

Discussion

ALAIN POMPIDOU, CLAUDE JABLON, MARC KIRSCH, JEAN-CLAUDE AMEISEN

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Chair:

Jean-Pierre Alix, Science-Society Advisor to the Presidency of the CNRS (France)

Speakers:

- Alain Pompidou, Vice-President, Académie des technologies (France)
- Claude Jablon, Former R&D, Total (France)
- Marc Kirsch, Professor, Collège de France (France)
- Jean-Claude Ameisen, President, Ethics Committee, INSERM (France)



ALAIN POMPIDOU

I would like to stress several points which struck me. Of course the world is flat on account of the Internet, but I think that control over “the flat world” lies in the fact that it is also flexible and in a permanent state of adjustment. If an ability to adjust exists then there is also an ability to acquire a critical approach. When it was mentioned earlier that we needed scientific education in schools, this is true, but we also need critical thinking, scientific progress and experimental methods as practised by Claude Bernard.

Within the framework of a flat but flexible world in which we develop the spirit of critical thinking, I think that the real contribution of Europe and of a wider Europe is actually to avoid dogmatism. In the United States there are whole swathes of public opinion living off dogmatisms.

In so far as communication in science, the integrity of scientists, young people and science, raising awareness of training, teaching and the need for hybrid forums are important for openness. I have been working on the ethics, science, technology and bio-

technology for over twenty-five years and I have observed that the hybrid forums which promote openness are often reserved for experts. We agree that there are no ethicists, but there is an ethical approach reserved for experts. It occurred to me recently that something is missing and that what is important with regards public opinion is not simply raising awareness, but trying to understand what its expectations, and fears are and how to respond to them.

In political debate a politician is of course focused on public opinion, but when he meets experts he is in a multidisciplinary, hybrid forum. The problem is that none of us today asks ourselves sufficiently clearly how daily life is interpreted in the event of dramatic change, in a world which is both flat and flexible and in which dogmatism must be avoided. This is a message which I wanted to share with you. Thank you.



CLAUDE JABLON

The theme of our conference is "Science in Society" and I think that we have all recognized that there are three interacting elements at work here. On the one hand there is the scientific world, then there is the general public, and finally decision-makers in the broad sense of the term and I would be inclined to include experts among the decision-makers. It seems to me that the different workshops demonstrated at an initial assessment that the dialogue between scientists and decision-makers is improving. We have a long way to go, but I think that considerable progress has been made. It struck me that these same workshops, by contrast, showed that dialogue between these two groups and the public requires more in-depth work because the situation is still far from satisfactory. Who is the public? It is difficult to define, as was said by the rapporteurs earlier on. I think that there is scope for improvement.

Looking at things in a different light, i.e. the flatness or otherwise of these different worlds, it seems to me that the scientific world, which is very international has a strong tendency towards creating flatness,

even if this is sometimes regrettable. The world of decision-makers, and in particular of political decision-makers also has constraints. Within Europe the constraints are extremely stringent and the European Commission sometimes has a tendency to be manipulated by outside influences. On the level of dialogue between scientists and decision-makers, I think that the flattening influence would seem to be extremely strong at the end of the day. By contrast, I am fairly convinced that the world is not really flat in dialogue with the general public because the influence of culture, and history will obviously manifest itself, and on a personal level, I hope it will continue to do so. There is scope here for further exploration.

My second response whilst listening to the presentations from the rapporteurs was that if we had held this conference a year ago, I am convinced that the word "market" would have been used much more frequently than today. This word has receded somewhat because there is an economic crisis, the market is ashamed and has gone into hiding. I only heard it said once by our colleague who spoke about work on agronomy. I think that there have been excesses in the past – everything was focused on the market and this was obviously excessive. I think that we must avoid the opposite extreme of ignoring the market. It is here whether we like it or not and has positive and negative effects, but we certainly cannot do without it.

JEAN-PIERRE ALIX

I would like to add a word before we listen to the next speaker. What we are currently doing is an exercise in democratic dialogue, working as an assembly, in which each person conveys a message, is listened to by the other partners and this is how laws are made in the Assemblée nationale and is how we reach opinions which converge as far as possible in the Conseil économique, social et environmental.



