethnography, this paper contributes to a decentering of the mine as a privileged site of study. Instead, I focus on the network of railways, ports, and purpose-built airports that facilitate the flow of coal and of labor. In asking the question of how actors can exert power through this infrastructure, I argue that new choke points – that is, new obligatory passage points – have been opened-up through the restructuring and decentralization of coal mining infrastructure.

What they don't see don't annoy them - The Imaginary of an Unruly Public and the Invisibilization of Mining Technologies *Alena Bleicher, Helmholtz Centre for Environmental Research - UFZ, GmbH; Henriette Rutjes, Helmholtz Centre for Environmental Research - UFZ; Martin David, Helmholtz Centre for Environmental Research - UFZ*

Mining activities are criticized for its major impacts on local environment and communities, on living environments in mining regions. New trends in mining such as an increasing number of mining activities carried out in areas that are rich or unique in biodiversity (e.g. deep sea) or ecologically sensitive (e.g. arid regions), mining of low grade deposits, or increasing complexity of mineral processing that relates to high environmental risk rather reinforced critique brought forward by societal actors. The development of concepts such as sustainable and responsible mining and voluntary certification schemes for minerals are an expression of the pressure that has been put on mining industry in order to achieve higher ethical and environmental standards by societal actors. Against the background of these developments none-invasive exploration practices and technologies gain importance in mining industry. Such technologies are developed in order to address and react on environmental concerns raised by societal actors, by "the public". Within this presentation we will investigate how developers of exploration technology imagine the public and how this imagined public influence decisions about the technology. We tie in with research on co-design in innovation and will show that an imagined "unruly" or "environmentally concerned" public result in a strong focus on (in-)visibility of mining activities and technologies at the cost of other (e.g. social) impacts of mining and exploration. Our presentation is based on a qualitative in-depth case study analysis of a new airborne exploration technology that has been developed and tested within an EU funded research project.

Building and Recycling of Nanjido Landfill *Sanghee Catherine Bae, Seoul National University, Republic of Korea*

Dumpsites and landfills that are known to have the biggest environmental impacts among different ways of discarding waste, and yet they still constitute a major part of waste management infrastructure in developing countries. For these countries, Nanjido landfill in Seoul, South Korea, has become a standard model for stabilizing their landfills and rehabilitating landfill sites. Nanjido landfill functioned as Seoul's official landfill from 1978 to 1992, harboring most of the city's municipal solid wastes and amounting to two mountain-like piles reaching up to 90 meters by the time of closure. After closure, Nanjido landfill went through stabilization process and was recreated into a "citizen ecological park". This paper examines these processes to investigate hidden factors behind the success story. In particular, this paper focuses on actors involved in the constructing and (re)covering of Nanjido landfill and the technologies and discourses they had deployed. Engineers and landscape planners not only actively adapted landfill designing and stabilizing technologies from the U.S., but also built on the action of scavengers that had lived on the landfill before closure. On the other hand, scavengers were driven out of their dwellings to provide space for other citizens who will visit the future park. By examining discussions and controversies among different actors including engineers, planners, and environmental activists and technologies that were deployed, this paper aims to question the goal and effects of modern waste management and what urban ecology is made of.

Session Organizers:

Giorgos Velegrakis, Department of History and Philosophy of Science, NKUA
Aristotelis (Aristotle) Tympas, National and Kapodistrian U. of Athens

Chair:

Aristotelis (Aristotle) Tympas, National and Kapodistrian U. of Athens

378. Challenges of Surveillance Technologies in Police and Criminal Justice Systems 2
12:00 to 1:40 pm
virPrague: VR 17
Participants:

Google Ayosh: AnyVision and Big Data's Shadow Archive *Sophia Goodfriend, Duke University*

In 2019, the Israeli newspaper Haaretz published an expose revealing an Israeli facial recognition start-up, AnyVision, was

supplying facial recognition software to Israel's Occupation regime throughout the West Bank. Not only were their cameras used at high-volume border-crossings, Haaretz detailed a secret military operation, nicknamed Google Ayosh, that installed AnyVision's cameras at clandestine location across East Jerusalem and the West Bank. While Ayosh is the Hebrew acronym for Judea and Samaria, the biblical name for the occupied Palestinian territories, Google referenced the powerful capabilities of AnyVision's biometric database, which immediately identifies millions of Palestinians based on illicitly gathered photographs as seamlessly as searching for a name on a search engine. This paper takes the nickname "Google Ayosh" as a starting point to historicize the intimacies between older tactics of colonial governance and contemporary big data. Drawing from Alan Sekula's theorization of photography's "shadow archive," I thread through the archives of 19th century criminology, Britain's imperial passport regime, and Israel's permit system in the occupied Palestinian territories, arguing AnyVision emblematizes the "shadow archive" of big data and the pervasive forms of surveillance it subtends. Digital or analog, these photographic archives are not so much a physical place where photographs are sequestered but a threshold through which the terms of political inclusion and the scope of state-sovereignty are quite literally fleshed out. Emphasizing such continuities links contemporary forms of policing and governance to more engrained technologies of sovereignty that have long been contested by those most susceptive to their effects.

Social Credit System at Play: The Encounters of Blacklisted Defaulters on China's Online Lending Platforms *Yichen Rao*

In an attempt to promote "trustworthiness" in society, China is experimenting with a nation-wide social credit system that combined the existing technology of credit scores with more expansive measures, norms, and behavioral data. Those who have been defaulters on China's banking record or the database of China's online lending platforms may be blacklisted in the social credit system and sentenced by the court to be "Trust-breaking Enforcement Subjects" (失信被执行人). Based on 12 months' online ethnographic fieldwork and 6 months' offline ethnographic fieldwork, the paper introduces the life encounters of people who were labelled "laolai" (老赖), the blacklisted defaulters, on the online credits platforms that emerged in the past ten years, under the state-encouraged banners of "financial inclusion" and "financial innovation". It examines the politics and ethics behind their "financial inclusion" (credit expansions with online platforms) and social exclusion (through the data collection of online behaviors and the algorithms that calculated their credit scores and filtered them out). It reveals the unintended consequence of the social credit system intended to promote "trust" in China's "moral vacuum" and the importance of human value and relational ethics. The paper contributes to the studies of the ethics and governance of AI-empowered social sorting by the technocratic state and market based on the big data.

Session Organizer:
Yichen Rao
Chair:
Yichen Rao

379. Welfare After Digitalisation: Siting values, affordances, and politics
12:00 to 1:40 pm
virPrague: VR 18

In European welfare states, private companies are playing a still more significant role in shaping the institutions that deliver welfare. Research is therefore needed to explore possible transformations of welfare state values like social and cultural rights, equal access to services, diversity, transparency and accountability in the relation between citizens and the state. A report from the United Nations General Assembly (2019) identifies welfare state digitalization as one of the biggest threats to key principles of the democratic welfare state. The report focuses on the risks to equal rights, social security, and public sector transparency that are put in motion by the use of artificial intelligence and big data analysis. The report argues that while the notion of 'digital transformation' often has a neutral to positive

ring to it, in practice it is very often characterized by attempts put in motion by the state to identify, profile, predict and target citizens or citizen groups whose dependence on public sector services is costly and therefore considered problematic. The report makes clear that many states are already 'post-digital' through a shift from an opt-in model to a 'digital only' situation. This panel suggests a Science and Technology Studies approach to public sector digitalization. The presentations seek to understand how welfare is sited and what it might be after digitalization. The papers each raises questions about how institutional values, digital affordances, and organizational politics are imagined and embedded in digitalized welfare societies, e.g. how they are experienced and practiced by citizens, public servants and developers of digital infrastructures. The papers focus on different welfare areas: Law enforcement, primary education, healthcare, and local government services. The overall question is how an intensified use of data and digital technologies reconfigure forms of citizenship, statehood and welfare values in both continuous and discontinuous ways.

Participants:

Patients as infrastructure: The case of MyChart *Cæcilie Sloth Laursen, IT University of Copenhagen*

During 2016 and 2017, the hospitals in the Capital and Zealand regions in Denmark implemented a new IT system, the Health Platform (Sundhedsplatformen), which integrates the patient portal, MyChart (Min Sundhedsplatform). The patient portal provides patients the possibility to communicate in writing with their doctor, and it allows them to read a majority of their own patient record and access test results. When healthcare becomes digital, it brings new modes of care delivery as well as transformations of doctor-patient roles. In the Danish political strategies for digital healthcare, patients are, for instance, seen as active partners, and digital technologies are promoted as enablers of patient involvement and self-care. Such strategies call upon patients as part of the infrastructure for care delivery. Taking MyChart as a case example, this project seeks to understand how patients and healthcare professionals experience and navigate digital health infrastructures, and, in turn, unfold which transformations digitalisation brings about. In addition, the project investigates the imagined futures embedded in policy documents for digital health care. The paper will focus on mapping out the many different ways in which MyChart embeds an active patient.

Tackling unemployment digitally? The Jobnet Platform *Konstantinos Floros, IT University of Copenhagen*

Jobnet is a multifunctional website and online database used both by jobseekers and employers, but also by caseworkers in Danish Jobcenters. Implemented in 2003, it was originally a CV and job vacancies database. Since then, it has been gradually upgraded to include self-service personalized planning and registration of job-searching or skill-acquirement activities for the unemployed (mandatory for receiving unemployment benefits), as well as an efficient toolbox which enhances employers' abilities in navigating the CV database. Jobnet's self-service nature has two explicit goals, the first being to digitally and socially empower the unemployed and the second to reduce administrative costs at Jobcenters. However, in practice, the rise of private social-networking and job-searching platforms challenge this public platform's primary role as a matchmaking tool for employers and jobseekers, tending to transform Jobnet more to an activity-monitoring tool for the documentation of job searching performance for receivers of social benefits. This paper aims to scrutinize how do Jobnet's digital tools perform "politically desirable behavior" of the user and through what technological configuration is such performativity pursued. Digital registration of unemployment-related activities makes citizens' lives easier but also more easily put under surveillance and managed by the state. This study aspires to investigate this double nature of digital public services by conducting document analysis and also a number of interviews so as to dive deeper into unemployed citizens' and caseworkers' perceptions, experiences and expectancies when using the platform.

Technological literacy and critical thinking in public schools: The case of "Understanding technology" *Simy Kaur Gahoonia, IT University of Copenhagen*

Worldwide, computational thinking is making its way into

compulsory education. In Denmark, its most equivalent form is a new subject on the curriculum in primary school education called "Understanding technology". The new subject is part of a national experiment, which takes place in order to teach children to understand, act in and shape digitalized society and digital technology as constructive and critical citizens. "Understanding technology" is a fleeting and contested phenomenon, but it has also somewhat solidified in the collective imagination of Danish public education as a welfare good in an increasingly digitalized state. But as ideas about its goal of critical reflection on technology mature parallel to continuous digitalization, there is a need to examine the multiple imaginaries at play when certain practices of technological literacy are being foregrounded by various actors with different voices and resources for shaping the future of our engagement with digital technology. This paper situates the "Understanding technology" in a controversy featuring computer scientists, policymakers, school managers, teachers, and pupils.

District heating as welfare: Rearrangements of public infrastructure ownership *Caroline Anna Salling, IT University of Copnehagen*

District heating and energy are usually not considered welfare services or infrastructures, despite district heating infrastructures mainly thriving within welfare states. This paper explores district heating as an infrastructure in a time of public sector digitalisation and Danish local governments' increasingly engaging with Big Tech. Welfare is a crucial contemporary issue to be studied in STS and is both as practice and concept integral to the fields of care and governance. My approach in this is to study an infrastructure considered at the boundary of what is usually considered welfare, namely district heating. As corporate actors of Big Tech come to influence local, public infrastructures through more or less official partnerships, the boundaries between what is public and private are rearranged. Accordingly, it is time we attend to questions of who accounts for what within and around public infrastructures, and how these partnerships come to matter in the practice of ownership. The partnerships are, for example, effects of the new data centres being built in various places of Denmark. Included in some of these partnerships is an imaginary informed by the level of energy efficiency within the Danish energy system and the utilisation of waste heat for distribution through local district heating infrastructures. In exploring the partnership and infrastructural rearrangements of public and private, I show how digitalisation is more than the increased production of and restructuring around digital data, and that it is also increasingly materialised through the welfare practices embedded in and represented by public infrastructures.

Predictive policing: The case of POL-INTEL *Vasilis Vlassis, IT University of Copenhagen*

As big data methods are used by an increasing number of police forces around the world, the questions around the practices that shape them have to a large extent remained unanswered. This is also the case in regard to digital data sharing by the police. This case study aims to investigate the use of POLINTEL, a data analytics ICT tool developed by Palantir Technologies and purchased by the Danish Police in 2017. We will investigate the initial procurement, design and everyday use and implementation of POLINTEL. This paper will initially examine the current media/political debate around the development of the software, the legal adjustments that had to be enacted for it to be compatible with the Danish constitution, as well as the expectations related to its procurement. The paper explores how notions central to law enforcement such as crime, prevention, justice and privacy are transformed by digitalization of/in the police.

Session Organizer:
Vasilis Galis
Chair:
Brit Ross Winthereik, IT University of Copenhagen
Discussant:
Annalisa Pelizza, University of Bologna and University of Twente

380. Digital Platforms, Knowledge Democracies and the

Remaking of Expertise 2
12:00 to 1:40 pm
virPrague: VR 19

Traditional forms of expertise appear in crisis. Digital platforms such as YouTube, Wikipedia and Zhihu increasingly shape the knowledge and expertise that constitute the infrastructure of modern knowledge-based democracies. Techno-optimism about the democratisation of knowledge has given way to dismay that the internet has eroded the shared truths that enable rational discourse. Digital platforms' business models incentivise audience over accuracy, with publics increasingly concerned about the resulting online misinformation. Meanwhile, a new wave of right-wing 'populist' politicians in the US, Brazil and elsewhere have come to power by fostering an anti-expert culture. Yet within this bleak picture, new kinds of experts and expertise, particular to digital platforms, are emerging in domains as diverse as finance, science and culture. This panel brings together researchers investigating the nexus of experts, publics and platforms across a range of topics, and employing a range of methods. Potential questions include: How are experts establishing credibility on digital platforms? How do digital platforms shape the production and communication of expertise? What are publics demanding from experts on digital platforms? How is epistemological power being reinforced or disrupted by platformisation? Are there potential futures for experts, digital platforms and democracy beyond the dystopian imaginary of the post-truth society? This panel will contribute to STS by assessing the impact of platformisation on existing, canonical theories of expertise, and provides opportunity for reflection on the conference themes of changing digital identities and the challenge of public engagement in democracies teeming with 'alternative facts'.

Participants:

Remodelling Platform Publics: Analysing Twitter Debates About Greenhouse Gas Removal with Climate Researchers *Laurie Waller, University of East Anglia*

Twitter is currently a platform widely used by scientists in a professional capacity as well as a major site of misinformation about climate change and politics. How do climate researchers engage with publicity concerning their research topics on Twitter? Can debates on the platform be translated to inform the integrated assessment practices that shape much of contemporary climate politics? This paper will present the results of an experimental analysis of debates about greenhouse gas removal (GGR) on Twitter involving an interdisciplinary team of climate researchers. The material for this analysis is over a year's worth of Twitter data relating to two GGR approaches: bioenergy with carbon capture and storage (BECCS) and afforestation. The participating research team are involved in assessing the "real world" feasibility of BECCS and afforestation to deliver large-scale GGR. The experiment will explore the potential for using tweets about BECCS and afforestation to detect real world issues relevant to the assessment of technical and environmental feasibility. The analysis will explore how scientific claims about the feasibility of large-scale GGR are made, and contested, on the platform. It will look at how actors representing BECCS and afforestation as climate solutions, from public agencies to energy companies and NGOs, use Twitter to publicise their causes and evidence claims. More broadly, the paper will aim to offer some reflections on the role digital traces, like tweets, might play in the assessment practices of (competing) modelling research communities.

Inadequate Interaction and Unbalanced Power between Scientist Community and the Public in Chinese Online Public Scientific Discussion Process——Based on Social Network Analysis *Zheng Yang, The University of Sheffield*

It is believed by many scholars that the new media environment indeed has the ability and potentiality for bringing out the real interactions between scientist community and the public. However, the empirical analysis of the Chinese online public scientific discussion process, this study has done, shows that the interaction between these two communities is inadequate and the discourse power relation is also unbalanced in the Chinese context. This study has chosen Zhihu, the biggest Chinese knowledge-sharing network, as field, and social network analysis as main research method. The partition and homophily of interaction networks between scientist community and the public

and the clusterization of scientist community and fragmentation of the public in those networks on Zhihu all indicate that scientists and the public still have not achieved the real interactions across identity differences in Chinese new media environment. And taking the centrality (degree centrality, betweenness centrality and closeness centrality) as the indicator of the social capital and discourse power of scientist users and the public users on Zhihu, compared to non-scientists, scientist nodes always have higher centrality in these two comment-network of genetically modified food discussion on Zhihu. Furthermore, the closer to the centre of the whole network (the higher the centrality indicators), the higher the proportion of scientists, which means scientists have a much more central position than non-scientists in the interaction networks on Zhihu, which indicates that scientists have much more social capital and discourse power in interactions between scientists and non-scientists on Zhihu.

The Plataformisation of Scientific Knowledge: Affects and Effects on Publics Strategies and Perceptions *Jussara Rowland, ICS Ulisboa; João Estevens, ICS Ulisboa; Ana Delicado, Instituto de Ciencias Sociais, ULisboa*

In the last decade, the plataformisation of knowledge has brought many changes to how information about science is communicated, disseminated, accessed and perceived. The increased epistemic fragmentation of societies, the spread of anti-expert rhetoric, the circulation of false news, but also the exponential increase of scientific knowledge circulating online has created new challenges on how the public can inform themselves and make sense of scientific topics. At the same time, this fragmentation also leads to an increasing responsibility of the citizen to navigate these challenges on his own, devising strategies to overcome them. In this communication, we will address the way the plataformisation of knowledge affects scientific communication through the perspective of the public. We will analyse the role publics assign to digital platforms and their infrastructures in the shaping of the knowledge they access, and the strategies they use to address these challenges when searching to inform themselves on different topics. What are the challenges they identify? What specific strategies do they devise to navigate the information overload and fragmentation? What effects these strategies might have on the way knowledge is constructed and disseminated online? This presentation is based on an in-depth qualitative analysis of citizen discussions within public consultations held in 5 European countries on the opinions and beliefs of citizens about science communication, in particular on topics such as climate change, alternative medicine, and vaccines. It is based on the EU funded project CONCISE - Communication Role on Perceptions and Beliefs of EU Citizens about Science.

Hacking, humanitarian apps and platformisation *Tobias Blanke, University of Amsterdam*

The opacity of digital technologies has posed significant challenges for critical research and digital methods. Platforms are locked away and our modes of participation in them is not open to general research. In response, controversy mapping, reverse engineering and hacking have been key methodological devices to grapple with opacity and 'open the black box' of digital ecosystems. We take recent developments in digital humanitarianism and the accelerated production of apps for refugees following the 2015 Mediterranean refugee crisis as a site of methodological experimentation to advance hacking as critical methodological interference. On one hand, this reworking of hacking advances an agenda for digital methods through reworking hacking for digital humanities and social science research. On the other, it allows us to show how the object of research – humanitarian apps – is configured through platformisation and a deep embedding of services by the large Internet providers. We will present the results of a series of workshops with humanitarian organisations as well as the development of a toolkit for a deep code analysis of links and networks of APIs that are embedded in apps. Starting from assumptions about data 'leakage' and extraction by digital technologies, we were led to focus on the exceptionality of unencrypted data leakage. While 'hacking' initially oriented us

towards exceptionality and transgression, we subsequently realised that we needed to reconceptualise digital technologies in order to explore the networked workings of refugee apps.

Session Organizer:

Warren Pearce, Department of Sociological Studies, University of Sheffield

Chair:

Laurie Waller, University of East Anglia

381. Pharmaceutical and diagnostic futures: innovation, governance and practice #2
12:00 to 1:40 pm
virPrague: VR 20

The development, marketing and use of new pharmaceutical and diagnostic products is playing an increasing role in shaping healthcare across the globe. Major changes are underway that may represent a fundamental transition in the sector, driven by the search for new sources of value, emerging technologies and systemic shifts in healthcare provision. Novel targeted and biological products are increasingly tied to new diagnostic tests facilitating the development of personalised medicine. A wave of ultra-expensive speciality and orphan medicines are posing major challenges for both access and existing regulatory frameworks and reconfiguring relations between patients and industry. The dynamics of pharmaceuticalisation and diagnostic innovation are extending the reach of Western medicine and international bioscience companies into new markets and the Global South, raising important social and ethical questions. This Open Panel invites papers related to pharmaceutical and diagnostic studies. We welcome papers on: the political economy of the global bio/pharma and diagnostics industry, new and alternative forms of knowledge production, the development of novel biological and speciality products, the changing role of patients in innovation and regulation, the challenge to existing forms of governance and Health Technology Assessment, medicines for neglected and rare conditions, and situating pharmaceutical and diagnostic innovation within broader health system transitions. In particular, we are keen to encourage submissions from critical, feminist, post-colonial and Global South perspectives. The Panel aims to help build a global network of STS scholars working in this area and develop collaborative research on the major changes underway in this key sector.

Participants:

Patient engagement in scientific advice: moving towards reflexive governance of medicines? *Callum Gunn; Tjerk Jan Schuitmaker-Warnaar, Athena Institute; Barbara Regeer*

Whilst the discourse of 'patient engagement' is becoming more ubiquitous across regulatory governance of medicines, the added value of patient knowledge to the scientific advice which some health technology assessment (HTA) and regulatory bodies now provide to developers (to facilitate the production of relevant evidence for demonstrating a technology's effectiveness) remains unclear and under-investigated. Meanwhile, reflexive governance theories value the enabling of social learning and reflexivities through the interaction of multiple knowledge and value systems – including from those most affected by the (proposed) technology - throughout scientific governance processes. Against this backdrop, we aimed to explore how learnings and reflexivities manifest in scientific advice practices drawing on patient engagement. We examined these practices by observing a workshop with 11 representatives of HTA/regulatory bodies reflecting current approaches, interviews with 4 informants from HTA and regulatory bodies, and a review of documentation related to scientific advice. We synthesised these data alongside insights from the reflexive governance literature. Social learnings and reflexivities arise through different forms of 'interaction' of patient knowledge with other more established framings within scientific advice practices, concerning both the legitimacy of evidence constructed to determine a technology's effectiveness and scientific advice's agency in steering this construction process. The effect thus involves opening ostensibly technical advising processes up to the range of normative interests and values driving medicines' development. Drawing on reflexive governance literature, we then discuss how scientific advice (and STS research) could be organised to productively unpack these interests and values.

The 'orphanisation' of the biopharmaceutical sector:

implications for patients, policy and healthcare *Paul Martin, Department of Sociological Studies, University of Sheffield*

'Orphan drugs' are a class of medicines that treat rare diseases. Their development has been incentivised by legislation in many countries to address the needs of neglected patient groups. They are growing rapidly, highly profitable and stimulating new business models based on high cost products for niche markets. However, the very high price of some orphan drugs has led countries, including the UK, to refuse to pay for them. This has provoked growing political concern that patients are being denied access to life saving therapies. A major international debate on how to improve access is ongoing, raising important questions about the value of these medicines and the ethics of resource allocation. Patient organisations (POs) have responded by sponsoring lower cost orphan drug development. Using concepts from transition studies this paper will argue that the growth of high-priced orphan drugs is the most visible sign of a major sociotechnical transition in the biopharmaceutical sector. This is being driven by a range of technological, economic, regulatory and biopolitical changes that together can be conceptualised as a process of 'orphanisation'. These include the co-production of novel business strategies, new initiatives for the governance and reimbursement of very expensive medicine, shifting political alliances between POs and pharmaceutical companies and new forms of collaborative knowledge production. The paper will conclude by analysing the main challenges that such a transition based on orphanisation poses for the future sustainability of drug innovation, equitable access to medicines, the governance of new targeted therapies, and our understanding of disease.

Exploring why global health needs are unmet by research efforts: the potential influences of geography, industry, and publication incentives *Alfredo Yegros, Centre for Science and Technology Studies (CWTS), Leiden University; Wouter Van de Klippe; Ismael Rafols, Centre for Science & Technology Studies (CWTS), Leiden University*

In this study we document the persistence of imbalances in research efforts using WHO data on Global Burden of Disease against bibliometric information as a proxy for research efforts: we find that disease more prevalent in high income countries generate ten-fold more research than those in low income countries. Then we investigate some of the potential drivers for these imbalances. First, we look at the geographic distribution of disease burden and research. We observe that countries drive their research according to national health needs while contributing a bit to global needs. Since research is heavily concentrated (about 80%) in high income countries, this results in a relative lack of attention to disease in lower income countries. However, a new finding is that diseases with a similar burden in high and middle income countries are also under-researched even in relation to their burden in both high and middle income countries. Second, we find that disease focus of global industrial R&D is very similar to the disease focus of public research, suggesting that public and industrial priorities are coupled. Third, we look into publication journal and citation patterns across diseases to inquire into the influence of academic prestige and evaluation practices. In middle income countries citation rates are found to substantially decrease for diseases most prevalent in low and middle income countries, which may constitute a disincentive to address them. We discuss how all three driving factors can potentially affect the relative lack of response of research to global health needs.

Innovating the post-pharmaceutical future: processes, problematizations, practices *Christian Haddad, Austrian Institute for International Affairs - oiip*

While pharmaceuticals have become vital 'modern' infrastructures, we are currently witnessing dispersed processes of post-pharmaceuticalisation. The paper investigates this emerging 'post-pharmaceutical' constellation that is expected to gather momentum in the 21st century alongside two strikingly different sites: regenerative medicine (RM) and antimicrobial resistance (AMR). Based on gene- and cell-based technologies, RM envisions overcoming the limitations of conventional drug-based therapies through innovative treatments that radically improve the quality of life of patients and accomplish

regeneration – actual healing – instead of what is often criticized as merely symptomatic treatment and chronic living. Here, post-pharmaceutical life equals opportunity and progress. By contrast, globally proliferating AMR propel a fearful vision of a post-pharmaceutical condition in which even the most basic features of today's advanced healthcare systems can no longer be sustained without serious risk of untreatable deadly or chronic infection. Here, post-pharmaceutical life signifies a threat and severe retrogression. Both fields articulate disparate visions of post-pharmaceutical futures that are fundamentally at odds with the present 'modern pharmaceutical imagination' and their political and cultural economies. When contrasted, RM and AMR bring into perspective some common problematizations of post-pharmaceutical health, and tentatively point to emerging post-pharmaceutical practices of treatment and care, innovation, investment and subjectification. Informed by STS work on sociotechnical assemblages built around modern drugs, this paper explores and conceptualizes this form of post-pharmaceutical life. Situated within broader transformations of health systems, these incipient processes of post-pharmaceuticalisation critically reshape our notions, expectations and valuations of health, disease and treatment at a personal, social and political level.

Session Organizer:
Paul Martin, Department of Sociological Studies, University of Sheffield
Chair:
Paul Martin, Department of Sociological Studies, University of Sheffield

382. **Postphenomenology and Computing: AI, Robotics, and the Digital**
12:00 to 1:40 pm
virPrague: VR 21
Our world is experiencing rapid technological change in the form of digital technologies, big data, robotics, and artificial intelligence. In this panel, we bring together ideas from the postphenomenological school of thought to help address these changes. With its framework of concepts for approaching human-technology relations, postphenomenology can make distinct contributions to our understanding of complex computer mediation. In our first paper in this session, Cathrine Hasse explores the role of materiality in human relations to robots in light of her empirical studies of user-robot relations. Our second paper, by Ciano Ayden, considers what it would mean to critically engage with artificial intelligence as it increasingly comes to shape the world we encounter. Esther Keymolen uses as Ricoeurian notion of "emplotment" as a way to come to terms with the kinds of changes AI may bring, and to analyze the stories we tell about it, before this technology becomes a part of our everyday worlds. In our fourth paper, Shoji Nagataki examines the nature of digital technology, taking up ideas from McLuhan's media theory to contrast e-reading and physical books, and to better get to the bottom of the embodiment of digital communication. And, finally, Galit Wellner explores the normative dimensions of AI, uses postphenomenology to track how human intentionalities become built into algorithms, and develops prescriptions for mapping stakeholders and avoiding AI biases.

Participants:

Perception as Material Hermeneutics in Emerging Worlds *Cathrine Hasse, Aarhus University, Department of Education*

Perception has always been an important concept for postphenomenology, building on, among others Merleau-Ponty. Don Ihde has argued that Merleau-Ponty never escaped notions of subjectivity even if his primary emphasis was on embodied perception. Though Merleau-Ponty rejected a psychology of 'inner man' he kept the notion of consciousness – and thus, Ihde argues, "the echo of subjectivity." Ihde suggests we get rid of the subject by replacing it with embodiment. In this paper, I take this debate further. I make use of a study of how different people perceive robots (see responsiblerobotics.eu). Some are engineers, and some are construction workers or cleaning staff. Their perceptions of robots are tied to different embodied practices. Where the notion of embodiment may allow postphenomenology to escape from subjective phenomena inside the mind, the postphenomenological embodiment does not capture the differences in how people, engaged in different practices, come

to perceive a robot in different ways. I suggest that different practices give rise to different interpretations of a material world. When humans engage with new materials, they often interpret from their previous learning experiences tied to practices they share with others. What happens when they engage with new phenomena as robots is that they bring these previous experiences to bear in their perceptions. However, the material body encounters give rise to new experiences that are not just embodied – and definitely not isolated subjective. They are rather collective learning processes which form perception as material hermeneutics as they learn to adjust to a new robotic environment.

Emplotment and the Story of Artificial Intelligence *Esther Keymolen, Tilburg University, TILT*

STS and postphenomenology are both situated after the "empirical turn". This entails that they focus on concrete technological practices or case-studies to investigate how human beings and technologies are part of a co-shaping, mediating interaction. The last couple of years we are confronted with rapidly evolving, potentially disruptive technological innovations, for instance in the domain of artificial intelligence (AI) and machine learning, which do not immediately make it to applications that mediate everyday life. The absence of clear-cut technological practices and case-studies poses a methodological challenge to both STS and postphenomenology. If both approaches want to engage with these new technologies already in an early stage, new ways of gaining access to these technological practices are needed. By analysing the stories we tell about AI, this paper will investigate to what extent Ricoeur's concept of emplotment might be useful to interpret and gain access to new technological developments. Central to this paper will therefore be the documentary "AlphaGo" which captures one of the greatest breakthroughs in the field. By intepreting how the documentary configures the actors, actions and events, this paper wants to show how the narrative approach developed by Ricoeur can be a valuable strategy to read ourselves into a context where we interact with the transformative power of new technologies, before they even are part of everyday life.

On the Digital Revolution: from a (Post)Phenomenological Viewpoint *Shoji Nagataki, Chukyo University*

Digitalization of media can change, drastically or superficially, our way of communication, education, and even thought. This is sometimes called "the digital revolution." Much concern has, however, been expressed over this transformation of media. Some people go so far as to have an aversive attitude to the digital devices themselves, referring, for example, to the addiction of young people to smartphones. This situation is, in a way, parallel to that surrounding television, which has sometimes been pejoratively considered as an "idiot's lantern." In contrast to lingering criticism against digital devices and television, reading books has always been praised. There is a common argument that reading and writing cultivate our imagination and intelligence. In many cultures, written languages serve as basic "media" when we participate in social practices and institutions. Thus, reading and writing have been positioned as a major foundation of education. The question, however, is whether using contemporary digital devices fundamentally differs from reading books. If so, what are the differences? Will the differences give any influences on the fundamental concept of humanity? Does the digitalization of media significantly alter our environment? Can it change even our body in a different way from biological evolution? This presentation focuses on these questions, referring to phenomenology, (post)phenomenology, McLuhan's media theory, and various contemporary discussions on the digitalization of media. By doing so, I describe lights and shadows of the digital revolution and propose a thesis that our embodiment gives us a good limitation on our way of thought and communication.

AI Beyond the I-Technology-World Formula *Galit Wellner, The NB School of Design & Tel Aviv University*

Artificial Intelligence (AI) technologies offer exciting new opportunities but also pose some threats, such as gender inequality. Those algorithms allocate lower credits for women (compared to their male spouses), offer women lower paid jobs and frequently fail to identify their faces, especially those of women of color. Postphenomenology examines the relations between humans, their technologies and the world via the formula of I-technology-world. AI algorithms are easily represented by the "technology" component. The dataset serves as "world" for it is a digital representation of the reality. But who is the "I" in these situations? It can be the end users, the service providers (like AirBnB's hosts or eBay's sellers), as well as less visible actors like those who contributed their data (frequently involuntarily). The stakeholder list is even longer, including programmers of the algorithms, data scientists who train the algorithms and the corporate managers who market and sell the technology. In this complex landscape, the technology element has an extended technological intentionality which causes some surprises to the humans interacting with it, whether end-users, service providers, developers, data scientists or corporate managers. There are three challenges: first, to map the various stakeholders and draft an extended postphenomenological formula to accommodate them all; then to move from directedness and intentionality to power relations; lastly to suggest normative guidelines to avoid gender and racial biases.

Session Organizer:
  Kirk Besmer, Gonzaga University
Chair:
  Kirk Besmer, Gonzaga University

383. Social Practices Perspectives on (Un)sustainable Urban Transformations (2)

12:00 to 1:40 pm
virPrague: VR 22

This is second session of a panel with the same title / topic. This session sheds light on urban socio-technical transformations, its key actors and main drivers. It invites papers that draw on or combine insights from studies of sociotechnical transitions, models of urban obduracy and path dependency, actor network theory, and social practice-based perspectives on technology use and experience. We seek to contribute to understanding why and how cities may transform towards 'less' or 'more' sustainable places, due to or despite all 'saying and doings' around urban development. In the past two decades, a few distinct analytical frameworks to understand socio-technical sustainability transitions have been developed, most notably the Multi-Level Perspective (MLP). However, the idea of hierarchical (micro, meso, macro) 'levels' has led to a neglect of the place-specific characteristics of regimes, and the dichotomy of niche and regime has been found questionable in practice (Bulkeley et al 2014). Some have noted a disregard for the role of users, a slight bias towards technology, and an over-emphasis on simple shifts from one regime to another, whereas in practice fragmentation and plural regimes seem more likely (ibid.) This session invites papers on urban transformation (drawing on or combing insights of the studies mentioned above) and looks at ways to overcome various criticisms to the MLP. Papers may address historical, contemporary or future transformations. The may focus on particular in cities, such as urban mobility. We encourage papers based on empirical research in cities.

Participants:

The Networked City: How the Blanka Tunnel Extended Beyond its Boundaries *Demetra Kourri, The University of Manchester*

Prague's Blanka tunnel project has been a site for assembling social relations in the capital city for decades. Throughout its planning and construction, we see the city struggle to maintain its historicity, while negotiating mobility for its citizens. STS approaches to large infrastructural systems are mostly focused on Multi-level Transitions, which by-passes the daily negotiations, break-downs and adjustments taking place in long established technological systems. Building on the idea that infrastructure can be seen as always in a state of "becoming" (Star 1999) as always unfinished and in a state of flux, this paper argues that a new infrastructural layer such as the Blanka tunnel cannot be seamlessly placed in the city without consequence. Mobilizing ANT methodology, we see the planning and construction of Blanka extend beyond the tunnel itself, to become a strong driving force for the development of new mobility related practices and relations in the city of Prague. We see how various actors deal with sustainability issues that emerge – the implementation of cycling, increasing traffic intensities and

pollution – by inventing solutions, moving between actors' worlds, from one field to another, and from one expertise to another. The actors challenge preset views of the city (Yaneva 2015) and use imagination and creativity in order to deal with these problems "from within" (Boullier 2011). Their actions challenge the terms we associate with the city; mobility, pollution, and traffic, to ones that are intertwined with local perceptions and practices and appear in terms that are unique to their context.

The Materialisation of (un)sustainable Values: Imaginaries, Obduracy and the Reproduction of (un)sustainable Practices in the Built Environment *Willow Leonard-Clarke, Cardiff University*

Sustainable transitions are often planned in the form of 'technofixes' but transformation depends on changes in the values and practices that shape technological forms and how they are used. The 'technological utopianism' (Segal 2005) of sustainability and its 'imaginaries' focuses on technological fixes in response to imagined future dystopias. Current transitions constitute a 'technofix imaginary' (Levidow 2014) where new technological forms are seen as the solution to previous failures and unintended consequences. The need for sustainable transformations now, depends on historical practices and the lasting material legacies of modernity. Here the social shaping of technology in the context of the 'sustainable' built environment is explored in the way (un)sustainable values become embodied in, and then reproduced by, material forms. Using comparative case studies of sustainable communities in the UK, this research draws mainly on the theories and methods of SCOT, the concept of 'obduracy' and Bijker's (2007) concept of 'technological frames', in combination with 'sociotechnical imaginaries' and agential realism to explore both the socially shaped nature of our built environment and the material discursive power it itself holds as a lasting legacy of (un)sustainable values. Values shape the design and 'final' material forms of the built environment, which grows obdurate leading to 'path dependency' and 'locked-in futures' formed from historical and present imaginaries. In this way (un)sustainable practices are reproduced by our built environments and what they and their technologies afford. STS and sociological analysis are hoped to add 'symmetry' to better understanding the 'success' and 'failure' of sustainable development.

Peace piece: Dissonance and the stabilising of local innovations in urban design *Stefan Molnar, RISE / Chalmers University of Technology; Karl Palmås, Chalmers University of Technology*

This paper introduces the musicological notion of dissonance as a means to theorise the situatedness and stabilisation of innovations in processes of co-creation in urban planning. Starting from the literature on valuation studies, the argument adopts Stark's (2009) proposition of studying innovations ethnographically in sites where evaluative dissonance is made productive. This concept, along with Farías' (2015) related notions of "epistemic dissonance" and "project mediators", is used to explore the local adoption of "active frontages" in the redevelopment of an central neighbourhood in Gothenburg, Sweden. In the paper, dissonance is that which emerges as local actors with non-aligned normative and cognitive expectations co-create urban design in a particular geographical and cultural setting. The paper has three aims. First, the argument seeks to transpose the notion of dissonance – which has previously been used to study intra-organisational settings – to the study of inter-organisational co-creation. Secondly, the paper will align STS-influenced valuation studies with the lineage of innovation studies (from Machiavelli to ANT) that focuses on stabilisation – the "Machiavellian moment" in innovation. Thirdly, the paper aims to take Stark's musicological metaphor further, surveying musical history for examples of compositions designed to make states of dissonance comfortable. References Farías, I. (2015) "Epistemic dissonance: Reconfiguring valuation in architectural practice", in Moments of Valuation: Exploring Sites of Dissonance, pp. 271-289. Stark, D. (2009) The Sense of Dissonance.

Session Organizer:

Marc Dijk, Maastricht University

Chair:

Marc Dijk, Maastricht University

384. 4S Business Meeting and Prize Announcements
1:40 to 3:00 pm
virPrague: VR 02

4S 2020 OPEN BUSINESS MEETING AGENDA TEXT 2020 4S BUSINESS MEETING AGENDA 1. Announcements – Joan Fujimura Appointment of a new editorial team for ESTS 2. Treasurer's Report – Paige Miller Financial Report on two conferences NOLA and virtualPrague– Wes Shrum 3. Future Meetings – Wes Shrum and Joan Fujimura 4. Publications Committee – Joan Fujimura Brief update on ESTS editor transition Opening for a managing editor of ESTS 5. 4S Web Committee updates – Noortje Marres 6. Travel Grant report – Noela Invernizzi 7. Update on 6S activity – Aadita Chaudhury or Katie Ulrich 8. Social Media and Backchannels report – Amanda Windle 9. Prize Announcements: Bernal Prize – Belen Albornoz Ludwik Fleck Prize – Lesley Green Rachel Carson Prize – Belen Albornoz Nicholas C. Mullins Award – Teun Zuiderent-Jerak David Edge Prize – Pablo Kreimer STS Infrastructure Award – Wenhua Kuo Making & Doing Awards – TBA – Teun Zuiderent-Jerak 10. Thank outgoing Council members – Joan Fujimura Lesley Green Noela Invernizzi Roopali Phadke Teun Zuiderent-Jerak 11. Welcome incoming Council members and President-Elect – Joan Fujimura Emma Kowal Vivette García-Deister Maka Suárez Chihyung Jeon Alondra Nelson – President-Elect 12. New Business from the membership   Should we do another Handbook?

Session Organizer:

Joan Fujimura, University Of Wisconsin-Madison

Chair:

Michael A Fortun, University of California, Irvine

385. Bristol University Press - Meet the Editor | 21 August
1:40 to 3:00 pm
virPrague: VR 23

Visit this session to meet senior editor Paul Stevens, who is responsible for our new list in science, technology and society: bristoluniversitypress.co.uk/science-technology-and-society. Paul will be delighted to speak with you about your publishing plans. He'll be available at the times listed below, so if you'd like to set up a separate meeting then please drop him a line (paul.stevens@bristol.ac.uk). August 18: 13.40 – 14.40 (CEST) August 19: 13.40 – 14.40 (CEST) August 21: 13.40 – 14.40 (CEST)

Session Organizer:

Bahar Muller, Bristol University Press

Chair:

Paul Stevens, Bristol University Press

386. SUBPLENARY: Locating matters
3:00 to 4:40 pm
virPrague: VR 00

In many ways, the centres of gravity for STS remain in North America, Australia and Western Europe. However, such a portrayal ignores important (sometimes long-standing) developments in East Asia, Latin America and, indeed, Central and Eastern Europe. In this panel we aim to discuss how these re-locations and new contextualisations of STS actually happen – and very importantly what do they mean for the discipline. The panel will particularly pick up on debates that have been taking place in East Asian Science, Technology and Society and Tapuya: Latin American Science, Technology and Society. How do we understand and re-work the historical asymmetries of STS? What influence is exerted by different research assessment systems and university rankings? How to build and experiment with trans-regional collaborations that would enact shared research agendas and matters of concern, without necessarily hiding areas of distinctiveness and difference? What does it mean, in terms of actual research and publication practices, to "mistranslate" across differences (Lin, Law 2019)? There are many questions to discuss with regard to the different contexts of STS but also what this means for the exploration of new empirical and conceptual possibilities.

