

## **Public Communication of S&T - German and European Perspectives**

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### **Abstract**

There has been much confusion as to goals and target groups of the initiative "Science in Dialogue" that started in Germany in 1999. On the other hand, this vagueness has left much room for experiments in science communication and dialogue which can now be analysed for further action. The paper will examine examples from the following areas: 1) The rapid development of informal science education at the interface of universities and schools focusing on the research process rather than on scientific facts alone, 2) the "science in fiction" format reaching broad audiences and engaging them in dialogue, 3) "responsive mode" projects, i.e. listening to the needs of the citizen and leading to more public engagement in scientific issues.

Finding a proper European approach to science communication appears to be hopeless, given the great variety of national cultures and languages in Europe. The recently founded grass-roots organisation Euroscience, however, is trying to achieve just that. A big European meeting, the Euroscience Open Forum 2004 (ESOF 2004) is being organised to present front line science, to enhance scientific awareness and to foster a debate on science and society.

### **Paper**

In comparison to other countries Germany took up the topic "Public Understanding of Science" rather late. This can in part be explained by the peculiarities of the German research system and the lack of strong associations for the advancement of science. Eventually it was the Stifterverband, an association of German trade and industry for the promotion of science, who started the nationwide initiative "Science in Dialogue" together with the Federal Ministry for Education and Research (BMBF) and all research councils and science organisations. The frame for all activities have been the "Science Year" (Year of Physics 2000, Year of Life Sciences 2001, Year of Geosciences 2002, Year of Chemistry 2003) and the "Science Summer" (Bonn 2000, Berlin 2001, Bremen 2002, Mainz/Wiesbaden 2003).

The first objectives certainly were 1. mobilising political support for science and technology in Germany, 2. counteracting the declining interest of young people in natural sciences and engineering and 3. raising public awareness of science in general, however, there was no masterplan with clear-cut goals. It is true that conditions conducive to a dialogue "at eye level" with the public were introduced in all communication formats from the start of the initiative (e.g. no scientific jargon allowed, open access for the public, venues familiar from everyday life like department stores, market-places etc.) but engaging the public in dialogue remained difficult for the following reasons: 1. Many scientists still believe in the "Deficit Model", 2. scientists usually have not acquired communication skills in their career, 3. they are not used to disputes outside their discipline, 4. many topics are uncontroversial (e.g. physics, geology) and 5. there is very little research in Germany to improve scientific understanding of the public.

In spite of these difficulties quite a few initiatives have tried to find new ways for dialogue in science communication. The first - and rapidly growing - development is in informal science education particularly at the interface between universities and schools (e.g. research labs specifically designed for school children). As a result a shift from understanding of science to the understanding of research can be observed. This new concept implies communication of science as a process with deadends and setbacks, ambiguities and uncertainties. It also leads to the economic, ethical and political implications of research. In the project "Paths to Utopia" (funded by the Stifterverband) the participants - pupils and trainees - chose a subject they were most interested in, in this case communication technology, carried out expert hearings and developed

scenarios for the future that were eventually discussed with politicians. To integrate such an approach in formal science education will be a challenge for schools in the future.

This example illustrates the close connection between science education and more general lessons in practical democracy. If the "Knowledge Society" is the society of the future, the democratic principle demands that it is not shaped only by a small minority of citizens. This is to say that the general public should be enabled to understand complex systems, uncertainty, statistics and the difference between science and pseudo-science. The second experience from "Science in Dialogue" in Germany is the importance of the "Science-in-fiction" format in achieving this goal. From the beginning a "Science Film Festival" has been part of every Science Summer. Hollywood movies like Jurassic Park or Outbreak are shown. After the film questions from the audience are answered by experts. In this way even people who would never visit a science museum can be reached. More sophisticated is the "Science-in-theater" format where ethical dilemmas can be made clear ("Copenhagen" by Michael Frayn and "ICSI" by Carl Djerassi may be mentioned here). This approach has successfully been introduced in the UK by the Wellcome Trust with the project "Theatre-in-education" as a tool to get school children involved in societal disputes with a scientific background (e.g. hereditary disease). The key here and in the much more simple "Hollywood-approach" is to personify science. Science – unlike arts or sports – suffers from its lack of heroes!

The third experience from Germany is to find a responsive mode to identify the needs of the general public and to give answers and advice. In the "Year of Life Sciences 2001" a "Science Hotline" was launched as a pilot project before and during the Science Summer. As a first step, life scientists received a briefing on new developments in research (stem cells, cloning etc.) and a communication training. They were then put on a duty roster in a virtual call-center organised by a telephone company, enabling them to answer questions from their lab-bench or from home. The telephone number was communicated on the webpage of both "Science in Dialogue" and "The Year of Life Sciences" and – more importantly – to the audience of round-table discussions, science shows broadcast on TV etc., events exclusively devoted to life science issues. Surprisingly, however, many people who called asked questions of the type "Why is the sky blue?". This shows that a science hotline cannot be too focused to meet the questions the public really have.