MARC KIRSCH

The conference underlined the dual aspect of science, which is both epistemic and practical: it is all about knowing and transforming. We have heard a lot about science as performing transformations, about science for decision-making and science for action. It seems to me that this is the element which

most closely reflects the main evolution of science in the 20th century - its increasing involvement in the workings of modern society.

That said, I hear something else quite frequently and that is the word science in the singular. It seems to me that this does not exist. There are many differences and often the impression was that we were hearing about science in general discussion and then in specific presentations we heard about particular sciences, thus creating an impression of diversity and an extremely diverse picture which contradicts the idea of a unified global problem. It is not so simple. In the speech on the Internet, we got the impression of a very bottom-up process, with very little hierarchy, whereas in other disciplines such as medicine for example, and many other areas, everything is top-down and very hierarchical.

The way in which dialogue between science and society can be initiated varies greatly depending on particular circumstances. This calls for greater pragmatism. We cannot have a single strategy. I have not heard much discussion of evidence-based strategies, which are in certain cases a way of responding to the issue of how science can meet public and political demands. Participatory models were more frequently mentioned. These models represent a conception of the relationship between science and politics in which there is a form of continuity in knowledge production between science and

politics which seeks consensus. This can be achieved in different ways. The IPCC is one way of illustrating the political demand for a form of scientific consensus upon which public decisions might be grounded. But there exist other models in which the relationship between science and society is a much more disjointed relationship, for instance models where scientists for their part work in mode one of scientific knowledge production as described by Helga Nowotny and in fact become trusted advisors of the Prince. These kinds of models, like evidence-based medicine or evidence-based approaches in general, give a different illustration of how scientists are able to respond to social demands. Often these demands formulated by the political and social world are specific demands in response to specifically social problems which are not necessarily on the scientific agenda. The issue is knowing how to make the two agendas coincide more effectively without distorting the purely scientific agenda per se, which has its own constraints, linked to the development of research programmes, etc. – even if these constraints are not necessarily autonomous and isolated from the rest of the social world.

Many other points elicited a response, in particular about the issue of acknowledging and defending “global public interests”, in particular in environments with complex and sometimes confused regulations, like the world of Internet and computing. The same question arises over private research, which was mentioned several times. When there are important social or even global stakes

and the research is private, then it is focused on interests which are not necessarily global, whilst the issues may involve, to put it strongly, the interests of humanity in general.

There should be a debate on these issues, and more generally on the uses of science – including the public use – and on the risk of bending and misusing science and scientific authority to serve particular interests. The society has to be consulted on these issues.

Yet when we raise the issue of the relationship between science and society, science is posited as the best way for mankind to use its powers of reasoning, in the Enlightenment tradition. Thus, the society bears some responsibility for the way it uses science and its extraordinary power to transform the world. Many questions arise: How should this power be used? Under which conditions should it be left to private interests? How to establish a dialogue between scientists, politicians and the society? These questions urgently require answers, in the present context of announced environmental catastrophe, where science appears in the same time as part of the problem and the hope of a solution.

The issue is that problems obviously arise when this extraordinarily powerful capacity to operate with great power to transform the world is left uncontrolled. I am not taking sides, but we have to ask ourselves: how do we resolve this sort of issue in new situations where research is actually increasingly connected to industry and science is becoming technoscience?



JEAN-CLAUDE AMEISEN

The geneticist Richard Lewontin said that living beings do not just try to solve problems, they begin by causing them in the first place. And I believe the same is true for us, when we are faced with the changes caused by science and technology. The constant movement of science, that allows us to adapt, also continuously modifies our environment, requiring new adaptative solutions. And one of the important issues is: for the benefit of whom and at the expense of whom? Do scientific advances reduce inequalities or increase them? Does it only permit to achieve sustainable development, or fair development, which may then be worth becoming sustainable?

There is the major issue of intellectual property: when does it promote innovation and the sharing of innovation, and when does it impede them? When are innovations a public good that should be shared and when are they just marketable products whose sharing is not in the public interest? I believe that there is a need to ponder these questions on a case per case basis, at any given time, and that there is no general and permanent best solution.