Session Organizer:

Tereza Stockelova, Institute of Sociology of the Czech Academy of Sciences

Chair:

Alan Irwin, Copenhagen Business School

Discussants:

Tania Pérez-Bustos, National University of Colombia
Gergely Mohacsi, Osaka University
Tereza Stockelova, Institute of Sociology of the Czech Academy of Sciences

387. Mutagenic Legacies and Future Living

3:00 to 4:40 pm
virPrague: VR 01

Modernist projects - e.g., 'green revolutions', disease eradication campaigns or power generation - have been rearranging molecular relations in the name of "better living," as a chemical firm famously advertised. Lives improved by technology are and were imagined as a source of private comfort, security and profit. But abundant food, cheap energy, lucrative resources and controlled pathogens have also been hinged to societal ambitions for collective prosperity and protection. Molecular rearrangements are mutagenic in a broad sense: vast volumes of substances have been synthesised or released by sociotechnical interventions, accumulating in bodies and environments, where they might alter genetic processes, foster cancerous cell proliferation or resistant microbes, and engender broader ecological reordering and novel interspecies relations. Yet past modernist projects can also be politically mutating and mutagenic. They exert durably transformative effects on and across changes in the values of life and the conditions of living, for variously positioned humans as well as nonhumans (defined as food, parasites, wildlife, etc.). This panel invites participants to examine modernist legacies through the lens of their biological and social mutagenicity. We welcome contributions that attend to past futures of better living, as imagined and embedded in modernist projects, and seek to discern their enduring presence, mutations and mutagenic effects in current possibilities for future living. We seek in particular to reflect on how mutagenic effects are exerted across changes in political regime and ideology (post-colonial, post-socialist, post-welfare, post-developmental) and the unequal relations of production and consumption they foster and seek to moderate.

Participants:

The Metagenomics of Colonialism. Tracing Ruderal Pathogens in South-East Cameroon *Guillaume Lachenal, médialab Sciences Po*

My paper establishes a conversation between STS, colonial history and molecular epidemiology. Recent progress in molecular phylogeny have given epidemiologists and historians extraordinary new tools to trace epidemics – both in real- and deep-time, across multi-specifies ecologies. My paper, based on historical and ethnographic fieldwork research conducted over 10 years in East Cameroon, deploys a "bio-historical" approach to explore the mutating ecologies of a region known as a "hotspot" of disease emergence. Focusing on the enmeshed histories of HIV, HCV, trypanosomiasis and mycobacterial infections, my aim is to offer a new perspective, beyond classic narratives describing (and anticipating) emergence as the result of pathological transgressions – of species barriers and of political borders. Firstly, I propose to recast the apparently exceptional history of HIV in a much wider ecological crisis which began in the late 19th century with the colonial rubber boom, and which led to the emergence of multiple pathogens (including trypanosomes, Hepatitis C virus and mycobacterias). Drawing from a neglected mid-century tradition of tropical biogeography (Maximilian Sorre's "pathogen complex"), and from recent advances in metagenomics, I will show how theses pathogenic collectives can be understood as ruins of colonialism and capitalism: as biological traces of the central-African Anthropocene, whose mutation history trace and reveal broader ruderal ecologies (from the latin word rudus, for rubble).

Trampling on Plastics : Plastic Mutations in a Broader Politics of Caste-work *Tridibesh Dey, University of Exeter*

In the original Marathi and later imports to other regional languages, "Dalit" would literally translate to those "trampled upon", left out, oppressed and marginalised in various forms over the centuries. My co-workers at the plastic processing workshop in Ahmedabad (India) would mostly identify as Dalit chamaars (trad. - carriers of animal carcasses, and leather-workers), now doing urban waste-work. In this paper, we will focus on the

intensive body-work of trampling plastics: compacting HD/LD polythenes, polypropylene, polystyrene raffia, etc. under one's feet for the preparation of homogenized bales. The skill (incorporated knowledge of the varying recalcitrance of different polymer-types), strength and persistence (day-long, and day-after-day) makes this a valued practice, variably gendered in its specific performances, and generates different forms of microsocial re-arrangement. The day-long practice of trampling generates its own language. The idioms press upon themes of suppression, conflict, fatigue, death and re-birth. The waste trade and processing centre is one of 20 such (more upcoming) in an urban ghetto, a "waste village" constituted mostly of urbanised Dalits – living on rag-picking and waste entrepreneurship. These establishments buy collected plastics, sort them, and secure transportation upstream along the recycling value chain. However, the present workshop is unique in its management by an NGO (rather than an entrepreneur from the local caste communities), waste supply chains, funding structure and flow, but also in its political affiliation. Together with the obvious material mutation of plastics, the paper will study social and cultural-political mutations in the community of employees, and their local caste-society.

Mutagenic Residues of Senegal's Peanut Export Economy *Noemi Tousignant, University College London*

In 1960, when Senegal's colonial independence was celebrated, about a hundred thousand turkeys died near London. Senegal's first development plan traced an ambitious program to transform the groundnut from a force of ruination, whose colonial exploitation impoverished soils, ecologies, households and diets, into one that would fuel the emergence of a new national society, landscape and citizen-peasant. The turkey outbreak was soon traced to fungus-contaminated groundnut-based feed imported from Brazil. Over the next decades, layers of animal-experimental, epidemiological and genomic evidence and uncertainty were produced about the hepato-carcinogenic effects of toxic metabolites – called aflatoxins – of groundnut (and other crop)-colonizing fungus.   This paper examines how this evidence and its uncertainty played out alongside the high political-economic stakes of Senegal's groundnut economy and of its successive reforms. I combine three strands of analysis: 1) A historical examination of aflatoxin research and regulatory control in Senegal, in which projects to specify and manage field and food contamination have been stifled, and investments made in exit-point measures to meet importers' standards arising from precautionary responses to evidentiary uncertainty. 2) A historical examination of the effects, on domestic groundnut commerce and consumption, of the liberalisation of the groundnut sector. 3) An ethnographic approach to enduring doubts and suspicions about the intentions driving characterisations of aflatoxin carcinogenicity, and emerging hopes in entrepreneurial techno scientific solutions. I thus consider how both embodied exposure and epistemological uncertainty can be conceptualised as mutagenic residues of the global political economies of agricultural commodities and scientific research.

Session Organizers:

Miriam Hanna Ancilla Waltz, Aarhus University
Paul Wenzel Geissler, University of Oslo
Noemi Tousignant, University College London

Chair:

Paul Wenzel Geissler, University of Oslo

Discussant:

Thomas Widger, Durham University

388. Contesting the 'migration/border control machine': entanglements of information and surveillance infrastructures with the making of publics/'non-publics'

3:00 to 4:40 pm
virPrague: VR 02

In recent years information and surveillance infrastructures of migration and border control have gained more attention of civic actors, activists and researchers. Work at the intersection of STS, critical migration and border studies scrutinizes the hidden processes of data and information processing and their consequences on citizens and migrants, the seemingly neutrality

of technologies or the role of technocratic experts. But what could or should enable 'non-publics', those affected by the infrastructure's consequences of social sorting, to transform into visible collectives and publics? How are other critical voices part of larger publics and controversies? How do publics emerge, and which issues and concerns gain authority and affect the design and working of surveillance and information infrastructures? The panel engages with the making of 'non-publics', publics and controversies around information and surveillance infrastructures of migration and border control and addresses multiple forms of critique and contestation. It explores the arenas in which controversies unfold, the actors involved and the issues and concerns being articulated. It critically examines which actors' voices are in- and excluded, amplified or silenced, as well as the processes and dynamics which enable or restrict public contestation. Furthermore, it reflects upon the ontological politics of research and researchers themselves. How is epistemic authority constructed within publics and beyond when engaging as experts, opinion makers and (expert) activists? Contributions to this panel study emergent publics and their arenas, actors, issues and contestations unfolding around the regulation, implementation and use of surveillance and information infrastructures of migration and border control. Huub Dijstelbloem, University of Amsterdam, will act as discussant of this session.

Participants:

"Becoming migrants at home": controversies around infrastructures of post-Brexit migration control *Fredy Mora-Gámez, Linköping University, Tema-T (Tema Technology and Social Change)*

STS scholars have revealed how the sociomateriality of extended border regimes shapes the lives of migrants and enacts states. We have also addressed how migration categories (refugees, asylum seekers, internally displaced people, etc.) are enacted by surveillance technologies and information infrastructures. But, can migration be produced by infrastructures and technologies without crossing borders (at least not so recently)? How can new policies of migration control transform legitimate forms of citizenship into migration categories? This paper builds on the lessons gathered by STS about borders and migration control to problematize the infrastructures of post-Brexit migration control. Drawing on preliminary results of an ongoing research project, I analyse interviews conducted with participants (EU nationals living in the UK, UK nationals living in the EU) and the content of social media publications authored by three social movements of "Brexit remainers". I trace the controversies around the protection of rights of EU and UK citizens in both sides of the border. The themes of this content analysis revolve around the engagements with new bureaucratic procedures (inscriptions practices, permit applications, biometric data submission), the production of evidence, the experiences of being treated as a Third Country National (TCN), and the uncertainty about "Becoming migrants at home" (in words of two of the participants) given the upcoming changes in the EU-UK migration control policies. I reflect on the destabilization of citizenship by information infrastructures. I explore the idiosyncratic notion of "Brefugees" as a category to address an emerging hybrid (non)public which participation/contestation is yet to be defined

Knowledge and Legitimacy in Asylum Decision-making: The making of non-publics in relation to Country of Origin Information *Jasper van der Kist*

State institutions engage in the production of knowledge and representations about the countries of origin of asylum seekers. Building on science and technology studies (STS), critical migration studies and critical citizenship studies this paper analyses the alignment of government Country of Origin Information (COI) with the public sector. We examine the different processes through which public legitimacy of asylum knowledge is fostered in three bureaucratic settings. The case studies highlight the variable legitimacy constructing technologies and practices of publication (Norway), evaluation (United Kingdom) and consultation (European Union) vis-à-vis asylum-relevant information. We demonstrate how this shifting style in the knowledge-based governance of asylum does not consistently enhance legitimacy and stabilization of asylum-relevant information, and can provoke new forms of critique and contestation in this environment of high-stakes policymaking.

The paper diagnoses how these procedures do not simply 'democratize' complex and uncertain policy knowledge that directly affect migrant's lives, but rather displace the possibility to intervene and contest asylum-relevant information. Building on Huub Dijstelbloem's notion of 'non-public' we highlight how the asylum seekers are denied political subjectivity in the sense of being excluded from procedures that legitimize information about themselves and the countries of which they are being constituted as a part.

Migrant Technologies: On the Border of Security and Human Rights *Lindsay Adams Smith, Arizona State University*

In the face of a migration crisis, with an estimated 70,000-120,000 migrants disappeared in the Mexican borderlands in the last ten years, and an ever-shifting and increasingly dangerous regime at both Mexico's northern and southern border, migrants and human rights activists are relying on emerging digital and forensic technologies to navigate these indeterminate spaces. In this paper I examine an assemblage of humanitarian technologies used in US-Mexico border region. Focusing on the Mexican borderlands, from Guatemala to the United States, I will discuss consolidation of four border technologies that straddle state-based and grass-roots responses to migration and migrant death: GPS and ICT technologies, forensic DNA, isotope analysis, and biometrics. Although emerging from disparate intellectual traditions ranging from molecular biology to spatial sciences, taken together these technologies highlight (1) borders as spaces of innovation and experimentation on the part of migrants (2) the role of technologies in migrant citizenship, and (3) the rise of hybrid technologies that fuse human rights and security goals. Although borders have been an important site for theorizing the state, culture, surveillance, and citizenship, less focus has been given to these liminal spaces as sites of scientific and technological innovation. In analyzing multiple border technologies together that act as hybrid technologies, deployed within both migrant rights communities and state-based border enforcement, this paper offers a unique paradigm for empirically understanding the "smart" border, migrant subjectification, and new forms of technological governance.

Session Organizer:
Nina Amelung

Chair:
Silvan Pollozek, MCTS, Technical University of Munich

Discussant:
Huub Dijstelbloem, University of Amsterdam

389. Robotics Innovation in Care: Ethical Considerations_Session 2
3:00 to 4:40 pm
virPrague: VR 03

Robots designed to accompany our elderly or to help people with Alzheimer; robots used in therapies with children with autism or to help them learn medication guidelines; robots to reduce the anxiety or pain of patients or to facilitate virtual assistance of hospitalized people; robots to feed or bathe people with limited mobility; robots designed to have affective and/or sexual relationships… Robotics innovation for care in daily live. We are living in an innovation framework in which development and technological application seem to have been previous or separated to the discussion on the moral, social, economic or political model that these innovations entail. Beyond usual debates regarding its alleged incorporation in daily life, and the utopian or dystopian scenarios that accompany its progressive introduction, the interaction with robots enacts controversies that require alternative forms of ethical reflection. In the same way, the ideation, design or commercialization strategies that are mobilized around this type of robots, suppose certain ways to conceptualize human-machine interactions, as well as certain ways to understand care and the role of care in our world. In these landscapes and dreamscapes, this panel has as main aim to discuss about ethical controversies that emerge (and disappear) with the development of robotics in care relations. We propose a multidisciplinary approach to this issue, from multiple and different perspectives: technological mediation, imaginaries, public controversies, risk identification…

Participants:

Care in a Can *Ingrid Meintjes, Dept of Gender, Sexuality &*

Feminist Studies, Duke University

Juxtaposing the hyper-feminized domain of unpaid community-based HIV/AIDS care work in the informal settlements of South Africa with hyper-commodified forms of care outside the global South – such as care robots, touted as a way out of the care crisis - I argue that unpaid care work demonstrates the biopolitical reconfiguration of care as an extension of the extractive economy into the biosciences. Using mixed methods such as embedded ethnography, in-depth interviews, and health policy analysis, alongside the interdisciplinary, transnational, and social justice perspectives of Decolonial and Feminist Science and Technology Studies, Meintjes examines experiences and policies that constellate around care to demonstrate that the care robot embodies the unmitigated care crisis, not its resolution. Evidence of this is: (a) how ongoing resource extraction to build care robots depletes African communities' wherewithal to address the care crisis; (b) how benefits of technoscientific interventions are primarily distributed to already well-resourced groups while their costs are distributed to economically and politically vulnerable groups (Roy, 2018); and (c) how care policies serve as ongoing 'imperial contact zones' (Pollock & Subramaniam, 2016) and facilitate (a) and (b). This paper uses an under-examined empirical example to offer novel insights into the exponentially increasing reliance on unpaid care work - cited as *the* major obstacle to gender equality, in times of radical uncertainty produced by public health crises, political unrest, mass migration, and climate change. This paper demonstrates the political cachet of an STS intervention into the long-standing debate on the "crisis of care" (Fraser, 2018) by taking care as a diagnostic site to better understand and mitigate against the cooption of technological health interventions by the neoliberal logics - and attendant colonial legacies - of the present political economy.

Mapping Robots Caring for Humans *Ludovica Lorusso, Universitat Autònoma de Barcelona; Cecilio Angulo, Universitat Politècnica de Catalunya; Fabio Bacchini, University of Sassari; Miquel Domenech, Universitat Autònoma de Barcelona*

AI and robotics technologies have nowadays an important role in our society. Many ethical concerns, however, are raised from the use of robots in healthcare. In order to adequately formulate them, it is important to deal with the present conceptual confusion about different categories of robots that take care of humans. In this paper we analyse and compare the many subspecies of robots involved in healthcare that have been identified, implicitly or explicitly, in current literature. Our main aim is the construction of a map of the different taxonomies of robots currently adopted in healthcare, in order to make it possible to clarify some epistemological and ethical issues concerning this kind of artefacts. In particular, we focus on the distinction between social and care robots. What these two sorts of things are supposed to be exactly? And, what are the essential differences among them? We deem it important to ascertain, for example, if every care robot is necessarily social, or, vice versa, if any social robot is necessarily care taking – and why.

ROBOETHICS: Ethical Concerns with the Use of Socially Assistive Robotics in Health and Social Care *Giulia De Togni, University of Edinburgh*

Technological developments in AI in combination with assistive physical technologies are facilitating the production of socially assistive robotics in health and social care. Despite the potential of these technologies, there are problematic questions which remain unsolved. For example, it is not clear what will happen to the nature of care provision in the future if it is no longer provided by human nurses but by robotic nurses. More empirical research is needed to determine how the integration of robots in care teams may work in practice and how it may affect care relationships, in particular the doctor-patient relationship but also medical team members' relationships. Furthermore, it remains unexplored what might happen once the nature of emotional and social intelligence are modelled into robots. To model it, the designers will need to have some conceptualisation of emotional intelligence that they can replicate into the machine. However, who decides what emotional and social intelligence is, in the first place, and if the designers are using a particular conceptualisation

of it, instead of another one, to build social robots? This paper draws on ongoing STS debates on roboethics, and is based on ethnographic data collected in Europe, the USA, Canada and Japan by the author, a trained social/legal anthropologist. The appearance of social robots in everyday settings challenges the sociological imagination to consider not only whether robotising social spaces induces new ontologies, but also to consider whether scholarly descriptions of these emerging socio-material collectives 'forget' fundamental aspects of human personhood.

Session Organizer:

Núria Vallès-Peris, Universitat Autònoma de Barcelona

Chair:

Cecilio Angulo, Universitat Politècnica de Catalunya

Discussant:

Ludovica Lorusso, Universitat Autònoma de Barcelona

390. Counter-hegemonic Knowing Spaces: Criticisms, Evaluations and Pedagogies

3:00 to 4:40 pm
virPrague: VR 04

Alluding to the 'end of the cognitive empire' (De Sousa Santos), this open panel focuses on how alternative ways of knowing are practiced in a variety of disciplinary, cultural, regional and historical contexts. In the humanities and social sciences mainstream research cultures are increasingly supplemented or amended by alternative epistemologies, questioning the dominance of propositional forms of knowing. In line with the agenda of this conference, these alternative 'knowing spaces' (Law) share an interest in the constitutive role of practices and things, in participatory and collaborative experiments that engage with matters of public concern, and in inclusivity with regard to the agencies and voices of the people involved in the generation of knowledge and understanding. What do 'knowledge' and 'discursivity' mean in these enhanced and performative epistemic cultures? And what consequences does this entail for the way people document, share and disseminate research? Through this open panel, we hope to advance these fundamental questions by tracing and discussing concrete knowledge practices and how they stabilize over time - or not - in research fields and traditions, ranging from visual ethnography and artistic research to the history of knowledge and 4E-cognitive sciences. We invite papers touching upon one or more approaches, including but not limited to re-enactment and reconstruction, citizen science and 'epistemologies of the South', co-creation and artistic work, enactivism and activism, with a focus on how knowledge and understanding are generated, stabilized and shared in these fields of investigation.

Participants:

Enhancing the Science System - The Case of Research Evaluations and University Repositories *Henk Borgdorff, Leiden University*

Academia has never been a stable sphere of human pursuit. From the advance of experimental physics in the 17th century to the emergence of the social sciences in the 19th century and the proliferation of academic disciplines in the 20th century, the development of the realm of higher education and research is characterized by the steady introduction of new or other ways of understanding the world and ourselves. The history of science also tells us that the transformations of our perception of what academia is, never took place without friction. Also in our days, alternative ways of knowing are knocking at the doors of academia, challenging the conventions and infrastructure of its gatekeepers. Recent applications for research funding at the European Research Council, for instance, have seen an increase of interest in participatory, artistic or indigenous epistemologies and methodologies. And the rapid growth of academic studies in the 'making disciplines' (e.g. design, fine art) or the advance of unconventional social sciences (e.g. visual anthropology) testifies that the 'science system' is challenged to accommodate other ways of generating, evaluating, documenting and disseminating knowledge. This contribution will zoom in on two specific spaces, where the encounter with established research infrastructures manifests itself clearly: the Standard Evaluation Protocol (SEP) for research assessments in the Netherlands and the Leiden University Current Research Information System (LUCRIS). These frameworks serve as examples of how academia sometimes guards it borders. The presentation will describe the work to be done on these frontiers of the science

system, and will argue for properly including non-traditional research methods and outcomes in the protocols and systems. By acknowledging here the constitutive role of practices and things, academia will enrich the science system with cutting-edge ways of exploring the world.

Counter-hegemonic Visual Arts: Anti-Empire as Method *Adam Kola, Nicolaus Copernicus University in Toruń, Poland*

This paper is based on the conviction that "another type of knowledge is possible" (Stoler 2016) but must be created "beyond the northern epistemologies" – (Sousa Santos 2008). I will not focus on "the darker side of western modernity" like Mignolo (2011), but on a positive example of "border thinking" (Mignolo 2000); in this particular case a critical theory based on Second-Third World assemblages and some discursive-non-discursive approaches. The aim is not to reconstruct the history of the Second-Third World relation. I have already done that in my book Socialist Postcolonialism (2018). The purpose is to create a methodological framework based on a shift from First-Third world relations (the dominant subject in postcolonial studies) to Second-Third world relations. The visual arts will be treated as an illustration of the paper's theoretical part and as an artistic expression of politically engaged critical studies. I will take a closer look at the role of non-discursive critical tools used in art. The problem is, to what extent difficulties with the conceptual framework as such, understood as part of Western discursive hegemony, can be solved in the non-discursive language of art (with some of the trans-historic dialog between Polish socialist artists and Vietnamese contemporary critical art, like the Propeller Group)? Maybe we should rather ask what sorts of not-only-discursive practices – visual arts, performance, dance, or theater – are or at least could be an alternative solution to post/colonial Western dominance?

Opportunities for STEAM in Out-of-School-Time Spaces *Christopher Leslie, South China University of Technology and Zhejiang Hexin Group*

This paper considers how STS theory can inform pedagogies for out-of-school STEM learning. In The End of the Cognitive Empire, Santos notes "there is no global social justice without global cognitive justice" (p. 276). A review of the academic literature on makerspaces and other out-of-school time activities, though, reveals that educators do not often think about how their curricula reinforce hegemonic cognitive norms, which could be troubling in settings perceived to be outside the core of STEM. Parents and educators may feel pressure to incorporate what they think are rigorous exercises to teach STEM, but these have already been shown to reinforce existing power relations in American and European contexts. By reviewing Santos, Patricia Hill Collins (Black Feminist Thought, 1990) and Angela Calabrese Barton (Teaching Science for Social Justice, 2003), it becomes clear that existing research that promotes equity in STEM education should be adapted for programs outside scholastic settings, such as after-school STEM enrichment and makerspaces. In particular, incorporating the arts in STEM education is a necessary step that can produce buy-in from parents and educators and achieve positive outcomes for students. Here broadly considered, the arts include culture and history to make projects not just culturally relevant but also responsive to students' personal experience and a starting place to build scientific knowledge, mathematics ability, and engineering expertise. Transforming STEM into STEAM is a necessary step for decolonizing maker pedagogies.

Session Organizer:

Henk Borgdorff, Leiden University

Chair:

Peter Peters, Faculty of Arts and Social Sciences, Maastricht University, Maastricht, the Netherlands

Discussant:

Sven Dupré, Department of History and Art History, Utrecht University, Utrecht, The Netherlands

391. Infrastructures of Care: Renegotiating "choice" (values, logics, and practices)
3:00 to 4:40 pm

virPrague: VR 05

Participants:

Cared-For Caring For: Relational Autonomies and Inter/Dependencies in Direct-Funded Attendant Services *Erika Katzman*

Since the 1990s, direct funding models have provided public funding to disabled people to employ personal attendants directly. Direct funding models are known to increase service user choice and control in support services, supporting greater autonomy in the everyday lives of disabled people. As direct employers of their personal attendants, however, service users are tasked to maximize scarce resources to see their care needs met. Where the cost of services correlates directly to the rate at which personal attendants are paid for their work, the material interests of service-user-employers are in direct conflict with the interests of their personal-assistant-employees. Yet, as this paper will demonstrate, the self-manager-attendant relationship cannot be reduced to a material exchange of payment for service. Through data from a qualitative study of the labour disabled people and care workers contribute to the organization and management of direct-funded attendant services, this paper illuminates complex relationships that develop as self-managers and attendants navigate a neoliberal landscape and negotiate mutual needs. Binary distinctions between carer and cared-for weaken as self-managers and attendants engage in mutually supportive relationships within a system that thrives on the sustained oppression of both groups. Drawing insights from feminist science and technology studies, this paper explores configurations of autonomy and interdependence that emerge in the context of direct-funded attendant services. Building upon contemporary works at the intersection of feminist STS and disability studies (Mauldin, 2017; Chang, 2017; Fritsch, 2017) care work is presented as a rich site for exploration of themes of medicalization and expertise.

Towards supporting flexible choice and care in deaf diagnostic and intervention practices in Ontario *Tracey Edelist, York University*

There are complicated relations of care and autonomy involved when parents must make health care decisions for their children. In the case of parents making hearing technology and communication modality decisions for their deaf infants in Ontario, Canada, Ontario's Infant Hearing Program (IHP) emphasizes that such decisions will be based on autonomous informed choice and consent. However, an analysis of IHP documents and interviews with parents about their experiences with the infant screening and assessment process indicate that their choices are constructed towards the one 'right' choice of spoken language supported by hearing technologies. Furthermore, the IHP assumed that choice was finalized once a cochlear implant and/or spoken language was chosen; parents reported difficulty in accessing sign language services when they felt their original 'choice' was limiting their child's opportunities for communication. This inflexibility in choice (and the related services made available to them) did not reflect the parents' lived experiences communicating with their children. Rather than this "logic of choice", I propose the IHP reframe parental choice as fluid and flexible; a non-linear, relational, ongoing process that acknowledges and respects differing embodiments, consistent with what Mol calls a "logic of care" (Mol, 2008). Within a logic of care, rather than limiting choice, the IHP could instead acknowledge and embrace embodied deafness and the collective experiences of deaf people, and take on the responsibility of informing parents about the historical (and ongoing) power relationships between signing deaf people and their allies, and hearing health practitioners and educators.

Tinkering As Collective Practice: The Case of Community Housing Services *Marjolijn Heerings; Hester van de Bovenkamp, Erasmus University Rotterdam; Mieke Cardol, University of Applied Science Rotterdam; Roland Bal, Erasmus University Rotterdam*

The value of patient autonomy has become central in healthcare. However, care practices involve a plurality of possibly conflicting values and often transgress the borders of the

individual professional-client relationship as they involve family members, other professionals and community organizations in a dynamic configuration of changing infrastructures. Good care should acknowledge this complexity, which requires a collective handling of the tensions between values and the infrastructures that support them. Drawing on Mol (2008, 2010) we develop a notion of collective tinkering which deals with value tensions in care practice beyond the client-professional relationship. Based on the results of an ethnographic study in community housing services for people with intellectual disability and serious mental illness, we analyze how professionals tinker collectively within their teams, together with family members and with professionals from other care and community organizations. Collective tinkering involves assembling values and ontologies into a care practice, attentively experimenting with these care practices and adjusting care accordingly within a collective of those involved in care for a particular client. Collective tinkering however not only happens in relation to individual clients. When creating care practices for a collective of clients, such as coffee moments, values and ontologies also require negotiation. Infrastructures providing time and space where professionals can deliberate with family members, managers, and professionals from other organizations are required for collective tinkering. The results also show that collective tinkering runs the risk of excluding clients in negotiating value tensions. Mol, A. (2008). The logic of care : health and the problem of patient choice. London: Routledge. Mol, A. (2010). 'Care and its values. Good food in the nursing home.' in Mol, A., Moser, I. & Pols, A. J. (eds) Care in Practice : On Tinkering in Clinics, Homes and Farms. Bielefeld: Transcript Verlag.

Caring Digitally: Beyond embodied practices of care. *Sara Loftus, West Virginia University*

Scholars have critically examined how caretaking occurs within interdependent care networks that are reciprocal and constituted by particular socio-cultural and spatial experiences. Building on this scholarship, my work expands the idea of care and caretaking into digital spaces by decentering caretaking as an embodied practice, examining how caretakers participate in activities of "caring for" and "caring with" in digital spaces. This focus considers what is happening in these digital spaces and what implications these practices have on how caretakers think of themselves and their caretaking. Since 2019, I have collected narratives from digital disability spaces and conducted content analysis to identify themes which will guide identification of actants and assemblages within these networks. Two key findings resulted from this digital ethnographic research. First, informal validation of caretakers allows for more effective caretaking. Second, digital relationships of care further decenter embodied qualities of care work by spatially and temporally broadening interdependent care networks. This spatio-temporal decentering shifts the focus of caretaking from the "body" in the here and now to ask how caring happens across different mediums while also challenging established ideas about boundaries and territorialities.This research unsettles taken-for-granted assumptions about caretaking by exploring digital disability spaces that caretakers frequent. Further, it challenges the way embodiment is currently expressed in much feminist, geographic, and STS literatures which conceptualize caretaking as being grounded in a particular place and time. I demonstrate how digitally mediated spaces entangle with caretakers within their daily care practices across dimensions and localities.

Subject Positioning: Assistive Infrastructures and Instantiations of Agency *Peter Fuzesi, University of Sheffield*

Recently, the notion of infrastructure (Bowker and Star, 1999, Star, 1999, Star and Ruhleder, 1996) has been productive for analysing how practices of self-care and responsible subjects emerge out of sociomaterial arrangements of the home (Danholt and Langstrup, 2010, Langstrup, 2012, Weiner and Will, 2018). The paper takes the notion of care infrastructure to the domain of disability; I draw on ethnographic material collected at an Assistive Technology (AT) centre that provides communication systems for people who have limited controlled movement, not unlike the late Professor Stephen Hawking. My presentation introduces the ways users, informal and professional carers open up new instances and capacities to act by continually assembling

and emplacing bodies, practices, assistive and mainstream technologies, material arrangements into particular care infrastructures. While these technologies link intimately to users' bodies and are often described as 'personal'. Yet, the notion of infrastructure highlights the relational, emergent and responsive ways instances of agencies emerge, and how these shifting and dynamic forms are identified as such. Further, analysing agency in terms of infrastructures calls into questions distinctions between person and environment, universal design, accessibility and assistive technologies, prosthetics and habilitative agencies (Callon, 2008). In my analysis, I first explore whether and how these emergent, relational and dynamic instances of agency (performed) are identified and linked to autonomy and a de/centred, interdependent personhood. Finally, I attend to the ways the use of technology allows different articulations of personhood, which might selectively focus on independence, capacity or kinship.

Session Organizers:
Emily Lim Rogers, New York University
Helena Fietz, UFRGS
Laura Mauldin, University of Connecticut
Chair:
Laura Mauldin, University of Connecticut

392. Teaching interdependent agency II: Feminist STS approaches to STEM pedagogy
3:00 to 4:40 pm
virPrague: VR 06

The 2nd of 3, this panel discussion of STEM graduate training brings together insights from feminist theory with social studies of science to address deep bias in scientific research to suggest methods and frameworks that produce more accountable, accurate and responsible scientific research. This panel is interested in talking about how feminist STS (fSTS) scholars are using, or exploring the use of, the critique of objectivity to address biases in science. How are we engaging with STEM graduate education to teach a more nuanced "situatedness" (Haraway 1988) in culture and history to produce more responsible and accountable science? Research in STEM education suggests that integrating socio-cultural context and communal values into STEM education can increase recruitment and retention of women, under-represented minorities (URMs), and first-generation students in STEM. Building on the contributions of Jenny Reardon, Karen Barad, and Banu Subramaniam's to feminist approaches to STEM pedagogy, this panel invites papers addressing how feminist STS can move STEM graduates toward greater engagement with social justice, as well as deep collaboration with social sciences and humanities. What sort of curricular changes could lead to a transformation of STEM research and the diversity of researchers conducting it? How can STS scholars use pedagogy to empower STEM researchers to be agents of social transformation even in the face of anti-science discourse, and anti-women, racist, anti-trans and anti-LGBTQ cultural politics?

Participants:

Activating Context: disruptive data pedagogies and smart infrastructure *Beth Coleman, Faculty of Information, University of Toronto*

Given normative "big data" practices, how might we reimagine data pedagogies that are aligned with intersectional feminist processes? In other words, how do we move toward actional frameworks, methods, and attentions established across critical race, critical data, and critical queering of normative data methods. If a stated consideration ("social good") of corporate, academic, and engineering interests is "equity," then our work is to craft relations to (and subversion of) power with marginalized, minoritized, and exposed populations. This paper draws on interlocutors such as the Feminist Data ManifestNO collaboratory as well as the "situated" work of feminist STS scholars such as Reardon, Barad, Subramaniam, Suchman, and Murphy. "Activating Context" speaks to disruptive pedagogies in regard to methods and ontologies of activating data in context. A goal of this work is the training of graduate researchers across STEM, social science, and humanities disciplines toward a framework of data ethics, data justice, and data sovereignty. Based on the work of the City as Platform lab, in the research projects we present we engage decolonial research practices, an ethics of relation, and innovation design across

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digital technologies to offer a critique of traditional engineering practices of municipal and industry bodies in regard to "smart" urban infrastructure. We build on a tradition of STS infrastructure and critical data studies, outlining research and design methods that enact participatory modes of knowledge mobilization of data as a right and public good. In presenting two case studies that investigate the installation of autonomous sensor technology (known as Internet of Things or IoT) in the public spaces of urban capitals, our paper addresses pedagogical challenges in designing intersectional and heterogeneous modalities of "data."

Teaching "Situatedness" without Haraway *Myriam Raboldt, TU Berlin, Germany*

With this paper I want to encourage discussions about integrating social justice training methods into early STEM education. I teach a weekly 4-hour-lab for students who are in an orientation year for STEM fields at the Technical University Berlin. The purpose is to introduce working methods of the humanities through the concept of research-based learning (Healey&Jenkisn 2009; Huber 2009) and by putting a feminist STS perspective on STEM fields. Conceptualizing the lab presents some challenges: The students have very heterogenous interests and levels of knowledge as well as no actual experiences in STEM education. Last semester I tried something new: I integrated exercises that I learned in a one-year "Social Justice and Diversity Training". Instead of only reading complicated theoretical texts such as Haraway with students who are right out of school, I provided concepts of structural discrimination and intersectionality and started every class with a small biographical exercise, focussing a different dimension of structural discrimination every week. The outcome was remarkable: an activation of students who tend to be more quiet, an atmosphere for lively and respectful discussions which then contributed to the text analysis and to the students research projects. But also: mainly females* with migration backgrounds stayed in class until the end of semester. I'd like to discuss my observations with an audience more experienced in teaching social justice and privilege in an academic context, since I know this is much more integrated into US-curricula while still being rare in german academic curricula.

Transforming the Classroom or Laboratory into a Feminist Science Shop *Sara Beth Giordano, Kennesaw State University*

In this paper, I share insights from developing and testing a series of workshops for STEM graduate students that aim to transform traditional STEM research through critical, feminist, and more democratic methods. The workshop series is part of a larger NSF-IGE funded project in which we are creating multiple modes to deliver an interdisciplinary critical STEM curriculum based in feminist science studies. In the workshops I showcase in this talk, I use the concept of the feminist science shop to work with participants in challenging the borders within the academy and outside of the academy to produce participatory, social justice focused research. The idea of the feminist science shop is to use the Dutch model of science shops to change the flow of research questions from the top-down to bottom-up, where bottom-up means community-driven research. The workshops work to build skills that can be used from within traditional STEM fields. The focus is on finding the ways that practical changes can be made to create new future laboratories by rethinking who and what is included in laboratories. I present the theoretical underpinnings of the workshops, examples from the workshops, and analysis based on participant feedback. My goal is to share one model that can be added to and adapted across multiple fields and specific geographic locations. This work represents an applied use of STS theories to transform STEM education and therefore STEM fields themselves.

Using Writing Pedagogy to Foster Inclusive, Responsible Scientific Subjectivities: The STEM Ed Op-Ed *Marisa R Brandt, Michigan State University*

Undergraduate writing courses offer STS scholars opportunities to shape how STEM students reflect on the values, responsibility, and challenges of scientific knowledge production. This talk shares the findings from efforts to develop an op-ed assignment as a tool for fostering inclusive and responsible scientific subject formation. The op-ed is an authentic writing genre that requires the author to adopt a position of expertise. The STEM Ed Op-ed assignment asks students to write an op-ed addressing a question that requires reflective thinking about themselves as scientists in training: What is the value of science education? Drawing on experience from two semesters and analysis of 65 op-eds composed in a writing class for first-year students as a science-focused residential college at a large Midwestern university, this talk shares efforts to assess how this assignment affected student's scientific identity and views on science. Framed through the theoretical lens of feminist STS, I share three kinds of data: 1) emergent themes in how students saw the value of science and how they positioned their subjecitivies in relation to science; 2) how writing pedagogy focused on argumentation can encourage epistemic responsibility; and 3) how students' values and arguments changed when they were given an opportunity to revise the op-ed at the end of the course. I conclude by reflecting on lessons learned about how to support this assignment as a "technology of humility" (Jasanoff) to encourage students to adopt an inclusive and responsible scientific identity.

Session Organizers:
  Kalindi Vora, University of California Davis
  Anita Say Chan, University of Illinois, Urbana-Champaign
  Maya Cruz, University of California - Davis
Chairs:
  Kalindi Vora, University of California Davis
  Anita Say Chan, University of Illinois, Urbana-Champaign

393. FLIPPED | Transnational STS: Theories, Practices, and Pedagogies (III)
3:00 to 4:40 pm
virPrague: VR 07

*You can access all presentations on the STS Infrastructures Platform (https://stsinfrastructures.org/content/open-panel-4seasst-2020-transnational-sts-theories-practices-and-pedagogies/essay) STS scholarship has flourished in diverse regions and institutional spaces, creating a deeply transnational, interdisciplinary research field. Further, STS scholars in diverse places often study global circuits of ideas, technologies, experts, development models, and so on. Transnational STS thus has many facets and potentials. Building on continuing dialogue about transnational STS in recent years (especially since the 2018 4S conference in Sydney, where TRANSnational STS was the conference theme), this panel will bring together presenters working to conceptualize, practice and extend Transnational STS in different ways. In conversation with STS scholarship that focuses on the constitution of modern technoscience across and between nation-states, this panel seeks to reflect on the transnational character of STS at theoretical, methodological and empirical levels from a comparative perspective. Rather than approaching "transnational" as an ideal temporal-spatial universalism to be achieved, this panel particularly aims to elaborate on and question STS praxis that centers on the analytic of the "nation-state" in studying technoscientific developments as well as reflecting on the uncritical utilization of STS concepts/theories across different contexts. Through opening a self-reflexive space about methodological nationalism and neocolonial orientations in our praxis at this very moment when we witness the haunt of the far-right movements, authoritarian states, post-truth politics, and intentional denial of socio-ecological crises across the world, we invite contributions that reflect on theoretical and methodological capacities of STS to imagine and reclaim for science(s) otherwise. Contributions may address, among others, the following questions: What makes STS transnational? How can we think about "transnational STS" in juxtaposition to other concepts, e.g., international, multinational, postnational, supra-national, anti-national, global, cosmopolitan, universal, imperial, and translocal? What becomes visible when nation-state as the only analytic breaks down? What is the role of the nation-state with regard to education, research activities and the regulation of technologies in the contemporary period? How do STS theories and concepts travel, get used and modified around the world? Are the directions of the flux of theories and concepts changing? To what extent do STS theories and concepts reflect on the inadequacies of existing categories -e.g., "East and West" ; "center and periphery"; "developing and developed"? What can we learn from South-South dialogues in STS? How are transnational research networks formed and organized? How do these networks set research agendas? What infrastructures can support transnational STS formations? What are the methods and methodologies used to foster transnational knowledge production in a collaborative

manner? How would transnational STS add to the interdisciplinary and transdisciplinary character of the field? What are exemplary cases that demonstrate transnational STS sensibilities? How can transnational STS contribute to STS teaching? How can transnational STS add to local efforts in engaging with multiple publics, decision-makers, scientists, activists, and other related actors? How can transnational STS contribute to the future of the field? What are the limitations of doing transnational STS?

