



GEOETHICS IN COMMUNICATION OF SCIENCE:

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Abstract

In the urgency to reconsider the relationship between humankind and the planet Earth, in the light of the issues of a sustainable economic and technological development, the defence against natural risks and climate disruption, the themes addressed by Geoethics are becoming central to the scientific debate. A growing number of scientists begins to consider geoethics as an effective tool to increase, in the scientific community and society as a whole, the awareness on the local and global environmental problems that humanity is facing.

In this perspective, it is important to develop a proper communication of the geological knowledge, as a fundamental part of the social knowledge of human communities. Bringing citizens closer to geosciences is a delicate task, that involves both geoscientists and the media system.

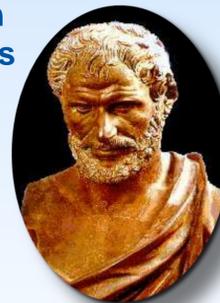
- **Nowadays what is the role played by geosciences in the scientific mass culture?**
- **Do the publishing world and media in general offer an adequate space to geosciences?**
- **How to make more functional the relationship between geoscientists and the science journalists, in order to avoid the most common mistakes made in geosciences communication?**



What is Geoethics

Starting from the definition of "ethics" by Aristotle, the IAPG (International Association for Promoting Geoethics, <http://www.iapg.geoethics.org>) has defined **geoethics** as

"the research and reflection on the values which underpin appropriate behaviours and practices, wherever human activities interact with the geosphere".



Geoethics deals with the ethical, social and cultural implications of Earth sciences education, research and practice. It addresses fundamental issues such as the exploitation of geo-resources, the management of natural hazards, the defence of the geoheritage as a common value to be protected and enhanced. But above all geoethics aims at raising in the community of geoscientists the awareness of their responsibilities in conducting the scientific and professional activity.

Role of geoscientists

Making the whole society more aware about environmental problems to be faced implies to develop a proper communication of the geological knowledge.

The scientific information through the media is one of the main themes discussed within geoethics.



The geoscientist has peculiar knowledge and skills and can contribute to dispel misconceptions and errors, strengthening the link between the population and its land. His/her relationship with science journalists is fundamental.

Geosciences and communication

- **How geosciences are treated and what is their weight in the media information?**

The relationship between geosciences and the media is particularly significant when focused on natural disasters that strike an area (i.e. earthquakes, floods, volcanic eruptions). Surely there is a great attention by the media towards **natural phenomena**, since they have a **strong impact on the population**. Consequently, the relationship between journalists and geoscientists, already delicate in other situations, becomes critical after the occurrence of a natural disaster.



Nowadays the geoscience communication to the public has to confront with two established trends:

- **the crisis of the print journalism;**
- **the globalization and the wider spreading of scientific news through Internet.**

These two trends contain germs positive and negative. Among the science journalists and the scientific community it is currently the subject of debate if the reasons for concern or optimism should prevail (Bauer et al., 2013). It could seem positive that the science communication have found in the new media a fertile ground where to multiply.

Critical points

Recent surveys indicate the online newspapers, websites, social networks and blogs as the scientific news sources more followed by science journalists, as well as by an audience permanently connected to Internet (Brumfield, 2009). However, it is a fact that while the scientific news spreads fast on the web to the detriment of the print media, its quality often falls off. Two-thirds of a sample of nearly a thousand science journalists admit that the pressures on their productivity, exercised from the publishers of the new media, damage the content of their work.



The **"Web Churnalism"** (from the verb to churn out) indicates those journalists who merely

compile articles by copying pieces of press release or other articles, without exerting any critical control on sources and content, only with the goal to meet the needs of continuous renewal of web pages with topics of assured emotional grip. The "Churnalists" would be "journalists who are reduced to passive processors of whatever material comes their way, churning out stories, whether real event or PR artifice, important or trivial, true or false" (Davies, 2008). Bauer et al. (2013) speaks of **"Science news cut and paste journalist"**.

The main **print media**, currently in serious decline, have had the merit of having grown generations of journalists specializing in scientific issues and exercised a sort of review, although unconventional, on texts concerning science issues.

