



Science Communication Conference, 23-24 May 2005

Jointly organised by the British Association for the
Advancement of Science, and the Royal Society

This report provides a description of session on **DAY ONE** of the conference.

Separate documents detailing the notes from individual workshops and the strategy recommendations formulated at the conference can be downloaded from www.the-ba.net/scicomm.

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Executive summary and strategic priorities

The conference drew out four main themes that would benefit from especial emphasis over the coming year. They are: sharing good practice; actions from funding bodies; working with industry; and taking the 2004 conference recommendations further. This last area encompasses the six key priorities from last year, some aspects of which overlap with the new themes.

This year's outcomes are summed up in the form of four new primary objectives and a fifth that details specific ways in which the 2004 recommendations can be taken forward alongside the newly emerging perspectives. All of the following is open to further input.

Primary objective 1: Share good practice

Aim for greater clarity of purpose. Capture case studies, both successful and less so. Develop a shared vocabulary about engagement and its impacts. Work with the wider dialogue community and social scientists. Make links to discuss ways of communicating and sharing knowledge, for example by means of Web sites, lunch meetings, workshops, training sessions.

Primary objective 2: Funding bodies to set the lead

Funding bodies should embed change within their own organisations – and report on the impacts of this, especially to higher education institutes. The Higher Education Funding Council for England (HEFCE), the Wellcome Trust and the Research Councils should cooperate on a joint strategy for rewarding and recognising the engagement work of institutes and departments, as well as of individuals. An expanded grant scheme offering more bursaries for postgraduate studies in science communication should be funded.

Primary objective 3: Engage with industry

Embrace a wider perspective so that industry is not seen as a separate world. Forge links with industry bodies (and actively promote the conference to them). Consider the industry position regarding communication and the interests of its stakeholders and make efforts to accommodate this. Form strategic partnerships with PR bodies such as the Chartered Institute of Public Relations Science Engineering and Technology Group.

Primary objective 4: Allow the conference to be open to change

The Science Communication Conference itself should practise what it preaches: it should give everyone a voice and try different approaches in order to optimise the sharing of best practice, allowing the community itself to play a part in shaping the event.

Primary objective 5: Take the 2004 priorities further (encompassing the following specific recommendations):

- Reward the public for its contributions
Explore means of building bridges, e.g. between science communication networks and policy-makers, so the public can see its influence feeding through to the decision-makers. Equip people for dissent as well as for agreement. Engage the public earlier in the process.

- Explore real costs of engagement

Before requesting funding, establish a clearer picture of how much is really required and what it will achieve. Undertake (and share) full cost analyses of projects.

- Equip graduates with the required skills and qualities

Explore the possibility of offering training to help new graduates and post-graduates form and articulate ideas about the ethics of their work. Monitor those emerging from undergraduate and post-graduate studies to see effects on their skills.

- Continue with intellectual convergence

Carry on building cross-disciplinary communication channels between the science, social science and dialogue communities.

- Build on partnerships with the media

Continue with discussions with the broadcast media in particular, for example the BBC and Channel 4, and explore new avenues where possible.

Keynote address: Science in Society

Helen Browning OBE, Food and Farming Director, the Soil Association

At first, Helen Browning quipped, she wasn't sure why she'd been invited – she's a Wiltshire farmer so surely there was some mistake! But she was glad for the opportunity to bring her rural agricultural perspective (illustrated throughout her presentation with rolling slides of bucolic scenes) to the issues surrounding science communication. Her views on this, she said, formed during the furore over GM crops, at which time many slammed the views of organic farmers as being "anti-science".

She had been inspired to start farming organically because of the social, environmental and animal welfare impacts of industrialised, mechanised agriculture and because she realised that it was this model – rather than organic methods – that had been driven by inappropriately framed research. It had left farmers doing crude chemistry with little consideration for biology or ecology.

So she pieced together her own understanding of the complex and interdependent systems on her farm, using a basic scientific understanding of carbon and nitrogen cycles, pests, and so on.