Participants:

Infrastructuring Transnational STS *Kim Fortun, University of California Irvine*

Transnational STS works against entrenched conceptual, social and political hierarchies, tuning STS to differently ordered problems and possibilities. Transnational STS works to decenter Euro-American dominance of scholarly space and analysis, for example, and to address expansive challenges calling for unprecedented levels of coordination across disciplines, geography and generation. Transnational STS thus depends on creative design, imaginative tactics and durable (while lightly structured) infrastructure. It must be a "recursive public," akin to recursive publics like the Free Software movement described and conceptualized by Chris Kelty -- a public that has the capacity to build, continually modify and sustain its own conditions of possibility, a public that is theoretically inflected while empirically grounded, working against the grain, identifying critical "design logics." In this presentation, we'll describe an array of experimental projects guided by these "design logics": STS Across Borders," and "Innovating STS," projects run within 4S's 2018 and 2019 annual conferences that included the making of both digital archives and gallery exhibits in the conference venues; the Quotidian Anthropocene project, designed to create situated, place-based as well as comparative perspective on the Anthropocene in different settings; the Visualizing Toxics projects in which geographically distributed participants have worked to extend the use of visualization to understand and communicate complex problems like toxicity. All of these projects leverage the Platform for Experimental Collaborative Ethnography (PECE), open source software designed with STS perspective. These projects will be presented as first, experimental steps toward transnational STS, pointing to what infrastructuring transnational STS will entail.

Publishing Latin American STS Studies Outside the Region: Visibility, Themes and Theoretical Perspectives *Noela Invernizzi, Universidade Federal do Parana*

Over the last decade STS studies have expanded in Latin America. Concomitantly, science policy and evaluation methods in universities in the region have stimulated the internationalization of scientific practices. Publishing in international, English-written journals are at the center of this strategy. While publishing in such journals increases the visibility of the science produced in Latin America, some side effects have been reported, such as orienting research towards topics of global interest in detriment of local relevant issues, and leaning towards mainstream science, adopting well-recognized theoretical approaches developed in northern countries (Giménez Toledo, 2018; Hicks, 2006; Kreimer, 2015; Vessuri et al., 2014). In this presentation, I examine Latin American STS work published in five relevant international STS journals between 2018-2019 focusing on: (a) the visibility of Latin American scholarship, measured by its relative frequency; (b) the themes published in terms of their local/global character, addressed by paper content analysis; and (c) the theoretical perspectives adopted, examined through paper content and references analysis. The journals object of research are three pioneers in the field: Social Studies of Science (1971), Science, Technology & Human Values (1976), and Science & Technology Studies (1988), and two newer journals from newcomer regions in terms of the constitution of the STS field: Science, Technology and Society (1996), and the East Asian Science, Technology and Society: An International Journal (2007). Results suggest increasing, but still frail international visibility, focus on themes under global discussion, but incipient attention to specific developing countries issues, and predominance of well-established theoretical approaches.

Transnational STS in Engaging Science, Technology, and

Society (ESTS) journal *Aalok Khandekar, Indian Institute of Technology Hyderabad*

Strengthening "Transnational STS" is a primary goal of the incoming editorial collective of 4S's Open Access journal, Engaging Science, Technology, and Society (ESTS). We aim to do this by purposefully diversifying the range of authors, reviewers, and audiences that currently engage with the journal, by cultivating an understanding of and developing supporting socio-technical infrastructures and protocols, and by encouraging reflexive theorization of "Transnational STS" and an understanding of what is at stake intellectually and politically. In this presentation, I will briefly outline our collective's vision, strategies, and immediate priorities for ESTS during our editorial tenure, hoping to learn from the audience how we can work together toward deepening the transnationalization of the field.

Session Organizers:

Kim Fortun, University of California Irvine
Noela Invernizzi, Universidade Federal do Parana
Duygu Kasdogan, İzmir Katip Çelebi University
Aalok Khandekar, Indian Institute of Technology Hyderabad
Angela Okune, University of California - Irvine

Chair:

Angela Okune, University of California - Irvine

394. **AI through an education perspective: concerns, potentials, and trade-offs - Session 1**
3:00 to 4:40 pm
virPrague: VR 08

Participants:

AI and learning in higher education: 2 future visions from the past *Király Gábor, Budapest Business School; Zsuzsanna Géring, Budapest Business School*

Artificial intelligence is proposed today as one of the key drivers to revolutionise the course of learning in higher education. Nevertheless, the way we understand learning determines what kind of potentialities we perceive considering the application of AI in an HE context. In this paper, we will argue that learning is a complex and ambiguous process with multiple, often contradictory purposes. In order to simplify this complexity, this paper draws on two future visions from the past. The first vision belongs to Skinner who imagined a fully technologised school where students progress in their own pace in a well-defined, linear sequence of a learning trajectory, their understanding and retention are often tested, they receive immediate and regular feedback from the system. The second vision was elaborated by Rogers who emphasises that real learning is always self-directed. The most important prerequisite of education is not a well-structured process of learning but a genuine human connection between people. Both of these visions are normative, prescribing specific norms, roles and purposes regarding the practices of teaching and learning. Based on a horizon scanning exercise covering the envisioned futures in teaching and learning in HE, we examine how the perceived drivers of change in these areas can be related to these visions. While one of them may dominate the discourse, we will argue that educational technologies available today can support the realisation of each of these visions in a complimentary manner.

Concerns about the Promises of AI Tutors: A Case Study of MATHia *Aditya Anupam, Georgia Institute Of Technology; Shubhangi Gupta, Georgia Institute of Technology; Nassim Parvin, Georgia Tech*

Proponents of Artificial Intelligence in Education (AIED) give three common arguments in support of continued research and use of AI tutors in educational environments: a) their potential to support learning by "personalizing" instruction for all students; b) their potential to support teachers by automating student evaluation, and c) their potential to provide more feedback about students to teachers and administrators. In this paper, we use Carnegie Learning's AI Math tutor MATHia as a case study to challenge these claims. Drawing on feminist, STS, and pragmatic scholarship we argue that these claims are flawed as they are contingent on a reductive framing of learning, evaluation, and

feedback. First, we argue that AI-based personalization cannot understand the dynamic sociopolitical contexts that students come from and hence cannot situate learning within those contexts. It is must therefore limit its interpretation of "learning" to the acquisition of acontextual standardized knowledge, which is not 'personal' to students. Second, we argue that the automation of evaluation eliminates it as a means of building student-teacher relationships and can perpetuate systemic problems such as high student-to-teacher ratios by cultivating the false impression that AI tutors can 'fix' problems such as grading without serious systemic change. Finally, we argue that AI tutors cannot provide appropriate feedback to teachers as they are limited to 'quantifiable' forms of data. Further, the very act of monitoring students for feedback can have detrimental effects on their learning by can endangering their privacy and autonomy.

Making Data in Higher Education *Madisson Whitman, Columbia University*

Big data technologies in higher education are becoming pervasive. These technologies are part of a growing market of platforms that seek to understand, anticipate, and direct students. Scholars in STS and education have critiqued the deployment of predictive analytics and AI at universities, citing concerns about privacy, governance, and the future of higher education (see Knox et al. 2019; Selwyn 2019; Williamson 2019). However, less explored are the ways institutions produce knowledge about students. As universities expand data collection mechanisms to non-traditional sources like network data (e.g., wifi usage), they create new proxies and purport to more intensively know students. In this presentation I explore everyday practices of making data. Drawing from 12 months of ethnographic research at a large public university in the United States, I examine how a set of university administrators and data scientists produce data. I focus on how these actors sort and type data into "attributes" and "behaviors," where "attributes" are demographic data actors regard as what students can't change, such as their gender, race, and socioeconomic status. "Behaviors," in contrast, are data that actors define as proxies for what students can choose (e.g., wifi usage as a proxy for attendance). Data scientists at the university incorporate behavior data into predictive modeling projects to nudge students to make decisions aligned with behaviors associated with academic success. As universities reevaluate their normative commitments and seek predictive power, I argue that the contingencies of making data are central to contending with an increasingly datafied higher education.

Reconfiguring the Student: Stabilizing the optimisable biosocial subject *Kevin Witzenberger, University of New South Wales, Sydney*

Educational technology (Ed-tech) has rendered education into a ubiquitous and pervasive computing environment: From automated roll calls and mood analysis via facial recognition, to student verification on learning management systems through keystroke analysis, and personalized learning applications that respond to emotional states of students, or produce learning suggestions based on eye tracking data. With the move from the OECD away from cognitive learning models towards social and emotional skills, education research is turning towards affective computing and machines that can read and respond to emotions to re-configure and optimize students' performance. This paper describes what the 'discursive regime', that normalizes data mining aimed at the bodies of students entails, and how it is being stabilized. It presents fieldwork from two key spaces: an international academic conference on learning analytics and an Ed-tech trade show. It offers a thick description through notes and visual material from observations, marketing and research material. The juxtaposition of ethnographic materials from different events should be understood as multi-sided event ethnography, which illustrates the practices that stabilize emotional intelligent machines in classrooms within local spaces that feature transnational elements. While these sites seem to be disconnected, they hold a fundamental belief that life and learning can be measured, processed, configured and reconfigured through computational methods. Both spaces attempt to redefine what student bodies are through the means of experimentation, and the assumption that 'the phenomenon as isolated and reworked under laboratory conditions is essentially

the same as the one found in 'nature'(Stengers, 1997, p. 6).

Session Organizer:

Rodrigo Barbosa e Silva, Lemann Center for Educational Entrepreneurship and Innovation in Brazil at Stanford

Chair:

Ana Carolina Goes Machado, Stanford University

395. Transformations And Tensions In Academic Publishing - Part II

3:00 to 4:40 pm
virPrague: VR 09

This panel invites contributions that explore practices of writing, reviewing and editing academic literature, particularly in light of recent transformations in its technological, institutional, and commercial formats. In the course of the last decades, digital technology has for example created new possibilities for circulating and reviewing academic research through pre-print archives and post-publication peer review platforms. Debates around Open Access and policy initiatives like Plan S in Europe in turn have re-emphasized unsolved questions regarding the political economy of scholarly publishing. Moreover, practices of writing and reviewing academic literature across all fields are shaped by relentless publication pressure, growing numbers of submissions to established journals, and the constitutive effects of citation metrics like the journal impact factor. We are interested in what these diverse developments mean for different actors in the scholarly publishing system. For example, how do researcher select journals and organize their publication strategies around intended audiences and career goals? How do practices of peer review and selection of manuscripts from an editorial perspective change in light of growing numbers of submissions? What defines publishability and originality in the context of increasingly crowded and stratified journal landscapes? How do relations with commercial publishers affect the outlook of editors on their journals, and how do scholarly communities react in turn? The panel invites studies based on qualitative, quantitative, and mixed methods.

Participants:

How to Allocate Authorship? Tensions between Research Practice and Editorial Policies *Cornelia Schendzielorz, Deutsches Insitut für Wissenschafts und Hochschulforschung/Humboldt Universität zu Berlin; Felicitas Hesselmann, German Centre for Higher Education Research and Science Studies*

With regard to changed research constellations and collaborative processes in science shaping the conditions of knowledge production academic publishing is undergoing profound changes. This change manifest itself e.g. in the cross-disciplinary increase of co-authorship and mass collaborations when in gravitational physics more than 1000 people are listed as authors in one article, and in the development of a "Contributor Roles Taxonomy (CRediT)". Together with the increasing differentiation of the division of labor in material- and technology-intensive research fields such as life sciences and persistently high publication pressure, this is prompting a lively debate on how the various activities of those involved can be adequately acknowledged in the publications (Biagioli/Galison 2003, Birnholtz 2006). Against this background we investigate how the discipline-specific conditions for the production of scientific knowledge are reflected in academic publishing. Therefore, we analyze on the one hand authorship policies of scientific journals from various disciplines to determine which dimensions of authorship are regulated here for which purpose. On the other hand, we explore which dimensions of authorship are negotiated in practice based on the research activities required to produce publishable research results. To this end, we use data from the DZHW scientist survey that provide insights into which activities and tasks researchers from diverse disciplines believe to justify claims to (co-)authorship. Finally, by juxtaposing the analysis of publishers' authorship policies with research-activity-based authorship practices in various disciplines, we empirically reveal current transformations and tensions in academic publishing and analyze them against the background of discipline-specific publishing behavior.

'This Paper Has Been Withdrawn.' An Empirical Analysis of arXiv Withdrawals *Ewa Zegler-Poleska, Indiana University Bloomington*

ArXiv.org is the most established and largest repository of e-prints in physics, mathematics, and related fields, currently hosting over 1.6 million articles. As such, it has been studied as an important part of the scholarly communication system. Most of the studies have focused on preprints with respect to their impact and the relationship with journal publications; other have also examined readership and authors' depositing practices. However, one aspect of the repository remains unexplored – namely, withdrawn articles. Interestingly, while journal article retractions have been widely discussed, withdrawals of e-prints have not been yet examined. Currently the arXiv repository includes almost 6.5 thousand of withdrawn articles accompanied by authors' comments justifying the withdrawal to the moderators and readers of the arXiv. In this paper I present a preliminary analysis of withdrawals and the comments' content as a source of insights into scientific practice and publishing.

Contracting In The Open Access Age Unboxing "Big Deals" In Academic Publishing. *Quentin Dufour, CNRS - I3 - CSI; David Pontille, CNRS; Didier Torny, CSi, I3, PSL Research University, CNRS UMR 9217 (France)*

Since the digitalization of academic publications, subscription to journals had taken the form of access rights to content platforms for users. Despite almost 20 years of open access policies, paywalled papers and subsequently subscriptions are still paramount for the oligopoly of publishing industry in its relations with ever-growing consortia of universities and libraries. Nevertheless, in the last five years, new forms of agreement have been signed, notably including paying open access publishing options. The range of names given to these "Big Deals" underlines their complexity and diversity: offset agreements, read and publish, publish and read, transformative agreements. Whereas previously subscription agreements included confidentiality clauses on their content, the transparency requirements of some consortia have led to their availability. Thanks to this publicity, we will present a first systematic comparison of more than 50 agreements between "big" or "medium" publishers (ACS, Elsevier, Sage, Springer, Wiley, etc.) and European or North American consortia. Drawing on STS approaches, we will first describe the various content of these agreements and the material effects of the reciprocal obligations they define (system of recognition of authors and rights holders, financial payment circuits, monitoring of actual costs, etc.). We will then analyze the expected, hoped for or feared effects of these agreements (tipping point effect for open access, reinforcement of publishers oligopoly, stabilization of APC or subscription prices…) from contrats themselves, monitoring reports and grey literature. Finally, we will discuss how the interactions between agreements as a container vs papers and journals as content are conceived.

The editorial process; How and why do commercial publishers innovate? *Serge Pascal Johannes Maria Horbach, Radboud Universiteit; Willem Halffman, Institute for Science in Society (ISIS)*

Triggered by a series of controversies and diversifying expectations of editorial practices, several innovative peer review procedures and supporting technologies have been proposed. However, adoption of these new initiatives seems slow and restricted to specific academic niches. This raises questions about the wider conditions for peer review change and about the considerations that inform decisions to innovate. We carried out field visits to the editorial office of two large academic publishers to study their editorial process. We set out to reveal how the benefits of peer review innovations are understood and to describe the considerations that inform the implementation of innovations. This study shows how the publishers' internal hierarchy determines whose arguments are most likely to prevail and it explicates the different meanings attached to editorial practices by different actors. We furthermore show that the editorial process is closely connected to commercial practices of creating business value, and the very specific terms in which business value is understood, such as reputation considerations and the urge to increase efficiency, among others through acts of standardisation. This demonstrates that commercial considerations extend much further than the publishers' choice

for business or publication models and reach into the very heart of the editorial and peer review process. This may subsequently have wider consequences for knowledge creation, validation and dissemination practices.

Session Organizer:
Wolfgang Kaltenbrunner, Centre for Sciencs & Technology Studies (CWTS), Leiden University

Chair:
Wolfgang Kaltenbrunner, Centre for Sciencs & Technology Studies (CWTS), Leiden University

396. Rare Disease Policies: From Exceptionalism Towards a 'New Normal'? Session 1
3:00 to 4:40 pm
virPrague: VR 10

Special policies for 'rare diseases' (RD) and 'orphan drugs' (RD) have been established since the 1980s. Yet, interpretations differ as of the nature and transformative effects of these partnerships, conflicts and policies. Some stress the successful role of patient organizations in advancing access to new medicines and treatments and addressing unmet medical needs. Others argue that such rare disease policies are best seen as a form of exceptionalism, "gamed" by Big Pharma for commercial reasons. Over time these struggles over rare disease policies and orphan drug regulation (and their interpretation) have not subsided; rather the contrary, they have intensified. Public controversies about 'Big Pharma' and excessively high pricing fuel the debate and the media on an almost daily basis. The advent of personalized medicine, digital medicine and 'advanced therapy medicinal products' (ATMPs) potentially means an increasing 'orphanization' of common diseases in the immediate future. But what are the implications of this for the future of inclusive health care? What about initiatives to create alternative forms of social innovation in health care regulation and pharmaceutical development? The panel will look at national and regional contexts and new forms of innovation comparatively and across nations and regions. What does this imply for the various STS research agenda's to be pursued?

Participants:

Social Pharmaceutical Innovation for Unmet Medical Needs
Conor Douglas, York Univeristy

"The irony of rare diseases is that they are incredibly common", so goes the common refrain in the area of rare diseases. By definition the number of patients suffering from any one particular rare disease is relatively small; however, the number of rare diseases itself is growing. While labeling a previously unknown condition provides patients and their families some help, there is a dearth in the number of medicines available to treat these conditions. What is more, many of these treatments are very expensive and/or lack conventional RCT data to support evidenced-based and cost-effective decision making by public healthcare systems. The challenges facing rare disease patients and healthcare providers are now well documented; however, what is less developed are alternative ways of proceeding in the face of these challenges. This paper responds to the call's question about "new business models in pharmaceutical innovation and newer alternative forms of non-commercial innovation." In doing so, a sketch will be provided of the possibilities of applying concepts and practices conventionally used in the area of social innovation to pharmaceutical sector, and the challenges facing rare diseases patients. Based on a new collaborative research grant involving Brazilian, Canadian, Dutch and French partners this paper outlines the goals and objectives of the new Social Pharmaceutical Innovation for Unmet Medical Needs (SPIN) project. Through our research, we endeavor to facilitate our understanding of social pharmaceutical innovation across Canada, Brazil and Europe, as well as contribute to the social pharmaceutical innovation itself.

Enacting biological citizenship in Chile: Developing a national rare disease and orphan drug policy *Carlos Novas, Carleton University*

This paper explores attempts by patients' organizations, medical specialists and political authorities to develop a comprehensive national rare disease and orphan drug policy in Chile. In doing so, this paper seeks to redress a gap in the literature on rare diseases and orphan drugs that tends to focus on the experiences

of healthcare systems within advanced industrial economies. Chile provides an interesting case study as it is a lower middle-income country that has a public and private healthcare system that aims to provide universal coverage for all citizens regardless of age, income, ethnicity, sexuality or political orientation by 2030. It is within this context of the aspiration for universal health coverage that Chilean rare disease patients' organizations advocate to have their medical conditions and treatments recognized and funded by the state or private insurers. As in other national jurisdictions, one of the key debates that has arisen in Chile is the affordability of providing specialist medical services to rare disease patients alongside the high costs of orphan drugs. In a country characterized by significant income and health inequalities, this paper explores the question of affordability in two senses: one, the personal indebtedness that many Chilean rare disease patients and their families experience as a result of their condition; and secondly, the broader question of the affordability of specialist diagnostic services and high cost orphan drugs in a country that struggles to meet primary health care needs. This paper builds upon the concept of biological citizenship (Rose & Novas 2005, Petryna 2002) to develop its analysis.

"Begging for orphan drugs": pharmaceutical innovation, patient involvement and bioeconomics *Paul Just*

Rare diseases have been on the agenda of public health policy in many countries since the 1980s. Historically patients' organizations have successfully framed rare diseases as an issue of equity and social justice. This paper explores policy making in the field of rare diseases in Austria and on the European level by drawing on qualitative analysis of interviews, documents and field notes. One of the cases given is erythropoietic protoporphyria (EPP), a rare hereditary metabolic disorder, which results in severe burning pain, swelling and scarring when patients are exposed themselves to sunlight. Since 2014 the European Medicines Agency (EMA) has approved a medicinal product called Scenesse. The paper analyses discourses about cost effectiveness of this orphan drug by contextualizing them within Austrian health politics. Drawing on the current debate on the Proposal for a Regulation on Health Technology Assessment (HTA) by the European Commission, which promises to improve collaboration, reduce duplication and improve efficiency, I hypothesize that these problematizations of HTA of orphan medicinal products (OMPs) (1) constitute sites within broader contestations of pharmaceutical innovation. I further explore (2) how patient involvement and "real-world data" in research and its assessment processes are valued, and finally (3) how therefore "evidence" as boundary object is (re)negotiated by different actors. The paper seeks to contribute to biopolitical literature by exploring the bioeconomic aspects of rare diseases understood as constitutive elements of global biomedicine and its relationships between biosciences, the market, and political economy.

Just Access: On the Work of Separating Costs and Care in the Clinic *Sarah Wadmann, The Danish Center for Social Science Research; Amalie Martinus Hauge, The Danish Center for Social Science Research; Laura Emdal Navne, The Danish Center for Social Science Research*

Biotechnological innovation increasingly leads to targeted treatments aimed at small patient groups. While revitalizing the market for 'orphan drugs', this development also challenges healthcare budgets as the products typically come with very high pricing. Attempting to control healthcare costs, healthcare authorities in many countries seek to prioritize the adoption of new pharmaceuticals based on cost-benefit analysis, thus reinvigorating discussions about what counts as a fair distribution of healthcare resources. Building on a two-year ethnographic study (2017-2019), we explore how the work of distributing resources for costly treatment unfolded in clinical encounters in Danish hospitals as a new pharmacogenetic treatment for the rare disease 5q spinal muscular atrophy (SMA) was introduced. As a result of centralized cost-benefit considerations, the new treatment was recommended only for a subgroup of the SMA-patients leaving clinicians with the responsibility of judging whether patients meet the standardized criteria for treatment eligibility. Contributing to STS-scholarship on the

'personalization' of medicine, the paper demonstrates how the advance of pharmacogenetics raises difficult questions about healthcare rationing that give rise to tension in the clinical encounter as healthcare professionals are to balance concerns for individualized care and economically informed treatment recommendations. We identify strategies used by healthcare professionals to navigate this tension as they seek to separate the issue of costs from care. These strategies seem to involve a complex relational work of establishing new and maintaining existing alliances.

Session Organizer:
Conor Douglas, York Univeristy
Chair:
Rob Hagendijk, University of Amsterdam

397. Asymmetrical Confluence: Justice, Inclusion, and the Quest for Health Equity
3:00 to 4:40 pm
virPrague: VR 11

The intentional inclusion of historically underrepresented and marginalized groups in the design of clinical trials, public health initiatives, and biomedical therapies has been an ignored practice. Today, however, a new paradigm has opened up within which public health, genomics, and precision medicine initiatives have begun to prioritize the inclusion of marginalized groups–often at the prompting of funding agencies (Lee, 2019). How are biomedicine's aspirational visions of a new era of inclusion and justice playing out on the ground? Bounded justice (Creary) is a biopolitical and bioethical concept that illuminates how programs, policies, and technologies focused on justice (usually through so-called inclusionary actions) do so without recognizing how the beneficiaries have historically embodied the cumulative effects of marginalization, thus undermining the effectiveness of the intended justice. This panel invites papers that make empirical and theoretical contributions to the intersectional, interdisciplinary viewpoints of how bounded justice is produced through biomedical and public health initiatives in neo-, settler, and postcolonial contexts. What are the ways in which inclusionary means towards health equity may undermine the (re)producibility of justice? What does this intention towards inclusion say about the quantification of differential life worth (Murphy, 2017)? How do technoscience projects "innovate inequity" (Benjamin, 2016)? What is the role of researchers in working with communities to help create space for justice without bounds? To interrogate the means and ends of STS in different places, we particularly welcome papers that pose questions about the complicated assumptions of justice in the global south.

Participants:

Bounded Justice and the Limits of Health Equity *Melissa Creary, University of Michigan, School of Public Health*

Programs, policies, and technologies are often designed with justice envisioned as the end goal—particularly products centered around the contribution to health equity. Based on empirical research on racialized health policy development, distributive and restorative justice, and citizenship in Brazil, I have designed a concept called Bounded Justice that demonstrates the limits of such justice-oriented interventions. Bounded Justice is a biopolitical and bioethical concept that illuminates how programs, policies, and technologies focused on justice (usually through so-called inclusionary actions) do so without recognizing how the beneficiaries have historically embodied the cumulative effects of marginalization, thus undermining the effectiveness of the intended justice. The National Health Policy for the Black Population prioritized the social rights of its citizens via the exploitation of new health care reform processes in the form of citizen participation. Yet, despite this mandate, the justice-based health policy, as described, is unable to address the underlying mechanisms that generated initial inequalities. Using methodologies of ethnography and oral life history interviews over a 19 month period, I found that while Brazilian national health policy changes required diverse representation as a means to equity building, the state did not account for the intersectional embodiment of race and disease. This presentation will demonstrate the historical pathway that lead to health policy development that centered the tenet of equity, describe bounded justice and the conceptual assumptions embedded in its design, and explore some of the implications of

bounded justice on policy development, technological advancement, and global health.

Big Data, Social Justice and Race in Precision Medicine *Shirley Sun, Nanyang Technological University*

Genomic researchers sometimes rely on social categories like race and ethnicity in an attempt to ensure genetic diversity for social justice (Bliss, 2012; Bentley et al. 2017). However, there are substantial concerns regarding whether the "classification of people by race promote racial division…[or] aid in the pursuit of justice and equality" (American Sociological Association 2003). We conducted a qualitative study to analyze and understand precision medicine in cancer care in Asia and North America. Our interviews with 46 practicing physicians and genetic researchers in Singapore, Canada and the USA reveal, first, a disturbing pattern of "self-contradiction", where many interviewees are supportive of using race/ethnicity as a proxy for genetics. However, when probed, they generally are cognizant of how definitions of race/ethnicity are a function of historical, political, economic and social forces. Secondly, interviewees highlight the lesson learned from the non-small cell lung cancer drug Iressa Pan Asia Study is that everyone is or should benefit from genetic-based precision medicine regardless of whether the racial/ethnic group they belong to are included in a particular genetic/genomic study. Finally, in contrast to the claimed benefits of using race/ethnicity as a proxy to ensure genetic diversity and provide healthcare (Burchard, 2019), some of our interviewees actually highlighted that the act of singling out racial/ethnic groups in genetic/genomic studies, albeit stemming from good intentions, lead to negative consequences, such as shared stigmatization. We argue that the use of race/ethnicity as a proxy for genetic diversity – even in the name of social justice – is not justifiable.

Can the Subaltern Interoperate?: Rethinking U.S. Health Equity for the Era of Digital Biomedicine *Stephen Molldrem, University of California - Irvine*

This paper draws on several years of ongoing fieldwork and policy research on U.S. health information technology (IT), LGBTQ health, and HIV/AIDS infrastructures to argue that the U.S. approach to healthcare reform should be reoriented to prioritize maximizing the ability of new digital health technologies to deliver services to marginalized groups. I show that the existing U.S. health IT infrastructure can be a powerful vehicle for ameliorating disparities, but only meaningfully so if healthcare reform is reoriented away from a market-driven approach and toward a model that ensures equitable access to both care and digital health tools. Since 2009, and with $30 billion in federal subsidy, the U.S. Department of Health and Human Services has worked to build a "nationwide interoperable health IT infrastructure." This approach has digitized the healthcare system and has been a central driver of market-driven approaches to healthcare reform that prioritize "patient choice" and "quality payment." These models rely on access to electronic health records, easily exchangeable patient data, and private insurance. However, who benefits from this approach to interoperability and healthcare reform, particularly given radically unequal access to insurance marketplaces and a limited and regionally uneven social safety net? If the subaltern can in fact interoperate - that is, if marginalized people's health information can now be meaningfully used and exchanged to connect people to services - I argue that this interoperation is of little value in the absence of an underlying care delivery infrastructure that guarantees equitable access for underserved groups.

Intersectionality, prevention of Alzheimer's disease and women's health: what does Brazilian medical-scientific production have to tell us? *Erica Renata De Souza, Unicamp - Universidade Estadual De Campinas; Marko Alves Monteiro, State University of Campinas - UNICAMP*

There is an agenda still little developed in Brazil of research in the CTS field to explore the role that markers of difference play in disputes around the construction of research agendas. It is in this direction that we problematize differences/intersectionality in Alzheimer's disease research and public policy in Brazil. This research aims to explore in what forms and to what extent the intersectionality of so-called social markers of difference (based on Kimberly Crenshaw's work) are present in the research on Alzheimer's disease in Brazil, especially with regard to the prevention of the disease in women. According to the literature, women are potentially the most affected group. But what women are we talking about? We well know about the plurality of Brazil as a nation, whether in terms of race-ethnicity, region, social class, gender, sexuality, religion, etc. However, when thinking about disease prevention on women, in what extent these differences are being considered? Our main goal is to understand how this knowledge is produced, what types of prevention it helps to produce and for whom, and how ageing, Alzheimer's disease and prevention have been reassembled. Another objective of the research is to contribute to the discussion of situated prevention, based on an intersectional bias, looking forward to the development of inclusive public policies for women's health in Brazil.

Session Organizers:
Sarah Blacker, York University, Toronto
Melissa Creary, University of Michigan, School of Public Health
Chair:
Sarah Blacker, York University, Toronto

398. Towards A Critical Medical STS - I: Challenging Hegemonic Ideas in Biomedical Establishment
3:00 to 4:40 pm
virPrague: VR 12
Participants:

Breaking Down the Gate: Depathologizing Trans* Health through Informed Consent? *Christoph Hanssmann, San Francisco State University*

This presentation critically engages the set of medical practices known as "informed consent." Drawing on ethnographic and archival data on transnational trans* activists based in the United States and Argentina, it analyzes an activist-led project to develop "depathologized" models of informed consent for gender-affirming care. The paper explores how trans* activists from across the global South and North: 1) synthesized transfeminist anti-authoritarian notions of self-determination with bioethical norms of autonomy, and 2) shifted the formal locus of decision-making to patients to contest medical "gatekeeping." Enacting Alondra Nelson's (2011:11-12) notion of "social health," activists connected gatekeeping at an individual level with the broader conditions of stratified transnational trans* politics. Looking to depathologized informed consent as a standardizing health activist project, the paper examines infrastructure and the enactment of power through ostensibly neutral protocols of practice (Star & Ruhleder 1996). It contributes to a broader discussion of politicization and social movements within heath care by considering activists' endeavors alongside similar efforts related to reproductive and disability justice; harm reduction; intersex activism; sexual health; and mobilization against racialized, sexualized, and gendered abuse in biomedical research and treatment. The paper asserts that depathologized informed consent forcefully challenges hierarchical relations of biomedical care while simultaneously reproducing anti-collectivist notions of autonomy in biomedicine. While depathologized informed consent thus remains a critical objective for trans* health and other activists, the paper emphasizes the utility of feminist and critical medical STS to analyze the possibilities and limits of "self-determination" in medicine.

"Critical" Means "Power": Notes on Whiteness in Patient Activism *Danya Glabau, NYU Tandon School of Engineering*

Though health activism has long been a concern for STS studies of medicine, recent scholarship examining activism through feminist, critical race, and disability lenses offer strong reminders about how activism is shaped by the social positioning of activists. The social power that activists are granted by outside actors and social institutions due to attributes like race, gender, class, disability, sexuality, and nationality form the basis for

deciding what problems are solvable and in need of solving, how to do so, and the ultimate legacies of health activist communities. In the case of food allergy activism in the United States, for example, whiteness, cis-heteronormative family structures, and upper-middle-class aspirations guided activists through a complicated set of options to focus on legislative advocacy (or lobbying) and big-dollar research funding as the means through which to promote inclusion and treatment of people with food allergies. Interest in critiquing such configurations and consequences of power should be central to the coalescence of critical medical STS. After all, while "critical" does many kinds of work in contemporary academic discourse, the "critical" in "critical theory" has an important Marxist genealogy. Critique was meant to be a tool for identifying class antagonism and oppression, and moving toward reclaiming power from below. This talk will argue that critique is not "out of steam" in STS, as Latour famously claimed, but entering a new era of import as medical STS work increasingly treats the machinations of power, oppression, and justice as its proper object of study.

Problematising Opioid "Withdrawal" in Interventions for Pain Management *Anne Fredrickson, University of New South Wales, Sydney*

An STS focus on the material and agential aspects of "drug" consumption are redistributing notions of substances' "causality." Instead, considering "drug effects" as multiple and co-constitutive presents new ways to trouble biomedical truths such as "addiction." In this vein I propose that drug "withdrawal"—broadly conceptualised as a cessation or absence—has been overlooked. A background but pivotal feature of neuroscientific and social theorising on "illicit" drug use, "withdrawal" is now appearing in contemporary concerns around the use of medicines—particularly the prescription of opioids for long-term pain management. Responding to current shifts in the regulation and surveillance of medical opioids, this paper explores how "withdrawal" is co-constituted in medical practices, and how such work challenges the boundaries of "drug," "medicine," and "dependence." This includes the interventions and technologies that make up "withdrawal," framed through an "evidence-making intervention" framework (Rhodes & Lancaster, 2019). "Withdrawal" matters because it is an object that travels—into service models, interventions, and larger imaginations of "drugs leaving the body," resonating with past and contemporary anxieties over how substances govern/are governed. This also includes the flight of drugs from the "social body," as represented in questions of "pharmaceuticalisation" and "deprescription." To identify the conditions which have made it possible for "withdrawal" to remerge in these spaces, I draw from Carol Bacchi's work on problematisation to present a (necessarily partial) genealogy of "withdrawal," via its enactments in evidence, intervention, and policy.

Queer Experiments and Sovereign Limits: The Case of PrEP use in Bangkok *Tim Quinn, Rice University, Department of Anthropology*

Research in anthropology and STS has explored how drugs: (1) emerge as objects of pharmacology, (2) circulate as chemical commodities, and (3) function as tools of governance within particular logics of capital and health. Ethnographic approaches that center drugs have revealed their constitutive role within situated relations and processes. This paper draws upon these approaches to theorize the role of preventative HIV medications within contemporary formations of Thai sovereignty and modernity. Since its market debut, PrEP has promised to revolutionize the field of HIV prevention. In Bangkok, state manufacture of a generic has made the drug widely available. Situated at the intersections of state projects of health governance and Thailand's attempts to position itself as a hub for medicine and tourism within a regionalizing Asian economy, Thai generic Teno-Em PrEP is promoted as a prevention tool and as a tool for the modern queer Asian man to embrace "a life without fear." As state health infrastructures expand to facilitate access and govern the use of PrEP, queer subjects also experiment with the drug on their own terms. Through an exploration of how subjects encounter and repurpose PrEP, this paper highlights the ways in which queer subjects challenge hegemonic concepts of health, happiness, pleasure, and risk from a position of undeniable entanglement within the very systems that seek to govern them through these categories. How might theorization from the lived experiences of queer experimentation with these chemical technologies help us understand the limits of modern forms of technoscientic governance?

Towards a Critical Pedagogy in Biomedical Education: Challenging Cultural Competency *Rebecca Hester, Virginia Tech*

Conventional wisdom in biomedical education holds that systematic attention to culture, or what has been called "cultural competency," improves clinical care and mitigates race and ethnicity-based health inequities. Despite this pervasive belief and countless efforts to teach medical practitioners to become competent in the cultures of their patients, there is little proof that cultural competence education achieves its goals. In fact, there is some evidence that such pedagogical efforts engender student resentment because the "soft science" of socio-cultural study takes time away from learning about the "hard science" of biomedicine. In response to these critiques, scholars have forwarded the idea that medical students should become structurally, rather than culturally, competent. What can an STS approach add to this debate? Grounded in ten years of teaching pre-medical and medical students and drawing from STS studies on race, sex, and disease in biomedicine, I argue that what we should be teaching medical practitioners to understand and analyze are the cultures of biomedical science, especially how these cultures 1) establish scientific truths about bodies based on racialized and gendered norms; 2) interpret scientific reality through these norms; and, 3) settle scientific controversies that favor existing social arrangements. I contend that teaching students to understand how biomedical cultures are socially and historically produced through a mixture of techno-scientific and social values will make them more ethically and scientifically sophisticated practitioners. That is, helping students see biomedical science as culture will do the work that cultural competency aspires to but largely fails to achieve.

Session Organizers:
Hined A Rafeh, Rensselaer Polytechnic Institute
Yesmar Semaj Oyarzun, Rice University
Rebecca Monteleone, SFIS - Arizona State University
Chair:
Yesmar Semaj Oyarzun, Rice University

399. Doing STS amid the Procession of Disaster
3:00 to 4:40 pm
virPrague: VR 13

The procession of disaster – extreme weather events, industrial legacy hazards, and the cascading failures of sociotechnical infrastructures – is the new normal. The impact of this procession on daily life ranges from inconvenient (e.g. campus closures due to extreme weather) to catastrophic (e.g. ice storms, floods, toxic contamination, catastrophic wildfires, increasingly angry hurricanes, etc.). As the regularity of large-scale tragedy accelerates, calls for sustainability, climate adaptation, and disaster resilience are converging. This open panel invites contributions that draw out the continuities and discontinuities in this convergence, especially where the links are tense for STS scholarship. Governance practices around sustainability and climate adaptation, for example, have developed from technocratic planning frameworks that promote economic growth while trying to preserve bio-physical resources. Here we find a persistently practical if pollyannaish emphasis on human behavior change and less wasteful consumption. STS scholars of disaster, in contrast, have focused on longer term sociomaterial legacies of modernity. Here we find theoretically rich but often quite removed deconstructions of the very concepts of crisis and disaster, accounts of the unequal distribution of vulnerability, exposes of entrenched institutional power, or broad denunciations of post-colonial and/or neoliberal governance. Where can STS scholars locate a constructive engagement with the programmatic emphasis of sustainability governance, disaster and emergency management, and climate adaptation? How do we continue to raise challenging epistemological and ontological questions while also engaging practical contributions to the climate crisis and procession of disaster? How are we to live, work, suffer, mobilize, and love within the new normal?

Participants:

Distrust for Human Judgment Part II: How to Break through "Grass-roots" Technological Hubris *Kohta Juraku, Tokyo Denki University; Shin-etsu SUGAWARA, Central Research Institute of Electric Power Industry*

In this paper, the authors will discuss the issues centering on the grass-roots aspiration for the automated decision on socio-technical risks in the era of "procession of disasters," which seems to be driven by deep distrust for human judgment in the traditional institutional framework. The authors co-authored the analysis of the cases of this phenomenon in the field of nuclear risk governance in Japan. They pointed out that a notion, "calculation should automate decision and prevent regrettable consequences," has been strongly shared among stakeholders – not only experts and technocrats, but also citizens to be exposed to nuclear risks. The notion calls for more automated decision using computer simulation technologies and disinclines them to expect strategic decision by emergency responders. It seems to be a bit different than the typical landscape theorized by STS scholarship, such as Jasanoff's "technologies of humility" concept, which criticized the hubris of technological experts (Jasanoff 2003). This year, they would extend the scope of this perspective from nuclear field to the reality of risk governance in general in Japan, such as natural disaster (earthquake, tsunami, typhoon, flood and so on) preparedness and the recent COVID-19 epidemic. It will shed new light on the focus of STS intervention on social decision-making and response amid "procession of disasters."

"Marauding Masses": Mythologies of Societal Breakdown in the Climate Change Imaginaries *Natalie Danielle Baker, Sam Houston State University*

Recent work in critical security studies has interrogated the imaginaries of apocalypse as associated with the projected consequences of anthropogenic induced climate change. In this paper, I chart the lineages of societal disorder through in a genealogy of large-scale terrors, to argue an assumption of mass human violence and societal breakdown is built largely on fiction. The politics of apocalypse are informed by mythologies of 'marauding masses' and related apocalyptic imaginaries. These specific, yet very powerful discourses are deconstructed through in a historical analysis of societal disorder. I piece together an alternative vision of human response to the future shocks of climate change and push for the incorporation of documented human response into the discourses of mass disaster. There is a large body of evidence that typifies disaster behavior as a struggle to re-establish social order through altruism and helping behavior. The marauding masses fiction as accepted fact in the politics of catastrophe is detrimental to the creation of empirically formed policy solutions. Its perpetuation helps foster policies oriented towards social control, which are founded on, as well as perpetuate, fantasy. I also present the possibility that societal disorder is also a myth not founded by known human response to crises.

Institutional interdependencies and resilience *Changdeok Gim, University of California, Irvine; Clark Miller, Arizona State University*

Approaches to improving the resilience of infrastructure to climate change and other emerging disaster risks have identified the interdependence of infrastructure systems as a key aspect of the problem. Typical engineering approaches to this problem focus on physical interdependencies among infrastructure systems. Alternatively, this article argues that institutional interdependencies are also likely to be significant and so should be incorporated into analyses of infrastructure resilience. Given that infrastructure is a sociotechnical system, investigation on institutional interdependencies is a must for enhancing infrastructure resilience. First, this article analyzes the structure of institutional interdependence. Then, it defines and classifies several types of institutional interdependence in infrastructural systems. With these generalizable analyses on institutional interdependence, it then analyzes the case study of interdependent energy and water systems in Arizona. Using this case study, the article maps the networks of intersecting institutions that govern water and energy in Arizona, uses this map to assess the problem of institutional interdependence, and

describes how climate stressors and vulnerabilities propagate through not only physical linkages but also institutional ties between infrastructures and analyzes trade-offs that occur in efforts to improve resilience.

