

# Science communication for the twenty-first century

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Members of the public, although generally supportive of science and scientists, have in recent years increasingly opposed particular developments involving science. The poor handling of controversies by scientists, businesses and politicians and the fact that new technologies often pose social or ethical dilemmas can exacerbate such opposition.

Debates such as those surrounding bovine spongiform encephalitis (BSE), the mumps, measles and rubella vaccine and genetically modified organisms (GMOs), which would not have occurred 30 years ago, now take place because of the public's increasing suspicion of authority. Lack of trust often arises when controversial issues, and particularly presentations of risk, are badly presented by scientists, businesses and politicians. An uncertain level of risk presented as a certainty can undermine the credibility of scientists and their institutions, Agriculture Minister John Gummer force-feeding his daughter a beefburger during the BSE crisis offering us a good example.

Whereas science and technology previously offered us cars and telephones with their obvious lifestyle advantages, new technologies raise increasingly difficult ethical and social dilemmas. These issues are often classed as 'non-scientific' but are very much about science in the real world. The debate around GMOs provides a good example. Many people are not flatly hostile to GMOs, but are wary, ambivalent or sceptical of the continued overconfident assertions about their safety and benefits by politicians and regulators invoking scientific authority. Public concerns go beyond health and the environment to questions of farming practice, distribution of the benefits of farming and globalisation.

In May 2003 the second annual Science Communication Conference, organised jointly by the British Association and The Royal Society, looked at these issues in depth and explored methods for effective interactions between science and society. Through the theme of citizenship, conference delegates discussed the contributions to science communication of different sectors such as museums, the media, schools, universities and learned societies.<sup>1</sup>

The Royal Society's programme of activities<sup>2</sup> is investigating effective models for interacting with the public, particularly through dialogue and consultation. Hypothetical scenarios around 'Genetics and Health' and the issue of 'Do we trust today's scien-

tists?' formed the basis for a series of regional and national dialogue meetings that have taken place during the programme's first two years. As a result, the Department of Health, which is concerned about the issue of public empowerment, wishes to work with The Royal Society to ensure that the public are able to make informed choices about health.

The programme has highlighted the fact that scientists' involvement in public consultations and other science communication activities needs to be formalised. Scientists are needed on the front line during debates of controversial issues to present their arguments in a credible and honest way; they need to be open to discussion and ready to acknowledge the values and opinions of others. However, training for scientists is not readily available in key areas such as the presentation of risk, how to avoid truncation or trivialisation of their subjects, and how to work with the media to avoid confrontational presentations of topical issues and new data.

Public consultations run by the Nuffield Council of Bioethics were also explored at the conference, and offer a contrast to the dialogue events run by The Royal Society. Since 1991 the Council has been contributing to policy making and debate by examining ethical questions raised by advances in biology and medicine, for example 'Pharmacogenetics' and the 'Genetics of Human Behaviour'.<sup>3</sup> Each issue is dealt with by a working party appointed by the Council and public consultation is just one method used to inform the debate. Industry is actively consulted, but its representatives are not recruited to working parties and the Council does not receive industrial funding. Potential conflicts of interest of working party members are published.

There is now a large community of professionals whose aims are, among other things, to improve debate of controversial scientific issues, to ensure that the general public has an appropriate influence over scientific policy making and to prepare and excite enthusiasm for science in the next generation. This community is presented with a number of challenges:

- Who should set the agenda for scientific dialogue and debate? If institutions do this, as is often the case, potentially thorny issues can easily be avoided and the agenda politicised. The public should be offered more opportunities for

discussion, thus giving them a greater influence over the direction of research and technical change. The science communication community should provide these opportunities.

- Research in the area of social science has shown that the quality of people's moral arguments does not depend on their age or their depth of knowledge of the subject area. The challenge for science communication professionals from all disciplines is to gain a more sophisticated understanding of their audiences, which should be utilised when planning programmes and methods for public consultation and dialogue. The activities should not aim to talk at people or to reinforce false divisions between experts and 'lay' people.
- New approaches are needed to enhance the involvement of socially excluded groups and minority ethnic groups, despite the lack of clear and easy ways to do this.

Science is important to our society. It has the cultural objective of giving us a better understanding of the modern world and it is key to improvements in our health and the environment,

and to wealth creation. Science is therefore central to the running of democracy and, in order to ensure that policy making is properly informed and influenced, high quality debate among scientists, members of the public, politicians and policy makers must occur. Effective science communication makes such debates possible. It is encouraging to observe that, for the first time, the Royal College of Physicians organised a session at the British Association's Festival of Science, which was held in Salford in September 2003.

## References

- 1 Representatives from across the science communication community were present including those actively involved in science communication, academics from different fields in science and social science, representatives of research councils and other funding bodies, and decision makers. A full report of this conference can be downloaded from [www.the-ba.net/scicomm](http://www.the-ba.net/scicomm).
- 2 More information on The Royal Society's Science in Society programme can be found at <http://www.royalsoc.ac.uk/templates/scienceinsociety/index.cfm>
- 3 More information on the Nuffield Council of Bioethics can be found at <http://www.nuffieldbioethics.org/home/>