Chair:
- Jean JOUZEL
  Vice-President of the IPCC Scientific Council, President of M.U.R.S.

Speakers:
- François AILLERET
  Honorary Managing Director EDF, CESE member
  Sciences and Co-players in Science
- Jean-Pierre ALIX
  Science-Society Advisor to the Presidency of the CNRS
  Improving Dialogue with Society on Scientific Issues
- Ulrike FELT
  Professor of the Sociology of Science, University of Vienna
  Taking the European Knowledge Society Seriously (report by the CE expert group)
- Jean-Gabriel GANASCIA
  Professor of Computer Science, Pierre et Marie Curie University, Paris
  Summary of the Morning Session and Workshops Announcement

How can we dialogue?

Jean Jouzel

After listening to our two ministers, to President Dermagne and to Jean-Pierre Alix, I think that we have already got straight to the heart of the subject. As you are aware, our aim over these two days is to open up this dialogue in society. We have three speakers in this session. The first speaker is François Ailleret who will speak on behalf of the Conseil économique, social et environnemental. He is a former managing director of EDF. His lecture entitled "Science and Co-players in Science" is largely based on a study carried out by the Conseil économique et social, before it had its environmental dimension.

François Ailleret

Science and Co-players in Science

Mr Chairman, ladies and gentlemen. After scaling the heights with Heinz Wismann this morning with great enthusiasm and interest, I will now lead you to lower altitudes.

Science has two objectives: pushing back the boundaries of knowledge and also offering solutions to the problems which people encounter. These two components are inseparable and Louis Pasteur expressed this very well when he said that "Science and the applications of science are connected like fruit and the tree which bore it".

Science has a number of effects on society and affects a variety of areas: the short and medium term consequences of increased life expectancy, health trends, genetics and its ethical dimension, GM crops, the risk of global pandemics, but also the protection of the freedoms and private life of the individual, major environmental and energy issues, climate change, nanotechnologies, etc.

These are often controversial subjects and demonstrate the extent to which science influences modern society. However, society today now wants to have its say on the matter. This is not in order to tell researchers what the relevant scientific issues are, or how to research them, as this is the researchers' responsibility, but to point out the major social challenges in which science can play a role and to encourage them to supply solutions. Public perceptions of science henceforth have a role to play in this dialogue. They can no longer be summed up as a shared belief that science leads to progress, as was the case in some historical eras. There is also an element of wariness which has been duly noted over the last few years.

The ambiguous status of science in public opinion and in civil society invites us to reflect on the way in which scientific and technical policy is framed. It is our collective responsibility to support the development of knowledge, but also to recognize the importance of the consequences of scientific advances and the perceptions which they generate, since these now have an impact on our country's scientific policy. The CESE, which is a forum for consultation, has a role to play and I shall return to this later.

We can distinguish four broad areas of responsibility in the scientific life of a nation: its choice of main direction, the organization of resources and scheduling of activity, the actual progress of the scientific work, and lastly, the applications of science and technology. Although the actual scientific work is mainly carried out by professionals, the other three dimensions – direction, organization and scheduling, applications – are in the hands of the politicians, major economic stakeholders and scientists, although civil society is becoming increasingly involved.

How can civil society be defined? By definition, civil society includes everybody and is an aggregate whose contours are difficult to define. In order to clarify this, I will group the players perhaps rather arbitrarily into a number of sets which can be viewed as the main players in the relationship between science and society. First, we have those who "know": researchers, teachers in higher education, the members of learned Academies and experts of every kind. Then, there are institutional decision-makers: politicians, industry and the service sector, workers' representatives and international bodies. Alongside them, there are those who disseminate and pass on information, the "conveyors", in the form of the media, philosophers, and sometimes also companies. Finally there are individuals and social groups, which are sometimes referred to as "organized civil society". An organization or individual can belong to different categories of player simultaneously, depending on the subject. All of these players constitute civil society.

What are its expectations? Civil society experiences, and has often incoherently expressed, expectations which can be summarized in the following way. Firstly, it wants its concerns, fears and hopes to be taken into account, i.e. considered, heard and understood. Secondly, when things are becoming increasingly complex, it wants to be informed and to have the means to increase its powers of discernment and to receive earlier and more effective warnings. It then wants to be able to engage in dialogue and debate in many forms and to express points of view to be taken into consideration through recognized channels (CESE opinions, public debate, surveys, etc.).