Session Organizer:
Steve G. Hoffman, University of Toronto
Chair:
Steve G. Hoffman, University of Toronto

400. When and how does life end? When and how should it? How do we know?
3:00 to 4:40 pm
virPrague: VR 14
Participants:

Creating "Death": Organ Donation and New Forms of Death in China *FAN ZHOU, Tsinghua University; Pusheng Wang, Tsinghua University*

Death is a bio-social process. The application of brain death concept and the intervention of life support system enable more sufficient communication of organ donation and better prognosis of transplant surgery, which, in turn, lead to a vaguer definition of "death" and a longer process of creating the fact of death. Thus, through a fieldwork approach, this article explores the novel forms of death constructed in recent practices of Chinese organ donation by tracing out how actors perceive, understand, and translate the death of a potential donor and how they react in response to the "death fact" in different stages. Specifically, the article proposes three distinctive forms of death presenting in three stages respectively: 1) technological death, which relies on rigorous medical logic and complicated technical identification to detect and confirm the fact of death in pre-death stage; 2) social death, which, in mid-death stage, refers to a state in which the families of a potential donor acknowledge his/her death through persuasion and negotiation; 3) complete death, which is close to a customary death and marks the end of the post-death stage. It can be expected that these new forms will redefine death and spark further discussions on biotechnology and bioethics in the postfact era.

Saving life or saving death? Interrogating dying subjectivities and troubling the denial of endings *Amanda van Beinum, Carleton University*

The intensive care unit (ICU) is a material product of modernity and a showcase of the powers of medicine. Here, the professional, technological, and administrative contexts prioritize the saving of life so that death becomes an event to be negotiated and controlled rather than a random or natural event. But the ways in which death is negotiated are not always consistent and can at times appear disconnected from patients' desires. In this paper, I suggest that complex and situated histories of life saving are involved in both generating and denying the subjectivities of dying patients in the ICU. By employing a feminist new materialist approach of encountering ethnographic fieldwork data and diffracting it through embedded and embodied histories and realities of the ICU, I aim to explore how the subjectivities of dying patients are materially and relationally produced in the contexts of intensive attempts at lifesaving. I suggest that in the midst of a material reality activated by desires to save and sustain life, the denial of dying patients' subjectivities serves to uphold liberal individual ideals about the value of human life and the undesirability of death. In contrast, attempts to engage with dying patients on their own terms appear to open up spaces for recognizing the ethical potentials of a subjectively desired death. I argue that cultivating the ability to recognize these desires is part of our collective responsibility to life, a responsibility which arrives conjointly with the invention and implementation of new life-support technologies.

Thanato-technics: temporal horizons of death and dying *Dylan Thomas Lott, Center for Healthy Minds/University of Wisconsin-Madison*

Recent advances in end-of-life technologies have destabilized received notions of personhood, identity, and ethics. Reliance on machines for the maintenance of life challenges conceptions of agency and identity; doubly so as the same technology is used to

inform and mediate decisions about when to end life support and declare death. As notions of personhood and identity within such systems are made to conform to discrete, binary and less fluid categories, some in the West have sought guidance in the techniques and views related to the dying process cultivated in other cultures, particularly Tibetan Buddhism. In addition to exploring the cultural, historical and soteriological currents that link that hope to post-Weberian re-enchantment, this paper draws on the work of Bernard Stiegler and introduces the concept of thanato-technics; the ways in which the temporal horizons of death and dying are reframed by the technologies which are designed to assay those states. Thanato-technics is articulated in connection with the author's ethnographic fieldwork in India. The details and history of this fieldwork – part of an ongoing research collaboration to determine the effects of meditative practice on the post-mortem body – are also explored.

Therapeutic Spaces between Life and Death: Making Sense of Non-Biomedical Therapeutics in Hospice Care *Wen-Hua Kuo, National Yang-Ming University*

Responding to the inquiry "how can we understand ethics and responsibility in spaces where the very possibility of finite endings has become at once unclear and imminent," this paper aims to achieve a better understanding of non-biomedical therapeutics as practiced in hospice care. Unlike Western countries where biomedicine predominates, in Taiwan, some East Asian healing traditions enjoy equal status to biomedicine. However, a dual health system also creates debates on the validity of these non-biomedical therapies. In the case of hospice in which Chinese medicine has not yet claimed any specialty, the debates in question are both ethical and professional. Based mainly on a six-month participatory observation in a Taiwanese medical center's hospice ward, this study offers evaluations on non-biomedical therapeutics as actually utilized in biomedical settings. It argues that a dichotomy between biomedicine and non-biomedical therapies is unrealistic and unnecessary: instead of a universal trajectory toward death in hospice, "therapeutic spaces" emerge in these wards upon the use of non-biomedical therapies. They are introduced to mediate patients' bodily and mental needs, their caregivers' social expectations, and medical professionals' beliefs regarding holistic hospice approaches. This paper also argues that recognizing these therapeutic spaces does not mean to overturn the hospice biomedical scheme or become its alternative. Indeed, while non-biomedical therapies do show some desirable clinical effects, they should be understood as part of a total effort made for favorable endings of life in which co-existing modes of care and strategic ambiguity in how good death shall proceed matter.

Session Organizers:
Amanda van Beinum, Carleton University
Dylan Thomas Lott, Center for Healthy Minds/University of Wisconsin-Madison
Chair:
Amanda van Beinum, Carleton University

401. Democracy in the Making III: Imaginaries of Democracy Enacted
3:00 to 4:40 pm
virPrague: VR 15
Studies of various kinds of practices with regard to implicit ontological presuppositions and implicit understandings of democracy (and/or politics, citizens, state, participation...).
Participants:

Representation of Members, Representation of Facts *Staffan Edling, Lund University*

How does the representation of elected officials interact with the social scientific representation of facts? In my ethnographic research, I'm following the knowledge production of social researchers at a Swedish central trade union organization. The organization employs around twenty people to produce reports primarily containing accounts about different aspects of Swedish society and policy suggestions. As knowledge producers, the organization's social researchers are spokespersons in the actor-network theory sense, giving voice to actors like the collective of

blue-collar workers or the Swedish economy and enabling them mobility and cohesion at the cost of being spoken for by others (Callon, 1984). In their work, the researchers also engage with other spokespersons within the organization: elected representatives speaking for about 1.4 million trade union members. These two groups draw on different discursive realms in order to legitimate their claims of representation. While the researchers use the discourse and practices of social science, the elected representatives are legitimated by democratic bureaucracy: elections, meeting protocols, titles, organizational charters and votes. These two modes of representation interact in complex ways within the organization, with the roles of the representatives and the researchers shifting between organizational units and the writing of individual reports, and the researchers employ different strategies in dealing with the representatives. In this presentation, I will talk about my research in order to discuss how to make sense of both representational democracy and social scientific knowledge production as two modes of representation in a material semiotics framework.

Platform Regulation and Liberal Democracy *Laura Fichtner, Universität Hamburg*

The presentation builds on my analysis of the media discourse that surrounded the introduction of the Network Enforcement Act, short NetzDG, in Germany. This law regulates how social media platforms perform content moderation and which content they take down. I explore how the political dispute over NetzDG can be read as a dispute over the future of online discourse and liberal democracy on the internet. I trace how, within this dispute, readings of what the internet is and does are co-produced with citizen subjectivities, state agencies, foreign relations and normative notions of freedom of speech and democracy. Thus, a discussion over the rules and practices for speech on social media platforms ends up as a discussion over how to imagine – and implement – platform democracy and as an exercise of state-making. Social media platforms function as the site for collective imaginaries of democracy; more than a material basis, they represent shared visions of an ideal marketplace of ideas that brings citizens together for engaging with each other and bringing about democracy. But they also function as a pivotal point for disagreement over what constitutes the very "liberal democratic order" accounts refer to which are tied up with ideas about how democracy ought to work online and particularly about state involvement, citizen-state relationships and the role of the state within a global internet. Such disagreements are not articulated explicitly but manifest themselves as disagreements over the "natural state" of social media platforms – whether they gravitate towards lawlessness and unruliness or towards democracy.

Platformised Identities in the 2019–2020 Hong Kong's Anti-Extradition Bill Protests *Chih-wei Yeh*

The 2019–2020 Hong Kong's Anti-Extradition Bill Protests are a series of severe conflicts between values regarding Hong Kong's uneasy relationship with China. In the media representation, these conflicts extend from the refutation of the Hong Kong Government's bill amendment to the mutual disagreement between the pro-establishment and the pro-democratic citizens, leading to an even more divided society after the Umbrella Movement in 2014. This paper employs constructivist discourse analysis inspired by Mike Mulkay and Nigel Gilbert (1984) and Greg Myers (1990) to study the discursive practices and sense-making of an Instagram account – save_hong_kong – one of the pioneering online actors that stimulate these protests. A restrained construction of the identity "Hongkongers" is found, which refuses political compromises and a less radical stance. Moreover, the same approach is also applied to study the discursive practices in the only one community dialogue held by the Hong Kong Government. Consequently, the patterned characteristics and repetitive themes of the discourse in the community dialogue indicate the possibility of overcoming political and value conflicts. A relatively more opened construction of the identity "Hongkongers" compared to that of the online one is discovered. A classic STS approach to studying democracy-in-the-making enables a timely understanding of the impact of digital democracy on society. Furthermore, a reflection on the different imagined communities of the constructions of

"Hongkongers" pays attention to the difference between the tribalised online interaction and the randomised face-to-face interaction.

Categorisation Work And Relationship Building In Extremism Prevention *Yannik Porsché, Bundeswehr University Munich*
Democratic societies allow individuals to hold a plurality of political views, yet some are denounced as too extreme. Practitioners of extremism prevention face the task of selecting who to present or treat as vulnerable members of – or risks to – society. In this contribution, I take an ethnomethodological perspective and explore how a non-governmental institution in collaboration with the police carry out two different projects of extremism prevention in Germany. In one project, NGO staff carry out a game in school classes that simulates processes of radicalisation. In the other, social workers aim to establish trustful relationships with refugees on a camping-weekend, in order to support them in the years to come. I employ methods of ethnography and conversation analysis to understand how this work is carried out and how documentaries and evaluations report on it in the mass media. I ask what understandings of a 'demos' are defended against threats from within, in what 'actor-networks' this is done and how this work is rendered accountable. I argue that extremism prevention involves both working 'with' and 'on' categorisation. This workplace study shows how social workers aim to transform what membership category clients belong to. In contrast, filmmakers and evaluations reproduce or challenge public categories of who is an extremist and legitimise the prevention work. I discuss STS concepts of 'translation' and 'modes of doing politics' to understand how prevention practices that 'normalise' the people they work with get into conflict with those that 're-specify' who counts as an extremist.

Democratic Situations *Andreas Birkbak, Aalborg University Copenhagen; Irina Papazu, IT University of Copenhagen*
Our paper explores a curious tension at the heart of democracy. As the sterile confines of the voting box and the polling station demonstrates (Cochoy and Grandclement 2005), democracy is supposed to flatten out differences and make people equal in their capacity as independent citizens. At the same time, it has been argued by STS scholars that the setting matters a great deal in political situations (Barry 2012, Gomart and Hajer 2003, Marres 2012). This raises the question of how to account for the various settings of democracy as a situated practice. In doing so, we suggest, it is important not to revert to a critical mode that upholds the impossible ideal of flattening out all differences. Instead, democracy as a situated practice must be understood in terms of how it makes problematization and participation possible in specific ways. To guide this work, we propose the notion of democratic situations, which is intended to foreground the variety of contexts in which it is made possible to refer to something as (un)democratic without maintaining a general abstract ideal to adjudicate between them (Stengers 2005). We explore this proposition through a range of specific democratic situations, collected in a forthcoming edited volume, including our own empirical work on a newspaper 'debate school' and the participatory organization of a zero emissions community, respectively. We argue that democracy should be situated in and understood as an assemblage of these diverse empirical situations, rather than in general abstract terms.

Session Organizers:
Jan-Peter Voß, Berlin University of Technology
Jason Chilvers, University of East Anglia
Chair:
Jan-Peter Voß, Berlin University of Technology

402. How to "make a better world" for humans with technologies? Part A
3:00 to 4:40 pm
virPrague: VR 16
[Note: The format proposed for this open panel will not be based in 10 min presentations. Instead, will encourage conversation, and sharing materials before the event from selected contributors. It is expected to dedicate larger amount of time in this panel to work-together around common topics, to be discussed via mail after acceptation.] From at least the WWII ideas such as

technological fixes, humanitarian technologies, and tech4dev, PIT, etc. has been transnationally framed, promoted, and funded, to solve or to assist human communities with their "basic needs" based in technical solutions. In particular, during emergency context, like natural disasters or a massive migration, or in the case of "resourceless" communities (due to physical, economic or political imbalances), humanitarian technologies are a path of action to "make a better world" At the same time, local responses have been emerging (like appropriated technologies, PLACTED or Civic tech), to contest colonial assumptions and practices around these projects. Shortcomings related to technological adoption, implementation or deploy performed by universities, international agencies, governments, and other privileged people are particularly relevant for those critiques. Imbalance and inequities of power, agency, and control has been largely discussed in study cases by STS and beyond. Nevertheless, there is an opportunity for propose alternatives, ways to engage and understand in those projects when which enact "techno-humanitarian systems" This panel welcomes contributions and experiences from researchers, practitioners and communities making and thinking questions "above and beyond" human-itarian technologies: What it means "make a better world" with using technology? Which values and paradigms share technologies to "make the world better"? Which good practices must replicate, and misconceptions must eradicate? Whose and how humans are benefited by these projects around the world?

Participants:

Strong Design: Engineers, Marginalized Users and Strong Objectivity *Logan Dawn April Williams, Inclusive Research by Design SM*
Recent news headlines in the U.S. paint pictures of injustice caused by major technology companies, e.g., Boeing's faulty planes, Google mislabeling Blacks as gorillas, Cambridge Analytica using Facebook data to manipulate voters just before the 2016 Presidential Election, California's electrical utilities causing wildfires, Volkswagon cheating on emissions tests through a specially designed computer software, etc.("Are Blackouts The Future For California?" 2019; Rosenberg, Confessore, and Cadwalladr 2018; Silverman 2019). While some engineering and computer science students keep their heads in their textbooks, others are looking for one or more solutions, that is, resources, or training that will help them to grapple with injustice through the technical details that first attracted them to STEM careers. A few U.S. engineers, user-experience designers, industrial designers, and artists are seeking out opportunities to positively intervene in their local communities by designing with, and for, marginalized users. This points towards insights from feminist and anti-racist technology studies (Eglash 2019; Gaskins 2019; Schiebinger and Schraudner 2011) about utilizing standpoint epistemology for improving design practices. This qualitative case study proposes a new theory, strong design: when design professionals apply strong objectivity (Harding 2015) to their logic of research, knowledge elicitation practices, visualizing, and prototyping as they take part in user-centered participatory design with marginalized community members. The preliminary results describe examples of strong design for: women, African diaspora, and persons with disabilities.

When Design is an Invitation to non-Engineers: Engineers and Engineering in International Development *Robert Krueger, Worcester Polytechnic Institute; Yunus Dogan Telliel, Worcerster Polytechnic Institute*
In the last decades, an increasing number of engineers in the West have been concerned with the ways in which science and technology are mobilized for international development projects. While engineers have been part of these projects since the early 20th century, their recent concern is a reflection of changing perspectives on design, development, and delivery of technology. In this paper, we first provide a historical background of development engineering, and discuss how engineers' views of design have changed from the large infrastructure projects of the 1950s and 60s, to the appropriate technology movement in the 1970s and 80s, and to the recent turn that privileges local communities' participation in technological innovation. Secondly, we move our focus from engineers to contemporary designers who have developed a similar critique of mainstream design ideologies in the West. We argue that the collaboration of development engineering and design studies not only leads to

more effective and sustainable technological solutions in non-Western contexts, but also changes how engineers think about their work. As engineers engage with critical design scholarship, they move away from a sole focus on problem-solving to the process of identifying, framing, and approaching problems.

The Development Imagination Of Czech Civil Engineers *Jan Werner, Charles University In Prague*

The notion that technologies perform materially embedded policies stemming from, among other influences, the voluntary and involuntary choices made by their designers, may seem all but obvious to an STS researcher. To this day, however, it isn't always fully appreciated and reflected within the design process, especially if the designers face financial, organizational, technological or time constraints. Such limitations may exist in a number of fields and circumstances – in this paper I focus on the case of Czech civil engineers working on designs intended for development projects in the Global South. Drawing on data collected on the various activities of the International Center for World Development of the Czech Technical University (a course in development civil engineering, public seminars by accomplished experts and a small scale development project implemented by the founder and current head of the Center), I examine the ways in which Czech engineers plan and imagine their designs working within the framework of development cooperation. Specifically, I discuss the strategies they employ when conceptualizing and stabilizing the location where the design is to be implemented (and its development needs); the techniques applied to reconcile local technologies with their own knowledge; and the negotiation of authorship while seeking to both handover the project to partners/recipients, and to use it as a source of lasting recognition.

Reciprocal Social Innovation – Reimaging university service-learning enterprises *Joshua Loughman, SFIS - Arizona State University*

The formation of university-led student organizations to engage in international project-based service-learning has expanded rapidly in the previous two decades. At Arizona State University, the Engineering Projects in Community Service (EPICS) program has entered its tenth year. In this program undergraduate students (primarily engineering majors) engage in multi-semester community-based projects in the theme areas of sustainability, community development, health, and education. The design of the program and the orientation of student projects endeavors to be mindful of the history and legacy of international development and its roots in colonialism and the exercise of development as a form of geopolitical power. The proposed discussion centers on a new approach to international collaboration that is inclusive of stakeholders as well as inclusive of project siting. In other words, student projects that are sited in international settings may still be extractive and problematic if some of the collaborators are representative of the community served. In order to reorient the approach to development projects, collaborators participate in reciprocal social innovation. The project teams work to generate social innovation that serves both communities. Further, this discussion will dive deeply into a specific pilot of this approach with collaborators from Danang Vietnam working on social innovations in Vietnam and in the United States.

Session Organizer:

Martin Andrés Perez Comisso, SFIS - Arizona State University

Chair:

Martin Andrés Perez Comisso, SFIS - Arizona State University

403. Challenges of Surveillance Technologies in Police and Criminal Justice Systems 1

3:00 to 4:40 pm
virPrague: VR 17
Participants:

Destined to be a criminal: Biometrics, race and predictions of criminality *Jona Zyfi, University of Toronto*

Throughout history, recollections of a previous golden age have led to various attempts at forecasting the changing nature and scope of crime, as well as predicting individual criminal behaviour. While these efforts have taken multiple forms and utilized different methods, they have been rooted in the idea of biodeterminism. Since the 19th century, new developments have occurred that theoretically and methodically, serve similar functions in today's social context. These developments include the use of artificial intelligence and machine-learning algorithms based on biometric and classification systems. Similar to the preceding methods, today's digital biometric systems, which are being utilized for a wide variety of purposes, are rooted in a biological and positivistic construction of race and the body. Through an intersectional and structural approach, this paper argues that since the 19th century, physiognomy based practices of biometric identification aiming to predict future dangerousness and criminality have been rooted in an epistemic construction of the racial body. Further, through an analytical engagement with the works of Cesare Lombroso and Alphonse Bertillon, this paper will build an account to demonstrate that the modern-day use of biometric and predictive technologies serve a political function of criminalization in the disciplining of racialized communities. Ultimately, drawing on Foucault's concepts of governmentality and biopower, the analysis reveals that similar to 19th-century attempts at predicting criminality, modern-day technologies serve a political function of criminalizing racialized communities and further entrenching systemic racism in the criminal justice system. Highlighting and critically engaging with the challenges posed by biometric technologies towards racialized peoples in the criminal justice system, this presentation hopes to make a valuable contribution to STS through a social science lens.

Genetic Racial Profiling: Discriminatory Consequences of Forensic DNA Phenotyping and Biogeographical Ancestry *Tino Pluemecke, Institute for Sociology, University of Freiburg, Germany; Isabelle Bartram, Institut of Sociology, University of Freiburg, Germany; Susanne Schultz, Frankfurt University*

In the last two decades, a massive expansion of DNA analysis for forensic purposes has taken place. In addition to the DNA fingerprinting, a new set of advanced DNA analyses has been developed to estimate externally visible characteristics of a person, such as eye, hair and skin color (usually referred to as 'forensic DNA phenotyping'), or ethnic, continental or regional origin (usually referred to as 'biogeographical ancestry') on the basis of the analysis of DNA found on crime scenes traces. Since the early 2000s, such analyses have been carried out first in the Netherlands, in the US and in Great Britain while other countries – especially of continental Europe – do not permit these DNA analyses for forensic investigations as personal genetic information have been granted a high protection status. In this paper, we will critically analyze the specific problems associated with these technologies in their application as well as on the debates about their approval in the Netherlands, Germany and Switzerland. With the use of concepts such as the 'absent presence' of race (M'charek), the 'contemporary synthesis' in race science (Fullwiley), and the term 'racial profiling' we like to highlight that advanced DNA analyses are anything but a 'neutral technology' and like to discuss how images of the 'dangerous others', emotions and hopes in the sense of a 'technological fix for fear and anxiety' (Buchanan) as well as how exaggerated notions of feasibility hinder an important social debate on the difficulties and dangers of this technology.

DNA, Citizenship, and the Biometric Governance of Migration in the U.S. *Meredith Joy Van Natta, Duke University; Nita Farahany, Duke University*

For over a decade, the U.S. government has been using DNA and other biometrics, such as fingerprints and facial recognition, to vet and identify migrants and prospective refugees. These practices garnered little public attention, however, until the Trump administration began accelerating their use to address what it has called a "national emergency" of migration at the southern border. Such practices include rapid DNA testing of family members separated at the border and expanded collection of detained migrants' DNA for the Federal Bureau of Investigation's Combined DNA Index System (CODIS). Despite the recent surge in media attention, few sources comprehensively capture the actual uses and ethical implications of these

technologies for migrants and U.S. citizens alike. Our study assesses the legal landscape of U.S. biometric immigration governance and explores the ethical implications of integrating immigration and criminal law enforcement through biometric technologies. We consider the privacy and dignitary interests of immigrants and how and whether Sovereigns can justify the collection of biometrics from individuals differentially based on citizenship. Through systematic review of policies, regulations, memoranda, case law, and academic literature related to the governance of DNA and biometric data in the context of national security and immigration policy, we have developed an interactive tool for navigating users through various DNA policies under the U.S. biometric governance regime. Through this tool and additional policy analysis, we aim to demystify the intersection of immigration and biometric technology policies while proposing more ethical biometric governance practices.

The Biolegal Coproduction of India's National DNA Database
Manpreet Singh Dhillon, Jawaharlal Nehru University

India has been on a journey of constructing its own national DNA database since 2003. When it is finally activated, the DNA database will potentially be one of the largest in the world. This paper traces the life of the DNA Bill to show how the creation of the database is a complex biolegal exercise between the scientific and the social scientific realms. I argue that the ethical, social, political and legal conundrums of establishing the DNA database in a liberal democratic polity has delayed the fulfillment of this technobureaucratic vision, although the technoscientific expertise and political will needed to activate the DNA database is existing in India. What the legislative scrutiny of the DNA Bill currently in progress in the Parliament seems to suggest is that issues concerning informational privacy and human rights concerns is being accommodated in the Bill to enable the coming into being of the DNA database in India as a sociotechnical artefact.

Session Organizer:
Susanne Schultz, Frankfurt University

Chair:
Tino Pluemecke, Institute for Sociology, University of Freiburg, Germany

404. STI, science diplomacy and international knowledge asymmetries
3:00 to 4:40 pm
virPrague: VR 18

In the past decades, the relationship between science, technology and innovation (STI), economic development and national interest has intensified. More than ever, increasing, maintaining and exercising power on an international level is tied to STI. In a globalizing world facing grand societal challenges – e.g. Sustainable Development Goals –, STI figure as root and resolution of conflict. STI represent transboundary knowledge flows that need creating, maintaining and – if severed – mending. Knowledge asymmetries between countries shape the distribution of bargaining power in geopolitical negotiations. 'Science diplomacy' has notoriously been put forward as a mechanism to mediate these tensions between a transformative version of science and a knowledge-based diplomacy. While the nature of the concept's meaning is debated, it redefines the interfaces between scientists, policymakers and diplomats in matters of foreign policy in practice and sparks research interests across the board. Through the notion of science diplomacy, we can understand modulation processes of transboundary knowledge flows reflectively. This panel contributes to STS by elaborating the role of knowledge asymmetries in international relations and the ways in which STI contributes to the interplay between increase and reduction of geopolitical tensions caused by these asymmetries. It asks in particular, but not exclusively: - Which interests take precedence in STI diplomacy – science's or diplomacy's? - How can we think about the dynamics emerging between these epistemic communities? - What makes this specific instance of a science-policy interface special? - Under which conditions is science-diplomacy interaction constructive and productive (from a stakeholder perspective)?

Participants:

The 'matter' of science diplomacy *Mitchell Young, Charles University Prague*

While 'matter' suggests something concrete and defined, the difficulty of pinning down the concept of Science Diplomacy,

rather leads us to address the question of 'what matters in science diplomacy'? This paper summarizes the transversal analysis of case work from the S4D4C project. Using the nine case studies undertaken in the project, it identifies and examines 13 conditions that matter for understanding the concept, governance and practice of science diplomacy.

An updated taxonomy of science diplomacy *Charlotte Rungius, German Centre for Higher Education Research and Science Studies (DZHW)*

The ambition of the paper will be to locate the concept of science diplomacy within the more recently evolved landscape of science policy and global affairs debates. Throughout the last decade we have seen continuous conceptual efforts to clarify and systematize the idea of science diplomacy. The focus of these efforts was mainly to highlight and order various forms of how science-diplomacy and science-policy relationships (science-diplomacy interfaces). These conceptual "interfacing efforts" within the science diplomacy debate will most likely be continued. What is surprisingly missing in light of these efforts however is a more encompassing perspective on the logics of this debate, relating its ambitions, themes, and perceptions to the terminologies and theories in global affairs such as SDGs, Grand Challenges, RRI and Mission-Oriented Research etc.

Science diplomacy as a transformative interaction space *Ewert Aukes, University of Twente (the Netherlands); Sanaz Honarmand Ebrahimi, University of Twente; Gonzalo Ordonez-Matamoros, Universidad Externado de Colombia; Stefan Kuhlmann, University of Twente*

The complexity and multifacetedness of grand societal challenges such as Sustainable Development Goals (SDGs) urge the epistemic communities of science, technology and innovation (STI) and international politics to collaborate. The effective transformation of unsustainable socio-technical systems then requires targeted inter-governmental, (science) diplomatic efforts and the mobilization of appropriate scientific knowledge. In this paper we ask: What governance practices are necessary for maximizing the interaction between the science and foreign policy community to contribute to transforming systems to address SDGs? What governance framework is necessary to shape effective science diplomacy interactions? The framework is rooted in the empirical and transversal analysis of nine cases. Based on a co-constructive governance notion and the concept of meta-governance, we develop a governance framework outlining the practice of science diplomacy as a transformative interaction space consisting of interconnected arenas. The three interconnected arenas encompass practices of reflection and alignment of motivations and drivers, of deciding on required scientific insights, and of designing suitable governance mechanisms. Structuring practices in all three arenas entails procedural principles and infrastructural requirements. The complete suite of transformative interaction practices enables the development of conditioning conditions for productive and constructive science diplomacy practice. Thereby, envisioning science diplomacy as a transformative interaction space gives actors the opportunity of dealing with knowledge asymmetries and the tensions deriving from them on an international level.

After Brexit, UKRI if you want to: ambition, ambiguity and active self-harm in UK science diplomacy *James Wilsdon, University of Sheffield*

On 31 January 2020, after almost four years of political turmoil, the UK left the European Union. It then entered an 11-month transition period, in which the future of its scientific collaboration—and the precise form of any involvement in Horizon Europe —is one of a daunting list of items that need to be resolved as part of any comprehensive EU-UK agreement. In 2018, co-authored papers with EU colleagues accounted for 60% of all the UK's internationally-collaborative research outputs, and thirteen of the twenty countries with which the UK co-published most intensively were EU member states. Throughout the Brexit process, both UK and EU research communities have made a strong case for preserving these levels of collaboration, and the mobility of researchers that underpins them. It is hard to predict the outcome of the negotiation process that is now underway, in

which science will inevitably be traded off against competing interests and priorities. But in a global research system characterised by ever closer connections, and the intensifying use of science as a form of "soft power", Brexit represents a rare example of science "undiplomacy", which will potentially result in an advanced research nation unravelling hard-won connections of its own accord. In an effort to limit such damage, the UK government had announced an expanded category of "global talent visas" and pledged an £18 billion (GBP) doubling of public spending on research by 2025, as part of a renewed commitment to boosting overall investment from 1.7% to 2.4% of gross domestic product. It has also repeatedly said that it wants to preserve ongoing association with Horizon Europe. The success or otherwise of these efforts, and the broader future of UK science diplomacy, will depend in large part on its newly-consolidated public funding agency, UK Research and Innovation (UKRI). This talk will explore what the unfolding Brexit saga means for the future of UK science policy and diplomacy, both within Europe and with respect to broader international networks and global challenges. Will Brexit inevitably trigger an unravelling of the UK's global networks and influence in science, or can it become a point of disruption from which UK science - and its many international partners - regroup and renew?

Session Organizer:

Ewert Aukes, University of Twente (the Netherlands)

Chair:

Stefan Kuhlmann, University of Twente

Discussants:

Gonzalo Ordonez-Matamoros, Universidad Externado de Colombia

Sanaz Honarmand Ebrahimi, University of Twente

Tim Flink, Humboldt-Universitat zu Berlin

405. Digital Platforms, Knowledge Democracies and the Remaking of Expertise 1

3:00 to 4:40 pm
virPrague: VR 19

Traditional forms of expertise appear in crisis. Digital platforms such as YouTube, Wikipedia and Zhihu increasingly shape the knowledge and expertise that constitute the infrastructure of modern knowledge-based democracies. Techno-optimism about the democratisation of knowledge has given way to dismay that the internet has eroded the shared truths that enable rational discourse. Digital platforms' business models incentivise audience over accuracy, with publics increasingly concerned about the resulting online misinformation. Meanwhile, a new wave of right-wing 'populist' politicians in the US, Brazil and elsewhere have come to power by fostering an anti-expert culture. Yet within this bleak picture, new kinds of experts and expertise, particular to digital platforms, are emerging in domains as diverse as finance, science and culture. This panel brings together researchers investigating the nexus of experts, publics and platforms across a range of topics, and employing a range of methods. Potential questions include: How are experts establishing credibility on digital platforms? How do digital platforms shape the production and communication of expertise? What are publics demanding from experts on digital platforms? How is epistemological power being reinforced or disrupted by platformisation? Are there potential futures for experts, digital platforms and democracy beyond the dystopian imaginary of the post-truth society? This panel will contribute to STS by assessing the impact of platformisation on existing, canonical theories of expertise, and provides opportunity for reflection on the conference themes of changing digital identities and the challenge of public engagement in democracies teeming with 'alternative facts'.

Participants:

Scaling a "global music platform": secret gigs, live music and the platform metaphor *Loïc Riom, Centre de Sociologie de l'Innovation*

In recent years, platforms have emerged as an issue of concern and controversies within the music industry. Several authors discussed how streaming platforms shape the way music circulate and is formatted (Morris 2015, Heuguet, Eriksson et al., 2019). Others examined how the "platform economy" affects musical employment (Azzellini et al., 2019). However, there is

still little research on how "musical platforms" work on a daily basis and how they change music consumers, intermediaries and musicians' practices. Based on a participatory ethnography of Sofar Sounds' secret gigs, this paper aims to capture how the "platform" metaphor actively shapes the way actors build music worlds. Sofar Sounds is a London-based company. It organizes "secret shows" in "intimate" and "unconventional spaces" – coworking spaces, offices, living rooms, shops, art galleries – in more than 440 cities worldwide. Sofar Sounds present itself as a platform allowing both spectators to discover artists and musicians to promote their music. This paper explores how such a platform is functioning through a complex infrastructure. Following how the platform articulates artists, venues, technicians and spectators in order to make an event happen, it emphasizes the different operations that allow Sofar Sounds to gather these various entities in the same place. It analyzes what the platform metaphor allows and makes Sofar Sounds do. The platform acts as a cultural engine that makes Sofar Sounds being both mobile and scalable (Tsing, 2012).

Peacebuilding Construction Through Participative Monitoring in Conservation Areas of the Tropical Andes (Colombia) *Rodolfo Andres Hernandez, Independent Researcher; Giovanna Garzón, Universidad de Cundinamarca*

This paper discusses preliminary advances of the research "Geospatial Tool for the Construction of the Social and Environmental Diagnosis of Territorial Development Plan in Silvania -Cundinamarca", which aims to build a spatio-temporal tool that visualizes changes in soil use, micro basin and ground cover in ecological conservation areas of the 'most affected areas of armed conflict of Colombia' (known as 'Zomac'). The tool supports national and local efforts to strengthen local planning, through posconflict initiatives and sustainable development. The paper focuses on the development of the social engagement of ST&I strategy, that relies on the collaboration of local authorities and grassroots organizations living nearby conservation sites. It focuses on recent STS reflections about the adoption of participatory methods that promotes science as resistance (Kullenberg, 2015), which in this case pretends to bridge local planning with the protections of ecosystems and human groups that were hit by the armed conflict in Colombia.

"Created by Experts, Backed by Science": The Mobilization of Scientific Credibility in Mental Health Apps *Sarah MacLean, Carleton University*

Depression and anxiety are significant global health problems with pronounced impacts on social functioning, productivity, and mortality rates. With the rise of Web 2.0 technologies and smartphone ownership, numerous health apps have been developed to support the diagnosis and management of mental health disorders. Many of these apps claim to be developed by experts and supported by scientific evidence. The goal of this paper is to explore of how these claims of scientific credibility are mobilized on mental health apps which target depression and anxiety. To do this, I first conducted an environmental scan with the goal of identifying the top 30 apps designed to support users struggling with depression and/or anxiety. Based on the results of this scan, I selected three illustrative case examples (e.g. Unwinding Anxiety, Youper, and Woebot) and conducted a partial walkthrough analysis of their websites to identify how credibility is marshalled and reinforced. Results of this study show that the two key ways that this is done is through the use of specialist credentials and calls to scientific evidence. Unexpectedly, two of the three case examples made use of a narrative style to convey scientific information which may have significant implications on the public's uptake of these apps.

Formation of Experts and Knowledge on Chinese Social Media Platforms during Public Health Crises *Yiran Gao, University of Illinois Urbana-Champaign*

This paper examines the formation of experts on Chinese social media during public health crises. When public health crises happen, citizens tend to seek information on social media regarding the crises' situations and health knowledge. Social media integrates immediacy, simultaneity, and interactivity into one media platform, and thus has become a powerful space to disseminate information and form public opinions. Chinese

social media platforms Weibo and WeChat carry multi-directional flows of information and communication for both state-led and bottom-up opinions, under strict internet regulations. This paper sees social media as an expansion of people's gathering in physical spaces and as a virtual public domain where public discussions take place. Using Chinese vaccine incident and the novel coronavirus crisis as examples, this paper revisits the notion of expertise in the context of digital group knowledge making, and investigates how experts in various fields become popular on social media platforms, how experts disseminate information and communicate with social media users on the platforms, why citizens trust the experts, and how knowledge and public opinions on such issues are formed on social media platforms.

Session Organizer:

Warren Pearce, Department of Sociological Studies, University of Sheffield

Chair:

Ana Delicado, Instituto de Ciencias Sociais, ULisboa

406. Pharmaceutical and diagnostic futures: innovation, governance and practice #1

3:00 to 4:40 pm

virPrague: VR 20

The development, marketing and use of new pharmaceutical and diagnostic products is playing an increasing role in shaping healthcare across the globe. Major changes are underway that may represent a fundamental transition in the sector, driven by the search for new sources of value, emerging technologies and systemic shifts in healthcare provision. Novel targeted and biological products are increasingly tied to new diagnostic tests facilitating the development of personalised medicine. A wave of ultra-expensive speciality and orphan medicines are posing major challenges for both access and existing regulatory frameworks and reconfiguring relations between patients and industry. The dynamics of pharmaceuticalisation and diagnostic innovation are extending the reach of Western medicine and international bioscience companies into new markets and the Global South, raising important social and ethical questions. This Open Panel invites papers related to pharmaceutical and diagnostic studies. We welcome papers on: the political economy of the global bio/pharma and diagnostics industry, new and alternative forms of knowledge production, the development of novel biological and speciality products, the changing role of patients in innovation and regulation, the challenge to existing forms of governance and Health Technology Assessment, medicines for neglected and rare conditions, and situating pharmaceutical and diagnostic innovation within broader health system transitions. In particular, we are keen to encourage submissions from critical, feminist, post-colonial and Global South perspectives. The Panel aims to help build a global network of STS scholars working in this area and develop collaborative research on the major changes underway in this key sector.

Participants:

A market for quasi-diagnostics in the making? An engagement with the emergence of cell free fetal DNA testing *Ingrid Metzler, University of Vienna, Department of Science and Technology Studies*

This paper engages with cell free fetal DNA testing. It began to take shape when biomedical professionals figured out how to combine next-generation sequencing machineries and bioinformatic tools to translate fragments of DNA circulating in pregnant women's blood into information about the genome of a fetus. Since the launch of first tests in China and in the US in 2011, this technology has begun to spawn across the globe, and also been described as a "vanguard of genomic medicine". Taking this claim seriously, this paper approaches cfDNA testing as a case that can help us understand how genomics has begun to reconfigure biomedical care in practice. It does so by drawing on data collected in a study that followed cfDNA testing around to various spaces in which it was envisioned, adopted and adapted, endorsed and problematized, as well as regulated and governed, making an effort to distill cross-cutting similarities from these otherwise different spaces. It discusses cfDNA testing as an instance of the emergence of "quasi-diagnostics", that is a set of technologies that produce information, that is deemed good enough to have a value and a prize without however been valued as full-blow diagnostic information. Second, it argues that quasi-diagnostics is both constitutive of and shaped by technological, epistemic, and moral dimensions within a market in the making, in which efforts to secure market shares by commercial companies are tied up with debates on the very value of quasi-diagnostic information and desirable goods and undesirable bads in biomedicine.

Assessing thrombotic susceptibility test, questioning the safety of the pill *Mauro Turrini, Consejo Superior Investigaciones Cientificas (CSIC)*

One of the side effects of oral hormonal contraceptive treatment is the formation of thrombi in blood vessels. In the mid-nineties, two genetic variants associated with blood hypercoagulation, "non-rare thrombophilia", were discovered. One of their most promising clinical applications was to use them for a screening of women wishing to take oral hormonal contraception (OHC) to identify those more prone to suffer from its side effects. By presenting data from the study of international biomedical literature, official documents produced in France and Italy, and interviews with key actors, both practitioners, biomedical researchers, and activists of a French association of "pill victims", this presentation aims to analyze the medical controversy surrounding screening for genetic susceptibility to thromboembolic disease in women who wish to start OHC, by focusing on the different meanings that clinical utility takes during a 20-year debate. Generally, the medical community seems to reject this proposal on several epidemiological, economic and clinical grounds. The guidelines issued by many medical societies largely echo this motivation and suggest that the test should only be prescribed to a small group of women at risk. However, this position is far from enjoying unanimous consensus within the medical community. The controversy then reopens with the pill crisis when the hormonal method of contraception itself is called into question. Despite its presumed objectivity, this debate shows how the assessment of pharmacogenetic screening depends largely on the political position towards the pharmacological treatment (in this case, OHC) it targets.

Global intermediaries, agendas and standards: designing diagnostics for global health *Nora Engel, Maastricht University; Harro van Lente, Maastricht University*

The drive in global health to offer testing for diseases such HIV and tuberculosis outside of laboratories in resource-constrained settings at point of care, challenges established innovation practices by diagnostic companies, as well as the governance, regulation, funding and evaluation of these technologies. Facilitated in part by technological developments to miniaturize molecular testing, developing such diagnostics requires addressing an unpredictable market, shifting and variable end-users, harsh environmental conditions, weak laboratory infrastructure and low revenues compared to cancer, Alzheimer or flu diagnostics. These diagnostics also challenge established evaluation indicators. Proving direct impact on patient or public health outcome is difficult, while questions of feasibility, scale and cost are important, yet difficult to measure. This paper draws on semi-structured interviews with manufacturers, donors, civil society, industry consultants, international organisations and researchers involved in diagnostic development for tuberculosis and HIV, operating at global and local (India) levels. We examine the crucial role of what we term global intermediaries – industry consultants, researchers and global health organizations- that support diagnostic companies in innovating for global health. Sitting at the nexus of developers-implementers, north-south, global-local, profit and donor-driven, these intermediaries embody shifting roles as co-developers, funders, gatekeepers, evaluators and customers. Adding to STS literature on intermediaries and the political economy of global health we show how global intermediaries articulate agendas and standards and provide (technical) assistance with implications for who is able to enter the market, global guideline making, the type of devices that are being supported and how they are made accessible in the field.