Regarding scientific culture, it is important to allow society to understand the scientific approach: not just a sum of knowledge and achievements at any given time, but rather the very approach that allows to produce this knowledge and these achievements. It is a transgression approach, based on questioning knowledge, in search of new and more relevant knowledge. Scientific research is a transgression approach, but with rules. And in my opinion, the ethical approach is, in this sense, very similar to the scientific approach. Ethics questions norms, rules and laws that provided, at a given time, answers to discordance between conducts and values, or conflicts between different values in particular contexts. It is a transgression approach, in search of new and more appropriate conducts. Moreover, science and ethics questioning co-evolve continuously, as one changes the environment of the other. And societies would probably benefit from taking inspiration from these questioning approaches when organizing their debates.

Another important issue, when addressing the question of sciences in society, is to think of sciences in the plural. And in particular, to think cross-disciplinary. Research often progresses by using cross-disciplinary approaches, at the boundaries of several different scientific fields, allowing looking at things differently and favoring the emergence of new ideas. The promotion of a general scientific culture in society favors, even for scientists, the breaking down of boundaries between specialized domains.

Fraud was also discussed, and the need for the development of a culture of scientific integrity. Several solutions were put forward, but one was not mentioned: the one that was installed for therapeutic trials, where fraud often becomes a matter of life and death: the sharing of raw data, of primary result. I believe that promoting integrity requires going beyond training and policing. It requires a scientific development based on sharing, including the sharing of primary data and of negative and inconclusive results. All should benefit of access to the real data, and not only to the syntheses that are the scientific publications.

I heard an idea, which, in my opinion, is rather problematic. It reveals the recurrent temptation to believe that knowledge, science, human rights democracy... all originate from one specific location: ours. This reminds me of the beautiful writing by the economist Amartya Sen, *Democracy and its global roots*. True, a particular form of democracy and of respect for human rights was invented in Europe, but several forms of collective deliberations, of respect for the other, were invented elsewhere. We have always to inscribe the universal into the singular, into dialogue and exchange, to attempt, as Paul Ricœur said, to think of *ourselves as another*, and to want that the *liberty of the other be*. Science pushes back ignorance, but it can not erase the basic uncertainty that is intrinsic to the process of making choices. There is no real responsibility in the absence of freedom, no real freedom in the absence of

choice, and no real choice without a degree of uncertainty. The scientific approach is crucial for allowing to choose in the context of the best possible knowledge, but it cannot, by itself, dictate our behaviour. And to the some extent that we have to confer value to knowledge, we have to restore value to the basic uncertainty that remains once ignorance has been pushed back as far as can be done. The physicist, Richard Feynman used to say that unless something is not surrounded by uncertainty, it cannot be the truth. I think that the main difficulty is to try to ensure that science is shared and developed as much as possible, while at the same time making it a tool at the service of what exceeds it by far in value, namely human beings.

We talked about health. The World Health Organization and it is very interesting that medicine and biology define proofs objectively, based on evidence in a wide range of areas. However, you are aware that the World Health Organization's definition of health is a *state of physical, mental and social well-being*. It is obvious that well-being cannot be defined from the outside, by a scientific measurement, but requires asking the person itself. We have to promote the use of science as a tool in the elaboration of our collective choices, in such a way that both allows us to freely invent our future and to respect each person

General discussion

FROM THE AUDIENCE

I would like to react to what Claude Jablon said concerning the dialogue between science and the decision-makers. I think that at national level, it is right to say that there is fairly effective dialogue between science and the decision-makers. I do not think that this is the case at all at a European level because there is no body, no forum for these discussions or for drafting scientific policy between the scientific community and the European Union.

ALAIN POMPIDOU

As far as the European Parliament is concerned, and this is also the case for the French Parliament and the other member States parliaments, there are bodies in charge of evaluating scientific and technical choices who organise hearings and engage in democratic dialogue and provide scientific and technical expertise.

PHILIPPE GALIAY (EUROPEAN COMMISSION)

I do not think that we can say there is no forum for debate on science and policy at a European level. There are many groups of experts who are regularly invited to express

their opinions concerning the European Commission framework research programme. We also have the EURAB, European Research Advisory Board, whose function is to advise the general research directorate on topics. There are also many groups of experts which meet when necessary, to discuss given subjects. Reports were also presented over the course of these two days, so there are many different ways of organising this debate.

