

The Science Communication Conference
22nd – 23rd May 2003

Day 1: Keynote Address

Chair: Professor Helen Haste, Department of Psychology, University of Bath

Sir Paul Nurse, Chief Executive Research UK – Keynote Address – 'A 10 year vision for science communication: Interacting with public about science and issues involving science':

Well thank you Helen for that introduction and I would like to thank both the BA and the Royal Society for the opportunity to talk about science communication here this morning. Although I am somewhat nervous it must be said because I look upon myself very much as an amateur in this field, I'm an active Research Scientist and Research Manager, rather than communicator, and here I am talking in front of the professionals, so I do feel a little nervous about that. And secondly I was a little bothered about my ambitious title, talking about '10 years vision' and the like. This is from someone who barely knows what's in next week's diary, and so I am a little bothered about that too. But having got that out of the way, I thought I should do my best and give you my thoughts about science communication and the issues and where the general direction of travel of where we might go in the future.

Now, the first point I would like to make is of course one I am sure you all agree with which is science communication is an important issue. And I think basically the reason why it is, is in the theme of this particular meeting, it's actually all around citizenship and the relationship of science with society. Because science is increasingly important to our society. I'm sure that's a theses that's accepted here. I have to say it hasn't always been accepted by our politicians, and we had a really rather dark period in the 80's when it was not accepted at all, but science is important to our society, it is important for the provision of better health, quality of life, for understanding and managing the environment, the creation of wealth, and particularly in an advanced society such as ours where we need added value to survive, and thirdly the reason which I personally think is important in a cultural objective, that is a better understanding of the world.

The Science Communication Conference
22nd – 23rd May 2003

So science is key to our modern society, and in a very real way I think it's central to the proper running of a democracy and that's why I think it's important in this citizenship theme. Because much policy decision-making has a scientific element, and we have to work out a way in which we can engage the public and politicians in the scientific issues if democracy is going to remain healthy. Now, this is actually quite a bit agenda and I think it's extremely important, because as the science gets more complicated, as the science begins to influence the running of our society in all these different ways, and I don't want to go through the examples any more than the headlines I've given you, we need to have a proper debate about science and scientific issues. We need to engage the public and politicians and we need them to understand what science can deliver, what science can't deliver, the shortcomings as well as what it can deliver, and we have to deal with this issue of trust in science and scientists because if that is lost, then I think democracy will suffer.

If scientists are sort of put into a sort of category of the sort of witch doctor classes, the term I often use, you know, people that you have to sort of rely on but you don't really trust and like, and you certainly have no understanding of what all this shaking of beads and so on is about, but it might make you feel better, or make it rain, or get the crops better. I think that's quite a good analogy between scientists and witch doctors on the whole. But on the whole witch doctors don't participate in democracies very well, I don't think, and I think that's really a key issue of how we can make scientists participate properly on science in the proper running of democracy.

And that is only possible in my view with good communication about science. It's key to it and that's why this is such an important issue, that's why this meeting is such an important issue, covering all aspects of science communication, and again that's another issue that's already come up from Helen's introduction, from school onwards through continuing media exposure to science, books, film and the like. Now, what are the problems that we see at the moment in the relationship of science and society, which maybe can be helped by better

The Science Communication Conference
22nd – 23rd May 2003

communication? Well the first think here I would like to say is, I do not yet think we are in a crisis. There is a sort of risk that we can sort of talk ourselves into a crisis and we can go on about you know, when we do see the ghastly headlines in the Daily Mail about Frankenstein Foods we do tend to think that the world has dropped away from us, but on the whole I think things are not yet too bad. But I think there is a risk of complacency because I think without attention things may well get more difficult in the next ten years, and that's really what I'd just like to dwell on for a few minutes.

One of the reasons why things may get difficult or that I have some concerns at least that there may be difficulties, the first is simply the pace of change. Now the pace of change in science is becoming extraordinary, even in the 25 years that I've been involved as a scientist, the amount of information, knowledge and understanding, and the implications of that for everyday life, has increased absolutely dramatically, from the time when I was a student in the 60's and 70's. And these advances are now so very rapid that I think our public institutions are having difficulties absorbing them, and I think that our public institutions are reasonably robust, I think the parliamentary system actually works quite well, but I think it's having trouble absorbing this pace of change, this shift in knowledge and understanding. And it's under pressure, the public institutions, to respond better and well. I don't think that it can do that unless we can communicate well and rapidly between scientists and the public and the politicians and the policy makers, and we have to get that process very effective if we are going to deal with this rapid pace of change.