Testing the Nation: diagnostic development capacity and universal access to healthcare in Brazil *Koichi Kameda de*

Carvalho, Centre Population & Développement, IRD, and Institute for Research and Innovation in Society, IFRIS

Brazil is mostly known for its public production of vaccines for tropical diseases or an industry of generic antiretroviral medicines. The country also has a not-for-profit in vitro diagnostic tests (IVD) production for infectious diseases, from HIV to zika. Such industry was reinforced since the mid-2000s during a new-developmental government that explicitly articulated healthcare and industrial development policies through investment in the national production of imported technologies and R&D to address the public healthcare system programs. As a result, established and new actors in the national biotechnology scenario engaged in the IVD production and innovation for traditional country ailments, but also emergent and chronic diseases, following ongoing epidemiological transition. I particularly explore how development of a national diagnostic capacity strengthens an imaginary of a technoscientific nation able to foster universal access to healthcare, as provided by the Brazilian constitution; and in which measure such option contributes to that end. Discussing the future of diagnostics and pharmaceuticals also requires regarding the new geography of innovation and national projects-associated values. Another interest when looking to Brazil is discussing the continuity of these initiatives vis-à-vis the recent scenario of recurrent financial crisis and adoption of fiscal austerity policies. The presentation draws on fieldwork conducted between 2014 and 2018 that traced the trajectories of IVD technologies and R&D projects through interviews with implicated actors from science, industry and government, and internships in two IVD producers in Brazil.

Session Organizer:

Paul Martin, Department of Sociological Studies, University of Sheffield

Chair:

Paul Martin, Department of Sociological Studies, University of Sheffield

407. Postphenomenology and the Mediated Self

3:00 to 4:40 pm
virPrague: VR 21

Technological mediation is often conceived in terms of the translations and transformations made by a device as it comes between a user and the world. But how should we conceive of cases in which technologies mediate the relationship human users have with themselves? With its framework of concepts for articulating human-technology relations, work in the postphenomenological perspective has the potential to make distinctive contributions to the study of our bodies and our lives as they are mediated by our devices. Here we consider these issues in terms of a variety of technologies, including laboratory imaging, social media, and self-tracking devices, explored through both philosophical and ethnographic analyses. In her contribution to this panel, Anette Forss shares her ethnographic work in Swedish cytology laboratories, with implications for our understanding of scientific hermeneutics and medical education. In our second paper, Stacey Irwin performs a postphenomenological analysis of endoscopy, exploring the hermeneutics of this video readout of the interior spaces of the human body. The third and fourth papers are on the topic of self-tracking devices. In the first of these two, Dorthe Brogård Kristensen, Signe Banke, and Alev Kuruoglu perform an ethnography of fitness self-tracking in Denmark. In the second, Elise Zheng considers the self-surveillance implications of self-tracking fitness apps. And in our fifth paper, Olya Kudina considers the mediation of social media upon our digital memories.

Participants:

'To Be Or Not To Be' – Hermeneutic Relations Through Technology in Cancer Prevention *Anette Forss, Karolinska Institutet, Sweden*

Cancer prevention programs aimed at detecting early asymptomatic stages of breast and cervical cancer rely on technologies (X-ray and microscopy) and a human interpretation of the images. In both fields new technologies complements, and even substitute, human interpretations. HPV-test complementing cytology exemplify the former and automated assessment of mammography X-rays exemplify the latter. This presentation

contribute to debates on human vs machine interpretation in medicine through a postphenomenological informed one year ethnographic fieldwork in two cytology laboratories in urban Sweden. It is argued that the microscopic differentiation between normal and potentially pathological cells, a highly demanding task, is a determined and trained figure/ground perceptual activity which necessitates awareness of reversibility that are likely to lead to mistakes. I conclude by arguing that postphenomenology is helpful in articulation human-technology relations, as well as the search for technological substitution of humans, in cancer prevention diagnostic processes. I also discuss the possibility of enlarging the curriculum in medical and laboratory sciences by including literature on morality of technology and on (the thriving range of) anthropocentric and anthrodecentric ontological positions.

Scoping the Endoscope: a Postphenomenological Use Case
Stacey O Irwin, Stacey Irwin

An endoscope is one kind of technology that often attempts to find and "read" a difficult to reach area in the human body. The variety of sophisticated and intertwined technologies that make up these diagnostic technologies do not always work well together, altering the way an image is "read." This analysis studies the use case of a laryngoscope, a thin flexible camera used to examine vocal folds and voice box. The scope uses a tiny digital camera to record moving images and then a translative video compression program to review the scoped visuals after altering them for clarity. But what if the technology itself gets in the way of proper diagnosis because the technology corrects the digital video image or artifact "too much?" The use case aims to illustrate post phenomenological macro and micro-perceptions, variations and trajectories of this kind of human-technology-world experience (Ihde 2019, 2010, 1993, 1986), (Crease & Friis 2015). Crease. Robert & Jan K B. O. Friis. Technoscience and Postphenomenology: The Manhattan Papers. New York: Lexington Books. 2015. Ihde, Don. Medical Technics. University of Minnesota Press, 2019. Ihde, Don. Heidegger's Technologies: Postphenomenological Perspectives. Fordham University Press, 2010. Ihde, Don. Postphenomenology: Essays in the Postmodern Context. Evanston: Northwestern University Press. 1993. Ihde, Don. Experimental Phenomenology. Albany: State University of New York Press. 1986.

Optimization and the Affordances of Self-tracking Technologies: an ethnographic study of gym cultures in Denmark *Dorthe Kristensen, University of Southern Denmark; Signe Banke, University of Southern Denmark; Alev Pinar Kuruoglu, University of Southern Denmark*

In present consumer culture the term optimization refers to a mode of living, as a strategy of "making the most" of life. The goal is to continuously improve, enhance, manage, develop and transform the self. Our case builds on an emergence of self-monitoring practices such as the measuring and tracking of physiological reactions, movement, and activities of individuals; these self-monitoring devices often go hand in hand with the sharing of data with others; as well as interpretation of data produced (Lomborg and Frandsen 2015). This paper takes point of departure in self-tracking among fitness user in Denmark and builds on ethnographic fieldwork and interviews. Drawing upon post phenomenological approaches (Verbeek 2005, 2011), we analyze 1) how metrics and algorithms mediate perceptions and action, and condition experience 2) how the affordances of different technologies and media platforms are used and combined by users, and how they create different form of reflexive intentionality (Verbeek & Rosenberger 2015). In the paper we present the following categories of interaction with metrics: documenting, selecting, questioning, tinkering and resisting that show different types of agency and interaction. Our analysis demonstrates how these practices in the context of fitness culture are shaped, experienced, and negotiated through the emergent affordances and arrangements of human and non-human actors. The five themes of the findings allow us to conceptualize the capacities emerging out of the human-nonhuman, analog-digital assemblages. Ultimately, we argue that self-tracking practices allow the users to modify, personalize or even optimizes the "optimization" ethos for themselves.

Interpreting Fitness: Self-tracking with Fitness Apps through a Postphenomenology Lens *Li Zheng, Georgia Institute of Technology*

Fitness apps on mobile devices are gaining popularity, as more people are engaging in the self-tracking activities to record their status of fitness and exercise routines. These technologies also evolved from simply recording steps and offering exercise suggestions to an integrated lifestyle guide for physical wellbeing, thus exemplify a new era of "quantified self" in the context of health as individual responsibility. There are considerable amount of literature in science, technology and society (STS) studies looking at this phenomenon from different perspectives, linking it with sociology of self-surveillance and neoliberal regimes of health. However, the human-technology interface, through which the micro- (behavioral) and macro- (social) aspects converge, still calls for extensive examination. This paper uses approaches from postphenomenology of science and technology, combining with empirical studies of design analysis and interviews of fitness apps, in order to reveal the human-technology link between the design elements and people's perception through the direct experiences and hermeneutic interpretations of technology. It argues that the intentionality of self-tracking fitness app designs mediates the human-technology relations by "guiding" people into a quantified knowledge regime, and shapes the perceptions of fitness and health with representations of meanings about a "good life" of individual success and management. This paper also gives critique of current individual, performance oriented fitness app designs, and offers the possibility of seeking alternatives through the multistability nature of human-technology relations – how altering interpretation and meaning could change the form of technological embodiment through the design with a cultural and social context.

Session Organizer:
Robert Rosenberger, Georgia Institute of Technology
Chair:
Robert Rosenberger, Georgia Institute of Technology

408. Social Practices perspectives on (Un)sustainable Urban transformations (1)
3:00 to 4:40 pm
virPrague: VR 22

This session sheds light on urban socio-technical transformations, its key actors and main drivers. It invites papers that draw on or combine insights from studies of sociotechnical transitions, models of urban obduracy and path dependency, actor network theory, and social practice-based perspectives on technology use and experience. We seek to contribute to understanding why and how cities may transform towards 'less' or 'more' sustainable places, due to or despite all 'saying and doings' around urban development. In the past two decades, a few distinct analytical frameworks to understand socio-technical sustainability transitions have been developed, most notably the Multi-Level Perspective (MLP). However, the idea of hierarchical (micro, meso, macro) 'levels' has led to a neglect of the place-specific characteristics of regimes, and the dichotomy of niche and regime has been found questionable in practice (Bulkeley et al 2014). Some have noted a disregard for the role of users, a slight bias towards technology, and an over-emphasis on simple shifts from one regime to another, whereas in practice fragmentation and plural regimes seem more likely (ibid.) This session invites papers on urban transformation (drawing on or combing insights of the studies mentioned above) and looks at ways to overcome various criticisms to the MLP. Papers may address historical, contemporary or future transformations. The may focus on particular in cities, such as urban mobility. We encourage papers based on empirical research in cities.

Participants:
Connecting The Logic Of Scientific Inquiry With The Logic Of Local Government Action *Christopher Joseph Barton, School for Future of Innovation in Society, Arizona State University; Qingqing Wang, Arizona State University School of Public Affairs; Derrick Anderson, Arizona State University School of Public Affairs; Drew Callow, Greater Phoenix Economic Council*
Local governments rely on scientific knowledge for making

policy decisions, and many scientists aim to produce knowledge which is useful to policy makers. However, the logic of action (which guides policy) and the logic of inquiry (which guides research) do not always converge. We explore this dynamic by comparing a selection of scientific literature on the effects of climate change in urban areas to the areas of policy action available to city governments. By identifying and explaining areas in which the logic of scientific inquiry and the logic of government action do and do not converge, this paper advances an understanding of the conditions under which knowledge is used in guiding urban transformation.

Transforming mobility practices in Maastricht (1950-1980) *Marc Dijk, Maastricht University; Anique Hommels, Univ Of Maastricht; Manuel Stoffers, Maastricht University*
This paper develops an understanding why and how cities may transform towards unsustainable places, despite all efforts to make them more sustainable. It reconstructs the historical transformation of mobility in the city of Maastricht from cycling as the dominant mode of traveling in the 1950s, to car driving by the end of the 1970s. Between the First World War and the late 1950s the bicycle was omnipresent on public roads in many parts of the western world. Thereafter cycling diminished and was superseded by car mobility. This shift in mobility practices entailed significant change of urban spaces. Transport historical studies on cycling have initially focused on the role of infrastructures and later on the role of (cycling) cultures, in the decline of cycling. However, scholarship has underexposed how urban cycling and car mobility co-evolved through partly common infrastructures and partly interrelated meanings and capabilities. Therefore, this paper addresses the following question: How was the diminishing use of bicycles related to the surging use of the car, focusing on the city of Maastricht, in the period 1950-1980? Based on an analysis of oral history interviews with Maastricht citizens who experienced this transition themselves, combined with an analysis of written sources (i.e. historic municipal reports, year books, newspaper articles, visual material) and travel statistics, this paper sheds light on this historical transition, its key actors and main drivers. It employs a social practice-based perspectives on technology use and experience, combined with insights from studies of sociotechnical transition and models of urban obduracy.

Session Organizer:
Marc Dijk, Maastricht University
Chair:
Marc Dijk, Maastricht University

409. Citing the South: Infometrics and Open Science for Sustainable Development in the Global South
3:00 to 4:40 pm
virPrague: VR 23
Participants:
Knowledge Mapping from Open Access to Open Science: Challenges and Changes *Lei Huang, Chinese Academy of Science and Technology for Development*
Purpose: Open science is the new development of the openness of science. By the comparison of bibliometric indexes between open science and open access, this research is trying to address the policy challenge of open science based on the mapping of the knowledge development from open access to open science. Design/methodology/approach: This research adopts the knowledge mapping approach to analyse the disciplinary distribution, research content clustering and burst citation of open science and open access. It is also an analysis of the research collaboration networks that include countries and institutes in the research of open science and open access. Findings: We have found that the research of open science is flourishing by the comparison with the research of open access. The research collaboration of open science is covering more developing countries. We also found that the research of open science pays more attention to the demand for the early career researchers. However, open science still needs more concrete empirical analyses to reinforce its practical significance to respond to the challenge of policy research. Practical implications: This research

will improve the understanding of the definition of open science in policy research and practice context. Originality/value: It offers bibliometric evidence for the further policy research and practices of open science.

Pattern and Trend of Scientific Knowledge Production in North Korea *Jungwon Yoon, Hanyang University*

Since many STS research have focused on scientific knowledge generated in the Global North, distinctive patterns of knowledge production and knowledge stock in its southern counterpart have not been given in-depth academic attention. Given the context, this study particularly sheds light on current trends and patterns of North Korea's knowledge production in science and technology (S&T) by employing scientometrics and network analysis methods. While S&T have long been considered as the essence of national development in North Korea, the nature and pattern of their research and development (R&D) activities have not yet been revealed. The implementation of national S&T development plans every five years since the late 1990s has served as a way to establish a linkage between science, technology, and society in the country. In order to provide a clearer picture, this study analyzes scientific papers from the North Korean journal titled Technological Innovation as well as international journals indexed in the Web of Science database. Results found that scientific R&D has a highly pragmatic nature and is problem-solving oriented, since the focus of knowledge production activities has been deliberately placed on solving domestic issues under the S&T policy framework. While North Korea strategically embraces S&T to overcome challenges encountered in its autarkic economy and to realize aspirations to become a powerful and prosperous nation, a close and interactive relationship between science, technology and society has emerged in the country.

Indian Academia.Inc *Omkar Nadh Pattela; Sobin George, Institute for Social and Economic Change*

Corporatisation of academia is a well researched area. Several scholars from different perspectival vantage points such as Rajan's (2006) venture science, Slaughter and Lessile's (2004)academic capitalism, Estokiwitz's (2002) entrepreneurial university, Kleinman and Vallas (2001) etc have all looked at the transformation in the nature of academia and their corporatisation. This debate mainly focused on the question, 'whether the commercial transformation of academic research is a characteristic of the contemporary?'. While one side argues that nature of interaction between academia and industry is a contemporary phenomenon, the other side argues the opposite. However, much of the evidence for these arguments are based on the experiences of countries like the US. In this paper, we examine the industry-academia relationship in India and ask a similar question. Our research shows that, in the Indian context, the commercial interaction between industry and academia is not a phenomenon of the contemporary. However, our research also shows that, the nature of this commercial interaction has transformed over time. Dividing the post- independence Indian history in three different time periods, we characterise the nature of academia-industry interaction. We argue that the nature of interaction between 1947-91, which is the period after independence and before economic liberalisation is of a different kind compared to the nature of interaction after economic liberalisation. We further argue that the interaction before economic liberalisation is more of demand driven in nature while the one after liberalisation is neo-liberal in character. This neo-liberal time period is further characterised as the 'conquest of innovation' period between 1991-2015 and 'coercive innovation' period from 2015 which is still ongoing.

Session Organizer:

Julian David Cortes Sanchez, School of Management, Universidad del Rosario

Chair:

Julian David Cortes Sanchez, School of Management, Universidad del Rosario

410. Mutagenic Legacies and Future Living - Follow-up Discussion
4:40 to 6:00 pm

virPrague: VR 01

Participants:

Colonial Agricultural Interventions and Toxic Exposure in Western Kenya *Miriam Hanna Ancilla Waltz, Aarhus University*

Recent insights around porous and permeable bodies have led to increased attention to nutrition, toxic exposure and intergenerational health and the enduring inequalities shaping these, including colonial legacies. However, it is important to consider the various mutations colonial interventions have undergone since their introduction and how these may conspire to produce particular vulnerabilities to toxic exposure. My paper addresses the afterlives of colonial interventions in agriculture in the Kenyan context, and how these are tied to patterns of use and exposure to pesticides among smallholder farmers. Specifically, I will look at the introduction of the cultivation of maize as a mono-crop and the establishment of an agricultural extension service. While this type of maize production is still widespread among smallholder farmers in western Kenya, the once-prolific agricultural extension service seems virtually defunct. I argue that these differentially-evolved interventions in conjunction leave small-scale farmers exposed to agricultural pesticides, by creating a vulnerable ecology with insufficient infrastructures of protection. By closely examining the variable contemporary impact of colonial interventions this paper sheds new light on patterns of exposure and risk.

Layers of Epidemy. The Lively Residuals of Late Colonial Disease Control in 21st Century Western Kenya *Paul Wenzel Geissler, University of Oslo; Ruth Jane Prince, University of Oslo*

This paper is part of ethnographic-historical work tracing relations, across time, between past epidemics, chemical interventions and pharmaceutical treatments, mutations of pathogens and host bodies, environmental change and emerging disease, in a part of Kenya, that since colonial occupation endured a succession of epidemics and disease control interventions. In early 2020, just as experimental Universal Health Coverage exposes the health system's utter fragility, international global health experts speculate whether the imminent landfall of Covid-19 will produce a public health catastrophe, due to the area's high HIV prevalence, or whether antiretroviral drugs actually might offer some protection against the new virus. Covid-19 arrives just as Western Kenya, once an epicentre of the HIV epidemic and of HIV research, care and treatment, experiences the «end of HIV», of sorts. One fifth of the population remains infected, but foreign-funded drugs suspend death and suffering, and once omnipresent transnational HIV-intervention infrastructures are fading from view. As HIV-positivity turns, for now, into a chronic condition, a cancer epidemic is becoming visible, accentuated by growing availability of diagnostic technology and some (if usually partial) treatment options. This new epidemic, presumably also driven by HIV infections and drugs, exhausts bodies and families' resources, raising questions of justice and causality. In the absence of epidemiological data, local conversations link apparently rising cancer rates to the mid-20th century use of DDT against epidemics of sleeping sickness, river blindness, and endemic malaria - spraying bush, saturating watercourses, impregnating the walls of houses – and the subsequent trials and mass-distribution of insecticide-treated bed nets. Our paper follows these speculations about pesticide-induced tumour-growth that link an emergent epidemic of chronic disease to the toxic residuals of eradicated tropical infections. In doing so, we trace the enduring remains of epidemic control: toxic residuals and memories, altered landscapes and now ruined infrastructures – substantiating, if not (yet) in epidemiological terms, material connections between successive epidemics and interventions.

Session Organizer:

Miriam Hanna Ancilla Waltz, Aarhus University

Chair:

Noemi Tousignant, University College London

Discussant:

Thomas Widger, Durham University

411. SUBPLENARY: Sustainable Academy
6:00 to 7:40 pm
virPrague: VR 00

Sustainable development was defined by the Brundtland commission as efforts to meet the needs of the present without compromising the ability of future generations to meet their own needs. In line with this understanding, it is important to apply a comprehensive approach to the challenges involved in developing a sustainable academy. First, clearly, the growing focus on global warming and other environmental concerns has forced institutions of research and higher education to address their own climate footprints and environmental impact. Second, universities and other institutions of research and higher education have come under increasing pressure to economise their resources in ways that threaten their relative autonomy as well as the working conditions of faculty and students, leading to increased precarity and job insecurity. This threatens the sustainability of academic institutions. Third, these institutions may play a vital role in providing knowledge and assessments that are needed in the sustainability transitions that are called for in wider society. The Covid-19 pandemic led to a shut-down of universities and institutes in many places, which resulted in a replacement of physical with digital interaction in teaching and research. Moreover, the effects of the pandemic have also disclosed serious problems regarding economic sustainability of universities and future employment of graduates. The recent surge of protest against racism serves as a reminder that diversity remains a challenge to academic institutions and their sustainability in the broad sense of the concept. Presently, we face a re-opening of academic institutions that seems guided by much uncertainty and anxiety. Experiences from the shut-down and the slow re-opening provide a window for critical engagement with academic institutions and practices. In this sub-panel, we shall explore and discuss the needs and options for making academia more sustainable in the multiple meanings outlined above. This includes reflecting about how the different dimensions of a sustainable academy should be balanced. Thus, the sub-panel invites participants to consider the interaction between these multiple meanings and what this means for strategies for a sustainable academy.

Session Organizer:
Tereza Stockelova, Institute of Sociology of the Czech Academy of Sciences

Chair:
Knut H Sørensen, NTNU Norwegian University of Science and Technology

Discussants:
Maria do Mar Pereira, University of Warwick
Sharon Traweek, UCLA
Harro van Lente, Maastricht University

412. New Technologies of Risk: Bioeconomies of Prediction and Therapeutic Prevention
6:00 to 7:40 pm
virPrague: VR 01

Health is now elusive. According to biomedical standards, we are instead likely living at risk for disease. Further, we may be diagnosed with a "pre-disease" or labeled among the "most at risk," be it for HIV, diabetes, heart disease, or types of cancer. To avoid disease itself, we submit to medical interventions at the advice of not just doctors, but now also public health officials who sometimes not so jokingly joke about putting the first-line diabetes drug Metformin or statins to reduce cholesterol into our water supply. People of diverse genders and sexualities, labeled "at high risk," are prescribed HIV medicines to minimize their risk of contracting disease. Risk reducing mastectomies are recommended for carriers of the BRCA1/2 gene mutations. Indeed, new biomedical technologies, including screening algorithms and risk scores, genetic tests for predisposition, and an array of "drugs for life" are shifting understandings of population-level prevention and the right to health globally. These technologies not only animate new subjectivities and inequalities among the "almost ill," but also index growing economies centered on research, development, marketing, and intellectual property that increasingly extend to low- and middle-income country contexts. This panel seeks to bring together papers that explore the political economy driving new technologies of risk and their implications for publics across contexts, for health governance, equity and activism, and for how we understand health and prevent disease. To encourage comparative perspectives and an analysis of these technologies with global reach, contributions from non-Western countries and the Global South are particularly welcome.

Participants:

PrEP Science and the Emergence of Queer Risk Data as a Material Commodity *Amaya Perez-Brumer, University of Toronto, Dalla Lana School of Public Health*

Unique to the 4th decade of the HIV epidemic, the emergence of therapeutic technologies (i.e., pre-exposure prophylaxis [PrEP]) has fueled a marketplace targeting not just people considered to be at-risk for HIV, but rather those recategorized as the most at-risk. The emphasis on enumerative evidence to assess certain risk profiles and extract data from the most-at risk has deeply implicated people categorized as MSM and transgender women, making queer risk data a new material commodity that is traded on the contemporary global HIV biomedical marketplace. Peru has been the leading offshore site globally to test PrEP among people categorized as MSM and transgender women and, thus, offers a particularly useful vantage point to explore the rise of HIV therapeutic technologies and the relationship to colonial practices of producing and the material implications of capitalizing on queer risk data. Drawing on 24-months of ethnographic fieldwork, this paper traces how Peruvian and American scientists mobilize queer risk data as a commodity. I show that the construction of queer risk data is a relational and subjective process that flattens sexual and gender diversity into categories devoid of cultural and social context, obscuring the historical and sociopolitical dynamics of HIV risk. Justified through scientific pursuits for technological innovation, contextual injustices that pattern HIV vulnerability are inscribed onto biomedical identity categories and queer risk data itself, rendering structural solutions to prevent HIV inactionable.

Saving Your (Statistical) Life: Genetic Counseling and the Politics of Previval *Shannon Cram, University of Washington Bothell*

In 2000, the non-profit organization FORCE (Facing Our Risk of Cancer Empowered) coined the term previvor: a person who survives their predisposition to disease. Previving an illness that has not yet materialized may require eliminating one's riskier parts, performing surgery on a healthy body before it gets sick. An individual with the BRCA (breast cancer) mutation, for example, must decide whether to remove their breasts and ovaries in order to save their statistical life. BRCA previvors are often encouraged to consider the costs and benefits of their bodies—to act rationally in the face of carcinogenic probabilities. Drawing upon ethnographic research in genetic counseling offices and BRCA support groups for women under 40, this paper asks: how does one survive the probability of their death? And what kind of life does anticipating death make possible? As both a breast cancer survivor and BRCA mutant myself, this paper also engages my own ambivalence about the statistical logics and surgical interventions that saved me. I argue that, as previvorship attends to the individualized body at risk, it fails to address the broader structural conditions of disease.

Under Surveillance or Early Intervention: How Institutional Practices Steer the Biomedicalization of Psychosis *Michael Halpin, Dalhousie University*

Theories of medicalization and biomedicalization detail how science and technology are shaping health and illness. However, these theories do not articulate how existing health systems, standards, and infrastructures might influence and direct (bio)medicalizing processes. This paper explains how existing institutional practices and logics steer (bio)medicalization through an examination of prodromal psychosis treatment programs. Prodromal psychosis is an emerging mental health category for people who are at seen as being at "ultra-high risk" for developing a psychotic condition (e.g., schizophrenia). Despite their "risk," these individuals do not have and might never develop a psychotic disorder. The concept of prodromal psychosis is based in neuroscientific research, which argues that psychotic conditions are brain diseases that develop over the life course. This paper draws on 30 in-depth interviews with the complete staff at two prodromal psychosis programs, one in Canada and the other in the United States. At the Canadian clinic, I demonstrate how the (bio)medicalization of psychosis is guided by an institutional logic of surveillance, with health professionals observing "at risk" individuals in anticipation that they develop a

psychotic disorder. At the American clinic, I explain how the (bio)medicalization of psychosis is guided by an institutional logic of intervention, with "at risk" individuals receiving psychiatric treatment before they meet the criteria for a diagnosable disorder. The paper discusses how (bio)medicalization processes are path dependent, with these processes steered and constrained by existing health standards, institutions, and practices.

A tale of two technologies: Making diabetes risk knowable in Mexico *Emily Vasquez, Columbia University*

Set against Mexico's intertwined epidemics of diabetes and obesity, this paper explores the politics of prevention policymaking in this context through a comparison of two technologies developed over the same period to make chronic disease risk knowable to individuals. The first is a cutting-edge genetic test for diabetes predisposition, developed under the purview of Mexico's wealthiest entrepreneur turned health philanthropist, Carlos Slim. Purportedly tailored to "Mexican and Latin American" DNA, the test was developed with the intention of making the advances of genomic medicine relevant to the region. Its broad uptake through Mexico's national public health system has been aggressively promoted to policymakers through Carlos Slim's philanthropic foundation and its partners. The second technology is the nation's embattled nutrition label, intended to warn consumers about the risks contained especially in process foods. While Mexico's nutrition label long misrepresented internationally accepted standards for sugar consumption, after years of protest by health activists—with vehement opposition by the food and beverage industry and its allies within federal agencies—this official nutrition label was finally re-designed in 2020 to more effectively communicate to consumers the risks posed by processed foods. Comparison across the social histories of these two technologies offers insight into the political economy underpinning prevention efforts and its consequences for the types of risk knowledge made readily available to the Mexican public. While knowledge about embodied risk—surfaced from the biological (often molecular) depths of Mexican bodies—is increasingly available, meaningful understanding of environmental risks is often forcefully repressed.

Session Organizers:
Emily Vasquez, Columbia University
Amaya Perez-Brumer, University of Toronto, Dalla Lana School of Public Health

Chair:
Emily Vasquez, Columbia University

413. Nocebos, Nocebo Studies, and STS: Meaning-Making and Recalcitrance
6:00 to 7:40 pm
virPrague: VR 02

Nocebos, described by some as placebo's evil twin, are unwelcome yet inextricable elements of medical treatment. In the mid-twentieth century, practices of informed consent were eliciting such pervasive adverse effects that researchers coined the term "Nocebo Effect" to render such impacts recognizable. Rather than anticipations of healing, the nocebo effect expresses expectations of harm—like side effects that emerge even when patients or trial participants receive placebos. While they are rarely familiar to the broader public, nocebo effects are intimately part of the array of interactions with which individuals relate to biomedicine. Nocebos point to the porous lines between bodies and epistemologies and between clinics and daily lives; as experiments in the burgeoning field of Nocebo Studies suggest, learning one's genetic predispositions for disease or encountering media coverage of a generic drug's ineffectiveness contribute to negative outcomes. Nocebos dramatize a liveliness that Isabelle Stengers and Vincianne Despret describe as "recalcitrance." At odds with bifurcating logics that keep "matter" and "meaning" apart, nocebos animate a kind of meaning-making that is palpable, involuntary, and unwanted. This panel seeks to contribute to STS by exploring how nocebos and Nocebo Studies draw attention to the ontological choreography of biomedicine, such as the assemblages, practices or relations that constitute medical treatment and research. We welcome papers that examine the import of nocebos—broadly construed—for resistance to the norms and curative ambitions of medical treatment. And we invite presenters to make use of creative or new

methodologies for identifying, interpreting and making sense of nocebo effects.

Participants:

Cures, Harms & Medical Authority: Animating Side-Effects As Modes Of Resistance In Hepatitis C-Treatments *Lisa Lehner, Cornell University*

In my paper, I will critically engage with one key aspect in the relation of nocebos/placebos and the curative ideology of Western biomedicine: the side-effects and long-term effects of medications. Understanding placebos as a mark of medical authority in the sense elaborated by Despret (2004) - as doing "everything possible to make whatever this [authority] says be true" -, I develop nocebos, or the animation of harm, as a form of resistance to that authority. In this vein, I reflect on side-effects as unexpected modes of resistance made meaningful at the body/mind interface. During eighteen months of ethnographic research in Austria, I accompanied the introduction of a new "miracle cure" against Hepatitis C. Promising cure rates of up to 99% with little to no side-effects, direct-acting antiviral drugs upended the treatment landscape and lived realities of patients with chronic liver infections previously deemed incurable. I use this case of curative success to reflect critically on what curing means, how its boundaries are articulated, and who gets a say in negotiating what is real/imagined. I discuss the lived experiences of curing, its side-effects and long-term effects, to understand how cures come into being beyond the seemingly final authority of the bio-chemical. I take moments of "recalcitrance" - where the cure and its ideological finality are called into question - as making perceptible the "invisible work" invested by patients into curing defiant ills (Despret 2016). More so, I explore moments where patients and patient groups leverage continued suffering as a (silent) political act.

Effects of Placebo Effect: Anthropology evidences by interviewing participants during a clinical trial *Mário Eugênio Saretta Poglia*

The placebo effect is an obligatory passage point required to understand rationality and development of randomized clinical trials. Attempts to delimit it as a concept require a definition of biosocial borders, which involves claiming an ontological privilege to establish it as the analytical vector of therapeutic rationality. In this paper, I will present results of my dissertation in social anthropology in which I did an ethnographic research at a teaching hospital in Brazil to observe a randomized clinical trial in which participants with a fibromyalgia diagnosis tested a new neuromodulation device in their sham (placebo) and active versions. I will explore the effects of the placebo effect by examining notions of body, mind, and reality through qualitative interviews conducted with trial participants. Inspired by Bruno Latour, Isabelle Stengers and Vincianne Despret studies, I will argue that measurement devices are able to affect the body and that imaginary may be a way to investigate how the body may be affected even if it is not considered in the clinical trials quantitative results that establish the superiority over placebo effect as the only way to define the therapeutic reality of any treatment. This paper contributes to STS studies because it opens in to question the claiming of an ontological privilege by biomedicine. In this way, I'll present that there are ontological interventions when biomedicine designed expectations as an unreal our illegitimate effect.

Negativity and Nocebos: Currents of Responsibility and Blame in Placebo Studies *Phoebe Friesen, McGill University*

Empirical evidence regarding the power of the placebo effect is piling up. Prominent labs around the world have tasked themselves with offering proof of the reality of this phenomenon, using randomized controlled trials and neuroscientific tools to demonstrate that patient expectations, practitioner warmth and empathy, and beliefs in mind-body healing can impact clinical outcomes. While the growth of placebo studies is producing many ripple effects, one implication of these developments is the identification of novel pathways of responsibility and blame. Interrogating the currents that followed the rise of positive psychology in the 1990s, this paper explores the ways in which optimism, responsibility, and blame became entangled in the field and how these narratives are at risk of being replicated

within placebo studies today. As 'mindsets' and 'optimism' are increasingly taken up as objects of study within placebo research, a classification system naturally presents itself, dividing patients into positive, placebo responders and negative, nocebo responders. This focus on the individual, cognitive processes underlying placebo responses also suggests clear lines of responsibility and blame for those experiencing nocebo rather than placebo effects. Such a focus obscures historical and structural forces that may contribute to distrust and pessimism within medical encounters, rewarding patients who have found medical systems familiar and easy to navigate, while further stereotyping those who struggle within them. An alternative explanation for nocebo responses, which complicates and contextualizes 'mindsets', is offered, in hopes of bringing additional routes of causation into the picture.

Nocebos and the Recalcitrance of Affect *Ada Jaarsma, Mount Royal University*

How do nocebos kick back against biomedicine? This phrase kicking back, popularized by Karen Barad and taken up by many STS scholars, refers to a certain recalcitrance that matter or materiality manifests. The world kicks back, Barad declares, proffering resources for redressing the harms wrought in the name of science (1998, 112). Recalcitrance, a key concept in science studies, has yet to be explored in relation to Nocebo Studies. In this presentation, I turn to Isabelle Stengers, arguably the leading philosopher of recalcitrance, in order to focus on one subfield within nocebo research—namely, the role of affect in medical treatment. Emerging empirical evidence about how affect can solicit nocebo effects raises questions about the entanglement of race, social inequities, and harms arising from medical treatment (Friesen and Blease 2018). Attention to affect, in the context of nocebo studies, invites concrete scrutiny into relational practices that seem to draw out nocebo effects. As Stengers points out, "in most cases, a 'fact' is not in and of itself so talkative" (165). Just as new "facts" about nocebos make inequities in biomedicine more recognizable, they also invite reflection on the practices deployed to identify, study, and render talkative an array of affects—including the attachments of researchers themselves. Barad, Karen. 1998. "Getting Real," Differences 10(2): 87-128. Friesen, Phoebe and Charlotte Blease. 2018. "Placebo Effects and Racial and Ethnic Health Disparities," Journal of Medical Ethics 44(11): 774. Stengers, Isabelle. 1997. Power and Invention. Minneapolis: University of Minnesota Press.

Session Organizers:
Suze Berkhout, University of Toronto
Ada Jaarsma, Mount Royal University
Chair:
Suze Berkhout, University of Toronto
Discussant:
Khadija Coxon, Khadija Coxon

414. Holding it Together? Data and Disasters
6:00 to 7:40 pm
virPrague: VR 03
Participants:

Civic Data for the Anthropocene: Visualizing Taiwan's Formosa Plastics *Tim Schuetz, UC Irvine*

In October 2019, Taiwanese petrochemical company Formosa Plastics agreed to pay a record settlement of $50 million for their release of plastic pellets into Lavaca Bay and Cox Creek in Texas. The settlement was achieved by a group of activists that made extensive use of "citizen science" (TRLA 2019). In Louisiana – in the petrochemical corridor known as "death alley" – environmental justice groups working in the spirit of "bucket brigades" are challenging the opening of a new Formosa Plastics Plant (Mosbrucker 2019). And in Kaohsiung, following an explosion at a Formosa-owned naphtha cracking facility, Taiwanese citizens have pushed back against the expansion of the company and argued for advanced data collection (Tu 2019). In all three cases here, civic data work has been a key tactic in responding to petrochemical disasters, fast and slow (Nixon 2011; Knowles 2019). Activists in these three cases also recognize the need to build infrastructures for connecting their sites and cases. In this presentation, I will draw on interviews with activists US and Taiwan to begin imagining what civic data practices and infrastructure are needed to support response to Formosa going forward. Members of the audience will be asked to help sketch this out, helping move the "informating of environmentalism" (Fortun 2004) forward, tuned to the Anthropocene. The Formosa project extends from and contributes to two collaborative projects, one focused on knowledge infrastructures for "Quotidian Anthropocenes" and another focused on "Visualizing Toxic Places".

From living the disaster to becoming a dataset: untangling science's tentacles *Ben Epstein, UCL*

For the person who witnesses a disaster, the experience is real and lived, but are psychological tools really able to grasp such experiences? Mental health and psychosocial support is an important aspect of post-disaster recovery. Medical professionals must negotiate tensions between distancing quantitative technologies — applying structured diagnostic instruments — and the primacy of lived experience. Tensions exist between the need for the medical professional to represent experience as data and the lived experience itself, which cannot be entirely constructed via representation. This reveals how science and technology constructs analytical categories that are at once black-boxed and also florid. Since methods could be said to enact realities as well as describing them (Law 2009), treating knowledge practices involved in disaster mental health as performative of the categories themselves may help us to see what it is that methods and interventions actually do, and only then whether or not that is desirable and by whom? Together, we will examine various instruments deployed and field-tested during the Great East Japan Earthquake and tsunami and nuclear disaster. Identifying gaps in the picture drawn by statistical evidence, by focusing on the material dimensions of medical systems, can help us to better understand how illness states become generated through structural conditions and social context. We shall also consider how practitioners translate or render subjective experiences into a set of measurable data points, comparable on a scale. What kinds of entities are deemed comparable and what is the effect of such commensurations on populations themselves?

Monitoring Radiation in Fukushima: (Re)Constructing The Invisible *Louise Elstow, Lancaster University*

Whilst most people could reasonably be expected to know the range of temperatures experienced in their local environment, few may have cause to have that same kind of intimate knowledge about their radioactive environment. Drawing on fieldwork from Fukushima in Japan, an area affected by nuclear contamination in 2011 following a meltdown at Dai'ichi Power Plant, I explore some of the ways by which residents and government authorities are seeking to make radiation visible and invisible (Kuchinskaya, 2014). One of the most popular ways of visualising radiation is via the production of map/pings. Different radioactive realities are produced by the different methods and devices used during these endeavours. Representing the data in a visual manner requires further decisions introducing yet more politics of scientific knowledge production (Starr, 1995). Presented in two parts, I start by providing a short introduction to the topic of radiation monitoring in Fukushima. Participants will then be engaged in producing their own radiation map of the local area using radiation monitoring equipment, to answer the question: How much radiation is there around here now? During data gathering groups may have to make decisions about where to record data, how many data points to get, where is important to monitor and how to use the device. Making a visual representation require further decisions during data translation. This will contribute to debates in STS about the production of scientific knowledge as a situated, social and complex practice, part of a wider ecology of living in a radioactive aftermath.

Session Organizer:
Louise Elstow, Lancaster University
Chair:
Louise Elstow, Lancaster University

415. Doing Arts and Design: Knowledge Making, Methods, and Public Deliberation
6:00 to 7:40 pm
virPrague: VR 04
Alluding to the 'end of the cognitive empire' (De Sousa Santos), this open panel focuses on how alternative ways of knowing are practiced in a variety of disciplinary, cultural, regional and historical contexts. In the humanities and social sciences mainstream research cultures are increasingly supplemented or amended by alternative epistemologies, questioning the dominance of propositional forms of knowing. In line with the agenda of this conference, these alternative 'knowing spaces' (Law) share an interest in the constitutive role of practices and things, in participatory and collaborative experiments that engage with matters of public concern, and in inclusivity with regard to the agencies and voices of the people involved in the generation of knowledge and understanding. What do 'knowledge' and 'discursivity' mean in these enhanced and performative epistemic cultures? And what consequences does this entail for the way people document, share and disseminate research? Through this open panel, we hope to advance these fundamental questions by tracing and discussing concrete knowledge practices and how they stabilize over time - or not - in research fields and traditions, ranging from visual ethnography and artistic research to the history of knowledge and 4E-cognitive sciences. We invite papers touching upon one or more approaches, including but not limited to re-enactment and reconstruction, citizen science and 'epistemologies of the South', co-creation and artistic work, enactivism and activism, with a focus on how knowledge and understanding are generated, stabilized and shared in these fields of investigation.

Participants:

Learning to be a Good Idiot: Not-knowing in Collaborative Classical Music Experiments *Veerle Spronck, Maastricht University; Denise Petzold, Maastricht University; Benschop Ruth, Zuyd University of Applied Sciences*

In the interdisciplinary Maastricht Centre of the Innovation of Classical Music (MCICM), academic and artistic researchers collaborate with the South Netherlands Philharmonic to innovate classical music in artistically relevant ways. This research includes (interventionist) participant observations and the organisation of collaborative experiments in the orchestra's practice. In STS, many studies have emphasised the benefits and problems of knowing differently in interdisciplinary interventionist research projects, thereby asking how to successfully combine these different knowledges. Our collaboration results in situations in which all present sometimes feel like laymen, strangers, amateurs, or fools. However, we see this experience not as something that should be overcome, but welcomed, expected and pursued. We wonder: How to make our mutual not-knowing productive? Drawing on Stengers' figure of the idiot (2005), we explore how agnosticism can stimulate fundamental and uncomfortable learning both on the practices studied and on the research approach. In this paper, we present collaborative work in which we experimented methodologically with the idiot position. What does it take to become (and remain) an idiot? What kind of embodied skills are involved? How to stage and perform idiocy? What is the value of not-knowing? How does learning happen? We will focus on a conference session we organised in the MCICM in which both researchers and classical music professionals participated. In this session we aimed to produce, stage and collaboratively articulate the position of the idiot. We will reflect on what these explorations taught us about music, methodology, and idiocy.