JEAN-PIERRE ALIX

I would like to add that the framework programme is decided jointly by the Commission and Parliament, which creates an additional forum every five or six years. But maybe there is no two-way debate in this forum. We should add that the ERC (European Research Council) was set up recently which, as Helga Nowotny explained yesterday, and is totally open to all researchers from member countries. It supports projects on the criteria of excellence and quality. Things are therefore changing. Secondly, there are all sorts of preparatory discussions for future programmes and I gathered that the bilateral relationship between the Commission and the member States was beginning to be considered inadequate and that scientific institutions themselves would be invited to take part. This is an idea that is developing and therefore the system is improving.

ALAIN POMPIDOU

These are what we call "joint programmes" and are in the process of being set up.

FROM THE AUDIENCE

If this were the case, then why are all European researchers everywhere very unhappy about the way in which research programmes and invitations to tender are organised and about the way in which everything is managed by the European Union? Whenever you talk to European researchers, they always tell you that they feel overwhelmed by the way in which things are done in European research programmes.

FROM THE AUDIENCE

I enjoyed Jean-Claude Ameisen's contribution, but I think that we have to appreciate how difficult the issue of uncertainty is and accommodate it. For example, in the climate field, the IPCC has in a sense accommodated uncertainty and has highlighted an approach based on scenarios, which is in fact a future-based approach advocated by other speakers for exploring choices rather than dictating policy and accommodates society in order to actually formulate responses. We can see the difficulties and the potential for manipulation which the issue of uncertainty opens up. We are not out of the woods yet in terms of making pro-

gress with public opinion on the practice of working with uncertainty and distinguishing between the issue of risk and unavoidable uncertainty and those uncertainties which could be reduced or at least on which progress towards reduction can be made. From this point of view, I think that the IPCC is in some respects exemplary, although this does not resolve the matter.

JEAN-CLAUDE AMEISEN

You are right. I think that the main difficulty is to help society understanding the relationship between uncertainty, choice and liberty, once full access has been provided to all available information. While more research may often be required before reaching a decision, this does not alter the fact that in the end, there will be an irreducible degree of uncertainty in the process of choosing. I believe that, in this matter, collective behaviours lag behind individual behaviours. For the last sixty years, biomedical ethics has been based on the process of free and informed choice, a process in which biomedical knowledge is placed at the service of the patient's right to exercise their freedom of decision. What has been viewed by society as a crucial progress in the doctor-patient relationship should be understood in terms of collective behaviour. If we wish to improve our process of collective deliberations and choices, we need to find appropriate ways to articulate knowledge, freedom, uncertainty and responsibility.

FROM THE AUDIENCE

This is complementary to what Martin Bauer had mentioned earlier about the indicators. What I had noticed and what I want to suggest is that the time has come to clearly bring out the difference between opinion, awareness, public understanding and perception. It is sometimes confusing what the researcher is doing: is it about opinion, or about perception?

What we have observed in India concerns the awareness and the perception. When we asked in surveys “are you aware about the science or technology?”, people said yes. When we asked “have you ever used this technology?”, they said no. And when we asked them “can you tell me how you benefit?”, it’s an entirely different set of answers. So, if people are using the technology or science, their perception is emerging by using the technology: that is perception. But, you have to distinguish between opinion poll and those serious answers. This is one thing.

The second thing is probably that the time has come, when a lot of globalization is happening, and the developing world is coming closer to the developed world in terms of knowledge and innovation. I believe that in “science and society” field, the time has come to unify the issues by which we can compare one country to another country. So it should be in terms of issues as well as in terms of the sufficiency of the science indicator which I believe needs to work.

And finally, I believe there is a lot of scope which – I just have to repeat - is engagement and involvement of the statistic tools. And the statistical rigorness required to do that, the validity of which will contribute to define what we’re getting from the data.

FROM THE AUDIENCE

It seems to me that in the scientific field and as far as scientific policies and scientific programmes are concerned, the culture of experts is more prevalent than the culture of debate. Everything is based on expertise and the experts, and not on debate. How can we achieve a balance or try to redress the balance between debate and expertise? I think that as far as the European Commission and establishing programmes are concerned, much more weight is given to the culture of expertise than to debate, even if it does exist in theory or in existing movements. I do not know if there is a solution to balancing these two cultures.