Not much research has been done in this area, Helen Browning remarked, and it has historically been hard to get it done. This is because the emphasis is often on science for the generation of wealth-creating products, and there is no money in organic farming for the supply industries. Although it is getting better now, more research is still needed, and directed towards better management techniques, not better products.

So why shouldn't we draw up a wider definition of science, which supports this perspective? Does science have to be done in a lab?

The conflation of science and commerce can present conflicts, and can make public engagement tricky, Helen Browning pointed out. The public is also concerned about issues relating to intellectual property rights, and to neglected areas that are not funded because they don't pay – such as orphan crops or rare crops.

Public interest in organic farming is high. This, she suggested, is because of the way it brings ethics and values to the fore and the way it uses "common sense" science. People do want to be involved in the process of decision-making and the public could have a strong role in areas like technology assessment. They are put off by trivial science, unfair allocation of equity, the use of science by politicians only when it suits their own purpose and the inability of some to acknowledge the limits of science.

To be valuable, she said, public engagement should not be seen as a brake on progress. It should improve decision-making, begin as early as possible and be based on trust – which requires transparency. It would be good if it could help engender a more rounded, holistic world-view, one that might have a particular resonance with women.

The government wants more women in science. Perhaps one problem is that the reductionist caricature of science does not fit with the way women feel the world works

– or should work. Now is the time to develop a more mature relationship between science and the public interest.

The discussion that followed centred on GM crops. Helen Browning said she thought the difficulty with their public acceptance lay with the lack of a long-term view, of the health implications and of the possibility that the technology could be used in the “wrong” way. A proper dialogue about the issues needs to go beyond market research and include industry and the common sense approach of the public within the context of a technology assessment. It also needs to include farmers – who often feel that their views are not heard and they have a lot to offer. The public too would benefit from a more direct connection with where their food comes from. There is also the issue of the developing world, with its fragile soils and particular needs, which are often not taken into account by the “feed the world” with GM approach.

Session 1: Moving forward: Progress made on the 2004 Science Communication Conference strategy recommendations

Roland Jackson, the BA and David Boak, the Royal Society.

David Boak expressed thanks for the support received from the government and the Office of Science and Technology, and mentioned that the government now wants to assess the progress that has been made with Public Engagement with Science and Technology and will be putting more money into this.

Roland Jackson explained that the 2004 conference had agreed six broad recommendations and that the BA and the Royal Society had undertaken to work towards them over the past year. The recommendations and progress made are as follows.

Reward scientists for engaging with the public

This is still largely at the discussion stage, but is moving on. The research councils have a science and society strategy in development and grant funding is available to encourage researchers to get involved and develop appropriate skills. The Wellcome Trust has also done some work. Research has revealed that small grants are more effective, in terms of enabling scientists to lead activities, than big grants – which are often too unwieldy to manage. The biggest remaining issue is at the institutional level: public engagement is still not valued, recognised or rewarded at a senior level. The Royal Society meanwhile has set up the Kohn award for recognising science and society initiatives, worth £10,000 to the winner. The reward issue has also been taken on by the Higher Education Funding Council for England (HEFCE). Movement, overall, is in the right direction.

Provide sufficient funds for engagement activities.

The question “how much is enough?” has not really been answered, admitted Roland Jackson, but a number of organisations including the BA, the research councils, ecsite-uk and the Science Museum have been talking about how they could work together and between them agree new means of funding. A spokesperson from the Wellcome Trust reminded that they give 2% of their funding to public engagement activities – this is relatively high on the scale.

Recognise the value of the contributions from the public.

There has been at least one ground-breaking development, explained David Boak: the way that the scientific community responded to the government's request for input to its nanotechnology policy. The Royal Society and the Royal Academy of Engineering took the lead on this [with their July 2004 report “Nanoscience and nanotechnologies: opportunities and uncertainties”]. They did more than just gather together a group of scientists: they also brought in groups from cross-sections of the public, social science communities and NGOs. We are now working to engage the public with the scientific community in the field of pharmacogenetics, David Boak added.

Professor Kathy Sykes intervened to report that the Council for Science and Technology (CST) has submitted to the government its report “Policy for Dialogue,” which makes recommendations along these lines and is already starting to be embedded within

government policy; and also that the government's response to the RS/RAE nanotechnology report includes a commitment to dialogue with the public and a good practice document which is already being used. She reminded that the government grant fund ScienceWise has already spent half a million pounds on public engagement projects.

