European Science Foundation Policy Briefing

Science communication in Europe

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The European Science Foundation acts as a catalyst for the development of science by bringing together leading scientists and funding agencies to debate, plan and implement pan-European initiatives.

Foreword

As scientific research becomes ever more specialised, it is becoming more and more difficult to exchange ideas across scientific disciplines. At the same time, scientists need to increasingly develop abilities to communicate their ideas and discoveries not only with each other but with policy makers at all levels and with the public at large. Given that the public sector is the principal sponsor of research there is an increasing onus on us all to devote more time to explaining, listening and debating.

To do this effectively requires an investment in time, training and resources within an overall communication policy.

By comparing and contrasting different approaches in Europe we should be able to develop and implement "best practice" at both the national and European levels. In this policy briefing, a group of professional science communicators, using simple wording, sets out some general policy recommendations which we believe, if implemented, will do much to fill the communications gap and so bring scientists, policy makers and the general public closer together on a basis of trust and understanding.

ESF is aware that, beyond the responsibility of journalists to report on the basis of well-constructed and well-researched information, the policy recommendations contained in this Science Policy Briefing need to be taken into account at the national level by the ESF Member Organisations and similar organisations and also by the European Union, in their actions.

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Introduction

The creation of new knowledge has been a major driving force in the development of society throughout history. In our modern world, where resources and space are getting scarce, one of the most important factors for improving living standards and the value of production resources is knowledge. This was the basis for the ten-year vision decided upon by European Union leaders in Lisbon in 2000 as they set the goal for the European Union to: "becoming by 2010 the most competitive and dynamic knowledge-based economy in the world". This statement was followed up by a common decision in Barcelona in 2002 to "increase the national spending on research and development from today's 2% of GDP to 3% in 2010".

The strategic goal from Lisbon and Barcelona to strengthen the knowledge-based economy in Europe is not only a question of increasing research and education budgets, streamlining the patent laws and supporting knowledge-based enterprises, it is also necessary to create a culture of public interest in science and technology in Europe if the ambitious plan is to have any chance of success.

Communicating science to the public through the media is not a replacement for improving the educational level of the European population; the media can only inform and create debate; real skills and operational knowledge still has to be acquired through the education system. But there are many reasons why the communication of science should be improved.

No major change in the investment of science and technology can be made without public support. The public needs to be informed how and why their taxes are being spent, and political decisions are sensitive to public opinion. The strategic goals from Lisbon need public support, not only for the acceptance of an increased investment in science, but also for the realisation of the vision of a more dynamic and competitive Europe based on knowledge.

Science and technology represent major changes in the daily life of the European citizen. There needs to be a good understanding and an ongoing public dialogue on the implication of new knowledge. Many important decisions are based on scientific data. The greenhouse effect, the use of genetically modified organisms, medical treatment with stem cells, the use of surveillance technologies are examples of issues where science has implications for the development of our society and therefore a public understanding is important in the democratic debate.

The motivation of young people to study and work with science and technology is highly influenced by the way science is presented in the media. Although young people may be more sensitive to new ideas, it is also important to increase the general public's interest in science, especially in lesser-developed regions where openness to new knowledge-based production forms is needed as traditional jobs and skills become obsolete because of technical development.

The current situation with regard to recruitment of young people to tertiary education in the natural sciences is far from satisfactory, and future projections lead to the fear that Europe will face a severe shortage of qualified labour in key areas of fundamental research and development of new technologies.

Science communication in Europe

During the last 5–10 years the information society has become an increasing reality, and there has been a virtual "arms race" in the national as well as the international media. Politicians have employed armies of spin-doctors and communication experts, and private companies and NGOs have fought battles in the media using the most sophisticated strategies to get the upper hand in discussion on issues such as Brent Spar, genetically engineered soya beans or the climate debate. Very often science is part of the public debate but the scientists themselves usually play only a minor role.

Today the battle for public attention is fiercer than ever. Nowadays policy and public opinion are influenced by the media much faster and more profoundly than before, and many more resources are used to influence the media. Politicians, big private companies and even NGOs are using basic media training services, and they can be trained by professional journalists in a television studio on how to answer the questions in the best way.

In Europe there are still scientists who think science should be kept within a small community and most countries devote very little resources to science communication. Even the media industries underestimate the potential of good science stories in newspapers, radio and television. We simply lack a science culture in Europe.