ALAIN POMPIDOU

A whole section of the General Research Directorate is addressing these issues, independently of all the efforts being made by the European Commission in the fields of science, society and the economy. I can give you an example which is being discussed – animal experimentation and animal experimentation on primates. The revision of the directive on animal experimentation

and the anthropomorphism which presides over certain decisions concerning experimentation on primates is a topic which is going to evolve over the next 18 months. The debate has been initiated and there is a constant succession of seminars, meetings and lobbying to protect animals on the one hand and research institutions on the other. The European Commission, the Parliament, the Council of Ministers and many eminent ministers have already started to take sides. This issue, which is linked to public health, can become very emotive and in the event of a serious health crisis we will need to have recourse to experimentation. The debate is in full swing involving many experts.

JEAN-CLAUDE AMEISEN

There are places where debate goes beyond expertise, namely all the ethical bodies, both national and international. In these bodies, cross-disciplinarity is not the sum of knowledge and expertise, but an approach which aims to transcend them.

What is lacking, in particular both in our country, is a way of conveying this kind of debate into society and the public. We should not expect an expert opinion from ethical bodies, but rather a way of framing the questions, which can then be pursued in society. I believe that this is an interesting model compared to the sole provision of expertise.

JEAN-PIERRE ALIX

We should recall that bodies such as the one in which we find ourselves today also engage in debate and offer points of view whose origins and roots are extremely different and therefore constitute the first step towards the search for consensus of opinion. One can also mention, without going into any detail, that our assemblies are also forums for debate, even if they operate on majority rule, and should be trusted in a sense. We need representatives from the scientific community. They will also have to contribute to these discussions.

FROM THE AUDIENCE

I would like to point out that at the time of the 2nd framework programme, there were science shops which got the public interested in what was going on and where people could take part in developments. There were also exhibitions called Science in the Streets. I might add that the decision-makers at the time wanted innovation and it was the era of the first programmes in information and communication technologies, biotechnology and all these issues. Now the roles are reversed somewhat. When we see what happened in the 6th and 7th framework programmes, it is obvious that decision-makers want results. They are no longer interested in free science without any immediate benefit. I think that things have changed a lot and that the Lisbon Treaty is

partly to blame, as it highlights the competitive dimension of Europe's role. I think that we had a very good example in Ulrika Felt's lecture on the information society. She demonstrated the tension between economic interests and decision-makers, which is the trend in the European Commission today, and also the balance which we need to re-discover between public and collective enthusiasm for these things. I note that Europe has totally lost this dimension, even within a framework project. If our conference is going to be more fruitful, then I think that it should demand the reinstatement of programmes on a European level, which would allow us to examine these aspects more closely. I am well aware that the ethical aspect was introduced into application forms for the 7th framework programme, but this is not taken into account by the experts evaluating them. This means that the approach to adopting programmes taken by groups of experts is not concerned with these issues. I think that we should put evaluation tools in place which will enable us to take responsibility for all these aspects which are of concern to the general public today.

CLAUDE JABLON

I wonder, at the end of the day, whether the proliferation of science festivals in different European countries is not a new way of presenting the aims of the science shops all those years ago, which you mentioned. With

regard to your question about Europe in a more general sense, we are labouring the point, but we feel that there is a lack of communication and understanding between European institutions and the wider European public. Unfortunately, science is just one example, and as you know there are many more, and recent political events in the last year or two show the extent to which there is a genuine deficiency in this area. Is scientific communication and better-structured dialogue between decision-makers and the public a priority which we should demand in Europe? Shouldn't the member States get more involved? I admit that these questions are somewhat beyond me, but they must be placed in a slightly more general context than that of today's discussion.

PHILIPPE GALIAY (EUROPEAN COMMISSION)

I would like to point out that ever since the 6th framework programme, since 2002, this science and society aspect has been extremely visible within the programme. We now have 330 million euros to spend on these issues of science and society. We are working on issues of governance and ethics. All the projects and proposals put before the Commission which are on the point of being accepted must undergo an ethics review. In this way the ethical content of the programmes being financed is guaranteed. Now we are moving towards ethics audits to see if projects are keeping their ethical commitments.