The players clearly have different objectives which can sometimes be antagonistic or identical. These include: pushing back the boundaries of knowledge, ensuring economic and social progress, guaranteeing the permanent survival of the nation, keeping citizens informed, creating market value, making genuine room for ethics in decision-making, improving quality of life in all its forms, promoting international solidarity and reinforcing a nation's competitive position in the global market. It is clear that there are many future horizons and timescales and each actor is a force and a counter-force. We have to get the best out of it in order to enrich the debate, without paralysing the decision-making process or making it inefficient. The links between the main players in civil society on this subject are many, varied and complex. Willingness to listen, dialogue, respect for the speaker, but also clear and relevant procedures are all prerequisites for mastering this complexity.

The CESE has a role to play in this respect, because tackling all of these issues forms part of its mission and one might even add that it has often played a pioneering role in its capacity as the "first voice" assembly, as it is often termed by Jacques Dermagne, in the hope of anticipating matters, because, in the words of Leonardo da Vinci "Failing to anticipate is preparing to groan". CESE presents reports, expresses opinions on which we vote in plenary assemblies, in response to government referrals or self-referrals. These reports are prepared in divisions. For general science, especially in its relationship with society, the main player is the Productive Activities in Research and Technology Unit. This unit conducts in-depth debates in a spirit of openness and great freedom of expression, in which everybody respects everybody else's point of view.

What we have here is a quite unusual atmosphere in this respect, which is rarely encountered elsewhere in France. CESE opinions are forwarded to the government. They generate widespread public information campaigns in newspapers, in publications, and now also via the Internet. Our rapporteurs are frequently heard in the Assemblée Nationale and Sénat and sometimes even in plenary sessions of these two parliamentary assemblies.

Without going into exhaustive detail, which would take too long, I would like to give some examples of subjects tackled by the CESE in the last few years, with the twin aims of expressing our opinions, which claim to be those of civil society, but also of providing citizens with material to form their own opinions. Examples include the assessment of research and technology on nuclear reactors, France and the challenges of biotechnology, French public research and companies, rare diseases, the impact of genetics, nanotechnologies, climate change, the virtual economy and new information and communications technologies.

Our advice is also sought for government bills, as was the case with the bill for a radioactive material and waste management programme. CESE's wide involvement puts it in a position to comment on situations and undeniable problems, which are a feature of France today and doubtless also many other European countries.

Increasing longevity brings with it many difficult new problems for which society is ill-prepared. In certain cases, such as avian flu for example, neighbouring countries (France, Spain and Italy) have adopted very different approaches, which is worrying for the public and leads to distrust. As was mentioned this morning, study at higher education level is losing its appeal. Decision-making is decreasing on a national scale in favour of the European dimension, which is very positive, but it leads to loss of reference points and reduced autonomy in decision-making. Public opinion often feels that major decisions are being made by going with the flow, without discussion. The frequent attitude among the general population is to use more and more new scientific applications in its every-day life (mobile phones, Internet, Satnav, smart cards, excessive use of medication, etc.), while at the same time developing increasing wariness with regards science.

There is also the fact that it is complex and difficult to assess certain risks and this often gives rise to rather heated or subjective clashes because there are not adequate analyses, studies or experiments available. The principle of caution is sometimes evoked simply to support a cause and it is often wrongly compared to the principle of abstention rather than a reasoned act.

Impact studies and *a posteriori* analysis do not yet form part of the culture of many French decision-makers and this is an omission. New technologies and the growing demand for traceability are producing applications such as computer files, computerized travel tickets and various records which pose a threat to the freedoms and privacy of the individual. Let us be quite clear about this – industry is slow to accept its responsibilities and powerful companies have triggered fierce debate because they have not had the intelligence to incorporate the expectations, demands and fears of public opinion into their strategies. False hopes are sometimes raised, especially in the health

sector, by research breakthroughs which are presented in a sensationalist manner, when their applications are still hypothetical and its very painful for the people involved to come back down to earth.

New ethical risks can also emerge in a series of shifts, without the main players really being aware of this. One such example is the transition from the curative to the preventive in human genetics. In general, there is not sufficient foresight on major social issues and we often find ourselves in de facto situations requiring rapid decisions, which as a consequence, are poorly prepared and badly received subsequently. These decisions must be tackled with determination, open-mindedness, without pessimism, but also with trust, because the events of recent years have shown good practice was developing and have pointed the way forward to progress.

One such example is a growing concern about ethics; ethical and professional ethics committees in companies are tackling hitherto overlooked problems. New forums for debate have emerged such as the Parliamentary Office for the Evaluation of Scientific and Technological Choices and procedures put in place for public debate. Initiatives such as the Généthon gene therapy research oriented, campaigns by the "Ligue contre le cancer" [Anti-cancer League] demonstrate the power of civil society to gain recognition for its priorities and to advance them.

