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

lay people was often carried out through the education system, i.e. over the long term. Another of its characteristics is that the general public does not understand science spontaneously. A third characteristic is that decisions are made from the top down. A fourth characteristic is that the experts, whoever they may be exactly, play a major, silent role. Therefore, it is this model of a lack of knowledge on the part of the public which prevails, according to which the public has to be taught. Communication is one-way from scientists to the public and is linear – from theory to technology and then to new applications.

But this vision of a Golden Age is counterbalanced by new facts which we can all observe.

Firstly, citizens' daily life depends on science and technology in a very large number of fields, and this is a measure of their success in a sense. Our grandparents life bears absolutely no resemblance to our own and of course this is down to transformations in society which have occurred our several decades.

Secondly, there are an increasing number of scientific challenges in society: GM crops, genetic testing, nanotechnologies, nuclear waste, global warming, energy, and science and religion with creationist trends. In parallel, people's trust in the scientific system and the whole scientific-military-industrial entity is decreasing, in Europe at least, although this is not the case worldwide. This represents a marked departure from eras in which discussions about science were limited to a small number of experts belonging to the state or industry. Therefore, the public or society, depending on one's choice of term, wants to express the fact that it has contextual knowledge which often belongs to a tradition which is neither totally empirical nor formal, knowledge which has often passed experts by. A certain number of public debates have opened up over the last twenty years, of varying degrees of importance and involving institutions to a greater or lesser degree. These experiences have shown that different partners can and must change, for example researchers must agree to make more space in their practice for society's questions.

There is, therefore, a process of reciprocal, integral change in scientific life and a shift in its focus. Society is undergoing its own changes. There is no reason why their relationship should always be harmonious at all times. This is why there is a wide range of situations. This is how crises occur, which are the extreme symptoms of this deeper situation.

Governments, parliaments and scientific institutions see new concerns emerging. It is necessary to maintain a high level of research, which is sometimes called excellence. It is necessary to understand that the "science = progress" mantra is in the process of disappearing for good, or of being transformed. As a consequence, it is necessary to optimize interaction with the public

concerning challenges with a meaningful scientific component.

The Global Science Forum got under way against this backdrop. The decision was made to explore the dialogue approach, with the aim of changing the one-way system of communication and moving towards a two-way system, with both scientists and society making a contribution. Each is entitled to ask questions in their own way. The aim is two-way communication. The initial conclusions indicated that the democratic process based on the principle of informed consent leading to two-way dialogue needed to be widened. It was also necessary to define clearly what the dialogue process was, taking into consideration in particular the complex nature of the process on account of the overlap between those involved which is often misunderstood. There are many overlaps, including for example between education systems, the economic system, research itself, culture, the media, decision-makers, etc. One can therefore just imagine the complexity of the communication channels which have formed over the course of time.

The second conclusion of a report written by Rémy Lestienne is that the concept of "the public" must be clarified. What is the public? Is it a construct? Is it equivalent to saying society? Is it the same as saying public opinion? These are intellectual constructs which we must be able to define and compare. Another important issue is how to evaluate and identify the public's concerns. What is a public concern? Where does it start? How is it defined? How does it change? A third issue is that we unintentionally introduce a debate between different forms of democracy. Is there a contradiction between representative democracy - i.e. an electoral system - and the new forms of expression in civil society with their self-elected representatives? One final important issue to ensure the efficiency of the dialogue process is knowing whether these consultations can be transformed into acceptable political decisions which decision-makers can understand.

We undertook our work in this spirit. As we moved forward, we formulated a number of propositions, which I shall now list. The first is that science in society is not about the relationship between science **and** society, but about science **in** society. This corresponds to a system of mutual expectations which were mentioned earlier and which I will not dwell on now. The second proposition is that the dialogue is the answer – but dialogue here does not automatically imply a search for consensus, because a social challenge and a scientific challenge are not the same and have different roots and we must avoid reducing one to the other. The word dialogue comes from the Greek and can be divided into two parts: "dia", which means difference, and "logos", which means reason. The idea of dialogue is to tackle, assemble and then, if possible, to contrast two rationales. On the one hand, the scien-

tific community does not want novices to interfere in the choice of themes of which it has no understanding or only a very patchy understanding. Scientists are quite rightly very attached to their freedom of research and want to be able to explore every avenue. This is how we learn, and history of science illustrates this, that this need for freedom is often exercised in defiance of the morality of the era. On the other hand, society wants to know, wants to have its say and avoid any drift or dangerous applications, but it demands progress. These two requirements converge. If one considers politicians' attitude to these two ontologies then they often develop a utilitarian vision of this system, i.e. what can I derive from it? How can I apply it? How can I respond to the demands of society in the short term? This shows how complex the word dialogue itself can be.

Its corollary is the word diversity, because historically there is wide involvement in forms of cooperation between scientific circles and society. The connections arising from this are multiple, complex and numerous. In fact, this diversity resembles natural diversity and what we lack to discuss this in practical terms is a good taxonomy of the system. It is only partially defined, notably in the field of the science studies, but we do not have a sufficient overall view.