JOHANNES KLUMPERS (EUROPEAN COMMISSION)

I am from the Science, Economy and Society Directorate. There have certainly been some changes over the different framework programmes. The 7th framework programme provides for debate between researchers and recognition of completely new social aspects which were never part of previous framework projects. A notable example is the option to include non-government organizations in projects. This is a new type of project which only exists in the 7th framework programme. Another point is that you correctly highlighted the ethical assessment and that the researchers who carry out assessments do not necessarily discuss ethics. It is the ethics committee which ensures that all projects are dealt with correctly from an ethical point of view. However, the ethical assessment does not provide for any debate between researchers on these ethical questions. By contrast, our colleagues in charge of research careers have several groups in place which deal with all sorts of issues concerning advancement and career opportunities for researchers in Europe. In these groups, the issue of how communication with the public is taken into account, or rather not taken into account at all as an asset in a researcher's career, is examined. There too, debate and the opportunity or obligation on the part of researchers to engage in debate with the general public is taken into account, and this has never been done before. There are there-

fore elements in this framework programme which have never been tried before.

FROM THE AUDIENCE

I would like to say that there is a system that exists at the national level to promote debates. In France, it brings together national groups based on a theme, representing research, universities, industrialists who can provide input, and also representatives from the committees of programmes working with the European Commission in each of the areas of the framework programme. This exists for all cooperative programmes, for the ERC and for all areas and infrastructures. There are representatives at national levels who work in specifically on the working programs. There is also a network of National Contact Points who work directly with the scientific community to offer advice and to set up research projects. Finally, there is a French website: eurosfaire.prd.fr that has all the relevant information.

JEAN-PIERRE ALIX

I would like to refocus the discussion on our main aim here. Rather than interrogate those on the platform or elsewhere, I would now like to ask you as scientists, experts in mediation or free-thinkers what type of dialogue you would like us to develop. A dialogue does not mean that everybody is in agreement. A dialogue is a way of address-

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sing each other and deciding to come together. Could we devote the last few minutes to inspired and enlightened suggestions on how to move forward?

FROM THE AUDIENCE

May I take this opportunity to take stock of the last two days. As a researcher and teacher, I found the debates very thought-provoking but that the concerns which I expressed yesterday were fully confirmed. What has taken place in this auditorium today is a debate between researchers and scientists, but are society the general public, or citizens or the parties involved? - as scientists we have to come up with an answer. In future initiatives it would be very desirable to have a different balance, to have scientists, of course, but also to raise the issue of people in society. I am speaking today on behalf of the CGT union, we have suggestions and if we had been able to speak in the different workshops we would have made specific suggestions.

I want to come back to what was said by our colleague from the European Commission, especially with regards the 7th framework programme. It is true that there are negative aspects to the 7th framework programme, namely the cut in the chapter on international cooperation, but I was going to add that there is actually a new chapter on the dialogue between science and society and this is to be applauded. I would like to

finish by saying that in the initiatives which could be taken by various bodies, such as the one of which you are president, but also the OECD and the Global Science Forum, there is always the concern that the panel should be balanced so that scientists come face to face with social stakeholders without a separate agenda.

FROM THE AUDIENCE

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It seems to me that one of the channels for communication between science and society which has perhaps not been addressed sufficiently is the media. I did not have the impression that there has been much in the way of contribution from the media and since you expressed a wish that the conference be followed up, it seems that this is a link in the science-society dialogue chain which we should come back to in the next conference. It seems essential to me. You wondered about the future and I think that we all know that young researchers represent the future of the system, even if this was not addressed here. They will act as a bridge for us to tackle the question of science, partly because they are the researchers of the future. If we want the scientific community to react or interact with society in a certain way, then we could begin immediately by considering doctoral programmes. When we say that there is a lot of work to be done on the image of science and that we are looking for role models in science, then we only have to consider that holding a doc-

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torate is an important factor in the problem. If we give people today who have been trained through research and for research their due place in society then many communication problems between science and society will be solved. This is all the more relevant because young researchers are not researchers in academia; as we now know that two thirds or three quarters of holders of doctorates will pursue their careers elsewhere in all layers and sectors of society and the economy.