This is why the CESE has come up with proposals which, far from being wishful thinking, are likely to lead to genuine progress if the long-term will exists. What is required is a commitment to a training process for debate, the expansion of forums and methods for consultation, which can be facilitated by new technology, especially the Internet.

We need to mobilize researchers even more so that they express themselves in appropriate language to different gatherings of lay people. There are scientists who are skilled at popularizing without distorting the facts. We need more of them and we need to call on their services more often. When people in the knowledge community communicate, it would clarify matters if they highlighted what we know, what we do not know, what is uncertain, what is probable or improbable and what public opinion thinks, believes and fears. Risk analysis would benefit by being carried out in two interconnected but separate circles: a first circle made up of scientists and a second circle also made up of scientists, but with representatives from civil society too.

French philosophers take little part in debate and often confined themselves to the present. We need to canvass them much more on the major themes for the future, as is the case with philosophers in Germany, as was superbly illustrated this morning, and in America also.

Finally it would be good to demonstrate that investment in health, safety and sustainable development stimulate economic growth and employment rather than just being additional costs for society.

These are some of the thoughts of a small group of members of the Conseil économique et social. As the world is undergoing more profound and rapid growth than ever before, people are naturally turning towards science and this is why we are entitled to expect a lot from the discussions and work that you are going to be involved in today and tomorrow. I hope that these discussions mark the start of a period of reflection and increased cooperation on a European scale, as Madame Pécresse mentioned this morning. If they are undertaken in an appropriate framework using appropriate methods, they will benefit from the variety of experiences and cultures and will be able to demonstrate best practice and suggest recommendations on the fundamental subject of the relationship between science and society. Thank you for your attention.

Jean Jouzel

Thank you Mr Ailleret for painting a comprehensive picture of the different stakeholders in this dialogue between science and society and their complexity. Thank you also for recalling the role and involvement of the Conseil économique et social and for all the suggestions you made. Personally, I am delighted that the role of the Conseil économique et social has been extended to cover the environment, because I was heavily involved in Grenelle de l'environnement talks and wanted the environment to be included. It was an excellent decision on the part of the Conseil économique et social to suggest extending its role to environmental fields. Thank you for blazing this trail. We have time for a few questions.

From the audience

I belong to the Fondation des jeunes diplômés [new graduates association] I would like to thank you, François, as you have been the only person this morning, apart from Mr Potočnik in his video broadcast, who has provided a definition of education. When global competition is mentioned, education is nothing unless it is understood in a global context. African education is no different to European education. I would like to thank you most sincerely because you are the only person to have highlighted competition for global education. If we do not become aware of humanity, then who is sciences aimed at? Thank you.

François Ailleret

I do not think that I am the first person to speak about education. I think this was an underlying idea in most of the speeches this morning. It is without doubt one of the vectors for progress for mankind.

Jean Jouzel

I would like to now ask Jean-Pierre Alix, Secretary General of M.U.R.S., to join us. He has been heavily involved in setting up this conference. He is also the science and society advisor to the presidency of the CNRS. He is going to tell us how we can improve dialogue with society about scientific challenges in the light of a recent OECD report.

Jean-Pierre Alix

Improving Dialogue with Society about Scientific Issues

I would just like to do a quick advertisement for this marvellous magazine which is hot off the press today. It is the M.U.R.S. magazine entitled, *Science and the Future of Mankind*. This special issue is the fruit of several months' work on the part of French social science community. It is an in-depth work as several hundred people took part. This work is presented here in the form of 15 articles written by philosophers, sociologists, historians and anthropologists on the way in which we should frame this question today. This is why the title of this issue is "Sciences, technologies and forms of knowledge in society". We try to answer the questions which you are asking yourselves.

I would now like to turn to some work carried out within the framework of the OECD and the Global Science Forum which takes topics and organizes workshops with government representatives over a period of several months. The one which I would like to present to you is called "Improving Dialogue with Society about Scientific Issues". This is a draft of the conclusions which I am now going to present to you in two parts. The first part deals with how we defined the issue of science in society. The second part gives the experimenter's view on the question: If you have to build a dialogue, what should you focus on?

What is "science in society"? We discovered that the traditional rationale for science in society is in crisis. It stems from a form of Golden Age which may never have existed, in which science occupied a legendary position courtesy of the great figures mentioned by François Ailleret – Pasteur, Einstein, and others. It was quite convenient to manage scientific policy on this basis for a number of decades. The consequence of this paradigm was that the transfer of knowledge to