The **online newspapers** that follow the principles of good quality of the information and science dissemination, as well as of a sound professional ethics, are dispersed in an undifferentiated magma of single websites, commercial initiatives and groups of opinion that offer few guarantees of fairness. Readers can easily get lost, without distinguishing true news from false or likely.

THE RELATIONSHIP BETWEEN MEDIA AND GEOSCIENTISTS

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Extinction of the science journalists

The decline of the print media is leading to the **progressive extinction of qualified science journalists** working full-time for a masthead. Frequently they are removed and not replaced. "The Securely employed specialist correspondent, writing for print and seriously investigating a story, is an endangered species" (Bauer et al., 2013).

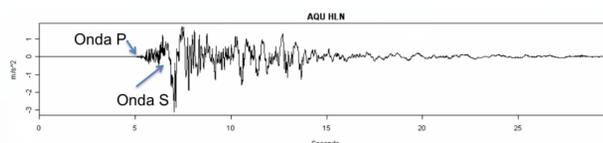


The transition from the scientific journalism in the print media to the online media is highlighting failures which should be rectified as soon. Geosciences and environmental sciences are suffering more heavily the repercussions of such failures, because of their strong impact on social safety, quality of life and environment, ethics of development. We must consider that distorted or even totally invented scientific news, and misleading or completely wrong explanations are a detriment to the mass culture because **often readers incorporate them uncritically, especially during a seismic, hydrogeological or volcanic crisis.**

An Italian case study

The Italian media have recently dealt with a **dangerous case of wrong and distorted geoscience communication**, that has also become subject of reflection on popular science magazines by seismologists (Amato, 2014).

The case refers to a device, marketed and presented as a potential life-saving, which would be able to provide an appropriate visual and audible warning of the imminent arrival of a seismic shock above Magnitude 3.0-3.2, taking advantage of the delay between the P and S waves (the latter potentially more destructive). So, in the opinion of the person who presented this product, it would have been possible several seconds for evacuating a building or being sheltered from a possible collapse.



Delay of just 2 seconds between the P and S waves in the shock destructive of April 6th, 2009 in L'Aquila, Italy (Amato, 2014).

Nevertheless, the Italian seismic history teaches that earthquakes cause damages and casualties in the vicinity of the epicentre, where the time difference between the S and P waves is of just a few seconds. So, if this minimum forewarning was instinctively used to leave a house, we would be exposed to dangers far more serious, for instance the collapse of stairs or cornices. These considerations didn't prevent some media from speaking of the device as a technological innovation and from promoting it as a kind of "do it yourself" for the seismic safety.

New opportunities from the web

The mass media have turned mostly their attention to the Earth sciences on the occasion of crises and natural disasters, rather than follow the most promising developments of the research in a balanced and constant way. This attention, centered on the emergency, is probably due to the fact that the same researchers are not committed enough to spread the content of their work in order to make them understandable and exciting for the general public.

The exploit of the scientific communication through **Internet is now a great opportunity** to reverse this trend because it offers an abundance of space and attention that the print media have not been able to provide, due to their own nature and publishing organization.



At the same time **Internet has permitted to open a direct dialogue between researchers and media professionals**, through blogs, forums and newsletters that are hosted in the websites of research institutes. An effective way to counter the junk science and misinformation that is spreading in the web will definitely consist of making more useful and attractive the spaces dedicated to the proper communication of geosciences for the media operators.

Conclusion

Scientists and science journalists should not underestimate the importance of transmitting reliable scientific information to citizens: this should be their social task.

- **How much are they both aware of the responsibility inherent to this activity?**
- **How is it possible to strengthen this ethical responsibility?**



Surely, geoscientists and science journalists have different languages, communication times and perspectives. The possibility of their fruitful collaboration can start only from sharing the same ethical values.

The principles of geoethics, such as **integrity, honesty, trustworthiness, accountability, accuracy and impartiality**, can orient scientists and science journalists to find the right way to collaborate, to guarantee a good service to the population. In fact, they should share the same ethical values and aim at the same end: **to make the scientific knowledge an integral part of social knowledge.**

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