Ensure that those emerging from undergraduate and postgraduate studies are equipped to play leadership roles and be good communicators.

A number of people contributed here. Observations included that as a result of the Roberts Review, university funding now allows for training provision in communications skills; a paper on the universal code of ethics for scientists has been produced by the CST and David King (and perhaps this could be used as part of student training); the relevant graduates won't emerge for another 2-3 years so we'll see then what difference has been made; there are some worries that young scientists still don't have the time to undertake communication activities and many don't see their work in the context of the outside world; and NESTA has written a report that looks at some of these issues.

Bring the science and social science communities together

Roland Jackson detailed considerable practical progress with this recommendation. The BA is working with the ESRC's Science in Society programme and as a result some seminars with a social science leaning are coming up in the Dana Centre. Frances Kencross is to be next year's president of the BA: she is chair of the ESRC. At a strategic level there are some cultural barriers still to overcome. A spokesperson from the Department for the Environment, Food and Rural Affairs (DEFRA) said that there is an initiative in that department to bring together scientists and social scientists.

Work with the broadcast media to reach and interact with the public.

David Boak said that the RS had taken up Robert Winston's challenge and started a series of engagements with the BBC. The Science Museum and Channel 4 have formed a collaborative venture.

Session 2: Focus on specific recommendations for public engagement (comprising two parallel sessions)

Session 2a: Innovative ways of working with the media

Dr Peter Lunt UCL

Dr Alison Cook, Head of Broadcast Strategy at the Department of Health

Dr Julian Siggers, Head of Broadcast Development and Production at the Science Museum and Louisa Bloch, Head of Science Programming Channel 4

First to speak was Dr Peter Lunt of UCL, whose presentation "Talk on television: TV and public debate" centred on his research into talk shows. He observed that in contrast with public service broadcasting, which simply projects information out to the public, talk shows draw the public in, and are effectively a mediated context for public engagement.

His analysis revealed that the host of a talk show is central to the control of its direction, and that he or she tends to use techniques such as non-verbal communication, elicitation and story-telling in a way that puts the public representatives in the stronger position, and that the "experts" (such as politicians called in to provide their insights) find themselves in a position of accountability. The setting – integrated rather than theatrical – and the genre, which allows a mixture of debate, inquiry and therapy, result in a context that effectively reverses the direction of power and knowledge. Often the experts' experience of this arrangement is one of frustration (e.g. at the "trivialisation of the issue") and unfulfilled expectations, while the viewers or participants are more satisfied.

Next on was Dr Alison Cook, Head of Broadcast Strategy at the Department of Health, who spoke about "Getting on air: communication policy initiatives through the media."

"Why broadcast?" she asked. The answer: because while millions of people watch television and radio listening numbers are increasing, the numbers of people reading papers are falling. Also because television as a source of information is believed to be more reliable; because some stories are best expressed in pictures; because you can reach a number of different audiences; and because you can reinforce a main message with different stories.

It's important to be sure you've chosen the right programme. To do this, explained Alison Cook, it's important to form relationships with editors, to check the ethos of the programmes under consideration, to know how the editors build their programmes, and to be prepared to fit to their agenda and deadlines. Keep records of successful broadcasts and increase awareness within your organisation of how broadcasting works. For optimum results you need to set aside specific time for building a rapport with relevant journalists.

Finally, the presentation "The Dana Centre at the Science Museum and Channel 4: a creative partnership" was given jointly by Dr Julian Siggers, Head of Broadcast Development and Production at the Science Museum and Louisa Bloch, Head of Science Programming Channel 4.

They introduced a new partnership between the Dana Centre and Channel 4, which will run for a trial period of a year and will bring together the arts, culture, comedy and debate theme of the Dana Centre with the family-oriented nature of museums and combine it with national science television broadcasting. Channel 4's role will be to continue commissioning the most attention-grabbing and imaginative programmes as possible and to reach an audience that can't be reached by other means. Between them the organisations are exploring the idea of interactive TV debates (on such subjects as creationism in the US and animal testing) and also planning some cross-fertilisation between science museum exhibitions and Channel 4 schedules – so that forthcoming programmes tie in with forthcoming exhibitions. There are also plans for a large public science/art commission, and to look at art to communicate science on television.

