

Cluster I

POPULARISATION OF SCIENCES

A CRUCIAL POLITICAL ISSUE

Vladimir de Semir

Commissioner for Scientific Culture
The Culture Institute - Barcelona City Council
E-mail: vdesemir@mail.bcn.es

We are living the transition from the industrial society to a new era featured by the quick incorporation of scientific advances into our daily lives and by our competence to transform information into knowledge. This transformation entails not only economic but also, and particularly, deep cultural and social changes. In this context, popularisation of sciences is a crucial issue. It is not just the case of understanding that only one culture exists –including arts and sciences- but also to try to explain the world we live in. We want to have -and we must have!- competent citizens in this emerging society of knowledge, people able to take advantage of the new opportunities of this world.

The underlying idea is, thus, to abolish the dichotomy that was established and had been increasingly developed throughout the 20th century, and which has led us to talk about and differentiate between *culture* –on one hand- and *scientific culture* -on the other hand- as if they were two different things. As you know, it was C.P. Snow who defined this break in 1959 in his world known conference: *The Two Cultures*. Up to now, this document has undoubtedly had a most significant impact in describing the relationship of science in society, and the debate is still alive despite almost half a century has elapsed since it was written.

The existence of only one culture is still an open objective but now is not enough...!

Europe is concerned about the transition to the knowledge society. Without a competent science– and of course, an efficient technology system! -, the idea of a strong Europe will not exist, even if the economic unity is successfully reached. Experts and governments are well aware of this and seem to believe, after the celebration of the Lisbon summit in 2000, that a lot must be done. The present Barroso's European Government has updated some of the Lisbon objectives. One is clearly renewed: the commitment of reaching 3% of GDP (Gross Domestic Product) in 2010 in R+D. In the last years, the Commission has performed a program analysing Europe's scientific situation. So that, since the Spanish presidency, several programs promoting the improvement of our scientific capacity and competence was established, with clear targets. But to reach this, all European countries must develop their own programs adapted to their particular reality and be self-responsible of achieving these goals. This is for the moment an unresolved matter!

Thus, the European Commission works in many fronts, from diagnosing the science we can generate to setting which are the levels of scientific culture necessary to have an adequate social environment allowing the promotion of European scientific talent. Furthermore we should not forget that an appropriate level of scientific culture is essential for the society to understand the important social and economic change we are immersed in.

One of the alarms that were set off has been the evident decrease of scientific vocations among European youth. Another problem to be solved is the lack of participation and

visibility of women in the European science. Undoubtedly, these facts point to the direction that a definite change in values must take place in the society we are creating.

Another worrying - and very worrying! - indication is the little positive advancement that scientific knowledge levels has experimented in Europe among the general population since the first eurobarometer “The Europeans, science and technology” performed in 1992. In some aspects we could even say that the situation is worse: two thirds of the surveyed Europeans consider they are not well informed on sciences and technologies. And of course, in a society with a poor scientific culture, it will be very difficult to promote policies allowing us to correct our evident *scientific euroscepticism*, a phenomenon particularly obvious in certain Mediterranean countries.

For this reason, the DG of Research of the European Commission approved in 2002 the “Science and Society” Action Plan. This plan aims to identify the main problems in science popularisation in society and recommend specific programs. So that the various political levels (national, regional and local agents) of the member states can promote the improvement of the public perception of sciences with the goal that administrations and citizenship support scientific development in Europe.

This action plan that we are updating today in this Science & Society Forum constitutes a relevant European initiative aimed at a close and harmonious relationship between the scientific world and the society in general. The plan, as you know, proposes 38 actions involving the role of science in education and popular culture, the participation of citizens in scientific policies, the equality between men and women, ethics and government. The plan provides a common framework for the follow-up and assessment of the results of the actions that are being performed together or in each of the member states.

In the last years plenty of initiatives were undertaken in Europe to popularise sciences. Here we will also have the opportunity to check the wide diversity and originality of some of these initiatives presented in this Science & Society Forum showcases. However, this sample is relatively limited and selective. Anyway, it allows us to get an idea of the different typologies existing nowadays.

Schematically outlined, such initiatives could be grouped in the following four categories:

1. Science on the web. That is, science communication systems fundamentally based on electronic mediums.
2. Science centres and exhibitions. Unlike the previous ones, in this case there is a physical contact among communication agents and the different publics.
3. Calendar activities. That is, activities concentrated in one day, week, month or any certain period of time which are repeated every year.
4. Action plans. Global strategies for the promotion of scientific culture, usually led by administrations, and which include several types of actions.