Although there are several trans-European initiatives, such as AlphaGalileo, European Science Week, Euroscience and a number of national and institutional programmes to promote science in the media, it is still at a very low level compared with the high importance that science communication is given in the USA. American universities and organisations such as NASA and NIH have a very different culture of communication. They know that they need to have public and political attention; if not, they will not get any funding for their research. This may be one of the reasons why the Americans use 2.6 % of their GNP on public research, while the Europeans use on average only 1.9%. (Ref.1)

American dominance is also reflected in the European media's coverage of science. A recent survey of coverage of astronomy and space science stories in the European quality print media showed that several national newspapers in Europe refer to American research rather than to national or European research (e.g. in Germany 67 % of articles dealt with US research against 14 % on German research). Statistics from this study showed that only in Denmark, France and the UK was there a higher number of references to the national research than to the American research.(Ref.2) The results also pointed to another problem that is significant in view of the current plans to establish a European Research Area: the almost complete omission of coverage of science carried out in other European countries and, by implication, the lack of appreciation for the European dimension of science conducted on our continent.

Though this example is based on a study that covered only national newspapers and a narrow

research area, the general impression from other research areas and media is that American research is a strong component in the European media. European feature films of nature science and technology will often get their materials from American universities and institutional sources because the documentary materials and access to film archives are much better in the USA than in Europe.

Regular surveys of public attitudes, understanding and knowledge of science and technology show a clear difference between Europe and the USA. The most comprehensive are the Eurobarometer survey made by the European Commission and the Science and Education Indicator survey made by the American National Science Foundation. These surveys have been conducted over many years and give surprisingly stable results when the same questions are asked of large groups of people in the same countries. The general conclusion from these surveys is that adult Americans are more interested in new scientific discoveries and their use; 90% of the Americans are highly or moderately interested whereas 52 % of the Europeans stated that they were not very interested in science and technology. Americans are also better informed about science than their European counterparts. In a 13-question "pop quiz" on general scientific issues the Americans scored an average of 64% whereas Europeans had an average of 60%. In a similar test on more biotechnology-related issues the Americans were even further ahead with an average of 6.2 correct answers versus 5.4 from the Europeans. Though a few North European countries were almost performing as well as the Americans in some indicators, the general picture is, and has been for many years, that Europe is not communicating science at a competitive level. (Ref.3, 4)

Improving the communication

European state leaders have decided to focus on the knowledge-based part of the European economy during the next decade and to increase the national spending on research to 3%. These goals will be reached only if the political intention has substantial public support. Public actions are not only needed to support economic priorities but also for motivating the interest of young talents to science and technology, openness to the implementation of new technologies and the replacement of traditional jobs with more knowledge-based productions forms.

If Europe is to reach the political goals set in Lisbon and Barcelona, European research needs to do more than perform well. Science communication is an important part of the project and needs to be integrated as a part of the research organisations' strategy plans.

The European Commission has included a specific programme on science communication and education in its Science and Society Action Plan. There are 38 actions in the plan, and 80 million euros are set aside in the Commission's Sixth Framework Programme to support the plan.(Ref.5) As stated in its foreword by Commissioner Philippe Busquin, the action plan will have a significant impact only if the EU Member States themselves make joint and coordinated efforts. The Science and Society Action Plan proposes three types of initiative: promoting education and science culture in Europe, bringing science policy closer to the citizens, and putting responsible science at the heart of policy making.

Considering the wide range of nations with different languages and levels of science literacy and cultures it is not an easy task to improve the level of science communication and science culture throughout Europe.

Science communication is to a high degree dependent on national relevance, culture, history and development. This is reflected in the experience of publishers of trans-European popular science magazines (e.g. *Geo Magazine, Illustrated Science, Bonniers* and *PM-Magazine*), which produce specific editions with a different content for each region or country in Europe. The public interest and the impact of science stories are generally high when the content has a national angle or fits the national culture and traditions. That is why national research organisations have a particularly important role in communicating science to the public.

A public culture of science in Europe has to start with the scientists themselves. They should be more aware of the importance of communicating science to the broader public. Better links between the research institutions and the education system, and a much more proactive strategy for putting science on the political

agenda is needed. This also includes putting demands on the journalists and the gatekeepers in the media.

The following recommendations are given to advise research organisations on how to improve their communication strategies on a European level as well as on the national or regional level. Though it cannot be proved that there is a linear effect of science communication on the popularity of science, it is clear that with poor communication, science will not exploit its potential for a dynamic interaction with society.