A lively discussion after these presentations touched on issues such as the short-term priorities of the media; techniques for treading the right lines with experts in talk show settings; the challenge of bringing policymakers into a TV-based dialogue; the role of advertising and the rise of independent television companies.

Session 2b: How to reward and recognise scientists for science communication

Darren Bhattachary, Science in Society Manager, the Royal Society

Clare Matterson, Director of Medicine and Society, the Wellcome Trust

Rachel Bishop, Programme Manager, Public Awareness Programme, EPSRC

Each speaker spoke broadly around the session topic and mainly from the point of view of his or her own organisation. Nevertheless, all three acknowledged that scientists would only be rewarded and recognised for science communication when institutional cultures change.

Darren Bhattachary discussed a current Royal Society/Wellcome Trust/Research Councils study to gather information about factors affecting science communication. Initial findings are that scientists tend to be put off science communication activities because they don't have the time and because these activities are not linked to career development.

The Royal Society has launched an initiative to combat this by making funding available so that scientists can be freed from other administrative duties. The study points to a number of desirable outcomes: partnerships between scientists and funding organisations, the provision of adequate resources and leadership, and directing organisational and cultural change to facilitate communication by scientists.

The Wellcome Trust has recently analysed the impact of its expenditure in terms of audience reach and the involvement of scientists in communication activities. It is very common for scientists to have an advisory role in Wellcome Trust-funded communication activities and events, but much less common for scientists to lead or participate in such events.

Clare Matterson explained that the Wellcome Trust spends the most money on drama and the arts, and that funding seemed to have the greatest impact when supporting debates and performing arts. One conclusion is that more expensive activities, which tend to have a limited audience range, probably lead to greater culture change.

In workshops held in 2003 to follow up on the Wellcome Trust-commissioned MORI survey: "The Role of Scientists in Public Debate," scientists stated that funding and training for public engagement were improving and that the single most important barrier to involvement was a lack of institutional support. Clare Matterson concluded that only big rewards will lead to culture change.

The Research Councils will soon have a dedicated Science and Society Unit. Currently the Research Councils provide grant funding to train scientists and to fund the time and space for scientists to pursue science communication initiatives. The Research Councils do not intend to encourage every researcher, but do wish to provide support and training for researchers who are good at public engagement. One possibility is that a group of researchers might get together to engage a science communicator.

Currently a Senior Media Fellowship Scheme may be used to buy out up to one-third of a senior researcher's time so that he or she can continue practising research. PhD students are provided with public relations support through the NOISE campaign. However, neither of these initiatives supports talented people in the middle – those busy building their research careers.

Once again, a change in institutional cultures was flagged as vital. There was some discussion about using the funding institutions as "blunt instrument" but concern was expressed that tagging public engagement to funding would tend to require all scientists to take part rather than just those who wanted to or had an aptitude. A suggested compromise was to require scientists to at least reflect on the societal/ethical issues associated with their work.

The audience and the panel agreed that only institutional culture change would lead to fair rewards and recognition for scientists – both in the funding and the higher education institutions – and that small steps would lead to large changes. Colin Pulham, just-announced winner of the Royal Society Kohn Award for Excellence in Engaging the Public with Science, found that, in the last 5 years, attitudes towards his own communication activities have changed from 'tolerated' to 'valued'.

Session 3: Creating strategic partnerships to take public engagement forward

This was also run in parallel, comprising two sessions in each of which three case studies were introduced, to give examples of different models and approaches to science communication.