There is a lot of experience in Germany with the Cancer Information Service (Krebs-Informationsdienst or KID) operated by the German Cancer Research Centre in Heidelberg. This telephone and internet service helps patients and other interested parties to find reliable sources of information and to interpret the results of independent clinical studies with sometimes contradictory outcomes. In other words the Cancer Information Service is an honest information broker. Although such a service is very much facilitated by the well-defined target group, a general "Science Hotline" could work in a similar fashion. At the moment, however, Science in Dialogue is lacking the necessary funds to establish a service like KID.

Finding a "responsive mode" also governs recent approaches to (technology) foresight in Europe, notably in Sweden, the UK and Germany (FUTUR-Prozess).

The initiative "Science in Dialogue" is just three years old and it is a success story if one takes the initial objectives as the measure:

- The attention of the media has grown considerably,
- the number of visitors (exhibitions, festivals, internet etc.) has increased year by year,
- it is much easier now to recruit scientists as active participants of events,
- the fact that the number of freshmen in the natural sciences has gone up again may also be attributed to the initiative, at least in part,
- many scientific organisations, foundations etc. have put the issue "science and society" high on their agenda.

The European Commission has also discovered this issue. There is now a new directorate "Science & Society" coordinating the respective activities. The primary objectives are more or less identical to those that governed the establishment of the German nationwide initiative. It is clearly felt that European research is weak in showing its outstanding results. A European organisation like the American Association for the Advancement of Science (AAAS) is clearly missing.

This prompted the European grass-roots organisation Euroscience that was founded only in 1997 to plan a large, pan-European interdisciplinary scientific conference that will be held in Stockholm in August 2004 to provide a forum for open dialogue on science and technology. This project is called Euroscience Open Forum 2004 (ESOF2004) and will involve as many national and European scientific associations as possible to help organising the event. Initial support and funding have been received from the Swedish Research Council and the Robert Bosch Stiftung.

The science and technology field is increasingly important and it interests, concerns and affects people. It is not always well understood or perceived in the media or by the public at large. Since it is to a large extent funded by the public a better communication with society is necessary. Also, science and technology is less well funded in Europe than in e.g. the U.S. and Japan. The main aim of the conference in Stockholm 2004 is to highlight science in Europe by · presenting front line science, including the humanities, · enhancing scientific awareness, · fostering a debate on science and society.

The participants in 2004 will be academics, teachers, students, policy makers, politicians and representatives from media and the science based industries, i.e. the aim is to bring people interested in science and technology from all over Europe to ONE meeting. In such a meeting the following can take place: · cross-disciplinary interaction, · communication between the public, politicians, policy makers and the media on current trends and future roads for the sciences, · a broad dialogue on and about science, · popular science presentations of front-line research.

ESOF2004 is clearly modelled on the world-famous AAAS Annual Meeting. But, of course, it cannot be simply a copy for the following reasons: 1. The convenor – Euroscience – is not an old, well-established and affluent organisation like AAAS, 2. other European and national organisations are also lacking personal and financial resources (with exceptions, like the British Association), 3. there are many languages in Europe, 4. there are also many different cultures and attitudes towards science, 5. the event should be visible in the city and in the region hosting it (in contrast to the – rather "hermetic" - AAAS meetings).

Science communication in general and dialogue in science communication in particular are very difficult tasks. The European scope of ESOF 2004 adds at least an order of magnitude to the size of the problems that are to be solved. How can possible solutions look like? 1. and 2.: The right way is a diversity of funding sources. Not only public funds, e.g. from the European Commission, national governments and research councils, should be applied for, but foundations and industry should be approached, too. To achieve this, the European identity of potential supporters will be put to the test. There also legal and tax obstacles are to overcome when national institutions want to provide money for a European endeavour.

The organisation of ESOF 2004 cannot be totally centralised; it should rest on many shoulders instead. 3. Language: Euroscience's pragmatic solution in all of its dealings is to use English as the "lingua franca" of science. For Stockholm 2004 with probably a high attendance from Northern and Western European countries this does not create a major problem. For Eastern and Southern parts of Europe English will certainly act as a deterrent. This will have to be taken into account for the next Open Forum 2006. In contrast, item no. 4. should not be seen as a problem but as an asset and as the wealth of Europe. The challenge is to harvest the rich experience in science communication from Europe and from elsewhere. 5. Visibility and open access: Outreach activities will play a major role for ESOF 2004. Again, there is much to learn from national,

European and international initiatives (Science Centers, Science Festivals etc.). Innovative ways to use the internet for outreach will also have to be examined.

As in the German case the serious dialogue with the public responding to the interests and needs of European citizens will be the most difficult part of this new European endeavour!