Art's Work in the Age of Biotechnology: STS and Art in Practice *Hannah Rogers, Science, Technology and Innovation Studies, The University of Edinburgh; Elizabeth Pitts, University of Pittsburgh*

STS and art are becoming intertwined, as evidenced by the increasing numbers of STS events involving artists and STS scholars facilitating and curating exhibitions. Although these efforts have tended to position artworks as objects of analysis, a growing number of scholars are interested in "working with artists and designers instead of making studies of them … to develop an emergent form of critique, which could allow novel discussions and explorations of sociotechnical complexity, and perhaps bring something new into being" (Calvert & Schyfter,

2017, p. 212). Building on this work, our paper contrasts two iterations of the same exhibition to reflect on the kinds of alternative knowing spaces that artists, scientists, and STS scholars can create together. The first iteration of Art's Work in the Age of Biotechnology: Shaping Our Genetic Futures included a program, symposium, and major exhibition that took place in 2019-2020 at North Carolina State University and the North Carolina Museum of Art. The second will take place next year at the University of Pittsburgh to help launch undergraduate and graduate studies in public communication of science and technology. The presenters, who serve as 1) exhibition curator and 2) director of the Art's Work program at the University of Pittsburgh, will compare the rationales guiding each iteration and discuss specific artworks in terms of the ideas they bring forward, the theories that might be used to make sense of them, and the possibilities they open up for public deliberation, public communication, and alternative forms of scholarship.

Orchestral cognition in the wild: symphonic rehearsals as musical knowing spaces *Peter Peters, Faculty of Arts and Social Sciences, Maastricht University, Maastricht, the Netherlands*

In a famous essay published in 1951, phenomenologist Alfred Schütz argued that our understanding of musical performance should play down the importance of notations and the cognitive operations involved in turning them into sounds. Making music together, Schütz wrote, requires a communicative situation that synchronizes individual experiences into a shared vivid present. This claim resonates in recent research in music psychology and music ethnography on joint musical performance, which focuses on phenomenological, embodied, and enactive approaches of cognition. The interactions of expert musicians are not reducible to processes and structures 'in the head', as Schiavio & Høffding (2015) argue. Typically, however, these studies do not distinguish between performance before an audience or during rehearsals. This distinction is relevant if we want to reflect on how music rehearsals are idiosyncratic situations where various types of knowledge are mobilized, shared, and put to the test in creative anticipation of the actual performance. In my paper, I will present ethnographic field work on the weekly rehearsals of a large, regional symphony orchestra in the Netherlands. I argue that a conceptual and empirical understanding of these rehearsals as musical knowing spaces can contribute to the debate on innovation of classical music, as well as broader debates on artistic research and its dialogues with STS research on alternative epistemologies.

Session Organizer:
Peter Peters, Faculty of Arts and Social Sciences, Maastricht University, Maastricht, the Netherlands
Chair:
Sven Dupré, Department of History and Art History, Utrecht University, Utrecht, The Netherlands
Discussant:
Henk Borgdorff, Leiden University

416. Peripheral States: Public Uses and Misuses of Big Data Technologies
6:00 to 7:40 pm
virPrague: VR 05
In September 2019, an 18-gigabit database was found stored in an unsecured server in Miami containing about fifty data points of private and some very sensitive information on every Ecuadorian citizen. As the growing list of private data leaks (Facebook, Cambridge Analytica, etc.), the Ecuadorian episode launch the alarms, but nothing indicates real changes in the near future. Though, there is a feature in the Ecuadorian case that opens a new range of questions on the problems and risk of the rise of the big data technologies. Unlike other similar massive leaks of information, the data exposed in this case was collected by different public agencies whose objectives and technological capacities are now in doubt. For the last ten years, governments, especially in peripheral states have followed the technological path imposed by the giants of the new digital economy without having the time of reflecting and regulate the side effects of the production and accumulation of such amount of private and sensitive information. Moreover, many of them has fallen in the temptation of

building (buying) mass surveillance systems to better control their citizens without having a real control over the technology they are using. This open panel aims to bring together scholars from different parts of the world to discuss the paths and approach governments from south and north are following in the adoption of big data technologies, their uses and misuses.

Participants:

Examining the role of big data in smart city management: unpacking the public transport data dispositif in Santiago de Chile *Ignacio J Perez, University of Oxford*

Over the last years, the concept of smart cities has been positioned widely on the global urban agenda through both discourses and practices. An important part of this agenda has been related to the development of big data applications in cities. Yet, it is still unclear how data-intensive smart city projects are redefining the future of cities, as the pure fact of accumulating more detailed, granular and real-time data does not reveal if and how the resulting data is shaping urban decision-making processes. Drawing in Michel Foucault's (1977) concept of dispositif, I analyse the role of big data in the public transport in Santiago de Chile; focusing in the discourses, practices and governing techniques supporting big data circulation and how these elements are related to decision-making processes in Santiago, and potentially to smart experimentation. Using an ethnographic approach, I seek to describe and analyse the big data dispositif unpacking the governing practices and techniques in the form of: organisational restructuring, developments (ie. software), legal arrangements and controversies (ie. privacy/ownership), technical frameworks, contracts, indicators, strategic configurations, amongst other supporting practices/governing techniques within this complex data enriched iconic city infrastructure. In sum, by analysing the cases of the Metropolitan Transport Board and the Traffic Control Unit, I will be reflecting in how big data dispositifs are useful analytical tools to appreciate the decision-making challenges and requirements for an experimental urban governance in Santiago de Chile.

The Technological Infrastructure Trajectory of SRI: A Socio-Technical Approach *María Belén Albornoz, FLACSO Latin American Social Studies Faculty*

It has become common practice for policy-makers, institutional managers, and consultants to look instrumentally at successful technological practices to include them intro their local policy design. Over the past two decades, the use of big data by government institutions in Ecuador has increased significantly creating new opportunities and barriers for citizens. This paper aims to make visible the role technology plays in the policy instrument selection of the tax evasion policy, and how policy-makers and bureaucrats relay on technological solutions as the best alternative to solve policy problems. From a socio-technical approach, I follow the development of the technological infrastructure of the Ecuadorian Internal Revenue Service (IRS) in order to comprehend how technology and data are used by a government institution. This note explains how technology becomes a framing device through which policy efficiency can be achieved. Therefore, technology turns into the pivotal condition to modernize institutions and to provide better services. Using STS lenses, I challenge this technological determinism to show how the technology paradigm does not consider the Ecuadorian digital gap and threatens citizens' rights. In this context, I explore how political and technological orders are intertwined in the decision-making process, and how political solutions can be imposed on the technological infrastructure.

Big data technologies and the Public sector: a bibliometric analysis *Henry Chavez, Pontificia Universidad Católica del Ecuador / CTS-Lab FLACSO / Divergence*

A bibliometric analysis of the publications containing the keyword "big data" in the Scopus database shows the emergence of this phenomenon as a scientific object around 2010. In only 8 years (from 2011 to 2019) the annual publications on this topic (in all areas and disciplines) increased from 90 to 16 000. China (17,700) and the United States (15,700) lead the scientific production on the topic. Latin America register around 1,400 publications. Most of these production is related to fields such as science, engineering and mathematics. Other fields represents just 10% of these publications. Within the social science contributions, despite the importance that big data has acquired in recent years, there is a deficit in academic production regarding the role and effects that it has on the State's decision-making processes, on the design of public policy instruments, and on its relations with other sectors of society. This paper will present a bibliometric analysis of the scientific publications on big data technologies and public sector and policies in peripheral context and its relations to the developed countries. Its aim is to identify the main networks, subjects, trends and institutions focusing on these subjects around the world.

Penetration of big data in the Ecuadorian public sector through an extended United Nations e Government Development Index *Fernando Martin Mayoral, FLACSO Ecuador*

The use of big data poses different challenges to public and private institutions related to governance, analytics, infrastructure or data security, but also to its potential applications to provide more efficient services and respond more quickly and accurately to the needs of citizens. The objective of this research is to analyze the degree of penetration of big data in the Ecuadorian public sector, taking into account all these dimensions. From the population's point of view, it is also important to know their capacity to interact with public institutions, both as providers of data and as recipients of public policies implemented through big data. To this end, the United Nations Development and Government Index (EDGI) will be used as a starting point. The EDGI incorporates three indicators (Telecommunications, Human Capital and Online Services), the first two focused on understanding the population's capacity to absorb the big data and the third one, which collects information on the technical characteristics and services provided by the public sector related to social benefits, employment and the environment through its web portals. These indicators will be complemented by a new dimension that will capture the physical and human capacity of government institutions related to collection, management and use of big data. The methodology proposed will be qualitative, based on semi-structured interviews with the directors of the government's ICTS units. The data will be analyzed through a thematic content analysis, looking for obtaining indicators and inferences from the content identified (expressed and latent) by the interviewees. Our main hypothesis is that Ecuador has is capacity to collect and store big data but the level of governance, analysis and application is still incipient in Ecuador.

The big data academic community in Ecuador. An explanation from network analysis and interpretive flexibility *Fernando Herrera, Escuela Politécnica Nacional; Anderson Castro, FLACSO Ecuador; Isarelis Pérez P. Ones, FLACSO - Ecuador*

Ecuador shows a notable increase in scientific production on big data registered in the Scopus database. Between 2012 and 2020 there are 119 articles that correspond to 265 Ecuadorian authors. If the number of publications per capita is measured, the country ranks third in Latin America, preceded only by Uruguay and Chile. This article aims to explain the reasons that account for this important number of publications. It is interesting to know if there is an academic community on big data and the role played by public or private demand for big data and the public policy of postgraduate scholarships abroad, implemented in recent years, which privileged converging technologies. To do this, the characteristics of these authors and their scientific production processes are investigated: origin and institutional affiliation, their academic profiles and the mechanisms through which they register their topics in specific research agendas, produce scientific articles and select spaces for publication. Finally, it is intended to corroborate the existence of interpretative flexibility on the notion of big data among these authors. In this sense, research is limited to the perspective of the social construction of technology, which is combined with the analysis of networks that allows the identification and characterization of the network from the quantitative analysis that involves the technique of graphs.

Session Organizers:

Henry Chavez, Pontificia Universidad Católica del Ecuador / CTS-Lab FLACSO / Divergence

María Belén Albornoz, FLACSO Latin American Social Studies Faculty

Chair:

María Belén Albornoz, FLACSO Latin American Social Studies Faculty

417. Teaching interdependent agency III: Feminist STS approaches to STEM pedagogy

6:00 to 7:40 pm
virPrague: VR 06

The 3rd of 3, this panel discussion of STEM graduate training brings together insights from feminist theory with social studies of science to address deep bias in scientific research to suggest methods and frameworks that produce more accountable, accurate and responsible scientific research. This panel is interested in talking about how feminist STS (fSTS) scholars are using, or exploring the use of, the critique of objectivity to address biases in science. How are we engaging with STEM graduate education to teach a more nuanced "situatedness" (Haraway 1988) in culture and history to produce more responsible and accountable science? Research in STEM education suggests that integrating socio-cultural context and communal values into STEM education can increase recruitment and retention of women, under-represented minorities (URMs), and first-generation students in STEM. Building on the contributions of Jenny Reardon, Karen Barad, and Banu Subramaniam's to feminist approaches to STEM pedagogy, this panel invites papers addressing how feminist STS can move STEM graduates toward greater engagement with social justice, as well as deep collaboration with social sciences and humanities. What sort of curricular changes could lead to a transformation of STEM research and the diversity of researchers conducting it? How can STS scholars use pedagogy to empower STEM researchers to be agents of social transformation even in the face of anti-science discourse, and anti-women, racist, anti-trans and anti-LGBTQ cultural politics?

Participants:

Classrooms as Safe and Autonomous Spaces: The Feminist Data Manifest-No and Student Rights of Refusal *Tonia Sutherland, University of Hawai'i at Mānoa*

In a world suffused with corporatized, militarized "big data" practices and exploitative, extractive artificial intelligence systems, how might we reimagine data practices and pedagogies that are aligned with intersectional feminist processes? How might we de-center data methods that privilege corporate, academic, and engineering interests to center vulnerable populations and community needs? How might these re-centered methods be mobilized as pedagogical strategies? The Feminist Data Manifest-No is a collaboratively authored set of principles, created by the Feminist Data Workshop in the summer of 2019. It offers a set of declarations and commitments, refusing harmful data regimes, reimagining and working towards reforming and remaking new data futures. This presentation takes up elements of the Black feminist notion of "safe spaces" to consider the possibilities inherent in refusal and commitment, as exemplified in the Manifest-No. Interrogating refusal and consent from a pedagogical perspective, the author reports on a resource-poor institution's commitment to teaching STEM knowledge in a manner that required students to utilize unverified technologies on personal devices and participate in social media with personal accounts. The presentations considers—through a critical Black feminist lens—efforts at increasing technological savvy in communities perceived as vulnerable, measured against student refusal to use personal data for classroom assignments. How can the invocation of safe (and autonomous) spaces, uniquely crafted around the freedom to openly address issues of oppression, be valued as a pedagogical refusal in a time when STEM education and knowledge is core to a broader commitment to protect vulnerable communities from data harm?

Greased Objects: How Concept Maintenance Undermines Feminist Pedagogy and Those Who Teach It in Computer Science *Audrey Beard, Rensselaer Polytechnic Institute; James Malazita, Rensselaer Polytechnic Institute*

This talk will document the challenges to STEM graduate student research and quality of life in attempts to bring feminist STS into Computer Science graduate research. We introduce the concept of "greased" objects--epistemic objects that, through maintenance practices by CS faculty, were made slippery to combat the possibilities of sustained political engagement in the classroom and in research. Greased objects included CS concepts such as "abstraction," the domains of computer science research and education, and constructions of "who counts" as a Computer Scientist. Perhaps unsurprisingly, whenever feminist STS was brought to bear upon CS epistemic objects, those objects were greased in ways that prevented critiques from sticking to them. This talk will also focus on Beard's experiences as a CS graduate student integrating STS into her teaching and research plans. These efforts were consistently met with resistance from her CS faculty advisors, as they maintained the system of "apolitical" research practices by articulating the object of "legitimate" CS research to be oppositional to Beard's research. CS objects were not internally consistent, except in that they were greased to be "not" related to whatever particular feminist or critical questions Beard was pursuing. In this iterative redefinition process, the field itself was made cold, oppositional, and inaccessible to her. STEM graduate students face interpersonal risks when applying feminist perspectives to their research and education, including running the risk of being "greased" out of STEM. Thus, feminist STEM graduate education must also include robust infrastrucutres of care and support outside of the classroom.

Humanitarian Engineering and Science: Opening Space for Multiplicity *Elizabeth A. Reddy, Colorado School Of Mines; Jessica Mary Smith, Colorado School of Mines*

At the Colorado School of Mines, we are developing a new one-year MSc program in Humanitarian Engineering and Science that allows students to bring STS perspectives to their training as geoscientists and engineers. Students take courses from STS-trained faculty on topics related to critical development studies, qualitative social research, and the social production of risk, alongside specialized training in geophysics, environmental engineering, or geological engineering. Through hands-on projects, they navigate the tensions and synergies among different forms of knowledge. In this paper, two members of this team consider our plans to develop students' appreciation for multiplicity in knowing, being and doing that Maria Puig de la Bellacasa (2017) describes in terms of feminist care. There is ample evidence that care is not sufficient for good relation or ethical practice (see, for example, Murphy 2015 or Martin et al. 2015). Nonetheless, engineering education often relies heavily and uncritically on the utility of technical interventions "for public good" (Johnson 2017, Lambrinidou and Canney 2017, Mitcham 2016). Even humanitarian and social justice projects may draw students through unconsidered mobilizations of care and normative ethics (Leydens and Lucena 2017, Riley and Nieusma 2010). In this paper consider the design of the MSc program, paying particular attention to how we mobilize our students' care to encourage critical engagement with multiplicity by teaching both non-normative and normative approaches to ethical STEM practice. We tell the story of our work thus far and frame our plans for the future. Referenced Johnson, D. (2017). Rethinking the Social Responsibilities of Engineers as a Form of Accountability. In D. P. Michelfelder, B. Newberry, & Q. Zhu (Eds.), Philosophy and Engineering: Exploring Boundaries, Expanding Connections Springer. 85–98. Lambrinidou, Y. and Canney, N. E. (2017). Engineers' Imaginaries of "the Public": Content Analysis of Foundational Professional Documents. ASEE Annual Conference and Exposition, Conference Proceedings. Leydens, J. A., & Lucena, J. C. (2017). Engineering Justice: Transforming Engineering Education and Practice. John Wiley & Sons. Martin, A., Myers, N., & Viseu, A. (2015). The Politics of Care in Technoscience. Social Studies of Science, 45(5), 625–641. Murphy, M. (2015). "Unsettling Care: Troubling Transnational Itineraries of Care in Feminist Health Practices." Social Studies of Science, 45(5), 717–737. Mitcham, C. (2015). Ethics is not Enough: From Professionalism to the Political Philosophy of Engineering. In S. Sundar Sethy (Ed.) Contemporary Ethical Issues in Engineering, IGI Global. 48-80. Nieusma, D., & Riley, D. (2010). "Designs on Development: Engineering, Globalization, and Social Justice." Engineering Studies 2 (1), 29-59 Puig de la Bellacasa, M. P. (2017) Matters of Care: Speculative Ethics in More than Human Worlds. University of Minnesota Press, Minneapolis, MN

Using the Feminist Data Manifest-NO to Transform Information Studies Pedagogy *Marika Cifor, The Information School, University of Washington*

In a world suffused with corporatized, militarized "big data" practices and exploitative, extractive artificial intelligence (AI) systems, how might we reimagine data practices and pedagogies that are aligned with intersectional feminist processes? And how might we decenter data methods that privilege corporate, academic, and engineering interests, to center vulnerable populations and community needs? How might these recentered methods be mobilized as pedagogical strategies in our interdisciplinary classrooms? The Feminist Data ManifestNO is a collaboratively authored set of principles, created by the Feminist Data Workshop in the summer of 2019. It offers a set of declarations and commitments, refusing harmful data regimes and reimagining, and working towards reforming and remaking new data futures. This presentation takes up two of the Manifest-NO's core principles as the point of departure. Cifor demonstrates how the Manifest-NO's commitments provide the groundwork for redesigning pedagogy in and beyond the information studies classroom. Taking up our principle, that making systems intelligible and controllable to those whose lives are implicated in them is vital to data justice, she proposes a new set of assignments. She demonstrates the potential of using collaborative digital projects as a teaching tool that embodies such a commitment. Second, she takes up the principle that asserts that it is our primary goal to open doors and make possible for others into the academy. She argues that Manifest-NO provides a framework for rethinking how we do mentorship in STEM to prioritize feminist practices that ensure that we not only open, but also subvert and undermine the damaging and exclusionary structures of our institutions.

Session Organizers:
Kalindi Vora, University of California Davis
Anita Say Chan, University of Illinois, Urbana-Champaign
Maya Cruz, University of California - Davis

Chairs:
Kalindi Vora, University of California Davis
Anita Say Chan, University of Illinois, Urbana-Champaign

418. Author meets Critics: Carson Book Prize session
6:00 to 7:40 pm
virPrague: VR 07

The Carson Prize is awarded annually for a book in Science and Technology Studies with distinctive social and political relevance. Both single and multi-authored book are eligible if they represent original work. This session celebrates the 2020 winner.

Session Organizers:
Roopali Phadke, Macalester College
Daniel Aldana Cohen, UPenn

Chair:
Roopali Phadke, Macalester College

Discussants:
Candis Callison, Unversity of British Columbia
Lucy Suchman, Lancaster University, UK
Sara Wylie, Northeastern University

419. AI through an education perspective: concerns, potentials, and trade-offs - Session 2
6:00 to 7:40 pm
virPrague: VR 08

Participants:

Creating the Optimal Student - Socio-technical Imaginaries of Characters and Subjects in Behavioral Platforms in Schools *Hemy Ramiel, Ben Gurion University of the Negev*

This paper focuses on the ways behavior management algorithmic platforms in schools are 'making-up' students through the tracking, measuring and analyzing of behaviors and translating them into presentable and quantified characters. These platforms represent what is known as "machine behaviorism" i.e. the combination of digitation and datafication of education with the rise of educational ideas focused on behavior and personality design, such as social and emotional learning (SEL) and character education. I examine these platforms through the concept of optimization, which express the practices, ethics and epistemology of anticipation regimes, enacted through algorithmic forecasting and data analytics. This paper focus on three educational behavioral management platforms.The traits and skills that are tracked and measured on these platforms (such as grit, growth mindset and self-efficacy) are framed as the metrics of the development of student success in school and in the future. The information collected is visually analyzed and displayed in dashboards that signal the action needed and enable the examination of progress, comparing students and more. Through analysis of publicly available documents and artefacts of the platforms as well as exemplary dashboards and reading in their modes of visualization I explore how these measurement and representations of quantified characters are "making-up" an optimal student. I argue that under this socio-technical imaginary the behaviors and characters are not only universal and univocal but are also 'lifted out' from any specific context and relationships. Moreover, as they represent as indicators for effectiveness and success, social and emotional aspects are reduced into technical tools for subject optimization.

Defining the "Stakes" in AI System Development: From Stakeholders to Protected Publics *Roel Dobbe, Delft University of Technology; Thomas Gilbert*

While AI systems become prevalent in high stakes social domains, the potential harms caused by systems to stakeholders in complex social contexts and how to characterize and address these remain subjects of controversial debate. In this paper, we challenge recent conceptualizations of "stakeholders" in AI system development and reconceive safety and fairness as public problems whose guiding principles entail multiple kinds of normative indeterminacy simultaneously. Drawing from the situational theory of publics, boundary critique, and situated design, we interpret indeterminacy as sources of public concern. These sources depend on unresolved relationships between technical development procedures and the social contexts of operation from which criteria for specification should be sought. Addressing this ambiguity, this paper develops concrete interventions to address safety concerns in the rapidly growing and world-shaping practice of AI system development. We endorse Grunig's Two-Way Symmetric Model and outline discursive practices developers can adopt for discerning, conveying, and seeking out criteria for design choices. Developers must understand their own interests as separate and possibly conflicting with the public, but capable of a desirable equilibrium if commitments are made to bind practices within a "symmetrical worldview that maintains the integrity of long-term relationships". This requires modeling the positions of the development organization and the prospective public on a continuum whose middle constitutes a zone of engagement and mixed-motive communication. The work needed to maintain this symmetry ensures that stakes are defined and stakeholder roles are specified to protect publics from problematic situations marked by contention, resignation, and unprincipled compromise.

"No cost" technology: how governments contract dominant internet companies and ignore students' rights *Rodrigo Barbosa e Silva, Lemann Center for Educational Entrepreneurship and Innovation in Brazil at Stanford*

After the impact generated by the General Data Protection Regulation in Europe, the use of personal data, new regulations, and public policy towards digital inclusion are under public scrutiny in Brazil. Several institutions, universities, press, and NGOs openly discuss the new Brazilian Data Protection Law and its effects on business and government. Concurrently, as an excuse to create a modern education, the biggest tech companies in the world offer products that school authorities either do not know or do not understand. This paper analyses public contracts between governments and the tech industry in Brazil. Also, it highlights how these actors are addressing data analysis, privacy, right to be forgotten, security, and access to technology outsourced to platforms. Governments are not aware of the risks of offering students as an abundant source of data to these

platforms. The paper argues that these contracts are black boxes, do not respect children's rights, and constitute a massive transfer of children's information to commercial entities. It points out alternative public policies, the necessity to public governance, and accountability of systems suppliers to schools. Finally, it proposes a comprehensive guide to address the potentials, risks, and trade-offs posed by big tech companies in education.

Session Organizer:

Rodrigo Barbosa e Silva, Lemann Center for Educational Entrepreneurship and Innovation in Brazil at Stanford

Chair:

Ana Carolina Goes Machado, Stanford University

420. They're Just Guidelines: Operationalizing AI Ethics - Session 2 (Classic Ethics)

6:00 to 7:40 pm

virPrague: VR 09

2018 & 2019 have seen a surge of frameworks or guidelines that lay out principles of how Automated Decision Systems (ADS) can be developed and implemented ethically. The Private Sector, Multistakeholder Groups and Government Agencies have published guidelines covering principles of transparency/explainability, fairness/non-discrimination, accountability, saftey/security and privacy (Algorithm Watch, 2019). Occasionally, these guidelines include the demand for AI be socially beneficial and protect human rights. Few include recommendations or examples of how to operationalise these principles. Today, most major technology companies using Artificial Intelligence and Machine Learning have agreed to comply with these guidelines. But has the development of ADS changed? What challenges still remain? This panel seeks to convene scholars from multiple disciplines who are interested in the operationalization of AI ethics and welcomes submissions exploring themes such as: Are AI ethics guidelines changing the way companies and universities educate/train their data scientists and AI developers? How are factsheets, fairness toolkits, scenario planning exercises, etc being used within industry? (Stories of success and barriers) How does corporate culture influence the oversight and enforcement of AI ethics guidelines? What responsibilities fall on executives compared to data scientists? How are traditional approaches to risk management being applied to AI & ML? How do AI ethics guidelines vary across sectors, domains and cultures? How do these variations influence guideline implementation?

Participants:

Rawls vs Google and Facebook: How teleology and prediction stands in the way of tech industry ethics *Morten Bay, University of Southern California, Annenberg School for Communication & Journalism*

One of moral philosopher John Rawls' main critiques of utilitarianism is that it is teleological. Thus, viewing the ethics of AI and Automated Decision Systems (ADS) through a Rawlsian lens raises the question: What is more teleological than the "greater good" trade-offs and promises of future benefits tied to AI and ML? One reason technology companies have difficulties operationalizing their ethics statements may be that these are contingent on the perceived ability to predict the consequences of their actions and products. On the surface, these ethics guidelines often resemble virtue ethics by stating, e.g., that any ADS must be fair and not discriminatory. But this assumes that the designers can predict how an AI or an ADS might behave unethically and that any unforeseen consequences will not outweigh the benefits. It places what may be an outsized faith in forecasting during the design process. Thus, corporate ethics guidelines are often clear examples of teleological utilitarianism. Based on arguments from John Rawls and Karl Popper, this paper argues that this approach is ethically questionable since forecasting consequences of technological development, adoption, and practices is demonstrably difficult. The paper closes by demonstrating a viable alternative to the utilitarian hegemony of AI, ML and ADS ethics through Rawlsian ethics.

On Becoming agile: The transformation from Waterfall to Agile in the Danish Tax Authority *Irina Papazu, IT University of Copenhagen*

This article presents an ethnographic study of how employees in the Danish Tax and Customs Administration grapple with implementing 'agile methods' (scrum and DevOps) in the ministry's IT projects, and so speaks to growing interest in STS in public sector digitalization. The adoption of agile methods in public digitalization projects is becoming a key concern in the Danish public sector. Acknowledged as a 'considerable change management project' (Agency for Digitisation, 2019), the process of becoming agile is challenging a bureaucratic public sector used to working at a relatively slow pace, in a rule-following and non-experimental manner. Bureaucracy, it can be argued, is at its core non-agile, but agility prioritizes flexibility and rapidity over stability, hierarchy and rules, thereby challenging the bureaucratic ethos of the public sector and forcing work practices to change. We observe and argue that the meaning of agility is flexible and ever shifting, an 'empty signifier' or 'fluid concept' (Law & Singleton, 2005; Laet & Mol, 2000). Public sector employees feel their projects and practices can always become 'more agile', leading to feelings of inadequacy as well as to boundary work regarding what gets to 'count' as agile (Burri, 2008). Agile is a process of becoming, it represents the future, not the present. Specifically, in the Danish Tax and Customs Administration, the agile transformation marks a desire to distance oneself from a past marred by scandals and failed IT projects, making becoming agile an even more pressing concern.

Producing Credible Quantum Futures: Planning the Transition from Science Fiction to Institutional Fact *Susannah Glickman, Columbia University*

How we think about the long term is a crucial and understudied problem--one which has implications for, at the broadest levels, our ability to survive and thrive as a species. More specifically, how our most important institutions--military, industrial and scientific--assess and plan for the future constitutes an important site of inquiry. This paper uses the field of quantum computing and information (QC) as a lens to demystify these futural processes. I look at various mundane planning documents from academic, corporate and government sources from the 1990s to the present day to offer a theoretical account of how institutions produce credible futures. This paper likewise offers an account of how these institutions understand and manage abstract questions of risk and futurity and retranslate them into concrete terms. QC is a good site for this inquiry because practitioners have been quite successful at controlling their history to direct and bring about their vision of the future. They have not had to rely on the construction of actual devices to build a substantive industry. While there are precedents for this, QC is a particularly pronounced and clear example that will give insight into the mechanisms and historical conditions behind this scientific network's extraordinary accomplishment. This project contributes to the larger history of risk reducing technologies and their role in the modern world. The production of historical narratives and credible futures--in particular via the production of histories--is an important yet understudied mode of risk reduction.

Technologies to Repair Victims in the Colombian Armed Conflict. Analysis of the Ethical Implications *juan carlos moreno, Santo Tomas University; Sara Guzman, Universitè de Grenoble*

As a result of 50 years of armed conflict, 7.7 million people in Colombia have been victims of forced displacement. This country is the second in the world with the highest number of victims, according to UNHCR. After the peace agreements of 2016, the Colombian State has had many difficulties to guarantee the right of the victims to the restitution of their lands. In this context, some technological innovations based on blockchain, biometrics, and artificial intelligence are being used to provide digital documentary support to the victims to ensure security, transparency, and justice in the restitution of their lands, seeking to reduce the corruption problems of the institutions in charge of these processes. Based on the contributions of the qualitative inquiry made in the case study, the paper will discuss the technological ethical approaches involved in this type of development for social purposes. The discussion will provide some contributions to the disruptive technology ethics discussions, in a debate with the perspectives of P.P. Verbeek, the moral relevance of technological artifacts, the Actor-Network

Theory, and the perspective of "A.I. for good ", promoted by the United Nations. We will analyze the way in which current disruptive technologies can be relevant moral agents, capable of playing important moral roles and providing moral value, in complex social problems, rather than being neutral tools.

Session Organizer:
Anna Lenhart, University Of Maryland College Park
Chair:
Anna Lenhart, University Of Maryland College Park

421. Rare Disease Policies: From Exceptionalism Towards a 'New Normal'? Session 2

6:00 to 7:40 pm
virPrague: VR 10

Special policies for 'rare diseases' (RD) and 'orphan drugs' (RD) have been established since the 1980s. Yet, interpretations differ as of the nature and transformative effects of these partnerships, conflicts and policies. Some stress the successful role of patient organizations in advancing access to new medicines and treatments and addressing unmet medical needs. Others argue that such rare disease policies are best seen as a form of exceptionalism, "gamed" by Big Pharma for commercial reasons. Over time these struggles over rare disease policies and orphan drug regulation (and their interpretation) have not subsided; rather the contrary, they have intensified. Public controversies about 'Big Pharma' and excessively high pricing fuel the debate and the media on an almost daily basis. The advent of personalized medicine, digital medicine and 'advanced therapy medicinal products' (ATMPs) potentially means an increasing 'orphanization' of common diseases in the immediate future. But what are the implications of this for the future of inclusive health care? What about initiatives to create alternative forms of social innovation in health care regulation and pharmaceutical development? The panel will look at national and regional contexts and new forms of innovation comparatively and across nations and regions. What does this imply for the various STS research agenda's to be pursued?

Participants:

Zolgensma: The Multiple and Conflicting Valuation of Advanced Therapies for Rare Diseases *Vololona Rabeharisoa, Ecole Nationale Supérieure des Mines de Paris; Liliana Doganova, Mines ParisTech*

Zolgensma is a gene therapy manufactured by AveXis, a company owned by Novartis, that received a market approval from the FDA in May 2019 for treating a rare pediatric disease called spinal muscular atrophy (SMA). Zolgensma is celebrated for moving a step further on the path to cure for rare diseases: in contrast to existing treatments, it is a one-off cure. Zolgensma also takes another step in drug pricing: it is today the most expensive treatment ever produced, its price being US$ 2.1 millions per patient. This triggers much turmoil, so much so that Novartis proposes to offer 100 free doses every year to 100 patients upon a lottery, an initiative which, in turn, provokes heated reactions from certain patient organizations. In waiting for a market approval in Europe, Zolgensma is accessible to patients in France upon a mechanism called "Approval for Temporary Use." This communication draws on a preliminary investigation of public debates on Zolgensma. Current debates raise a series of issues ranging from the promissory future of advanced therapeutic medicinal products, to the access to treatments for patients who had long been underserved, and the sustainability of health systems. This communication addresses Zolgensma as an interesting locus for exploring the new economy of advanced therapies and the exceptional status of rare diseases that constitute one important area of development of these therapies. It aims at digging the multiple and conflicting valuation of diseases and treatments, at the intersection of science, public health, and social justice.

A case study on the tensions between personalization and regulatory harmonization in regenerative medicine *Christine Hauskeller, University of Exeter; Jean Harrington, University of Exeter*

Treatments for only the few, or individual patients are the future of medicine, yet present a challenge to medical epistemology and practice which STS can help to analyse. The current sciencescape is designed for standardization, mass production and off the shelf 'cookie cutter' drug development. Orphan diseases, or personalized treatments, such as regenerative medicine procedures do not fit into this framework in which industry, regulation and law as well as the epistemic validation criteria of medicine are aligned. Our study on harmonization of regulation and clinical practice presents an example of the 'bridge' between rare diseases and the 'new normal' of personalized medicine. The problems this stem cell trial encountered, exemplify how innovative treatments cannot be introduced if they are not designed to fit within standardizing European regulatory regimes, especially advanced therapeutic medicinal product regulation. Regardless of whether the trial participants show improvement beyond best standard care, the implementation of the stem cell procedure is extremely unlikely. The rules and regulations that make clinical research expensive and difficult mean also that, even if the evidence base for a treatment is achieved, it is too expensive to deliver to become part of standard care. The case study illustrates that current ideas of medical progress call for alternative forms of social innovation in health care policies if benefits from advances in personalized treatments are to be realized widely.

Innovation in distributed forms of medicine production: the case of in-hospital production of orphan medicines *Jarno Hoekman; Rob Hagendijk, University of Amsterdam; Ellen Moors, Copernicus Institute of Sustainable Development, Utrecht University; Wouter Boon, Copernicus Institute of Sustainable Development, Utrecht University*

Distributed, in-hospital production of medicines holds a promise as an alternative innovation model for medicine production that circumvents some of the technological, regulatory and financial challenges facing the development of medicines for rare diseases. These innovation models are characterized by patient-centric partnerships between heterogenous actors including patients, medical specialists, hospital boards, medical technology developers, governmental regulators and health insurers. Our paper analyses various attempts to form such partnerships in the Netherlands and how they were legitimised and de-legitimised in the healthcare system. The paper focuses specifically on how involved leading actors in partnerships differed in their alignment to existing institutions, and how they balanced between an inward-looking focus on situated user-initiated practices and an outward-looking focus to open up the healthcare system to alternative innovation models. We analysis such differences with respect to demonstrated legitimacy of the activities within the partnerships and their broader success in sketching alternative pathways for innovation. The results show that in-hospital production of orphan medicines is a promising strategy with a high potential for pragmatic and moral legitimacy as it provides possibilities to address urgent needs of patients with rare diseases in healthcare systems that face tight coverage budgets. We also find that specific institutional strategies to broaden their mobilization contribute to the emergence of alternative innovation models as part of the future 'new normal' in medical and pharmaceutical innovation.

Creating DNA biocollection for reference population of Western France: a case study using STS approach *Lindzy Tossé, Centre de Recherche Médecine, Sciences, Santé, Santé Mentale et Société (cermes3), Paris*

Lindzy Tossé ,1,2*, Richard Redon 1, Catherine Bourgain 2 1 Institut du thorax – UMR Inserm 1087 / UMR CNRS 6291 IRS-Université de Nantes, 8 quai Moncousu, BP 7072, 44007 NANTES Cedex 1, France 2 Cermes3 (Centre de recherche médecine, sciences, santé, santé mentale, société), Inserm U988, Site CNRS, 7 rue Guy Môquet, 94801 Villejuif Cedex, France *lindzy.tosse@univ-nantes.fr The last three decades witness massive creation of DNA banks for health, biology and epidemiology research. Using STS approach, the present study describes, how and why a regional French health and research institute, specialized in thoracic and metabolic diseases, constituted a blood and DNA biobank (PREGO) from more than 5,000 healthy blood donors from western France between 2013 and 2017. Participant observations, documentary analysis and semi-structured interviews** firstly showed that donors were recruited during rural and suburban blood donation mobile

campaigns of the French blood agency (EFS). Donors' parents and grandparents birth places were asked. The EFS settings and historical routines allowed researchers to access local populations while facilitating acceptance of DNA donation because practical and conceptual displacement was barely required. Secondly, the design of this biobank showed that genetic and spatial epidemiology became key features in this institute because their biomedical experimental systems alternate between clinic, laboratory and territorial resources. Our historiographical work followed up: • successive rises of epistemic things (Rheinberger): genetics (late 1990s), genetic epidemiology (early 2000s), and the PREGO biobank and genomics (late 2000s); • their settlements as technical objects. By tracking those objects, circulations of knowledge, practices, and genetic data were visualized. The institute mastered these reconfigurations and navigated through various scales and actors. It became a key actor in French population genetics in fabricating local populations for genomic medicine. ** with the recruiter, blood donors, managers of the scientific project, hospital and laboratory staff, the coordinator of EFS mobile blood campaign, the regional council.

Session Organizer:

Rob Hagendijk, University of Amsterdam

Chair:

Conor Douglas, York Univeristy

422. Locating South Asia in Social Studies of Science and Technology

6:00 to 7:40 pm
virPrague: VR 11

While researchers engaging with South Asia, often as a research site, advance various STS commitments, concerns, and its conceptual vocabulary, the empirical richness of the region and the unique community of South Asian researchers remain scattered, underarticulated, and invisible. This session seeks to highlight and investigate what makes South Asia a unique site to research emergent forms and consequences of technoscientific developments collating the sustained critiques of scientific knowledge and technoscientific state-building from the region. Simultaneously, it is also an effort to carve a space in 4S for a community of South Asian STS researchers to discuss how their personal commitments, concerns, and experiences in South Asia co-constitute their engagement with STS. The session asks how STS informs South Asian studies when technoscientific developments become primary subjects and objects of research. How do South Asian studies inform STS on questions of epistemological pluralism, technoscientific practices, intersectionality, scientific hegemony, and democracy? It is a call to (re)engage the pasts of South Asian STS scholarship to critically intervene in its presents and reinvent its possible futures.

Participants:

Decoloniality and social justice as motives for STS in the Global South: reflections from an ethnography of research on human difference in India *Thiago Pinto Barbosa, Universität Bayreuth*

My paper explores the synergies between post-/decolonial critique and STS in South Asia. My reflection draws from my since 2016 on-going doctoral research on the work of Maharashtrian anthropologist-geneticist Irawati Karve (1905-1970) and her legacy in the production of knowledge on human difference in India. Based on this historical case and on a ethnography of how it reverberates today in a molecular anthropology lab in Pune, the first level of my analysis explores the coloniality of research on human variation and the entanglement of difference categories – especially race and caste – in their scientific and political co-production. I focus on key tensions in Karve's practices, from her training in Germany's most known racial anthropology and eugenics research centre (1920s) to a postcolonial context (1950s-1960s) in Pune, in which she fluctuated between racializing difference categories and stressing India's "unity in diversity", up to the current re-articulation of Karve's legacy in a genetics research setting. On a second level of analysis, I draw from this case to reflect about the challenges of decolonizing knowledge in transnational knowledge networks, having in mind our special positions as researchers in/from the Global South and considering the

complex historical entanglements of scientific objects. Finally, building a bridge between Latin American decolonial critique and South Asian postcolonial studies, I advocate for further attention to technoscientific practices that resonate in persistent issues regarding exclusion/inclusion in India, and I argue for the anchoring of STS in South Asia to the social justice-oriented critical thinking traditions in South Asian studies.

An 'Elephant's Gestation': Rebuilding Madras City's Water Infrastructure 1904-1919 *Viswanathan Venkataraman, King's College London*

Hydraulic engineering for urban purposes in the British colonial world is often seen as a top-down technocratic imposition of British engineering practices that reinforced the spatial and racial inequalities of the colonial city. Case studies of the introduction of modern sewerage infrastructures, novel water intake structures such as dams etc in colonial cities during the second half of the nineteenth century have tended to dominate this literature. Yet despite the claims made about unequal water distribution in the colonial city, that part of the system has barely been studied, before or after 1900. This paper, which considers the early 20th water supply infrastructure of Madras - British India's third biggest city – argues that water provision in the city was differentiated along lines of class rather than race wherein property tax levels determined the mode and level of piped water access in the city. Furthermore, the design and implementation of the project, while for the most part was a top-down process, had to negotiate the demands imposed by Indian members of the city's municipal corporation. I will discuss whether this is a special case, or whether we need to rethink the dominant arguments about urban infrastructures in the colonial world.

Locating Delhi's air *Prerna Srigyan, University of California - Irvine*

Delhi's lethal air frustrates science and politics. Scientists contend with the fact that air flows across boundaries, yes, but toxic excesses at Delhi's ever-shifting borders create unequal, punctured spheres of breathing. Scientists visualise air as urban, regional, national, transnational—their research trajectories attuned to both national and environmental politics. They know that to place air is a political project requiring choices to be made about what scale is appropriate for governance. They contend with existing environmental monitoring and regulatory infrastructures to propose policy changes. Research papers on Delhi's air start by locating it within the developing world, within the megacity and its attendant toxic idioms, within a body open to attack by new types of toxics. They invariably end with policy suggestions, one of them a demand for more, better science. The central government of India, meanwhile, periodically rejects evidence of air pollution mortality and morbidity, demanding "indigenous" science even as it builds citizenship on technoscientific regimes that exclude deliberation. This paper examines how diasporic networks of technoscience studying Delhi's air contend with different scales that map air and people's bodies onto different registers of personal, legal, administrative, pedagogic, and planetary times (Fortun and Fortun, 2019). As STS scholars and anthropologists of science and technology demonstrate multipolar and polyvalent attachments of science, society, and politics, this paper asks, how can we locate a postcolonial STS when following our technoscientific objects leads us to diasporic entanglements? How can postcolonial STS mobilize alternative ways of mapping science and society when indigenous ways of knowing and sensing can be violently exclusionary?