Let's see briefly some of them, with the showcase examples that we can visit in this Forum.

1. Science on the web

This group includes initiatives that have in common the fact they are based on the web technologies for scientific communication purposes. There are periodical electronic publications (in formats ranging from simple texts to multimedia technologies); resources adopting the classic concept of news agency, but which use the capabilities offered by the

Information & Communication Technologies; systems putting in touch journalists with members of the scientific community, etc.

In general these are resources offering information about current issues coming from producing knowledge centres (such as research centres, scientific networks, universities, etc.) which are addressed to journalists as the main mediators of the transmission of scientific information to the society. As we all know, till now media are the essential way to disseminate science to the society, but the times are changing!

Some initiatives bypass the conventional media and go directly to the society, or to specific groups. This is the case, for example, of the University Science Communication to the Public resource, an Icelandic initiative addressed to a young university audience. This case highlights that Information & Communication Technologies open a wide field of possibilities to the science producer centres in order to communicate with the society. Thus, up to now the scientific community has had an almost absolute dependence from the mass media to communicate with citizens. The dependence goes from the decision of what is newsworthy to the interpretation and explanation such news is going to have. But as Information & Communication Technologies are spreading, citizens have more possibilities to access directly to the primary information sources. Centres producing knowledge can and must benefit from this new and wide door to the society.

On the other hand, in the review of the resources of this group, we missed the presence of true European initiatives. Thus, in general these resources are restricted to a certain geographical area, country or region, except of course for the electronic resources of the European Commission aimed to communicate the scientific activity.

Even in the case of the news agency Alphagalileo (www.alphagalileo.org), one of the most developed and biggest resources. But with the inconvenience that although news come from 11 countries and more than 750 different information sources (research centres, universities, etc.), and some of them are European (the European Space Agency, for instance), most of the information is limited to the countries that with their economical contributions support Alphagalileo. If we want to have an European news agency for science communication (such as the American agency Eurekalert – www.eurekalert.org– that represents the American Association for the Advancement of Sciences, AAAS), all countries must be represented without exceptions. If not, the news spread by Alphagalileo are unbalanced: a lot of research centres of some countries and nothing from others... For this, a serious commitment from all of us has to be taken, specially national administrations from each member state of the European Union that are not represented in Alphagalileo must support with a specific budget this news agency.

Let's see other examples of the initiatives of this group, which can be visited during these days:

- Science on the web – the Netherlands – NL (www.kennislink.nl). Kennislink.nl is an independent, virtual platform for science communication based on the network idea. More than 60 Dutch and Flemish partners offer their public information via Kennislink. It now contains over 7 000 articles and multi-media items.
- Science on the web – Sweden – SE (www.forskning.se). Forskning.se (research.se) is an on-line science news service which aims to generate interest in research as a source of information, insight and development – both for the individual and for society.

- Science on the web – Norway – NO (www.forskning.no) Forskning.no (research.no) is a web service with news, background articles, multimedia applications and interactive services from Norwegian and international research targeting young adults. It reports on all facets of research.
- Expertanswer – SE (www.expertsvar.un) Expertanswer is a media service offering journalists from all over the world access to Swedish science sources and research news. Around 4 000 journalists in Sweden and other countries are members and uses the service.
- SCP – University Science Communication to the Public – IS (www.visindavefur.hi.is) SCP draws on two existing initiatives: the Icelandic Web of Science (IWS) and the Young People's University (YPU). IWS introduces scientific concepts by answering questions posed by the public. YPU is a summer school for young people covering such fields as engineering, languages, physics, and ethics.

2. Science Centres and Exhibitions

Unlike the previous ones, museums and science centres generally focus on the physical contact between audiences and science. The science museums, centres and exhibitions panorama in Europe has radically changed in the last 30 years. First of all the renewal of traditional museums with a great heritage, many of them coming from old collections of animals, plants, minerals or other exhibition objects collected in the colonial expeditions and extended later on thanks to the museum research works. And after, the renewal of science centres or specific exhibitions basically thought in terms of experience, interactivity, informal education... The museum 'offer' is wide and more and more innovative... With no doubt, the European Collaborative for Science, Industry & Technology Exhibitions (ECSITE) network is one of the gathering initiative that has had more relevance in the European collaboration among science-related museums, centres and exhibitions. During these days we will have the opportunity to get closer to this network in its stand, with an interesting proposal, YESS - Yearly European Science, a new annual event organised for 9 May, the Europe Day. In 2005, it will take place in ten different EU countries where citizens will participate in demonstrations, activities and debates on the topic of brain research. The idea of a network is essential in this case and it adds a very interesting value for future proposals.