I think there's a second issue. The public are becoming increasingly suspicious of authority actually. Now it might be that that's actually rather a good thing. I don't look upon this as a bad thing, in fact I think that's where we should have been many years ago, and I think it's a consequence in changes in society that that's happened. But what comes with that suspicion of authority, is of course a general public unease about institutions advice, scientific advice, and the like, which means that there is an increasing lack of trust and doubt, and we've seen that. I think that the debate over BSE, Foot and Mouth, the Measles Vaccine.....I

The Science Communication Conference
22nd – 23rd May 2003

have a feeling it wouldn't have happened 30 or 40 years ago. The public would have believed what the doctor said when he got up there. They don't any more. I think that's a good thing, but it's only a good thing if we have a decent debate about it, and my concern is that maybe we are not having a decent debate, and that's something we need to come to. It's not only the practicalities that I've just mentioned about whether one should have a vaccine or not, important as they are, but science increasingly challenges long-held views about what it is to be human, about the nature of life, and about being a human being. Now, it's done that for many centuries when you have you know the furore around Darwin in 1865, so this is nothing new here. But every decade something new pops up, we are in the middle of cloning and so on at the moment, and these challenge long-held views, religious views, moral points of view, about what it is being human. And this is not going to get less either because we will understand yet more about what it is to be human, what it is to think, and more about our emotions, and we will be able to manipulate it more.

And that's the third point. Science, and you know if I call this the 'playing God' part, scientists increasingly will be able to play God in the sense of manipulating nature in a variety of ways, and the public are bothered about this quite understandably as well. Now I mention these things only to indicate that this requires careful debate because this is going to continue and there are important issues there. In fact the public have quite a lot of trust in scientists. If you do these...and I think you've got Bob Worcester is coming later today, and I am sure he will report on this, but on the whole, if you take the generic term 'scientist' and you know ask 'would you trust what they say?', around 60 – 65 % of the public trust them, and that's to be compared with, you know, 90% for doctors and perhaps around 20% for journalists and communicators, but wherever it is, but scientists are okay except of course it depends a little bit who their paymasters are. And if their paymasters are government or industry you will find that the trust goes down to 20 – 30 %, whereas if they are clearly university-based it goes up to 65% and if they are NGO's then it can go up to 85 – 90%. That's a kind of very interesting statistic. NGO's of course cover everything from Cancer Research Charities, through to Greenpeace, but they are generally trusted more. This is a

The Science Communication Conference
22nd – 23rd May 2003

bit of a problem of course for us, given that government scientists are giving advice about things like measles vaccine, Foot and Mouth and the like and yet $\frac{2}{3}$ of the population do not trust what they say. And there's clearly a disengagement there which I think is of major concern.

A third point, remember I'm running through the reasons why I think things may become increasingly difficult, the third one is we have to be careful that we do not truncate the scientific debate. Now I've used the word 'truncate', if I was being more aggressive I could have said 'we should be careful we don't trivialise the scientific debate' but I think part of the problem is reducing science to a sort of an amount that can be digested has led to the truncation, can lead to trivialisation, and that will be a problem with complex issues which are often the basis of science. Now, I'm not quite sure what we do about this because obviously there's real pressure. You know, you have your 300 words on page 3 in the Guardian or whatever, and you are then meant to be able to describe something that is immensely complicated in those 300 words, and of course that applies to many walks of life, but particularly for science. And how do we actually deal with that? Because if we write a 3000 word essay which many scientists would like to see, nobody will read it, and we don't solve the problem there either. So I think this is a problem and I'm not quite sure how we deal with it, but I think it has to do with taking it on the chin a bit and recognising that as an issue and also maybe trying to get more complex issues more properly explained.

Because what bothers me is when you are reduced to the 300 words or when politicians are reduced to the sound byte what they will do is shelter behind the expert. In other words, rather than give an explanation in a form that can be understood by the public they will simply say 'doctors say this is good for you' or 'veterinary scientists say this is the right thing', but why should somebody believe a doctor or a veterinary scientist or somebody from an NGO or a Cancer Research Charity, or whatever, any more than a complete quack for example? You've got to get down to the explanations, you cannot rely on authority of others, and I think that's an increasing problem also. So I think that's an issue, a real problem, and I'm not sure how we solve it but I'm sure we need to.

The Science Communication Conference
22nd – 23rd May 2003

Scientific books of course are actually really up. I mean it's been fantastic what we've seen in the last 10 years and they are more reflective, they do have time to deal with the issues, they also want to sell their books of course, which sometimes means that they stray into sort of areas where, and make statements which can be very grandiose. If I see yet another book which is going to explain the nature of consciousness, which you range through 350 pages and you certainly are not 1 centimetre further forward than you were at the beginning, so I mean they do claim a bit much, but at the same time they are more reflective, but we have to recognise the audiences who read these books are much smaller. I mean it's great that it's out there, but they are smaller than the newspapers or the mass media of television.