FROM THE AUDIENCE

We have seen young people's involvement this morning. Tomorrow the Comité consultatif national d'éthique [National Ethics Consultative Committee] is welcoming classes from all over France and they are going to offer their thoughts and ask questions about the implications of research in life sciences. I think that this might serve as an example and that we can call for greater involvement of young people like those we have seen today to come and engage in dialogue with experts like yourselves.

FROM THE AUDIENCE

I work in a university research centre in Austria. We have been carrying out for twenty years participatory research program, with the aim of shaping social and environmental friendly technologies. Recently we have started a cooperative research project

within the 7th Framework Program in the science in society area. This is a narrowing interaction between researchers and civil society, involving people by a very bottom up approach into research. We think this is a very constructive way to make science in society and for society.

We have heard that science is going to change the world. But to change anything, one needs to know where to go and how to get there. And in science, normative decision is important especially when it affects uncertainties related to research. This might make more explicit different rationalities and different values by including society in the process. It is a kind of learning process for researchers too. I don't think that our policy system will change very much from this expert oriented system. This is a good way for the experts to get the ideas from society when they are consulted for policy. This is my suggestion for constructive interactions between science and civil society.

FROM THE AUDIENCE

I think that the format for types of interaction or conferences like today's could be different. I had the opportunity to take part in debates or sessions in which experts were not the first to speak and there were all kinds of communication beforehand to engage the public and the public spoke first. Experts in the field were present, but they did not have top billing, but were reacting to events which meant that they either did not always have

a ready reply to an unexpected question or they were able to ask the public what their concerns were, which is something which is always biased if experts are made to speak first. I took part in other debates or sessions of experts where the experts would not be the first ones to express themselves. This could be an alternative format and that is my suggestion for the future.

PIERRE-BENOÎT JOLY

I have two propositions. The first one is to pick up on my Austrian colleague's point that it is important for civil society to have access to laboratories and in this respect I think that there is a series of initiatives which we need to back up. Coming back to the subject of the science shops, there are PICRI, Partenariats Institutions Citoyens pour la recherche et l'innovation, [Institution/citizen partnerships for research and innovation] in all the European programmes for the promotion of cooperation in science and public involvement in science. This strikes me as very important. My second proposition is that we know that there are a lot of experiments in organizing dialogue at a national and European level and we must capitalize on this. My point is that what we need in France, and perhaps on a European level, is institutions to support the organization of public debates. There is currently a bill to this effect which would make the Conseil économique, social et environnemental the vehicle for citizens conventions,

and I think that we must really think hard about the decisions to be made on the subject. This could involve the Commission nationale du débat public [National Commission for Public Debate] which is going to organize a major debate on nanotechnologies or a move towards technological choices. I think that what we need to do now is to capitalize and to have institutions responsible for organizing public debate.

FROM THE AUDIENCE

I would nevertheless like to highlight that education is a fundamental issue for the future of Europe and its citizens. Young European citizens are no longer interested in science. I come from Denmark and organize scientific communications and try to encourage scientists to go into schools and explain what they do. We know from experience that we need to arrange meetings with real scientists in order to persuade youngsters to embark on scientific careers. Too many young people never meet any scientists within the framework of their studies, which gives rise to a lot of myths about science. We also know that a number of scientists who go into schools get the impression that they are learning something from the dialogue. It is not just a case of imparting knowledge and I think that a lot of benefit can be derived from this two-way dialogue with young people. There is a problem of supply and demand with scientists and schools. In Denmark, at least, there is very

strong demand for meetings with scientists, but there are many scientific obstacles which prevent them from taking part in this type of activity. Perhaps we could try to remove some of these obstacles, which are often of a bureaucratic nature, so that we can encourage scientists to share their knowledge with the European citizens of the future, because there is great potential which we are not exploiting sufficiently.

nal and international level could open their doors once or twice a year to present some of their major research and so that researchers could make an effort to present their work. It would be interesting to have direct access to information.

JEAN-PIERRE ALIX

Thank you very much. This is the end of our round table summary session. I now would like to hand over to our colleague and keynote speaker today, Dominique Pestre, Professor at the Ecole des Hautes Etudes en Sciences Sociales, and a historian of science.

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Dialogue

FROM THE AUDIENCE

I am a freelance scientific journalist. From my point of view I have a particular need and what I would appreciate is if organizations and research institutes at a natio-