The main audience consists of children, with a close collaboration with schools. It is worth to highlight some initiatives that look for collaboration with young people, especially with the secondary education sector and universities. In this sense, an interesting proposal is the House of Science. It is a Swedish proposal addressed to students and teachers at secondary schools, with the possibility to experiment directly and in close collaboration with museums and science centres.

The collaboration among the different science centres, in a network, and also its collaboration with different education centres, particularly universities, are two main goals that should be boosted in the following years.

Among the initiatives that we can see during these days we can find also:

- **Invent an ET! – PT** (www.exploratorio.pt). To explore the topics of communication and the five senses, this interactive exhibition was built around the theme of inventing an extraterrestrial. Each experiment enabled the children to choose the ET's various sensorial characteristics.

All the portuguese programs are related to the succesful foundation of Ciencia Viva, an heritage of the wellknown 5% initiative of the former minister of Science, Mariano Gago, (who now is again in the recent new portuguese Government). The 5% solution was the decision to devote this percentage of the total budget of R+D in Portugal for the promotion of scientific culture.

3. Calendar activities

One of the features of this group of initiatives is that they concentrate their activities in a given period of time – one day, one week, one term... - The flagship of this group is, with no doubt, the Science Week, which has already a long experience. In all of them, the formats used to communicate science are multiple, from talks to exhibitions, workshops, interactive experiences, fairs, festivals, etc. The Science Week is an initiative widely spread in the European countries. But in some countries it has reached such a success that it makes difficult to manage it. That is, sometimes the offer is so wide during only one week that many of the activities overlap. In Barcelona, since a few years ago, the week has been extended to the whole autumn (from September to December) so that the offer is more affordable and continuous. Also in this case, the celebration has been directed to a specific strategic goal. For instance, the Scientific Autumn 2004 in Barcelona focused on the problem of scientific vocations and the Scientific Autumn 2005 will be devoted to the International Year of Physics and scientific and science popularisation books.

It is worth to highlight that, unlike in other type of actions, in such kind of celebrations one of the most involved agents are the universities.

So, some of the initiatives that we can see during these days are the following ones:

- **European Science and Technology Week – EC** (www.cordis.lu/scienceweek). Through thought-provoking activities across Europe, European Science and Technology Week aims to create a totally new perspective on science. The emphasis is on showing, rather than telling, Europeans how science and technology affects them, from the simplest gadgets to the most sophisticated satellite technology.

- **Engineering in summer – PT** (www.cienciaviva.pt/veraocv/engenharia/eng2004). 'Engineering in summer' brings the engineering of everyday life to the attention of the public by promoting direct contact with specialists in the field. It organises visits to large engineering facilities and to companies where engineering plays a central role.

- **SF - Genova Science Festival – IT** (www.festivalscienza.it). The Genova Science Festival seeks to lay a common ground where science and society meet in an interactive and diversified way. Using appealing and simple language, the Festival is a showcase of events with a ‘scientific flavour’.
- **Science Picnic – PL** (www.radio.com.pl) Science Picnic is an annual outdoor fair which takes place in the Market Square of Warsaw’s old town in June. For that one day only, a city of 130 tents sprouts up, where scientists and students carry out different science-related activities.
- **SFPL – Warsaw Science Festival – PL** (www.icm.edu.pl/festiwal) The Warsaw Science Festival is organised by academics for the general public. Visitors can observe scientists carrying out real experiments, take part in hundreds of activities and attend science lessons.
- **ZIELONA – Green Action – PL** (<http://davinci.mini.pw.edu.pl/zielona>) Rather than bringing children to universities, academics in Poland hit on the novel idea of taking the universities to the children. Known as ‘Green Action’, this initiative encourages students at various higher educational institutes to give up two months of their summer holidays to attend kids camps at remote rural schools.

We must also remember that many European initiatives join world calendar activities us the Brain Awareness Week, which is celebrated next week in 55 countries all over the world.

4. Action plans

Up to now we have seen initiatives that have been grouped according to its format or planification in the calendar. In this last group we have included general programs, led by local, regional or national administrations including several action lines. These are political action programs allowing the development of the rest of activities.

In this sense, we must admit that the European panorama is still virgin and unexplored. The European Commission has its own Action Plan Science and Society, but there are few states, regions or local administrations that have decisively supported it.