Science has an important role to play in a modern society and this role can only be filled out if science gives priority to communicating its results, its visions and its culture to the public.

Recommendations at the European level

1. The European Commission's strategy for promoting scientific education and culture is welcomed, but its budget for Science and Society activities is relatively modest compared with research programmes in the USA and Japan. A more appropriate level of funding under the Sixth Framework Programme would be 1% rather than the current level of less than 0.5% if the proposed actions are to set the pace for the Member States.

2. The promotion of a European scientific press agency and the facilitation of a network for exchange of professional science journalists are important parts of the action plan. But these initiatives should not result in the creation of new agencies and networks without taking into consideration the existing communication structures such as AlphaGalileo and the European Union of Science Journalists' Associations (EUSJA).

3. The stimulation of dialogue between the scientific community and the media at a European level is important and should be set up in collaboration with the established organisations of European science journalists, science writers and science broadcasters.

4. Most European citizens claim that their primary source of information is television. A European science television channel has been proposed. Unfortunately, this option is not practical because of the high costs of broadcasting in different formats and languages, and the diverse European media cultures. A collaboration with the European Broadcast Union (EBU) on open production support for a number of selected science programmes based on open calls is recommended. This could be organised as an ESF "à la carte" programme or by the Commission.

5. Targeted calls for proposals for creation, translation and dissemination of high quality communication products such as newspaper publications, books, radio and television programmes, Internet websites and exhibitions is an other area of the European Commission's action plan, where substantial support is needed.

6. National science weeks and festivals need to be promoted more than merely coordinated by the European Commission. The subject for promotion could be the European dimension, which usually has a low visibility in national events. The idea of promoting a European convention for science inspired by the well-renowned yearly events of the American Association for the Advancement of Science is welcomed. A collaboration with Euroscience at the EuroScience Open Forum in Stockholm, 2004 is recommended. (Ref.6)

7. The impact of activities for raising public awareness of science and innovation should be surveyed, benchmarked and analysed continuously, and it is important to provide well-founded research programmes in the humanities and the social sciences to provide a deeper knowledge of the interaction between science and society.

Recommendations at the national and regional levels

1. All research institutions and funding organisations need to define a communication strategy as part of their aims and activities, targeting the public as well as the politicians. A target of at least 1% of all free research money spent on communication and educational activities would provide a good basis for a coherent activity level. One way of linking research with communication could be to offer an option of a 1-10% overhead on research grants and make science communication part of the application and evaluation procedure. The rest of the funding could then be used for targeted actions.

2. Depending on their size, research institutions may need to set up communication units or professional help for communication of their activities. During the last five years a number of European universities and research institutions have employed communications officers and opened press or media offices. This is an improvement of the situation, but communication still needs to be accepted as an important part of an institution's senior management tasks.

3. Research institutions should consider how to be more proactive in the media; they should contact broadcast and printed media whenever there is a scientific debate going on. The mobilisation of researchers to participate in current debates will make the institutions and their research more visible to the public.

4. Basic communication and media training courses for scientists, and science courses for journalists on a regular basis is the right tool to improve the level of public communication. Scientists who are in the spotlight of an intense media debate may need professional help from their institution.

5. Better links to the media is a key element for science communication. In some countries national broadcast companies have direct links to university communication units, and some have even established websites where they integrate the science programmes from radio and television into a website where the public can get answers to their questions by a network of (volunteer) scientists. In other countries there are plans to make all public research available to the layman via an Internet portal describing all national research activities, supported by fora for questions and answers.

6. An important way to increase the focus on current research is to have more professional media material available to journalists and broadcast companies. Research institutions may need to build their own picture archive and to hire professional film teams for television coverage. A good distribution system to channel material at the national and international levels can increase the exposure. A science press agency or the current AlphaGalileo website may serve that purpose.

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(Ref.3) Eurobarometer Survey (*http://europa.eu.int*)

(Ref.4) *NSF Science and engineering indicators 2002 (www.nsf.gov/sbe/srs/seind02/start.htm)*

(Ref.5) *http://www.cordis.lu/rtd2002/science-society/home.html*

(Ref.6) EuroScience Open Forum 2004 (*www.esof2004.org*)

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By drawing on the advice and expertise of the ESF's membership, the briefings aim both to provide information and to promote discussion.

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