Session 3a: Valuing public contributions to science

Nick Pidgeon, Director, Centre for Environmental Risk and Tee Rogers-Hayden, Research Associate, Centre for Environmental Risk

Kathy Sykes (for Geoffrey Boulton) from the Council for Science and Technology (CST)

Sandy Oliver from the Institute of Education

From January 2003 to July 2004, the CER undertook a consultation, which included public views, on whether nanotechnology would have novel societal implications. This resulted from the lesson learned from the GM debate, which came 'too little, too late'. Nanotechnologies are currently in use and development for cosmetics and sunscreens, medicine and material science, but also have potential applications in invisible sensors and human enhancement. Public concerns have been expressed regarding economic and military/surveillance implications, as well as the potential for unknown outcomes resulting from a convergence of sciences (nano-bio-info-cogno).

The CER found that the public have a low awareness of the term 'nanotechnology' (less than 30% knew what it meant). There was widespread enthusiasm for the potential benefits of nanotechnology, but concern over long-term uncertainties and a lack of trust in the future control and regulation of nanotechnology.

These findings justify 'upstream' dialogue and deliberation because, upstream, key decisions are yet to be made, outcomes are still hypothetical, and there is low awareness of and no major controversy surrounding emerging technologies. However, initiating dialogue/deliberation at this point in the process also has attendant problems. Because outcomes are potential, rather than actual, they may never come to pass. Because information must be provided where there is low awareness, bias may be introduced. Engagement may itself generate controversy and unwarranted beliefs.

With upstream dialogue and deliberation, how can 'the public' be identified? Will there be 'stakeholder fatigue' if it has no impact on the development of the technology? Finally, it can be difficult to reconcile public debate with other evidence streams. The overall challenge for upstream dialogue and deliberation is to establish and follow good practice and this was emphasised much throughout the session.

The CST recently released its report "Policy Through Dialogue," which encourages Government to engage the public in science and technology policy development, or risk losing potential economic and social gains as a result of decreased confidence in Government's use of science. Greater dialogue, explained Kathy Sykes, requires the identification of issues, ministerial buy-in and openness, good governance and resourcing, and the capacity to learn and improve – all of which will only occur with a culture change on the part of the government. Government commitment to engagement will provide more openings for science communicators to feed back into policy

development. The ScienceWise grants scheme is one example of how this might work using strategic partnerships between government, scientists and the public.

The NHS has been at the forefront of public engagement, particularly involving patient groups and the public in setting research agendas. However, so far, there has been little shared learning about methods, successful approaches, challenges and potential impacts of engagement. Overall, there needs to be more and better reporting of successful, and unsuccessful, public engagement activities.

Recommendations were made for improving public engagement: (i) a variety of methods should be used, and training and resources should be provided for everyone involved; and (ii) a combination of reflexive research and iterative communication has proved to be successful and may be the only means to overcome challenges.

Patient groups and the public have successfully suggested research topics, shut down low-value research, altered research topics and conducted their own research.

The sessions concluded that the public(s) and stakeholders do have a valuable contribution to make to science. They are not merely focused on risk, but talk about fundamental issues, such as the roles of multinationals in science, trust in the government, and how everyday knowledge is linked to technology. All of these issues should inform the outlook of science. As a warning, where there is a diversity of evidence streams, power relationships can derail dialogue. Establishing, reporting on and sharing good practice can stop this from happening and is the primary recommendation of this session.

The session split into three workshops each lead by one of the speakers. Reports of the workshops are available from www.the-ba.net/scicomm

Session 3b: Engaging young people.

Samantha Tang, Public Awareness Scientists, Nottingham University

Louise Webb, Project Manager [ecsites-uk](http://ecsites-uk.org)

Anita Shaw, Education Director, Techniquist

Samantha Tang described her unique position as the University's Public Awareness Scientist, funded by the EPSRC, and how being embedded in the clean technology group in the School of Chemistry enables her to keep up with current research while taking awareness and understanding of science in the university to the outside world.

Her main aims are to take the latest science and engineering direct to the public – and explain how it's done. She outlined three projects to this end. On one, chemistry lecturers visit primary schools to talk about their work, using hands-on experiments and slideshows based on artwork done by children, to help explain some of the concepts through children's eyes. It is well received. Much planning is needed though, including risk assessments, CoSHH assessments and so on. Another project, "Research Twinning," involves a postgraduate from the university paying a monthly visit to a year 8 class in a local school to talk about his or her research and how its going. A third is Sci-Kick: a Café Scientifique type project that she has set up for 14-16 year olds. It is held once a

fortnight. The audience suggests the subjects and speakers are invited from local universities.

