

Understanding Publics of Science

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In recent weeks, Britain's Better Regulation Task Force report on scientific research regulation asked the Government to evaluate the risks associated with the development of Nanosciences and Nanotechnologies. The Government was also asked to prove its implementation of a specific policy to protect human, animal and environmental safety, were it to be threatened by the development of this emerging field of knowledge.

These requests may sound rather alarming. However, objectively speaking, the precautionary attitude of the Better Regulation Task Force does not differ greatly from that of the U.S. Congress and National Science Foundation, which, in 2001, placed the study of ethical, economic, legal and social implications of Nanotechnologies among the five great objectives of the National Nanotechnology Initiative. This initiative, i.e. the Nanoscience and Nanotechnology development programme, was financed by the U. S. federal government with a grant of over 500 million dollars and includes specific training schemes for researchers and other field experts.

Nanoscience belongs to the future. It will apparently lead to significant theoretical and practical results only in five, ten or even twenty years' time. Nanotechnologies are, therefore, still a world in the making. Why then is the scientific community already concerned – or is forced to be concerned ? about their social effects? Why are the worries of the scientific and non-scientific communities so

important as to influence the development of this new field of research with “specific policies” and substantial funding?

The reason is certain: public opinion has burst onto the scientific scene with its own demands and decisions. Today ? more than ever ? scientists are no longer in an ivory tower, answering only to their peers for their work. On the contrary, they are in the public eye and have to answer to a public – or publics ? of non-experts.

But on what grounds does public opinion make demands and take decisions, thereby entering the heart of scientific activity and affecting it?

This is not an easy question. For a long time many sociologists of science believed that the Public Understanding of Science was the basis for scientific public opinion formation. Today we know this is not the case. Public opinion forms through a network of channels which is as closely-woven and intricate as that of Venetian canals. Public opinion itself is rather similar to Venice: a group of interconnected islands rather than a compact city. In other words, there is a a myriad of non-expert publics asking questions to scientists and participating in the scientific decision-making process. Moreover, they form their own opinions through a wide variety of channels, one of which may be, and perhaps not one of the most important, analytical understanding of science. Returning to our Venice metaphor, the Public Understanding of Science cannot be considered the Canal Grande of science communication.

Nature's leading article of the 23rd of January, 2003¹ provides some evidence of what has just been affirmed. According to this article, the Better Regulation Task Force's request has stemmed from the widespread alarm mounted by a public opinion which draws its information on nanosciences more from science fiction than from data offered by the nanoscience community. Briefly, in shaping the general concept of nanosciences, Michael Crichton's new novel, *Prey*², is more influential than publications made by the very scientists, who study matter at nanodimensions (between 1 and 100 billionth of a metre).

However, this is not just a British problem. As mentioned earlier, the American Congress and the U.S. National Science Foundation decided that the study of the social effects of nanotechnologies be one of the five objectives of the National Nanotechnology Initiative. Their choice was explicitly influenced by the mental model of nanotechnologies shaped by Bill Joy, ex-chief scientist at Sun Microsystems, with an

¹ *Nanotech is not so scary*, *Nature*, **421**, 299 (2003).

² Michael Crichton, *Prey*, HarperCollins, 2002

article ? half prophetic, half science-fiction ? published by the magazine, *Wired*, in April 2000^{3,4}.

In a nutshell: public opinion based on science and influencing scientific activity is composed of various non-expert publics. Each of them create their own opinion through a myriad of channels which rarely include analytical scientific information as their main source.

A dynamic relationship between science and society is essential to both the development of science and to the democratic development of society as a whole. To understand such a relationship, however, it might be necessary to adopt a new approach. It might be necessary to shift consideration from Public Understanding of Science to Understanding Publics of Science.

*Translated by **Francesca Mazziotti**, Scuola Superiore di Lingue Moderne per Interpreti e Traduttori, Trieste, Italy*

³ National Science Foundation, *Social Implications of Nanoscience and Nanotechnology*, March 2001

⁴ Bill Joy, *Why the Future Doesn't Need Us*, *Wired*, 8 April 2000