Forth point about issues that we have to be aware of in the next 10 years. And this is I think the Anglo-Saxon, and I call it the 'Anglo-Saxon' because I think it's a characteristic particularly of Anglo-Saxon institutions, the Anglo-Saxon love of confrontational debate. It's the way our politics works, it's the way our media, our mass media, often works. You know, you will have a good guy and a bad guy, or at least 'A' and 'B' and they go and hammer it out one to another. And it's how we present everything, and that isn't actually necessarily a good way to deal with science. Just like in the family courts and divorce, the confrontation between two parties, they try to reduce that to try and look for solutions, which is a different sort of departure from normal legal process. I think it's sort of the same in science, that dealing with the complicated scientific issues, do not.....it doesn't prosper when it is put in this sort of confrontational package. And the people I think who put it into the confrontational package on the whole, and here I think we are talking more about the mass media, newspapers and television, are not actually the scientific reporters themselves, but usually the editors, the current affairs or political editors who are actually controlling that debate once it gets into that level, and they like that confrontational approach and I think the delicacy and sensitivity of science gets lost in all of that, and you end up with actually very low quality debate. Look at the GM foods as an example of that, and when that happens.

The Science Communication Conference
22nd – 23rd May 2003

Science doesn't lend itself, as I said, to that sort of confrontation. You know, when you read a book about evolution written by a lawyer, you know, saying 'if this was in a court of law would we believe this?' you know, they have so little understanding about science, scientific process and so on, they wouldn't even believe why an aeroplane could fly if they applied that sort of logic. So, it irritates because there's such a misunderstanding about science, what it is, and the fact that science at the front and leading edge is really tentative knowledge. I keep pushing that out there, and that's actually another problem here. I'm beginning to digress, I'm going to run over time I can see, but the problem is most of the exposure, at least traditionally, I think it's better now in schools the science education was stuff chiselled in stone, you know, Newton blah, blah, yet much of the science which is impinging on everyday decisions, like should we have the Measles Vaccine, or BSE or Foot and Mouth, is often at the tentative knowledge stage. Yet, of course what people think of, this should be chiselled in stone, and then the politicians will force some communicate scientist to say something chiselled in stone and then it all goes and unwinds. I mean I've caricatured that but I'm sure you understand what I'm referring to.

Final point I just want to make before thinking of ways how we can perhaps improve things, is that there have been examples in the last several years, and I've mentioned a number of them, mostly in the life sciences. I think if we were having this debate in the 50's and 60's there would have been more to do with physics, nuclear energy and the like, but mostly in the life sciences to do with BSE Foot and Mouth, Measles Vaccine I've mentioned, GM Crops, and in most of these cases the debate in the media, and the communication, hasn't been great. I mean it hasn't been great for various reasons and I think it would help if we sort of looked at that and see why it wasn't good because there's a lot of different reasons, and I think those case studies would be very helpful. You know, nano-technology grey goo is going to be the next one, so it might well help us to have a little bit of a think about how we can get that right, and of course the reason the debate's been kicked off is because somebody has written a popular novel about it. Which is great, you know, that's fine, but we then have to sort of try and get a

The Science Communication Conference
22nd – 23rd May 2003

more reasonable debate about these issues before things get to a point where you cannot have a sensible debate, as it's so difficult to have a debate about GM crops any more, it's almost impossible. And this is in one of the most rational societies in the world.

What can we do now to improve things? Well, you know, crystal balls and making proposals, I mean all I can do is scope and give you a few opinions that might be worth thinking about. There's nothing hugely imaginative here I'm afraid, but just a few thoughts about it.

Well, I think we need to get scientists better involved in communication. Things are better now than they were 25 years ago, I think but still need to improve, and there's several things to say about that. One is, and this has been said by others of course, scientists must see that there are advantages to getting involved in communications. With the real pressures that we have from things like the RAE, the Research Assessment Exercise for example, recognition for good communication in science is not really seen as sort of part of people's professional activity. Now it is seen in certain places, that isn't all sort of gloomy and I think that's increasingly been recognised, but I think as the door is now beginning to open let's push it wide and push it out, because this is very, very important and we have to recognise that scientists who decide they want to get involved in this should get recognised for it. And it isn't just a question of time, because scientists are really busy, you know, especially since the infrastructure has still been partly stripped out of universities and so on and they have to spend all their time putting up their own letters and so on together, I mean they are under pressure, so it's got to be recognised. And we've also got to recognise that scientists are snobs, and there's quite a lot of peer pressure you know that you don't get involved in saying these naff things on BBC1 or to the Daily Mirror because your reputation is somehow at risk. It's very irritating I think for those who work in this field, well I know it is, and we just have to sort of combat that sort of snobbishness of that sort of culture that scientists have got.