Photovoltaics, Pasture, And Puffed Rice: The Production Of Low-Carbon Infrastructure In India's Smart Cities *Ankit Bhardwaj, New York University*

The climate crisis warrants that we build, power, move, and make in urban areas differently, yet there is scant attention on what negotiations over transitions to low-carbon infrastructure will involve, especially in postcolonial settings. Framing the low-carbon urban as a "heterogenous engineered" assemblage emphasizes the creation of novel, local alliances amongst actors with low-carbon interests. But emphasis on novelty elides over the influence of existing actors such as political institutions, capital, and labour on transitions. I propose the concept of

"heterogenous substitution" to conceptualize transitions to low-carbon infrastructure when there is social and political continuity: low-carbon actors will not be engineered anew but substituted into existing networks. The concept emerges from grounded interviews and participant observation of actors negotiating over urban infrastructure development as part of India's Smart Cities program which mandated the deployment of low-carbon technologies such as solar photovoltaics. I set up a comparative case study between two cities – an exemplar case of Rajkot where low-carbon 'world-class' real estate development is proposed on land used by herders for pasture, and a deviant case of Davanagere where the state negotiated with workers to decarbonize a 'puffed rice' industrial district – to show the continuity and variety of negotiations between existing state, capital, and labour actors over low-carbon space. The variation which indicates that low-carbon technologies are "infrastructure agnostic" and can be applied to even unjust projects, was methodologically made evident by paying attention to how abstract projects such as 'smart cities' or 'decarbonization' ground themselves in existing places and practice.

An Ethnography of Edison, New Jersey: Tech Expansion in an International State *Kinjal Dave, Annenberg School of Communication, University of Pennsylvania*

In September 2019, New Jersey governor Phil Murphy announced that 1,200 jobs would be created in Edison, NJ by three India-based technology and industry companies: Birlasoft, Larson & Turbo, and Tata Consultancy Services. Following Murphy's meeting with Narendra Modi in India, he announced the opening of a "Choose New Jersey" office in India to lure businesses to the Garden State. This current expansion of international conglomerates exists alongside 400+ Indian-owned small businesses dating back to 1965. A wide range of diasporic cultural creation, identity formation, and economic flows are present in this town of 100,000, roughly a third of Indian origin. Through this diaspora, South Asian hierarchies of religion, nationality, caste, race, gender, and socio-economic status have traveled abroad. While Facebook, Google and other large American-based companies have been identified as neocolonial agents, how do we identify and trace the complicity of the Indian nation-state and the South Asian diaspora in the imperial project of global tech expansion? I argue Edison's history of immigration, growth, cultural establishment, and finally tech expansion serves as a harbinger of future transnational politics rooted in the local-international establishment of diasporas. This thesis challenges notions of a post-place ethnographic model in the Anthropology more broadly and clearly demarcates an understudied site transnational local/global connection within Anthropology of STS specifically. This project urges us to incorporate the critical cultural engagements of Diaspora Studies and continues in the trend of American Studies that requires we study the Global South.

Session Organizer:
Ranjit Pal Singh, Cornell University

Chair:
Misria Shaik Ali, Rensselaer Polytechnic Institute

Discussant:
annapurna mamidipudi, Max Planck Institute for the History of Science

423. Towards A Critical Medical STS - II: Perspectives Of the Body In Biomedicine
6:00 to 7:40 pm
virPrague: VR 12
Participants:

Building a Science of the Post-Colonial Body in Egypt *Jennifer L Derr, University of California, Santa Cruz*

In the twentieth century, Egypt's primary public health challenge was an epidemic of the parasitic disease schistosomiasis. The country's sky-high rates of infection dated to the nineteenth century when Egypt's irrigation landscape was transformed through the damming of the Nile River. When Gamal `Abd al-Nasir came to power in 1952 and vanquished the remnants of colonialism from Egypt, the battle to defeat schistosomiasis

ranked among his top priorities. Under Nasir's populist authoritarian regime (1954-1970), the state expanded efforts to treat human bodies and the environments in which they lived. Treatment of the disease had begun in the 1920s with the establishment of clinics by the Egyptian Public Health Department. Despite the large numbers of patients who passed through these clinics, the numbers of those infected remained high as treatment targeted infection in the body and not the forms of environmental interaction that produced infection. In an attempt to alter the environment that produced infection, the Egyptian scientists associated with Nasir's state worked with the World Health Organization, UNICEF, and the governments of the United States and West Germany to test the efficacy of chemicals in eliminating the snail populations that served as the parasite's intermediate host. Drawing on the extensive publications of Egyptian scientists and physicians and the archives of the World Health Organization, this paper explores the Egyptian endeavor to understand and treat bodies infected with parasites through the distinct but linked practices of biomedicine and environmental science.

"Deep Inside, We're All Just Pink": Skin of Color, Dermatology, and Antiracism *Yesmar Semaj Oyarzun, Rice University*

"Skin of color" is a category that emerged in the field of clinical dermatology in 2002 to address a gap in knowledge about the skin conditions and treatment needs of people of color. This paper will address (1) how skin of color becomes a meaningful object of knowledge and care in dermatology and (2) outsider associations of dermatology with whiteness. The research focuses on ethnographic research among two different groups: dermatologists who work on "skin of color" and medical students who work on issues of antiracism in medicine. While the former attempt to work specifically on improving outcomes for patients with already racialized skin, the latter group's work sits in tension with practices of dermatology in general. The dermatological need to consider and recognize differences between people with different skin tones can seem incompatible with antiracist medical discourses appealing to the fundamental sameness of our bodies on the inside across racial categories. Thinking with Janelle Monae's 2018 album "Dirty Computer" and scholars who have worked on issues of race and racialization (Valdez 2019; Cooper Owens 2017) and on issues of the formation of the body in medicine (Prentice 2013), this research addresses the critical question of the race-liberatory potential of skin of color in dermatology. Is the concept of race so embedded in the skin that dermatology can never get past racialization? Or can dermatologists who spend much of their time observing skin level differences still subscribe to the ethical understanding that "deep inside, we're all just pink" (Monae 2018)?

Knowing Normality, Learning Disease: Material Epistemologies and Embodied Standards in Medical Education *John Nott, Maastricht University; Anna Harris, Maastricht University*

In health, as in disease, the body is not easily standardised. That pathology and normality exist on a complex spectrum of bodily manifestation is an enduring question at the heart of the philosophy of medicine (Canguillem, 1943, trans. 1991). Insights from STS and medical anthropology have suggested that this may be because the body does not exist as a single entity but is enacted in many ways, and in many spaces and times, through practices which make both health and disease visible, audible, tangible and knowable (Mol, 2002). As the primary locus for the reproduction of medical practices and epistemologies, medical schools are important sites for the cultivation and disciplining of these biomedical bodies. Yet students are taught to know particular constructions of normality before learning similarly constructed pathologies. Technopolitics helps support these epistemic standards. Access to a requisite range of bodies is not easily achieved but is still simulated in models, manikins, photographs and films, all of which tend towards assuredness and fixity in their representations. Drawing on ethnographic and historical fieldwork in medical faculties at Maastricht University (the Netherlands), Semmelweis University (Hungary) and the University for Development Studies (Ghana), we explore how

knowledge of the normal and pathological draw from interactions with the material surroundings and educative technologies which makeup and inhabit these three sites. In doing so, we also extend ideas of 'epistemic disobedience' (Mignolo, 2009) in pursuit of the ending of 'cognitive empires' (de Sousa Santos, 2018), to the biomedical sciences which have largely overlooked them.

PrEP at the After/Party: The 'Post-AIDS' Politics of Frank Ocean's "PrEP+" *Benjamin Joseph Fleminger Weil, University College London; Chase Ledin, University of Edinburgh*

HIV/AIDS prevention efforts have taken many forms, ranging from pop-up stalls at LGBTQ+ Pride parades to circuit parties at popular queer venues. In this paper, we examine music artist Frank Ocean's recent attempt to revivify the HIV prevention-access circuit party: a dance event primarily attended by gay men which emerged in cities in the United States to fundraise for HIV/AIDS treatment and prevention efforts. Placing the circuit party in historical context, we argue that Ocean over-simplifies and medicalises the histories of this model, thereby reconstructing technological determinism through anachronism. In particular, we consider how Ocean employs the biomedical technology HIV pre-exposure prophylaxis (PrEP) in a manner that reifies and absolves the "post-AIDS" pharmaceutical and medical realities that continue to bar access to HIV prevention both locally and globally. With this in mind, we propose a critically-applied approach to understanding PrEP as an historically specified and, crucially, politico-medical tool. In our view, the contexts of PrEP exceed the clinic and must be understood to include (queer) social, sexual and cultural spaces, like the circuit party, which are implicated in and shape the politics of PrEP and prevention access. We counter Ocean's mis/context by turning to video artist Leo Herrera's (2018) "post-AIDS" project, which constructs a differently politicised queer-led healthcare reform using the prevention-access circuit party. We argue that Herrera's project provides a more compelling revisioning of the prevention-access party and employs a critically-applied approach that might enable scholars to better understand the sociocultural context/s of HIV/AIDS.

Session Organizers:
Hined A Rafeh, Rensselaer Polytechnic Institute
Yesmar Semaj Oyarzun, Rice University
Rebecca Monteleone, SFIS - Arizona State University
Chair:
Hined A Rafeh, Rensselaer Polytechnic Institute

424. Inclusion in scientific communities II
6:00 to 7:40 pm
virPrague: VR 13

The original conception of scientific communities by Robert Merton, Thomas Kuhn and Michael Polanyi implied the idea that all members of scientific communities equally participate in the production of scientific knowledge. Meanwhile, science studies have uncovered many constraints that limit the participation of researchers in the knowledge production processes and decision processes of their scientific communities. Examples include constraints based on gender, ethnicity, access to means for research, or non-mainstream approaches in research. At the international level, several scientific communities have begun a discussion about a North-Western dominance in the selection of topics and approaches. In addition to these constraints, which could be considered endogenous to scientific communities, political decision produce constraints by limiting access to resource, imposing secrecy, or restricting travel and other forms of communication and collaboration. The purpose of this open session is to explore the potential of studying these phenomena from a perspective of researchers limited inclusion in (or exclusion from) their scientific communities. We suggest considering inclusion as the way in which researchers participate in knowledge production and decision processes of their scientific communities, and to look at mechanisms that constrain inclusion from a comparative perspective. How are opportunities to participate in knowledge production and decision-making distributed in international scientific communities? Whose participation is restricted, and in which ways? What mechanisms restrict inclusion? How does the inclusion of researchers, national scientific communities, and world regions in the international production of scientific knowledge change historically?

Participants:

Lithuanian Researchers and Policymakers Regarding the Inclusion into Global Knowledge Production: the Publishing of Books *Eleonora Dagiene, Centre for Science & Technology Studies (CWTS), Leiden University*

Lithuania was under Soviet control for almost fifty years. After the restoration of its independence in 1990, the small Baltic state put all the efforts to participate in the production of scientific knowledge along with developed countries. After joining the European Union in 2004, politicians have set some ambitious goals and developed various incentive systems; the results were not they had hoped to achieve. A bibliometric analysis of books authored by Lithuanian researchers and submitted for annual performance-based research funding from 2004 to 2016 reveals outcomes contrary to expectations of policymakers (that have been publicised widely) to have more national-outputs published by prestigious North-Western publishers. Bibliometric analysis has posed quite a few questions that could be answered by qualitative approaches such as analysis of relevant policies and interviews. The qualitative research aims to identify (1) changes in the book publishing behaviour of the authors from a tiny Post-Soviet country over two last decades, and (2) conditions that have shaped researchers' decision on publishing their books. One phase of this ongoing study embraced the qualitative analysis of Lithuanian policies-regulations designed to incentive publishing behaviours of researchers. Another phase entailed interviews with currently about 45 participants: researchers from the sciences, social sciences and humanities; policymakers and administrators. The paper contributes to the STS scholarship on the inclusion of researchers from a little community into global knowledge production in the way of book publishing with named academic publishers.

Fieldwork in the internationalization of the social sciences *Leandro Rodriguez Medina, Universidad de las Americas Puebla*

Social sciences' internationalization is often studied through collaboration (co-authorship), mobility of scholars, and circulation of ideas (translations, citations). Less attention has been paid to the role of fieldwork (anthropology being an exception), especially of graduate students but also of established scholars, in internationalizing the social sciences. In this paper, I discuss how fieldwork has partially shaped Mexican social scientists' careers by showing the intertwining between international connections and institutional pressures and incentives. I conclude that fieldwork often allows researchers to build trust with colleagues and/or supervisors and, as a consequence, important bonds are established that transcend the location and period of fieldwork to give rise to personal relations. In turn, personal bonds have structuring power that condition scholars' range of opportunities and constraints well beyond their fieldwork.

Individual Grants, Collective Benefits? A Case Study Of The Canada Excellence Research Chairs Program *Marc-André Simard, Université de Montréal; Gita Ghiasi, Université de Montréal; Vincent Lariviere, Université de Montréal*

Concerns around the relationship between individual funding and the collective yield are repeatedly raised in the science-policy context. In this study, we investigate this relationship using Canada excellence research chairs (CERC) program—the most prestigious and generous award in Canada which is dedicated to attracting world-renown researchers to the Canadian institutions—as a case study. The objectives of this program are stated as fourfold: (1) to strengthen Canada's position at the forefront of scientific research conducive to socio-economic benefits, (2) to build expertise in the government-specified priority research areas, (3) to help Canadian universities reach excellence in research and attract top researchers, and (4) to position Canada as a desired location for conducting the world-class research. This study intends to assess the collective effects of the CERC program on the Canadian research ecosystem, and evaluate the extent to which its objectives are realized. Using bibliometrics, we monitored the scientific impact and research output of host institutions in CERC's top research specialties and Canada's top priority areas before and after the attribution of the award. Our results suggest that funded universities have reduced

in world rank (11%) in the specialties in which the chairholders were most active, while their normalized impact has increased (8%). At the national level, Canada is ranked lower (16%) in those same specialties, while its normalized impact has improved (3%). The results of this study are of utmost importance to Canada's S&T policies, highlighting the mismatches between the country's largest funding allocation and its objectives.

The Role of Science Novels in the Study of the Autonomy and Social Responsibility of Science *Fabian Hempel, University of Bremen*

This contribution discusses the utility of literary narratives in the sociological inquiry of science. It is based on a research project that examines the differences in the cultural conceptions of the autonomy and social responsibility of science as they are manifested in so-called science novels from the U.S., Germany, and India. These novels have the potential to offer epistemic insight, because their narratives are directly or indirectly concerned with aspects of the autonomy and social responsibility of science that, ideally, allude to actual cultural and institutional configurations of the social system of science. By using exemplary passages from selected books, the emphasis of this presentation lies on demonstrating how science novels can be fruitful for such conceptual inquiries. In line with this, it starts with a short theoretical outline of the autonomy and social responsibility of science that comprises the conceptual framework of the research project. The second step is to show how science novels allow for a different and nevertheless apt perspective to look upon various pertinent social phenomena of science, for instance due to the multi-layered and ambiguous ways internal and external scientific interests are treated in some literary narratives that allow to contextualize the interpenetration between science and other social spheres given science's capacity for both insight and subsequent practical action internal and external to the scientific field. The third and final part uses such an analysis as an epistemic prism to reflect upon corresponding actual facets, cases, and developments in science and society.

Session Organizers:
Jochen Glaser, TU Berlin
Nelius Boshoff, Stellenbosch University
Chair:
Jochen Glaser, TU Berlin

425. How should we "preserve" the dead? What is the role of ritual and memory in modern death?
6:00 to 7:40 pm
virPrague: VR 14
Participants:

Death Interrupted: How Facebook "In Memoriam" Pages Redefine Dying *Sara Bimo, York University*

As our lives become increasingly digitized, the experience of death is made all the more complicated. Conducting life concurrently in the digital and the physical world means that the process of dying must also be negotiated concurrently in these spheres. While we have been equipped with various ceremonies and rituals to cope with death in the "real world," we thus far have developed no such digital counterparts: currently, there is no set of historically rich and culturally informed customs for "digitally passing on." However, attempts have been made to organize the process of dying in the digital sphere. Facebook "memorialized accounts" are an example of this; by establishing a protocol for online deaths, they mimic real life rituals and attempt to offer similar degrees of closure and spiritual comfort. However, there are certain ways in which these "In Memoriam" pages are distinctly different from their real world counterparts. Through an analysis of the design features and affordances, user behaviours, and current literature surrounding Facebook "In Memoriam" pages (including the statements put out by Facebook itself), this project compares digital and "real life" death rituals, and addresses the extent to which the two process are comparable. Do "In Memoriam" pages provide similar levels of closure and comfort? Can they always be interpreted as ethical or respectful? Do they demonstrate a similar understanding of the process of dying? And, perhaps most importantly, have they had

a role in reshaping our understanding of what it means to "pass on"?

"Everything Seems so Illogical": Constructing Missingness' Narratives in the Cultural Space between Life and Death *Ori Katz, Ben-Gurion University of the Negev*

This paper discusses the case of missing persons in Israel, to show how the category of 'missingness' is constructed by the people who have been left-behind, and how it is positioned between life and death. I claim that the social category of missingness and its' narrative construction undercut modern dichotomies and assumptions. The missing persons are placed in a constant flux between life and death. As such, they are both in a liminal state, meaning neither alive nor dead, and in a hybrid state, meaning both alive and dead. Those who have been left-behind fluctuate not only between different ontological assumptions about the missing persons' fate. They also fluctuate between acceptance of the life-death dichotomy, and thus yearn for a solution to a temporary in-between state, and blurring this dichotomy, and thus constructing 'missingness' as a new stable ontological category. Many of the in-between states, despite challenging the binary distinction between life and death, are temporary, and their liminality only postpones the return to the familiar distinction between these basic human categories. And yet many scholars have recently discussed entities whose state is not definable as in-between but rather destabilizes the notion of personhood. This literature shows how new technological developments may construct new kinds of 'humans', such as through eugenics or cybernetics. But while advanced technologies keep challenging the notions of life and death, missingness shows how an ancient category, which is not based on technology (on the contrary, technology aims to diminish this phenomenon), similarly confronts these notions.

Re(e)valuating Plastinated Bodies *Dimitrios-Karolos Kaloulis*

This study focuses on plastination and analyses how this tissue preservation technique attributes value to deceased bodies. Based on extensive fieldwork in exhibitions as well as research of literature and web sources, it calls into question the proclaimed edifying role of plastination and its contribution to scientific advancement and improvement of health. Legality in the form of donations with informed consent has been assumed for all the bodies that turned into plastinates. In this way, the analysis attempts to overcome legal claims, either in favor or against plastination, regarding the accusations for the doubtful origin of the bodies and thus set the Law itself as well as contemporary bioethical standards under question. To do so, firstly, it exposes how through omissions and alterations "a history of anatomy" is being ideologically presented by the plastination entrepreneurs in order to legitimize their business and persuade possible donors. Furthermore, it shows how the invention of plastination at the end of the 70s, its establishment in the 80s and 90s as a laboratory technique, and finally its spread at the turn of the century with the public exhibitions can only be explained, if examined under the light of the neoliberal changes in political economy. Lastly, it locates the socio-cultural circumstances that make donations for plastination ethically acceptable, on the one hand, in the scientific classification of plastinates among other preserved corpses and, on the other hand, in the conflicting relation between body and self, which is embedded in the principle of informed consent.

Commemoration of the Dead by Technology: A Future for Material Avatars? *Kirsten Brukamp, Protestant University of Applied Sciences*

Commemoration of the dead undergoes cultural changes, which may be caused or accompanied by technology. In recent years, network media have been used to remember the dead and to give consolation to the ones left behind. Approaches include internet documentation, memorial pages, virtual graveyards, virtual tours of graveyards, and QR codes on gravestones. Most recently, funeral services were transmitted via the internet in the times of the corona pandemic crisis. A deceased human's traits may be represented by a virtual or physical avatar. A material avatar would be a robot that copies a dead person. A fictional case study helps to understand the potentials of technology in the realm of commemoration. In a science fiction series episode (Charlie

Brooker and Annabel Jones: episode "Be Right Back" of the science fiction television mini series "Black Mirror" in 2013), Martha and Ash are in a relationship. After Ash has died in an accident, Martha has his writing style imitated in a chat, and she uses a service that mimics his voice on the phone. Eventually, she orders a robot that looks like Ash and that continuously learns to imitate his behavior better. Martha's responses to the robot are highly ambivalent. The representations evoke emotions of grief, affection, and aggression. Popular media have already asked whether "Black Mirror" scenarios, including Martha's story, could become true in the future. Commemoration by technology leads to serious questions regarding social and ethical implications. The case study illustrates several challenges, including prolonged periods of grief and ambivalence.

Session Organizers:
Amanda van Beinum, Carleton University
Dylan Thomas Lott, Center for Healthy Minds/University of Wisconsin-Madison
Chair:
Amanda van Beinum, Carleton University

426. Situating Artificial Intelligence (AI): Medicine, Green Energy, & Justice
6:00 to 7:40 pm
virPrague: VR 15

Artificial Intelligence (AI)—the suite of technologies that make machines capable of performing task that would require intelligence if performed by people—opens new dimensions on STS discussion of material agency, as it continues colonizing an increasing number of domains, from Internet search and social media to medicine, nuclear command and control, energy distribution, and even criminal sentencing. The United States National Security Commission on AI's 2019 interim report states flatly that "We have entered the age of AI"—with the consequence that "We take for granted the many ways it is changing our lives." Such claims underscore the heightened importance of situating AI technologies as the contingent creations of groups of people: humans with limited views and partisan agendas, foibles and failings. Seen through a social lens and located within specific contexts of implementation, AI—all too often presented as panacea for society's ills—can be brought down to Earth, critically analyzed, and contextualized to produce the kind of nuanced understandings necessary for improved governance of this rapidly advancing suite of emerging technologies. The papers in this session each address aspects of AI that have to date received insufficient attention, and each thereby contributes to the growing body of literature that constitutes "critical AI systems studies" (e.g. CRAISYS Network). Hanemaayer explores the long history of medical professionals' resistance to AI system adoption within medical environments. Sakalis, Konstantis, and Tympas uncover the vexed relationship between AI, green energy, and electricity infrastructure. Wang sheds light on the problematic implementation of "robot judges" within the Chinese context to probe the connection between AI and justice. Finally, Garvey excavates the early 1980s controversy over AI system integration into the US nuclear command, control, and communication infrastructure. Each paper demonstrates how AI, far from being a universal technical solution to social problems, is, like so many other technologies, a contingent product of competing cultural forces, and one that often introduces as many problems as it solves.

Participants:

Artificial Intelligence, "the most revolutionary technology for green energy": "Artificial Lines" as "Phantom Circuits" *Konstantinos Sakalis, National and Kapodistrian University of Athens; Konstantinos Konstantis; Aristotelis (Aristotle) Tympas, National and Kapodistrian U. of Athens*

In recent decades, 'smart grids' were introduced as the technology to dynamically match energy generation-supply and consumption-demand. By the 2010s, 'artificial intelligence' (AI) emerged as a key addition to (or ingredient of) smart grids. The pursuit of dynamic 'stability' of the transmission-distribution infrastructure, so as to 'balance' generation and consumption, is as old as electric lines and networks. In the context, however, of the aggravation of the environmental crisis, this pursuit is no longer presented as having to do, simply, with maximizing economic profit. In engineering and popular media, the balancing of the transmission-distribution infrastructure is by now

legitimized as having to do, also, with minimizing energy loss, thereby maximizing environmental sustainability. Accordingly, AI is portrayed as "the most revolutionary technology for clean and green energy". This portrayal of AI assumes a full compatibility between the traditional pursuit of economic profitability and the new concern about environmental sustainability. Moreover, it technocratically assumes that the environment crisis is to be addressed through some intelligent technology. To contextualize the ongoing rhetoric about artificial intelligence, our paper turns to the long history of computing artifacts known as 'artificial lines'. Artificial lines were used offline from the beginning of electrification, in order to calculate the stability of the lengthening and interconnection of electric lines (of power and, also, communication). They were also used online, to control-enhance transmission, through filtering or amplification. Assuming the prefect balancing of the transmission-generation infrastructure, the artificial lines could be virtually 'superimposed' on real lines. The formal term used by the laboratory engineers who designed them was 'artificial lines'. At the other end of the technical hierarchy, the wiremen and other technical workers, who had to labor hard in nature to implement and maintain the balance assumed by the design of the engineers, called them 'phantom circuits'. The available literature on the history of artificial lines, which covers the period from the 1850s to the 1960s, points to the mismatch between the skilled and extensive laboring with 'phantom circuits' and their portrayal as 'intelligent'. In this paper we argue about the same mismatch in the history of the more recent decades (1970s-2010s), thereby offering a context for the passage from the long history of artificial lines to the short history of 'smart' and 'AI-powered' grids. Considering that these decades overlap with the gradual acknowledgement of the environmental crisis, our paper also offers a context for understanding the extension of the rhetoric about machine intelligence from infrastructure stability to environmental sustainability. The primary sources for this paper are texts from leading international engineering journals and newspapers of this period.

"Black Box Justice": Robot Judges in China's Court System *Nu Wang, Virginia Tech*

How are robot judges transforming China's court system? Artificial Intelligence (AI), as an auxiliary tool, was originally used in China's court system to enhance research capabilities and boost efficiency in case documentation. In 2017, as part of China's National Informatization Development Strategy, China launched the world's first "internet court" or "smart court." These digital courts are presided over by an AI-powered "robot judge," enabling faster turnarounds for court judgments of civil cases and greater efficiency in the legal systems. But not everyone is optimistic about this "new age" digital court system. Skepticism around the credibility of the so called "black box" of AI algorithms is gaining steam, and many stakeholders argue that the promise of efficiency does not guarantee effectiveness. The risk of biased or erroneous decision making resulting from flawed algorithm logic threatens to undermine the legitimacy of this new legal infrastructure. When faced with complicated cases involving ethical issues and legal value, even with extensive amounts of data from observable existing cases and legal provisions, AI based judgment may nevertheless be inconclusive, or worse, inappropriate. This paper historicizes "robot judges" by placing them within the larger thrust of 21st century social applications of AI and evaluates how China is navigating through the implications, for better or for worse, of leveraging AI in its court system.

Averting AI Doomsday: The Legacy of Computer Professionals for Social Responsibility *Colin Garvey, Center for International Security and Cooperation, Stanford University*

With the rise of activity and excitement around artificial intelligence (AI) in recent years, academics, technologists, businesspeople, government officials, and concerned citizens are increasingly grappling with the question of how, exactly, to do "responsible," "ethical," and/or "human-centered" AI research and development (R&D). In response, multiple organizations have put forth documents detailing various "principles" intended to guide AI R&D, often drawn from recent work in "responsible research and innovation" (RRI) and the longstanding tradition of

medical ethics. That technologists and other actors have wrestled with this difficult issue in earlier AI epochs has largely escaped notice. This paper contributes to the ongoing project of historicizing AI (Garvey 2017, Penn 2018) by examining Computer Professionals for Social Responsibility (CPSR) and the contributions they made to the controversy over integration of AI systems into the United States' nuclear command, control, and communication (NC3) systems. Loosely inspired by the radical science social movement organization, Science for the People, CPSR formed largely in reaction to the Strategic Computing Initiative (SCI), at $1 billion, decade-long (1983-1993) national project—the largest in the world at the time—focused on R&D for AI systems designed to augment each branch of the US military. In addition, under the auspices of the Strategic Defense Initiative (SDI) (better known as Reagan's "Star Wars"), planners of the SCI proposed to integrate AI into the US NC3 system—thereby putting AI in charge of the nation's nuclear arsenal. Reckoning that any such program would have serious bugs and put the world at greater danger of nuclear apocalypse, CPSR initiated broad campaigns against the SCI. By 1985, AI was on the cover of Newsweek, but the SCI had become highly controversial within the computer science community, largely thanks to CPSR's efforts. Eventually, military planners were convinced to abandon the NC3 plan, thereby staving off the creation of what was ultimately "tantamount to a doomsday machine" (Roland & Shiman 2002: 71). This paper will draw on the CPSR, AAAI, and other archives located at Stanford University to excavate this controversy, contextualize the confrontation, and extract strategies, tactics, lessons from the experience that may be of relevance for ongoing struggles over the social application of AI.

Session Organizer:

Colin Garvey, Center for International Security and Cooperation, Stanford University

Chair:

Colin Garvey, Center for International Security and Cooperation, Stanford University

427. How to "make a better world" for humans with technologies? Part B

6:00 to 7:40 pm

virPrague: VR 16

[Note: The format proposed for this open panel will not be based in 10 min presentations. Instead, will encourage conversation, and sharing materials before the event from selected contributors. It is expected to dedicate larger amount of time in this panel to work-together around common topics, to be discussed via mail after acceptation.] From at least the WWII ideas such as technological fixes, humanitarian technologies, and tech4dev, PIT, etc. has been transnationally framed, promoted, and funded, to solve or to assist human communities with their "basic needs" based in technical solutions. In particular, during emergency context, like natural disasters or a massive migration, or in the case of "resourceless" communities (due to physical, economic or political imbalances), humanitarian technologies are a path of action to "make a better world" At the same time, local responses have been emerging (like appropriated technologies, PLACTED or Civic tech), to contest colonial assumptions and practices around these projects. Shortcomings related to technological adoption, implementation or deploy performed by universities, international agencies, governments, and other privileged people are particularly relevant for those critiques. Imbalance and inequities of power, agency, and control has been largely discussed in study cases by STS and beyond. Nevertheless, there is an opportunity for propose alternatives, ways to engage and understand in those projects when which enact "techno-humanitarian systems" This panel welcomes contributions and experiences from researchers, practitioners and communities making and thinking questions "above and beyond" human-itarian technologies: What it means "make a better world" with using technology? Which values and paradigms share technologies to "make the world better"? Which good practices must replicate, and misconceptions must eradicate? Whose and how humans are benefited by these projects around the world?

Participants:

Entangled Engagement: Making Up Publics and Moralizing Gene Drives *Christian H. Ross, Arizona State University*

In recent years, gene drives have become often treated as

technological 'solution' to large-scale, societal and environmental 'problems' using gene editing. Gene drives have been considered both in the US and in Aotearoa New Zealand to alter local rodent species to prevent disease and conserve native ecosystems, but they have been most prominently discussed as a way to eliminate vector mosquito species that carry malaria across regions of sub-Saharan Africa and south Asia. Kevin Esvelt, a scientist at MIT and co-creator of gene drive technology, has been a leading figure in regional and international gene drive discourse, spearheading engagement initiatives with local communities to promote cautious consent and consensus from local communities prior to their use. However, Esvelt has simultaneously been a strong, public advocate for expedient, responsible development of gene drives, invoking a moral imperative that one ought to prevent malaria-related deaths if able. This paper explores how rhetorics of urgency, the moral responsibility of scientists, and constructions of local publics as proxies for global ones implicitly pre-frame the view of possible future worlds. The entanglement of local and global publics reinforces narratives of collective societal progress according to western, globalizing sensibilities of 'the good' and 'progress' which also situate science as both an epistemic and a moral authority. Recognizing the entangled discourse around gene drive prompts reexamination of the ways in which notions of local and the global publics fold back on each other and the imagined futures of controlling social and biological life that they underwrite.

Doing Good With Data – Bottom-up And Instrumentalist Notions Of Data In The UK Non-profit Sector *Ville Aula, London School Of Economics & Political Science*

Among the various movements that try to leverage technology as a tool to make a better world, "Data for Good" is an emerging phenomenon that addresses the question whether and how can data be force for good. In essence, "Data for Good" is a loose umbrella for attempts to use data sets, data skills, and data science as tools to pursue goals related to social and public good. A central tenet in this line of thinking is that data can have a positive impact on how charitable goals are pursued. This paper presents findings from a study of UK-based organisations that facilitate the use of data in the third sector. It outlines their rationales, emergence, and forms of operation. The paper argues that the attempts can be divided into bottom-up and instrumentalist approaches that represent fundamentally different notions of what does it mean to do good with data. In the bottom-up approach, charities and non-profits are trained to obtain data skills and to discover for themselves how data can make a difference for them. In the instrumentalist approach, charities and non-profits are presented with a supply of data science expertise and applications to showcase their value and to use them as an intervention to charitable practices. The findings highlights a difference in the values and paradigms of what is the relationship between data as a technology and pursue of social good. It expands the STS understanding of use of data sets beyond scientific environments towards more explicitly political contexts.

The Brazilian experience on Social Technology: lessons and policy implications *Rafael de Brito Dias, University of Campinas*

Despite recent setbacks due to changes in the Brazilian political context, "Social Technology" remains a relevant, noteworthy topic in the country. According to the widely propagated definition drawn by RTS ("Social Technology Network"), social technologies are "products, techniques or methods, developed in interaction with communities, representing effective solutions for social change" that may be altered and replicated in different contexts. These technologies have been regarded as effective tools to address complex, enduring social needs and demands, such as responding to sustainability challenges, fighting different forms of exclusion and promoting access to basic services and goods. Despite some very compelling evidence regarding the relevance of such initiatives, however, there is still some skepticism concerning its potential in promoting broad, long-term social change. We argue that the main results of these experiences are still overlooked, since they are (formally or informally) evaluated based on mainstream parameters that do

not cover all their actual outcomes. To sustain this argument, we draw elements from STS literature, from institutional documents and from case studies on Brazilian social technologies conducted over recent years. Based on the analysis of selected experiences, we argue that the development of technological artefacts should not be seen as a final objective on its own, but as a means to achieving other even more important goals, such as fostering social cohesion and community empowerment. This, we emphasize, may be on the foundation of a human-oriented science and technology policy model that may be replicated in other contexts, particularly in the "Global South".

Session Organizer:
Martin Andrés Perez Comisso, SFIS - Arizona State University
Chair:
Martin Andrés Perez Comisso, SFIS - Arizona State University
Discussant:
Ambollo Ambole, University of Nairobi

428. Categories of Hatred: Unearthing algorithmic cultures of hate groups, marginalization, and surveillance of minorities 2
6:00 to 7:40 pm
virPrague: VR 17
Participants:

The Assimilation Of Atheist YouTubers Into The Alt-Right
Brian Pleasants Harper, Indiana University Bloomington
The alt-right as a "movement" is difficult to effectively describe. It is composed of a variety of different interest groups with seemingly contradictory positions spread out over many different online social media spaces. Atheist YouTube provides an interesting case study for exploring the development of alt-right communities, as many of the major English-speaking content creators focusing on atheist content politically polarized during 2016, with those polarizing to the right arguably becoming a new constituent part of the alt-right. This shift may be partially cultural, but it is also necessary to examine the role of YouTube's algorithmic systems in aiding this political polarization and extremism. To that end, this paper uses a database of YouTube video metadata dating to the end of 2016 to conduct a cluster analysis of the videos based on content creator patterns of liked videos to reveal politically interpretable groups over time. Atheist YouTube is merely a part of these clusters, but by comparing the ideological splits in these clusters to close readings of the changing ideological content in atheist YouTube videos, this reveals through both approaches ideological and network correspondence between those atheist content creators and other channels important to the alt-right. This work speaks to polarization within algorithmic systems generally, but also provides us with a historical narrative of the formation of alt-right media on YouTube.

A Cult of Technoscience? Rhetorical Devices, Narratives and Sociotechnical Visions in Transhumanist Political Party Programmes *Sophie Marie Huber, University of Vienna, Department of Science and Technology Studies*
In the last decade, the world has seen an increasing prominence of the transhumanist movement. While Silicon Valley has proven to be a centre for the movement's visionaries, transhumanist political parties have risen as a global trend. As a philosophy that promotes the technoscientific transformation of the human, transhumanism strives to go beyond the limits of 'nature', ready to conquer even one of the most 'known unknowns' – death. While frequently criticized on a theoretical level, case studies about transhumanism are rare within and outside of STS. This research approaches this gap by focussing on the linguistic production of sociotechnical visions in two transhumanist documents – the constitution of the US Transhumanist Party and the party programme of the German Transhumanist Party. Two visions became visible: the vision of 'technology = magic' and the vision of 'paradise (lost)'. While a fascination with prestigious culture and a romantization of the Enlightenment era produced the vision of a paradise that was lost, technology was mystified as a magical fix for the problems of the human species. Though it may not turn base metals into gold, technology might turn humans into transcendent, practically immortal creatures.

Arguing that contemporary Western societies are hypermodern ones and thus marked by megalomania and excess, the paper offers a reading of transhumanism as an attempt to re-enchant society with the means of technoscience, and wonders if it may be fruitfully conceptualized as a 'cult of technoscience'. Thereby, the importance of engaging with transhumanism from an STS perspective is emphasized.

Session Organizers:
David Nemer, University of Virginia
Melissa Adler, Western University
Chair:
Melissa Adler, Western University

429. Accommodating A Plurality Of Values When Engaging Emerging Technologies In Sustainability Transitions – On Designing For Safety And Security In A Warming World II
6:00 to 7:40 pm
virPrague: VR 18
Climate change is a wicked problem, which many hope technological innovation will effectively resolve. Technologists themselves frequently claim their work will help pull off sustainability transitions successfully, e.g. to keep the temperature rise within acceptable limits or feed the 10 billion people projected to inhabit Earth by 2050. However, many factors complicate technologists' hopeful stories. Firstly, techno-scientific developments will interact reciprocally with perceptions of societal values and needs, whether associated with climate change or not. Insofar as these perceptions diverge, so will the acceptance of technologies, affecting their potential impacts. Secondly, technological developments' shape and direction is contingent on market and political constraints. This can compromise future technologies' capacity to serve public interests well, irrespective of any good intentions behind them. Finally, technologies that serve one specific goal – such as mitigating climate change – risk (unwittingly) justifying all means. Solving one problem then potentially means creating others. Contributions to this session shed light on how to resolve value conflicts that arise where emerging technologies feature in sustainability transitions, e.g. to sustainable agriculture or a circular- or bio-economy. While focusing on accommodating safety and security to sustainability, values like democracy, equality or justice are not excluded. We welcome contributions using transdisciplinary (possibly arts-based) methods geared towards bridging gaps between science, society, policy and industry. Since technologies cannot realize sustainability transitions by themselves, we stimulate contributions presenting novel narratives of change, while refiguring the problem space of safety, security and sustainability.

Participants:

On Crosses and Early Warning Systems: Coping with Extreme Water Events through Heterogeneous World Arrangements
Tomás José Usón Pizarro, Humboldt University of Berlin; Macedonio Villafán Broncano, Universidad Nacional Santiago Antunez de Mayolo & IPEAN, Peru; Rufa Olortegui Mariño, Universidad Nacional Santiago Antunez de Mayolo & IPEAN, Peru
Due to its proximity to the Cordillera Blanca (White Mountain Range) and current changes in climate regimes, the region of Ancash in Peru has been increasingly exposed to extreme hydrological situations such as floods and droughts, leading to the population developing diverse strategies for water source management. Notably, several communities have strengthened deep relations with local crosses that ensure the welfare of the population. In the case of the Aguak lake, located over the villages Paria-Wilcahuaín and Monterrey, the cross of Aguak protects the inhabitants and crops from possible outburst floods coming from the lake. In Mará, moreover, the cross Chuna Mará is associated with the capacity of the community for building canals and, ultimately, avoiding water scarcity scenarios. Such value systems for water management, strongly influenced by the controversially-called Andes' animist tradition, is a crucial aspect in a region like Ancash, where techno-scientific efforts for water and risk management have clashed with local groups – the latter arguing that the implementation of foreign technology such as meteorological stations and early-warning systems might be the ultimate explanation for anomalies in water regimes. Based on an ethnographic research built upon interviews and participant

observation, this article aims to explore how cross-based value systems might coexist with institutional water and risk management systems, what are the meeting and conflicting points between them, and how the encounter of both world arrangements can lead to a water management system where all entities – humans as other-than-humans – might coexist.

From Clean Stove to Rural Vitalization : The Anti-Politics Machine in China *Wei Hong, Tsinghua University*

In the rural areas in Northwestern China, a majority of the families are still burning biomass or coal for cooking and heating, which may cause huge indoor air pollution and release carbon dioxide to the atmosphere. In 2017, clean cookstoves were introduced to a village in Yan'an city by the foundation of a Chinese firm, and I led a team of seven local students to follow the adoption of the new technology. Not surprisingly, without a contemporary understanding of air pollution that is compatible with the technology, the villagers were reluctant to use the new cookstoves. The local caves, frame beds, and traditional stoves constitute a comprehensive technological system which has been coproduced with the local social order. It is therefore impossible for them to abandon their traditional stoves. Nonetheless, the clean stove project has become a nexus of international organizations, private enterprises, local governments and academics. Although this project initially took an innocent technocratic approach, it is gradually intertwined with political sectors at various levels. In the 19th CPC National Congress, rural vitalization was put forward as a national strategy, with anti-poverty as the top priority. In response to this new political task, the foundation's focus turned to boosting local economy. Just as a development project in Lesotho incidentally expanded state power in the book "The anti-politics machine", the clean stove project was also wisely used to strengthen government-enterprise relationship.