If we want to go beyond in the relationships between science and society, it is necessary that administrations decisively consider the promotion of scientific culture in their political agendas. Can you imagine a 21st administration without an environmental department or area? It should happen the same with the promotion of scientific culture. That is, we have achieved that the society concerns about environment and consideres it a fundamental aspect (even in the election programs) in almost all European administrations. In the same way we must make that the promotion of scientific culture reaches its own room in the different administrations policies.

In the showcases that can be visited during these days, we can see two initiatives belonging to this group: IPUTS, an Slovenian initiative, and Science & The City, a program of the city of Barcelona that was recognized as a ‘best practice’ in the Benchmarking the

Promotion of RTD culture and Public Understanding of Science process, carried out by the European Commission in 2002.

- **IPUSTS – Improving Public Understanding of Science and Technology in Slovenia – SI** (www.ustanova-szf.si). The Slovenian Science Foundation has launched a number of initiatives to enhance the public image of science, such as the hands-on ‘science adventures’ organised at the annual Slovenian Science Festival. Children learn important scientific concepts through actual experimentation.
- **Science and the City – ES** (www.bcn.es) Barcelona’s ‘Science and the city’ initiative brings science out of the lab and on to the streets. It has brought prominent scientists to libraries and civic centres, produced a guide book for ‘Walks around the scientific world of Barcelona’, and much more. It especially focuses on the important role that local administrations can play as boosters of scientific culture. The city of Barcelona works in this field also with the Catalan and the Spanish Foundations of Sciences.

Both are samples of what is already doing in several European political institutions. In a few words, an increased involvement of political administrations. Of course, other European countries have also more and less answered to such a challenge: Portugal, Germany, United Kingdom, Spain... These are usually policies led by states rather than the cities or regions. The scene is still in a very preliminary status and, though in the following years there will certainly be a progress, we should foster the development of city networks, collaboration among administrations, in order to cooperate and share experiences in the promotion of scientific culture. On the other hand, a part of the current media –particularly local or regional TV channels and radio stations- belong to the local or regional administrations, what clearly promotes the possible impact of these actions. Furthermore, we must take into account that such administrations are also responsible for the cultural offer and construction of the cities in the ‘conventional’ sense of the word (i.e. those responsible for the spread of the humanistic and artistic culture). So, integrating the scientific culture as another type of culture is one of the unresolved matters of the European local administrations.

To sum up

We have done a lot but all this is not enough! To reach a leading position in the context of the knowledge society, the political agendas of our cities, regions and countries must include the promotion of scientific culture. Scientific culture must reach the political level of decision and acting as we have seen it has happened with environment in the last quarter of the 20th century. The environmental movement began in a social and cultural level to reach later the political level. Promoting the popularisation of science must do the same!

The fact is that most Governments do not have a clear idea of what exactly they are doing – if they do something!- at least when it comes to levels of resourcing. Some Governments appear to be providing little leadership in this area.

We have done a lot but we need to do more to achieve that our societies understand and support the important changes going on and to have competent citizens with critical opinions. Popularisation of sciences is the first essential step to fulfil these objectives. It’s time to act at different political levels!

Let me insist about the case of Barcelona as an example of what can be done at the local level... Promoting scientific culture is in the political agenda of the local government of the city of Barcelona. In a plenary session of the City Council –July 2002-, all political groups represented in gave here unanimous support to the “Science & Society” Action Plan of the European Commission and the “Barcelona Science & the City” program started. Since then, the influent Culture Institute of Barcelona works as other cultural departments of the European cities promoting arts and all fields of the traditional humanistic culture. Now science is also part of its duty. We think this could be a good example to set up a network of European cities working together in this sense. If any of you is interested in this initiative - that we call at a preliminary level European Science & the City Network (ESCITY) - please contact us. We are ready to work with you to create this network!

We must spread political initiatives in this way with more commitment by the different levels of all the administrations involved: national, regional and municipal. Countries, regions and the cities must also reach a political compromise in this area in the same sense as Barroso’s Government pointed out when updating last February the Lisbon 2000 agreements. To put the appropriate political policies into practice we need to definitively break the wrong idea of two separate cultures. But with the shared goal that today it is not possible to be a citizen of the world without knowing that science is part of a unique integrated culture and acting according to this principle. This is particularly true when we realise that we are gradually leaving behind a social culture we inherited from the industrial revolution and that we are entering the era of knowledge. In which the capacity to generate new ideas is our main raw material and the steam of our cultural, social and economic transformation.

**WE NEED TO TRANSFORM OUR RICH EUROPEAN CULTURAL DIVERSITY
INTO A CROWDED RAMBLA OF KNOWLEDGE**