The Science Communication Conference
22nd – 23rd May 2003

Secondly we need to get scientists I think to engage with the issues in a better way. They just have to explain their work better and more simply. I mean that isn't so difficult. I mean, you know, this sort of withdrawing into the three letter things all the time you know, it just isn't necessary and you can explain things simply, they just have to sort of get used to that. But I think scientists can also engage more in I think things that are clearly interacting with the public. I'm a great enthusiast about scientists getting involved in horizon scanning, thinking of concerns that might pop up in 5 or 10 years time and the public are going to like that because that looks like scientists behaving responsibly. I know 80% of the time you will be going off in the wrong direction and you've got to actually accept that. But I think looking at where things may go is I think a really important thing that we need to think about. And of course all of this should be put into our research training as well.

We need to improve the debate. I've mentioned that I think there's issue there, we shouldn't truncate the issues, we shouldn't dodge them. We need to try less confrontational approaches. We need to explain the issues and not shelter behind experts. But the point as I was saying, it's no good putting up somebody and saying 'because they are a fellow of the Royal Society believe them'. They've got to be believed because their argument is right. Because if we go down that track, then if we put up somebody who is a representative of some organisation of lunatics why don't we believe them too?

Let's get back to the argument. We've got to improve the debate by, and now here I am going to sound pompous and I apologise if there's any here, we've got to educate the editors. And we've got to shoot the headline writers by the way. I think part of the problems that we have with headlines is that we can get perfectly decent articles with headlines that are just completely crazy, and since most of the people only read the headlines anyway, you will find that's what goes along in the consciousness, and I don't know how you deal with that, because there's no good in sort of preaching to the media because I do understand how that sort of works, but for goodness sake, we can get better headlines and we can

The Science Communication Conference
22nd – 23rd May 2003

get better editorial comment on these things, rather than pushing for the confrontation and so on.

Another I think we could do here, we need to work better together, because science and society issues and the communication of them involves not only scientists but other communities too. Social scientists, the medical profession, ethicists, philosophers, those religious people. And we have to get these people out of their bastions, you know, where they are all in their little cultures, and getting them talking and working better together. And that's difficult, I've got to say, that has been really difficult and we should do that. And of course the other side of working better together is with the media and the people responsible for communication. We have to listen to them. You know it's been a real message for me that as a scientist you think 'well I'm going to preach this message' blah, blah, blah. The media people know what works, and you have to listen to that, and I think that's very, very important.

A final thing here, well there's actually two more things if you will give me just a minute or two. Two more things and then I will finish. The first is the new ways of promoting dialogue with the public, because communication traditionally has been of course scientist here talking to public, right, (Propos) stuff, you know, well as we all know in the last several years the listening to what the public think about science has had much more credibility and that's extremely important and I've been involved in that in the Royal Society Science in Society Programme, where we have gone out and had dialogue meetings with the public to hear what they think about issues, and that's really important because not least, because you actually find out what they think about issues. I'll go back to the GM crops thing. The majority of the public were bothered about GM crops because there were genes in food, right? Now the scientists would never have even thought that that was a problem because they knew that there were genes in food, because I mean you know it's full of genes, but the fact is that was an issue, and the fact was scientists should have known that was an issue so they could have damn well explained what was going on there. And there was such a

The Science Communication Conference
22nd – 23rd May 2003

disengagement that this is one of the reasons the debate went wrong. So, proper dialogue, and there's lots of initiatives and I think that's something to think about.

And then of course finally we should end with education. We can't...you know, education, education, and education, or is that discredited now? I have a feeling it might be. And I think science education...I'm one of the supporters of the changes in science education I have to say. I know academic scientists are supposed to be a bit sort of wobbly about it, but I'm actually really supportive of it. We have to explain clearly what science is to school kids. You know, we shouldn't be getting them to learn the periodic table, I mean there's things to learn from the periodic table, don't misunderstand me, but they have to understand why science is a reliable form of knowledge. That's the really key question. Because most of them are not going to see it again after age 16, right, and those have to know why they should rely and trust in the scientific process and where they should begin to doubt the scientific process, and I think we need to get that over. And that's I think extremely important. And the other part of education is of course continuing education and to get as high quality as we can books about science and television programmes about science, out there on BBC1 and ITV1 if possible. And that will be a problem for scientists because they think it will be too trivial you know, and downgrading the debate. We just have to get out there and do that, and do it as well as we can.

And the final point I want to make here is new forms of education, and that you mentioned upon, because we have to excite the public and excite the children. One thing, I was walking over with a colleague, Jo who is in the audience here, and she was mentioning 'what about sci-art?', you know, we can really push that, and there's going to be lots of other ways in which we can do and develop new forms of communication.

Well, I'm going to stop there, because I know I've overrun my time, I know I haven't put a vision together, but what I hope I've done at least is indicated where some of the problems are, and at least some things that we can think about in debating the issues now. Thank you.