Social Acceptability Of Virus-based Biotechnological Innovation During COVID-19 Epidemic Emergence: A Focus-group Study in Italy *Roberto Carradore, University of Milan-Bicocca; Paolo Grigis, University of Milan-Bicocca; Riccardo Rella, University of Milan-Bicocca*

In the last years, an increasing policymakers' attention is devoted to the usage of pesticides in agriculture within the EU context, so that ever-greater restrictions are pushing researchers to develop sustainable and socially acceptable alternatives. Moreover, at a global level, food security and food safety have emerged as crucial contemporary issues connected to soil exploitation and pollution, thus leading to evaluate specific viruses as plant protection products (biocontrol). Our purpose was to investigate the non-expert's acceptability towards the usage of virus-based biotechnologies (stemming from both natural and bioengineered viruses), with specific reference to possible agricultural and medical applications. Furthermore, it was possible to monitor overtime changes in the acceptance processes in relation to the COVID-19 outbreak emergency in Lombardy, Italy. Through the implementation of creative focus-group methodology, we were able to assess differences and analogies linked to socio-demographic characteristics like age, gender, education level, and proximity to highly/poorly urbanized areas. These factors have been inquired in determining risk perceptions, morality evaluation issues, conditions for acceptability and trust/distrust dynamics before and during the emergency. We also probed the opinions towards the stakeholders potentially involved in the process of communication of virus-based technologies with the general public, focusing on the aspects of information accountability and communication effectiveness/efficiency. In conclusion, we offer an alternative perspective that could ease the development of both indications for adequate regulation of these technologies - in terms of information spreading and expert/non-expert interface - and responsible research practice.

Session Organizer:
Pim Klaassen, Vrije Universiteit Amsterdam
Chair:
Megan Palmer, Center for International Security and Cooperation, Stanford University

430. Science Technology & Innovation (STI) Roadmaps and the

SDGs
6:00 to 7:40 pm
virPrague: VR 19

Sustainable Development Goals (SDGs) progress reports, index and dashboards are open to the public after four years of sustainable development (SD) programme. Some countries (especially those in sub-Saharan Africa) remained backwards. With 17 goals and 169 targets; SDGs are multidimensional and ambitious. It's hard to achieve by 2030 without development of science, technology and innovation (STI). Despite challenges new technological innovations widen gaps for STI laggards. This panel intends to throw lights on impacts of rapid technological changes on attainment of SD? Rapid technological change disrupts markets, exacerbate social divides and raise normative questions. However, big data; machine learning; artificial intelligence; robotics; block-chain; 3D printing; nanotechnology; satellite & drone technologies, e.t.c can bring transformation of economies. We also need to know how developing nations can build STI capacities to deploy these transformative technological innovations. How can we use these disruptive technologies (as indicators) to monitor progress or lack of local actions in poor-performing countries? STI Roadmaps for SDGs are meant to speed up process of developing new or adapting existing solutions to meet SDGs and targets by 2030. What kinds of STI policies or roadmaps will help countries lagging behind without appropriate socio-technological systems or transitions? How can nations use regional and global partnership to develop STI communities? What are the roles of global STI communities? Can there be co-production of STI roadmaps for SDGs and how can we harness grassroots innovations to achieve SDGs? This panel contributes knowledge to STS on how sustainability science is shaping the emerging world.

Participants:

Co-production of knowledge for attainment of sustainable goals in developing countries: A focus on Africa *Emmanuel Ejim-Eze, Institute of Engineering, technology and innovation Management*

Challenges facing attainment of sustainable development (SD) have been described as someone trying to hit moving targets. Although political, economic, social, environmental and technological developments seem location specific, the risks of climate change, inequality, cultural barriers, energy price shocks, disease outbreaks e.t.c are common challenges. SDGs may seem ambitious but there is a resolve not to leave anyone behind. Countries such as those in Africa met none of the last eight millennium goals and meeting seventeen SDGs may be an uphill task. How can global public goods address SD issues peculiar in some regions that lack capabilities? How possible is it for countries in Africa to develop without local R&D capability, Science, technology and Innovation (STI) capabilities? This study investigated how co-production of knowledge can address shared development challenges? It also looked at how co-production of knowledge for global sustainability could help in achievement of SDGs in developing countries. This study surveyed the literature on co-production of knowledge and innovation systems. Secondary data were obtained and analysis shows that Co-production is one of the most important ideas in theory, practice of knowledge and governance for global sustainability. Aligning knowledge and action for global sustainability is essential to the future. Other findings show that issues of donor funding, demand of scientific evidence, poor implementation of policies, and exclusion of users amidst others are constraints to co-production of knowledge. Some of the countries lack continuous supply of STI indicators to measure knowledge generation and development overtime. The authors offered some policy recommendations.

International development through women's empowerment in science: implications for inclusive innovation *Gita Ghiasi, Université de Montréal; Matthew Harsh, California Polytechnic State University; Vincent Lariviere, Université de Montréal*

In response to the growing concern on the lack of women in science, policies have largely focused on either increasing the enrolment of women in science programs or on affirmative actions to remedy the attrition of women from scientific careers. However, these efforts could be futile, unless coupled with systematic efforts to alleviate inequalities in other dimensions

that are likely to hinder social inclusion and cohesion. This study aims to address this need by investigating how international development is promoted through (1) implementation of mechanisms to support participation, retention and progression of women in science in developing nations, and (2) women's engagement in scientific advancements that help the attainment of sustainable development goals (SDGs). Of these, the former reflects on the 5th SDG on gender equality and the latter on the 17th SDG on the global partnership and development and transfer of science and technologies that can help the global community meet all of the SDGs. Using meta-data of scholarly publications, authorship, and author social networks, this study seeks to address two priority dimensions: first, it investigates gender differences in scientific activity, collaboration patterns, and citation practices of researchers from developing nations. Second, it examines the extent to which scientific advancements that contribute to the success of SDGs are led by women. The study has significant implications for both developed and developing countries and provides guidance for international development policies, including encouraging women's participation and retention in scientific research, as well as a fairer recognition of their contributions.

Bibliometric evidence on Innovation for Sustainability in the Global South *Julian David Cortes Sanchez, School of Management, Universidad del Rosario*

Commercial and knowledge exchange within the Global South (GS) (i.e., countries mostly located in Asia, Africa, Latin America and the Caribbean [LATAM]) is becoming increasingly important [1]. A sustainable commercial and knowledge exchange agenda in the GS must consider a sustainability perspective and the transversal role of innovation in its achievement [2], [3]. Several concerns may arise by counting for the thousands the number of research and knowledge entities (e.g., research papers, patents) related to sustainability and innovation produced by the GS, such as how to identify the trending research topics and the structure of both the innovation-related fields and the researcher/institutional social capital? Which is the impact of corporate-academic research collaboration? Which are the key authors/institutions in the social capital network to build strategic alliances with? Methods from bibliometrics enable us to generate analyses over those inquiries [4]. The objective of this study, therefore, is to conduct a comprehensive bibliometric outlook on the output, impact, and structure of the research on innovation in management and STEM (Science Technology Engineering and Mathematics) disciplines for sustainability in the Global South. In this line, integrating into a unified framework both topics of sustainability and innovation in the GS. This study deepens the corporate-academic collaboration to map strategic national/international firms advocating in the aforementioned fields. In addition, local–global perspective and stakeholder participation are methodological appraisals often considered for sustainable development problems in strategic policymaking [5]. References [1] E. Ortiz-Ospina, D. Beltekian, and M. Roser, "Trade and Globalization - Our World in Data," 2018. [Online]. Available: https://ourworldindata.org/trade-and-globalization. [Accessed: 16-Aug-2019]. [2] United Nations, "Goal 9 -Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation," 2018. [Online]. Available: https://sustainabledevelopment.un.org/sdg9. [Accessed: 15-Aug-2019]. [3] UNDP, "Southern Development Solutions for the Sustainable Development Goals," UNDP, New York, NY, US, 2019. [4] I. Zupic and T. Čater, "Bibliometric Methods in Management and Organization," Organ. Res. Methods, vol. 18, no. 3, pp. 429–472, 2015, doi: 10.1177/1094428114562629. [5] P.-M. Boulanger and T. Bréchet, "Models for policy-making in sustainable development: The state of the art and perspectives for research," Ecol. Econ., vol. 55, no. 3, pp. 337–350, Nov. 2005, doi: 10.1016/j.ecolecon.2005.07.033.

The Absence of a Justice Matrix in Japan's STI for SDGs Policy Society 5.0 *Ayşe Şehnaz Kart*

Today, more than ever, humanity has the opportunity to understand and analyze the world with a holistic approach and take the necessary steps in directing the upcoming paradigm in human history. In this regard, The Japanese Government executes an ambitious initiative in pursuit of Sustainable Development Goals (SDGs). This paper firstly presents the Japanese STI for SDGs model, then describes the island nation's newest concept Society 5.0, and makes the connection in between. It demonstrates the absence of Goals 10 and 16 in the Model, revealing their central role in the whole picture. The author correlatively reveals the significance of linking innovation policies with social justice while making a critical discourse analysis on Society 5.0's liberation discourse. As a policy suggestion, the paper suggests the adoption of the concept of technological justice as a new paradigm and the revival of its core, the Right to Science and Culture as imperatives to achieve the idealistic goals set by Society 5.0 and SDGs.

Session Organizer:
    Emmanuel Ejim-Eze, Institute of Engineering, technology and innovation Management

Chair:
    Emmanuel Ejim-Eze, Institute of Engineering, technology and innovation Management

431. Pharmaceutical and diagnostic futures: innovation, governance and practice #3

6:00 to 7:40 pm
virPrague: VR 20

The development, marketing and use of new pharmaceutical and diagnostic products is playing an increasing role in shaping healthcare across the globe. Major changes are underway that may represent a fundamental transition in the sector, driven by the search for new sources of value, emerging technologies and systemic shifts in healthcare provision. Novel targeted and biological products are increasingly tied to new diagnostic tests facilitating the development of personalised medicine. A wave of ultra-expensive speciality and orphan medicines are posing major challenges for both access and existing regulatory frameworks and reconfiguring relations between patients and industry. The dynamics of pharmaceuticalisation and diagnostic innovation are extending the reach of Western medicine and international bioscience companies into new markets and the Global South, raising important social and ethical questions. This Open Panel invites papers related to pharmaceutical and diagnostic studies. We welcome papers on: the political economy of the global bio/pharma and diagnostics industry, new and alternative forms of knowledge production, the development of novel biological and speciality products, the changing role of patients in innovation and regulation, the challenge to existing forms of governance and Health Technology Assessment, medicines for neglected and rare conditions, and situating pharmaceutical and diagnostic innovation within broader health system transitions. In particular, we are keen to encourage submissions from critical, feminist, post-colonial and Global South perspectives. The Panel aims to help build a global network of STS scholars working in this area and develop collaborative research on the major changes underway in this key sector.

Participants:

Another Type of Precision Oncology? Knowledge Production within a Platform of Cancer Immunotherapy in Switzerland *Nils Graber, STS Lab, University of Lausanne; Luca Chiapperino Chiapperino, University of Lausanne, Faculty of Social and Political Sciences; Francesco Panese, University of Lausanne, Faculty of Social and Political Sciences*

Over the last three decades, the landscape of cancer medicine has been dramatically changed by the promissory technologies of 'precision oncology'. First, cancer genomics' tools permitted to develop 'targeted therapies' through the identification of actionable pathways specific to each tumor. More recently, since the 2010s, a new wave of cancer immunotherapies has been developed, which is linked to both monoclonal antibodies targeting 'immune-checkpoints inhibitors', and adoptive cell therapies relying on expanded or engineered T cells stemming from patients. In this paper, we explore knowledge production within a platform of T-cells therapies in Switzerland. Building on Löwy's (1996) conception of cancer immunotherapy as a boundary object that has permitted to articulate fields that were separated before, we ask: how is the new wave of cancer immunotherapies related to targeted therapies? To which extent

is it bringing a new idea of 'precision' within cancer medicine? Drawing from interviews with researchers and clinician-researchers, we show that a specific understanding of precision is at stake when hybridities between immunological and genomic concepts of cancer development are experimented with. We discuss the way researchers produce knowledge about T cells. While relying on similar equipment than genomic research to identify neo-antigens, investigating such immune entities for cancer therapies re-activates concepts that move beyond an understanding of this disease as fundamentally driven by genetic phenomena. Finally, we suggest this specific way of understanding 'precision' oncology has to be described to grasp the larger political economy of innovation at stakes with this new wave of immunotherapies.

Health inequities and ethical conflicts in the implementation of precision medicine oncology in Brazil *Jorge Alberto Bernstein Iriart, Instituto de Saúde Coletiva da Universidade Federal da Bahia*

Oncology is undergoing rapid transformation with the incorporation of new diagnostic and therapeutic technologies such as genetic testing, target drugs and immunotherapy. The high cost of new medicines, however, poses a challenge for equitable access to precision oncology, especially in low and middle-income countries. Based on ethnographic research carried out in public and private oncology clinics with a range of health professionals and patients in the cities of São Paulo, Rio de Janeiro and Salvador, Brazil, we examine the inequities, distortions and ethical conflicts that emerge as precision oncology is being incorporated into the Brazilian health system. Brazil has the largest free and universal health system in the world whose principle is to provide integral and equal assistance to the entire Brazilian population. In practice, however, the system is fragmented among patients who have private health insurance, with different levels of coverage, and patients who depend only on the underfinanced public subsystem. The drug approval process is complicated and different institutions evaluate what will be available in the public and private subsystems. In this context, the judicialization of health emerges as a form of access to high-cost technologies. Our data shed light on the conflicting interests between different social actors (pharmaceutical industry, health insurance plans, oncology clinics, public hospitals, government agencies, oncologists and patients) and the emerging ethical conflicts and distortions that are contributing to the increase of health inequities.

Emerging Implants: Shaping Governance *Saheli Datta Burton, King's College London*

Emerging nanorobotic implants hold immense promise for medicine and health. Implantable brain-computer interfaces (implants hereafter) are increasingly used in neuro-prostheses, brain-controlled exoskeletons or as nanorobotics enabled motile nanoparticles performing specific in-vivo tasks such as targeted drug-delivery, diagnostics or incisions. A key characteristic of these emerging artefacts is that they will have some level of autonomy to perform tasks and will communicate with a human or artificially intelligent agent external to the host's body. This suggests substantial ethical and philosophical issues widely debated within the context of nanomedicine traceable to early scholarship but beyond the remit of this research. Our focus is on understanding how existing governance arrangements (or its lack) encourage or discourage research and translation of these emerging artefacts? Our consideration of 'governance' perspectives not only include regulatory arrangements for translating research from bench to bedside but also the organisation of interdependent infrastructures such as funding mechanisms, skills availability and entrepreneurial support ranging from access to product distribution and marketing networks to legal expertise in intellectual property and so on. Questions also arise around biocompatibility and safety issues linked to RFID-tracking/hacking/data privacy. Through discussions with basic scientists leading key research in the area, policymakers regulators and social scientists, we aim to understand the ground realities that are shaping and being shaped by research and translation pathways. Finally we reflect on recommendations for what is needed (e.g. policy changes) to routinise these artefacts into practice for the benefit of society.

On the technological enhancement of human performance by the use of psychotropic drugs and its ethical implications *Lauren Predebon, Universidad de la República (Uruguay)*

The expansion of psychotropic drug use in the last decades has resulted in a variety of types of consumption, not always connected to a mental disorder. In this sense, the concept of "cosmetic psychopharmacology" (Kramer, 1993) emerges, defined as the use of a psychotropic drug by a person who is not ill in order to feel even better. An example of cosmetic psychopharmacology is the use psychostimulants as neuroenhancers, that is to say, disconnected of its official indications (the treatment of ADHD and narcolepsy), aiming to improve cognitive capacities such as attention and memory. The literature describes a strong association between the use of such drugs and the quest for performance at work and study, inspiring questions about its relationship with current kinds of experience and subjectivity. This paper approaches some issues raised by the practices of neuroenhancement, by presenting partial results of interviews carried out in adults residing in Montevideo (Uruguay) who have used psychostimulants as neuroenhancers, as a way to explore motivations, types of use and opinions on the matter. It seeks to contribute to the knowledge about how such practices are, at the same time, product and producers of new kinds of experience and subjectivity in its relatively recent outbreak in the Global South (considering that they have been well spread in the North, specially United States, for some time) and the corresponding unavoidable ethical implications.

Session Organizer:
Paul Martin, Department of Sociological Studies, University of Sheffield

Chair:
Paul Martin, Department of Sociological Studies, University of Sheffield

432. Postphenomenology and the Built Environment
6:00 to 7:40 pm
virPrague: VR 21

The built environment—the objects and devices and architectures that make up our human-made surroundings—shapes our lives in a multitude of ways. In this session, we take up ideas from the postphenomenological perspective to draw out and analyze these dynamics. This perspective enables distinctive contributions in the study of the multiple non-innocent ways that our lives are mediated by architectural technology. In our first paper, Lars Botin explores how postphenomenological notions of multistability and mediation can be used to cultivate sustainable and responsible development practices in urban spaces. Inger Berling Hyams also takes up the postphenomenological notion of multistability, and she uses it to develop an account of power in urban space, one that manages to remain situational and non-totalizing. In our third paper, Stanley C. Kranc takes up this notion as well and considers how our infrastructure, and water infrastructure in particular (such as in the Flint, Michigan case), can take on a backgrounded place within our experience. Søren Riis, in our fourth paper, builds on Martin Heidegger's ideas to explore the kinds of lives made possible by smart home technologies. And in the final paper of this session, Robert Rosenberger considers the case of public-space security cameras and, using ideas from postphenomenology and actor-network theory, explores their potential to take part in "hostile" strategies that target vulnerable populations.

Participants:

"Straight outta South Harbour:" Postphenomenological Reflections on Urban Design and Development *Lars Botin, Aalborg University Copenhagen*

Postphenomenology has in recent years tried to show that 'things matter' and that the latter is a question of process and practice. There are matters that matter, and it is a question of mattering; i.e. a question of caring and nourishing. This paper is revolved towards urbanity as a matter of caring and nourishing in a postphenomenological perspective. Urban design and planning has for too long been left in the hands of calculative power and sophisticated drawing technologies that has led to rather dystopian metropole and urban centres around the world. How can multistable and human-technology relation perspectives on

what urban design and planning is and can become, inform and enrich responsible, sustainable and liveable designed and built environments? The paper is cased in the South Harbour area in Copenhagen, which is in a radical transformation from old dock areas, and working class allotments, to middle and upper class flats with harbour view. There is a clash in between old and new world, different strands in politics and interests, and 'ownership' of the area, as well as concerns in relation to the 'spirit' of the South Harbour. How can postphenomenology shed light on the controversies and how can concepts like multistability and human-technology relations support and facilitate appropriate, sustainable and responsible development in urban areas?

Architecture, Power and Multistability *Inger Berling Hyams, Roskilde University*

Architecture has long been thoroughly associated with power either as a direct function of its relationship with states or princes, or simply in some lines of theory (Bataille 1929, Hollier 1989) as structurally power-laden. Architecture is a frame that at once structures and limits but it empowers and enables too. It is often through architecture that place emerge from abstract space. In each such emergence agendas reside as is well known in city planning, but even the power strategy of city planning can be countered by tactics from a pedestrian view, which is experienced based and more place-oriented (de Certeau [1980] 1984). The main contribution of this paper is to align and compare de Certeau's classic reading of the city with more recent postphenomenological work as Rosenberger's reading of the politics of benches (Rosenberger, 2017). The paper argues that using a postphenomenolological approach that focus on the multistability of architectural design makes way for a non-totalising and situational approach to architectural analysis. This in turn not only mitigates the cause and effect readings of architecture and society criticized by Albena Yaneva (Yaneva 2012), but also thinking multistability of design might offer spaces and places where power is more openly distributed or in some measure counterable.

"Water, Water Everywhere": Perception of a Utility Infrastructure in the Background *Stanley C Kranc, University of South Florida*

While all humans desire and need clean water, in urban environments the impossibility of local provision from natural sources means that engineered systems must be in place for purification and distribution. Understanding relevant social implications—the experience of a supply network—presents a challenging task. While ostensibly logical for such studies, Actor Network Theory has been elsewhere discounted (Latour). Instead, a postphenomenological methodology, regarding the "background" relation is appropriate here: examining these systems as a mediating technology, functioning off to the side, unattended. Water networks are typically hidden, indicated only faintly by utility markings on the ground. How then is this mediating relation evident? In practice, consumers are never far from a water source, thus experiencing the system as supplying potable water "everywhere". The network appears as infilled with a continuous potential surface, constituting a field of perceptual representation. Such reflections raise significant concerns about the nature of technological mediation in the relations between human and world, however. Most consumers trust their water source, but are utilities functioning in the background environment actually reliable? Recently, administrative decisions regarding the Flint, Michigan water system created untrustworthy conditions that were not simply system breakdown, but rather an instance of Ihde's multistability: here operational multistability, the system functioning mechanically but tragically delivering impure water to consumers initially unaware of any change. Flint is not an isolated case; similar analyses apply to other distribution systems, as for instance transportation networks that can facilitate the spread of pathogens while delivering people or produce.

Building Dwelling and the End of Thinking *Søren Riis, Roskilde University*

In a double sense, Martin Heidegger succeeded in making the human dwelling on earth questionable. In his lecture Building Dwelling Thinking Heidegger made the field of architecture a matter of crucial importance to human existence. By connecting reflections on architecture and the build environment with some of his early insights from Being and Time, Heidegger developed a concept of dwelling able to reveal fundamental characteristics of being human, and by the same token, he gave it a unique positive significance. In the research literature, the fundamental ambivalence of Heidegger's notion of dwelling has so far been quite neglected. In this presentation, however, I will develop this ambivalence and use it to unfold a notion of dwelling, which explores and shows more clearly some of the dangers of his understanding of dwelling. By extension, this danger is clearly manifest in what today has come to be known as smart homes that promotes "easy living", but ultimately regulates and automates human existence. Smart homes, so the claim, is the physical convergence of human dwelling and Heidegger's concept of the enframing. The present critique of Heidegger has been made possible through postphenomenological considerations that emphasize the analysis of the material and technological embeddedness of particular life forms and practices.

Hostile Public Spaces and the Case of Security Camera Surveillance *Robert Rosenberger, Georgia Institute of Technology*

A discussion is emerging over an alleged hostility built into public spaces. Along with others, I have identified instances and patterns of what can be called "hostile design" (among other names) in which the objects of public spaces are built in ways that close off particular uses, and that can have the effect of pushing out particular targeted groups. In my own work, and particularly in my recent book Callous Objects (2017, Minnesota), I argue that those living "unhoused" are targeted by a campaign of anti-homeless design and law that can be seen to operate (in different ways) in many cities across the globe. Common examples include benches build in a way that deters their usage as a place to sleep, spikes set into ledges to prevent sitting, and trash cans built with lids designed to dissuade picking. I've used ideas from postphenomenology and STS to offer an account of hostile design and to criticize anti-homeless design in particular. Here, I explore the curious case of public-space security cameras. They are often listed as paradigmatic examples of hostile design, and often play a part in anti-homeless agendas. Yet their hostility does not function in the same manner as the spikes or trash can lids. Building on work in the field of surveillance studies (and of course Foucault), I develop an account of surveillance hostily.

Session Organizer:
Kirk Besmer, Gonzaga University
Chair:
Kirk Besmer, Gonzaga University

433. Vulnerabilities, Technological Environments, and Material Ontologies
6:00 to 7:40 pm
virPrague: VR 22

Living in dense technological environments implies engaging in history and social dynamics in a very specific way. Both living beings and objects engage with each other and thus expose themselves to past and present influences. Humans and non-humans expose themselves to past desires, material history, and political or ethical concerns through technology; on their part, technologies expose themselves to new human concerns, material decay, new materials, changing physical forces, and biochemical arrays. Getting exposed to others is the mark of vulnerability, the condition to openness and change. However, most of our notions regarding vulnerability are negative: caring for others, human or not, is associated with preservation in steady conditions, forced endurance, enclosure, and control. Those thus protected risk to become (politically, ontologically, culturally) estranged from the world; their hopes shrunk in an already frozen future. The aim of this panel is to explore the different ways in which vulnerability articulates change, technological and scientific reorganisation, and expectations: how does it unveil the presence of disappeared cultures, organisms and shapes? What kind of ethics is behind this openness to the world? How do humans and non-humans agree or acquiesce to past endeavours, values, and notions of dissolution? This perspective would help to make visible the relevance of STS to understand

changes and challenges regarding normativity, specially when it is linked to emergent attitudes in technological environments that relate to ways of extinction, ageing, obsolescence, and degradation.

Participants:

Why Did the Glow-worm Cross the Book? *Juan Felipe Guevara Aristizabal, Universidad Autónoma Metropolitana-Cuajimalpa, México*

In the midst of Heidegger's The Fundamental Concepts of Metaphysics a glow worm briefly shines, not for the chemical reactions occurring in its light-producing organ, but for what it can see—a photograph that presumably depicts how the glow worm sees the world. It enters at a crucial moment in which Heidegger is discussing the relationship between organs and capacity, a feature of utmost importance for his characterization of animals as poor in world. We could say that the glow worm shines for the span of less than a paragraph, if it were not for Heidegger's unconcern with the experimental milieu in which the photograph was produced, an omission (signaled by parentheses) in which a new field of questions opens up. The photograph was taken by Josef Maria Eder and discussed by Sigmund Exner in his 1891 manual on animals' compound eyes. Like the hand that writes, the microphotograph apparatus that took the picture erased itself from the picture. Yet, its withdrawn presence may call into question Heidegger's blunt limits between matter (whether a stone or a technical object), animals and humans. Rheinberger's experimental systems will be of great use to construct a general frame for reappraising the concept of philosophical toys, a wide arrange of visual apparatuses developed at the end of the 19th century to study vision and movement. The openness that the latter conceptual framework draws upon objects will be essential for discussing the alliance of creativity and vulnerability.

Involving Vulnerabilities: Experimental Wastewater Systems in a Damaged Planet. *Rebeca Ibáñez Martín, Humanities Cluster, Dutch Academy of Science (KNAW)*

In this paper, I think ethnographically 'vulnerability' as it is enacted in a dense socio-material experimental setting. In 2017 I started fieldwork in an ecovillage in the south of the Netherlands. During my fieldwork I have examined wastewater treatment practices in the ecovillage. The villagers decided to install a pilot of an experimental waste water system that uses micro-algae to further clean wastewater. The technology has been developed by an engineer and her team working at the Netherlands Ecology Institute (NIOO-KNAW), and later implemented in a 'real life setting'. As an anthropologist, I have documented both the work at the lab and the implementation and functioning of the pilot in the ecovillage. Villagers' desire to treat wastewater off-grid entices learning to collaborate and coordinate with global actors such as researchers, governmental institutions, global fish, microalgae and polluted oceans. But also, with local forces such municipalities, water managers, and an array of different human and non-human actors. Recognizing vulnerability as a characteristic of a damaged planet is a starting point to think vulnerability as a quality of solutions for and arrangements to tackle and remedy planetary damage. In this paper I thus trace 'vulnerability' as a property that is enacted in three different practices: 1) Vulnerability as the property of the technological infrastructure; 2) vulnerability as the property of damaged ecosystems; 3) vulnerability of the 'the social', understood as the vulnerability embedded in the group of people that live and care for the ecovillage in a daily fashion. What can we learn, while tracing vulnerability, of the different normative repertoires pertaining to each practice?

Interfaces, Changes, and the Rationale of Vulnerability: Translation Machines in Context. *Nuria Valverde Pérez, Universidad Autónoma Metropolitana-Cuajimalpa*

Flows of matter and information have been at the core of our understanding of life, vulnerability and transformation. In the early 20th century, some engineers assumed that sustained interaction with a particular type of wave would transform objects and living things on a molecular and/or spiritual level. Quality, durability, enhancement and virtue were some of the expected benefits of these interactions whenever they were considered to be positive. Interaction exposed entities to others, and this vulnerability was their only chance to cope with change, (moral) integrity and durability. There were risks: the wrong waves could produce the opposite effect. These concerns made reflections on insulation and selective information a fundamental axis in understanding communication between different entities, and therefore in designing interfaces. As devices for selecting information and controlling exposure to the environment, interfaces define what a hostile environment is, but they also define disorganisation, energy waste and meaninglessness. They are thus linked to moral notions such as desirable limits of exposure. Within this framework, this paper analyses the evolution of notions of interface by exploring the development of a specific type of interface: translation machines. I will focus on the uses of two devices: the Phraselator used for military purposes in Afghanistan and Iraq between 2001 and 2005; and NESPOLE!, a speech-to-speech translator system intended for commercial use developed during the same period. The aim of the paper is to clarify the types of vulnerability produced by these devices and their links to the values and expectations held by the agents involved.

Session Organizer:

Nuria Valverde Pérez, Universidad Autónoma Metropolitana-Cuajimalpa

Chair:

Nuria Valverde Pérez, Universidad Autónoma Metropolitana-Cuajimalpa

434. Aesthetic Interventions: Exploring Emerging Worlds Through Art III – Methods

6:00 to 7:40 pm
virPrague: VR 23

This panel explores art interventions into sociomaterial worlds and their implications for STS. It draws on the assumption that the complexity of emerging worlds requires innovative modes of approaching and engaging with these worlds. Building on recent discussions of the potential of art in exploring the nexus of science, technology, and society (Salter, Burri & Dumit 2017, Sormani, Garbone & Gisler 2019), we aim to further this conversation. The visual and aesthetic dimensions of scientific knowledge production have been discussed in STS for a long time. More recently, art in particular has attracted more attention by STS scholars who have addressed connections and boundaries between art and STS, relations between science, art, publics, and democracy, and project collaborations between scientists and artists. In this panel, we explore art in/as STS research. Art may serve as a way to express feelings of unease, confusion and powerlessness while at the same time has the potential to critically reflect sociomaterial developments and challenge power structures. By engaging with such issues, art interventions into emerging worlds are a form of "acting now". In this panel, we aim to discuss in what ways art may open up grounds for realigning and adding to STS practices. We welcome contributions that reflect on the potential of art in exploring emerging sociomaterial worlds. We are interested in both theoretical papers discussing the implications of art in/as STS research, and presentations of art practices / projects / interventions that examine science and technology driven realities of our times.

Participants:

Installation Ethnography: Curation, Aesthetics, Experiments *James Adams, University of California, Irvine; Tim Schuetz, UC Irvine*

What does the immersive space of an art installation offer STS scholars that cannot be achieved with a standard, peer reviewed article? In this presentation, we will describe experiments with installation in the "Visualizing Toxics" projects hosted by the University of California Irvine's Center for Ethnography. These projects ("Visualizing Toxic Subjects," 2019 and "Visualizing Toxic Places," 2020) were designed to explore "toxicity" in many guises (chemical, discursive, gendered, mediated, and others), and ways toxicity can be conveyed and analyzed through diverse modes of visualization (expanding how visualization is conceived, developed and used in STS research). In both projects, geographically distributed participants produced diverse visualizations (as digital photo essays) that were collaboratively analysed to advance their critical effects. In the 2019 project, select visualizations were presented in a gallery show designed to

foreground different modes of visualization. For the 2020 show, we will use our visualizations -- and other sensory devices - to draw out the dynamics of toxicity. Working with professional installation designer (and anthropologist) Scott Lukas, we will learn about and experiment with diverse tactics and techniques for producing critically e/affective installations. We expect our April 2020 installation in Irvine to work not only with visualizations but also with sound, light and perhaps ambient color and smell. Other, differently designed installations may be set up at other sites, allowing for generative comparisons.

The hyperbola stories: A collaborative narrative methodology for enacting sociomateriality *Horst Rachel, The University of British Columbia; Susan Sechrist, The University of British Columbia*

Experimental literature has long been a generative environment for thinking through and experimenting with theoretical ideas about systems, networks, and complex sociomaterial assemblages. Science and technology thinkers such as Latour and Haraway have often turned to the literary imagination as a provocative space for storying the implications of our sciences and maths and designing new and creative ways of thinking the world in order to find solutions to our most pressing problems. It is not just the artifact of the story, but the processual art of storying that can be a radical tool for (re)imagining and (re)inventing reality. Avant-guard groups, like OuLiPo, have focused on the process of writing to illuminate the deeply contingent and post human collaborations of authorship, and the materiality of text. In this presentation, we will share our collaborative storying methodology, which we designed to explore the narrative implications of a mathematical concept: specifically $(x^2 + y^2)^2 = a^2 (x^2 - y^2)$, the nonlinear formula for the pedal curve of a rectangular hyperbola, the Lemniscate of Bernoulli. We each took up this formula and storied the sociomaterial implications of these remarkable shapes. We then engaged in collaborative, proliferating, and recursive storying, thus problematizing the binaries of reader and author, experiment and experimented, and revealing the richly contingent collaborations between tool, method, and sociomaterial context. We hope this storying methodology, as well as the emergent data of entangled texts, will be a provocation to breathe narrative possibility into the ways we think and do science and math.

Navigating creative approaches to wayfinding research in STS *Rebecca Noone, University of Toronto*

In contemporary information conditions, wayfinding is often associated with 'asking' Google Maps for directions. Over one billion people per month use Google Maps and Google estimates that one-in-three mobile searches is location-related. What are the stakes if Google is the go-to broker of spatial information? And, to paraphrase Sarah Sharma (2012), whose routes and what pathways does Google Maps direct one towards? I approached these questions through performance- and drawing-based research. In the early 1960s, artist Stanley Brouwn stood on a street corner in Amsterdam and asked people for directions with pen and paper in hand. Over the course of the project, Brouwn amassed a collection of hand drawn maps. Now, in contemporary conditions of geomedia, I reactivated Brouwn's work as an exploratory research project in Toronto, New York City, London, and Amsterdam. I also collected drawings and notes, spontaneously produced in situ, which I analyzed in relation to the location-awareness and real-time feedback of digital mapping technologies. The creative intervention cuts through the everyday and points to the ways digital mobile tools are put to work and how they parallel, intersect, and diverge from other forms of a city's ambient intelligences. Situating these findings in the context of a Google Maps discourse, the question becomes, what types of orientations and mobilities are normalized and reified through proprietary mapping platforms? The paper presents a case study of creative approaches to critical research in STS the interweaves an arts-based methodology with a framework to assess dominant discourses of wayfinding and place-making. Sharma, S. (2012). It Changes Space and Time! Introducing Power-Chronography. In Communication Matters: Materialist Approaches to Media, Mobility and Networks, edited by Jeremy Packer and Stephen B. Crofts Wiley, 66-77. London, UK: Routledge.

Face Dance *Ekaterina Zharinova, UC Davis*

When I danced with Provincial Dances Theater, a prominent Russian contemporary dance company, the choreographer Tatiana Baganova gave us specific instructions not to use our face while we perform. We had to express ourselves through the body language, keeping the face «silent» or neutral, despite that the face represents our personality the most. The face's image is what allows our identification in the world. My recent solo performance, "Multiple Selfie in the Dark," explores some of my face dance possibilities and is an instance of extremely personal work that is uncomfortably individualistic. Here, I consider selfie to be a unit of dance rather than an image of one's authentic self, and the performance implements, in real-time, quite accessible personal technology devices, my cell phone, laptop, and projector. I will present an excerpt from "Multiple Selfie in the Dark" and talk about this and other case studies of face dance. In the presentation, I intend to examine the artistic possibilities of the face as a form of dance with the use of technology.

Session Organizers:
Regula Valérie Burri, HCU - HafenCity University Hamburg
Joseph Dumit, UC Davis

Chair:
Joseph Dumit, UC Davis

435. STS Continuities and Discontinuities in Moving Past Modernity's Gender and Sexuality.
6:00 to 7:40 pm
virPrague: VR 24

European modernity was constituted in large part through distinctive colonial regimes of gender and sexuality, always entangled with local conceptions and practices of class and race/ethnicity. The recent emergence of a new wave of feminist social movements around the globe, from the "Me too" movements through struggles against local governmental, religious, social and cultural configurations, are contributing new possibilities for more accurate and powerful STS projects. Yet the consequences of such movements and STS analyses are sometimes surprising. This panel features examples of the successful and not so successful theoretical and practical projects with such commitments in Latin America, Africa, Belarus, and in international development research. The particular knowledge-production processes that they consider include artificial intelligence, information technology platform work, Third World development research, and the recovery of non-modern gender and sexuality conceptual frameworks. These panelists ask how can feminist sexuality and gender analyses strengthen and enlarge the accuracy of mainstream STS? How do such analyses succeed or fail at identifying effective ways to move past modernity's current residue of colonial assumptions?

Participants:

Gender Mainstreaming in Development Research and Feminist STS *Wenda K Bauchspies, MSU, GenCen*

On webpages and annual reports of international development organizations in the 21st century gender, equity and diversity are common themes that are reinforced by the Sustainable Development Goals. Large development organizations have hired staff and are doing internal assessments to guide and monitor their gender work. Meanwhile, funders are calling for development research proposals that integrate and/or mainstreams gender. This talk will address this prioritization to mainstream and integrate of gender in research for development in order to think through what gendered social hierarchies are being reproduced, maintained, and disrupted in this adoption of "gender" by powerful stakeholders. In particular, I will compare what we have learned from feminist science and technology studies about changing knowledge production within sciences and technology to the current dialogue of gender integration into development research. Ultimately the focus of the conversation will be to trace how the call to mainstream gender in development research is disrupting, maintaining or shifting modernity's practices in the periphery.

Locating Narratives of Artificial Intelligence Across Africa *Laura Foster, Indiana University - Bloomington*

Scholars of science and technology studies have recently begun

to examine how technologies of artificial intelligence (AI) have implications regarding gendered and racialized processes related to work (Atanasoski and Vora, 2019; Gray and Suri, 2019), identity (Cheney-Lippold, 2017), local knowledge (Loukissas, 2019), democracy (Eubanks, 2017), and discrimination (Benjamin, 2019; Noble 2018). Drawing upon these scholarly conversations, this paper discusses preliminary findings from a discourse analysis of how two-hundred and seventy media accounts by and for African-based newspapers articulate and give meaning to emerging AI innovations. In particular, it examines how these media sources describe AI technologies through a language of disruption, transformation, and neutrality in ways that obscure how these technologies are embedded within colonial histories of extraction of African bodies, lands, and resources. This enables understanding into how AI technologies are taking on meaning and becoming apparent in normative gendered and racialized ways particular to the continent of Africa. The paper therefore provides a model for doing research on AI technologies that does not presume categories of gender and race at the outset. Alternatively, it attends to how AI technologies become gendered, racialized, and Western through the language and images used to describe them, and in doing so, reveals directions for how to articulate AI technologies otherwise and to direct technologies and associated forms of governing towards social justice.

The Political Potentiality of Molecular Feminism in Mexican Marginalized Groups: The Case of Santa Muerte. *Luisa Fernanda Grijalva Maza, International Relations Department, UPAEP Universidad*

The constitution of modernity in Latin America has been accompanied by a colonial patriarchy that materializes to this day in systemic practices of exclusion, division and discrimination. Although sociotechnical developments promised to become sublime expressions of modernization and progress, realities of poverty, gender and ethic discrimination continue to be the case. Yet various social groups have innovated modes of survival, resistance and transformation that deal differently with the logics of modernity and entrenched traditional hierarchies. By moving in liminal spaces in-between sociotechnical, economic, religious and social mechanisms of traditional power, marginalized groups in Mexico created the image of Santa Muerte (Holy Death) –a cult that is not against catholicism, capitalism nor the State. Instead, it moves in-between these through a process of cannibalizing their power and using it for its own purposes. Santa Muerte is a hybrid that brings to the fore a powerful and slippery female figure that has intervened the flows of globalization to reach other socioeconomic spheres and societies. Following Deboleena Roy's work on molecular feminism in molecular biology, I explain the stolonic processes of Santa Muerte that transform the encounters among followers and the world. That is, Santa Muerte does not resist modernity or globalization, but appropriates them for its own purposes. This molecular feminist project both uses STS tools, and also reveals how STS is itself appropriated locally to activate different life experiences.

Engaging with Gender and Sexuality Formations in Latin America: Recent STS issues *Sandra Harding, Graduate Department of Education, UCLA*

A number of Latin American scholars are recovering conceptions and practices of gender and sexuality that have been marginalized or oppressed in modern European/U.S. societies but that still can be found today in Latin America. These accounts refuse Modernity's insistent centering of heterosexuality and its sex and gender binaries. They insist on sexualities that are inseparable from the spiritual commitments that unite humans and their activities with the materialities of non-human worlds. Yet such projects encounter a number of criticisms from other feminists. As Breny Mendoza points out, these encounters are producing a rich discussion of gender possibilities that are rarely found in Northern feminist projects. For example, Maria Lugones argues that gender is itself a colonial concept. To attribute it to peoples whom modernity regarded as not fully human is to continue that colonial practice of imposing on others conceptions that they do not themselves choose. Others question if we can even know what non-modern genders and sexualities

were after their long history of adaptation and change through colonial eras. Since every knowledge producer lives within distinctive local assumptions about gender and sexuality, such authors direct international STS to valuable new approaches to conventional STS topics.

Session Organizer:
  Sandra Harding, Graduate Department of Education, UCLA
Chair:
  Sandra Harding, Graduate Department of Education, UCLA
Discussant:
  Sharon Traweek, UCLA