Martin Bohle, Abstract for Ronin Seminar, 9th November 2017

Geoethics, Human Niche, and Citizen-science

Some months ago I joint the Ronin Institute (alias on slack: Ukko Elhob). This presentation at the *Ronin Seminar* shall introduce some activities, which happen within communities of geoscientists. They may be inspiring, as well when considering their form or their substance. To that end, I will reuse two presentations[1].

Geoethics is an emerging way of thinking within the international geoscience communities. It is about responsible geosciences. The 'International Association for Promoting Geoethics' (headquarter at the 'Istituto Nazionale di Geofisica e Vulcanologia' (INGV), Rome (Italy)) encourages the development of geoethical thinking since 2012. The IAPG was set at the 34th International Geological Congress in the aftermath of the Aquila trails[2] (Italy, 2009, accusation of manslaughter). I am a member of the IAPG's Board of Experts, the so-called 'Corresponding Citizen Scientists' (CCS), who have the *"cultural function of stimulating our community with papers or news. The CCS is interested in Earth sciences and humanities and in promoting issues on geoethics and the IAPG. The CCS can work calmly, without deadlines, to listen and to share her/his thinking/information with the IAPG network through IAPG channels."*[3] The following paragraphs give an example of work undertaken in this framework[4].

The 'human niche' is the intersection of the biogeosphere and the sphere of human activities of social, economic, cultural and political nature. The application case for geoethics, namely *"appropriate behaviours and practices, wherever human activities interact with the Earth system"*[5] is about niche building. Geoethics is about the conduct of people including geoscientists, as well as their normal lifestyles as their professional activities. Geoscientists notice the diverse economic, social and cultural living conditions of people, and the application cases of geosciences mirror the social diversity at the local, regional and global scale. Subsequently, it is argued: A) when considering the ethical dimensions of a

[1] General Assembly 2017 of 'Conseil International de la Philosophie et des Sciences Humaines', General Assembly 2017 of the European Geosciences Union
[2] http://www.sciencemag.org/news/2016/10/seven-year-legal-saga-ends-italian-official-cleared-manslaughter-earthquake-trial
[3] http://www.geoethics.org/experts
[4] http://iapgeoethics.blogspot.be/2016/08/whats-up-citizen-scientist-by-bohle.html, http://iapgeoethics.blogspot.be/2017/09/a-quest-citizen-science-in-geosciences.html, http://www.geoethics.org/egu2017-eos14
[5] definition of 'geoethics' in "Cape Town Statement on Geoethics", 2016, http://www.geoethics.org/ctsg

global niche building then geosciences should feature 'citizen geoscience'; and B) when considering the functioning of a knowledge-based society under conditions of anthropogenic global change then 'citizen geoscience' facilitates applying that knowledge base.

(A) Regarding 'niche building': The design of production systems and consumption patterns embeds geoscience expertise and relates it to the everyday life. Any citizen's activities purposefully interconnect to the biogeosphere for well-being, caretaking, and reproduction, although habitually without involving a geoscientist in a professional capacity. In that implicit manner, the everyday behaviours and practices of people influence Earth system dynamic. This feature renders citizens' geoscience expertise a public good as it makes their ignorance a risk.

A comfortable human niche for billions of people requires a global biogeosphere that their activities disrupted only little and that exposes them to hazards that can be tamed. Quite the reverse, anthropogenic global change will disturb living conditions for many people. Much geoscience expertise will have to be deployed to tame disturbances in a socially sustainable manner. Sustainability, in turn, needs the involvement of citizens in searching expertise and deploying it, i.e., needs 'citizen geo-scientists' to maintain the human niche.

(B) Regarding knowledge-based societies: The rapidly increasing human knowledge base accelerates the scientific-technical revolution. Its industrial-societal implementation confronts societies with numerous change processes. Their speed and scope is a risk as well as the mutual interferences of different change processes. The latter often only get obvious within everyday societal doings. This vigour of change requires robust two-way linkages between research and technological development on one side and societal activities on the other side. Research and development undertaken in cooperation with citizen scientists would improve such linkages, e.g., through increased transparency of research and development or strengthen the sense of people's belonging of their environments.

Citizen scientists are a resource because they are partner to the professional researcher. On one side, citizen scientists provide experiences that are rooted in everyday practices and on the other side they facilitate uptake of new practices. Both features are needed in societies that face anthropogenic global change.

Summarizing, geoethics affiliates geosciences and 'citizen science' in a particular relationship, i.e. 'citizen geo-science', which is beneficial for knowledge-based societies that are functioning under conditions of anthropogenic global change.