I am going to put forward a working hypothesis. If we take as our hypothesis that society is made up of a set of cultures based on common principles and exchanges between each other and between institutions and citizens, that the main cultures are represented by these institutions (science mainly created its versions in the 20th century) and that science and technology are very powerful because they can permanently envisage and suggest possible or alternative futures, then one has to recognize that the relationships that exist between science and society take many forms. The dialogue between research and the educational system is not the same as the dialogue between research and culture or the economy, but they have a shared foundation, which is democratic debate. If there is no longer a shared foundation, then I think we should stop this conference immediately.

The proposition is that we should move from the classic linear relationship, which transfers knowledge from knower to non-knower, to an interactive relationship in which the cultures represented by large institutions expect something from science and offer science something in return. This is possibly the real and realistic position in which we find ourselves. If we take this simplistic picture as our hypothesis then we can understand what the structures of dialogue are and how to structure these dialogues whilst respecting diversity and retaining a degree of efficiency.

A certain number of lessons have emerged from our as yet preliminary work in the OECD. We felt that it was useful to split them into three phases. The first is the rationale

– preparing and planning the dialogue. The second is the conduct of the dialogue. The final phase focuses on the expectations and the results which can be anticipated. Here are a few rules.

The first rule when preparing a dialogue is that it is necessary first of all to identify the source of the question correctly. Who asked the question? What is the nature of the issue raised? Is it legitimate? What are the challenges? Then it is necessary to identify and understand the needs and motives of "society" in the way in which the question is introduced. These motives can be scientific or totally unconnected with science. At this early stage in the process, I think it is necessary to dismiss the idea that society is stupid, fearful or irrational. It is often said that scientists are rational and that society is emotional and irrational. We must abandon this state of mind and accept that the person asking the question and suggesting discussion has a culture based on history and that this culture and history can in themselves raise interesting questions. Binary or yes/no questions and simplified questions should be avoided because the problem is quite complex.

We should avoid having as our aim forcing society to agree, as the temptation to manipulate things is found in traditional communications policies which try to seduce the other party in order to draw them in - this is not our aim at all. The process itself must be constructive and allow for different varieties of recommendation and scenarios.

This leads to the suggestion of explicitly involving the parties in framing the dialogue and in the preparatory work. To repeat a previous recommendation – it is necessary to train scientists in dialogue with the public and the media. We must also incorporate this activity into careers – an area in which there is still a lot of work to be done. These are a few recommendations from the preparatory phase of the dialogue.

When it comes to the conduct of the dialogue itself, a certain number of principles which create credibility and trust must be respected. The aim must be to be equitable and fair and to open up dialogue to the challenges of opportunity as well as of risk. Finally it is necessary to be able to distinguish explicitly between risk (which can be calculated) and uncertainty, which is ignorance from a scientific point of view.

As far as expectations of a result are concerned, it can be observed that the process initiated sometimes fails to reach an overall consensus during the dialogue. In this case, we must settle for achieving a less ambitious goal, for example an agreement on a selective set of facts could be considered satisfactory. The aim, therefore, is not to achieve consensus, but to record the different positions and when consensus is achieved then this is one way of reaching a conclusion. When considering expectations and results, it is useful to schedule an evaluation of the dialogue process itself, i.e. to observe with hindsight and this is an evaluation process which must itself be defined

and stated in advance. What seems to be the most general aim is to establish long-term trust and understanding between the parties involved – this can be just as important as reaching consensus. These are a few initial practical recommendations from experimenters which we are offering and our work will obviously continue and produce a summary and an OECD publication in 2009. Thank you.

Jean Jouzel

Thank you Jean-Pierre. I would like to thank all the members of the OECD group, especially Frédéric Sgard and Stefan Michalowski. I have taken note of the fact that relationships between the scientific community and society will inevitably need to change and also the need for a two-way approach. It is clear that we must not stay in our ivory towers. I'm on the side of the scientists, but I do not entirely subscribe to the idea of science at the service of society. By contrast, I do subscribe fully to the idea of science at the heart of society. I believe that this is what is important, which is your message to some extent, along with fairly clear messages on how to organize it, although the three phases are perhaps a little rigid as things do not always go that way. However, the main idea is to construct dialogue involving all the players in a planned and responsible manner.

The OECD and CESE are not the only groups reflecting on this dialogue between science and society. There is an expression gaining ground at the moment - at least among researchers – in our daily life, where the phrase "knowledge society" is on everybody's lips. This leaves me somewhat sceptical. Ulrike Felt, Professor of Sociology of science, at Vienna University is going to demonstrate to us how to take this concept seriously and how Europe wants to take this notion seriously.

Ulrike Felt

Taking European Knowledge Society Seriously

Thank you very much for inviting me to share the main ideas of a report produced as outcome of one-and-a-half year of collaborative work of an expert Group on science and governance to the Science, Economy, and Society Directorate of the European Com-