Louise Webb talked about a new partnership between ecsite-uk and Girlguiding UK, which is geared towards getting girls interested in science, particularly after the age of 16, by providing them with special events and resources. The potential is huge: there are 600,000 members in the UK of which 130,000 are active Guides, and 10 million members worldwide. The partnership has received funding from Planet Science, the Institute of Physics (Einstein Year), the Royal Society of Chemistry and others, and has been able to arrange science-oriented ("Go For It!") challenge days at science centres, which incorporated each of the 5 areas required to achieve a Go For It! award (through workshops, trails and other science-based activities).

Overall this was described as a popular initiative and a great success story. The project is now being expanded to cover new areas of science. This will include the development of space and astronomy events at UK science centres and museums especially for Guides, and support and training for Guiders (funded by PPARC).

The lessons learned include that relationships take time but are rewarding; the audience is eager and large (and extra capacity is needed); Girlguiding UK members value their awards and that they make a very positive difference, and that national and regional marketing is important.

Anita Shaw's presentation, "Using a citizens' jury to engage young people in contemporary science," described a project run jointly between the University of Glamorgan, the Wales Gene Park and Technquest with funding from the Wellcome Trust, which responded to the Human Genetics Commission's consultation document, 'Genetics and reproductive decision making' (July, 2004).

Fourteen young adults aged from 16-19 (including those not in education – which were hard to find!) were selected to form a jury, which sat over a period of three and a half days to hear the case for and against genetic selection (or Designer babies: What choices should we be able to make?).

After a short briefing on the science, they listened to and questioned a number of expert witnesses and people with direct and real experiences (case studies), aided by expert facilitators. It became clear that telling stories about genetics and reproduction has a huge effect on young people; they were motivated and enthralled by the experience.

They delivered a verdict that was more conservative than that of the House of Commons Science and Technology Committee's report on 'Human Reproduction Technologies and the Law' (which came out six months later, in March, 2005): that people should be allowed to design babies to prevent genetic conditions from being passed on; that people should be able to design babies to save a sibling; but that people should not be allowed to design babies for the sole purpose of sex selection (with no health benefit).

The questions and comments following the three presentations touched on examples of

networks of science centres and science teachers; the possibility of engaging universities with the girl guiding project; and the difficulty of maintaining momentum with such projects, however innovative and valuable they are, since things go out of date very quickly for children. Further discussion was encouraged in the break-out workshops, following.

The session split into three workshops each lead by one of the speakers. Reports of the workshops are available from www.the-ba.net/scicomm

Session 4: Effective dialogue

Gary Kass, Office of Science and Technology

Andrew Ackland, Dialogue by Design

Richard Wilson, Involve

In this session three panellists looked at effective dialogue, exploring what it is and how to do it well, and highlighting new approaches and initiatives.

Gary Kass from the OST began by explaining why the government sees a need for dialogue in science and technology. We want to use science and technology to create wealth, he said, and it's crucial that we bring the public and policy makers together. We need to list people's aspirations and concerns and analyse the intelligence relating to emerging areas of research as well as existing controversial issues. Dialogue will both inform and be linked into the decision-making process. If delivered properly it can help raise key issues, and address them.

Andrew Ackland of Dialogue by Design then went on to explain that he was a full-time practitioner of stakeholder engagement and dialogue and could offer a "view from the trenches." Lots of the good work being undertaken does not get noticed or reported. Let's start with a definition of dialogue, he said. The best way of clarifying what we understand by dialogue is often to compare it with debate.

Where debate is adversarial, dialogue is collaborative; where debate seeks to persuade, dialogue seeks to explore; where debate is reductive, dialogue is holistic; where debate makes distinctions, dialogue makes connections; and where debate is about telling, dialogue is very much about learning. The point of debate is to win the argument, but dialogue is intended to create understanding, shared meanings and consensus where possible.

After debate, said Andrew Ackland, participants tend to feel polarised and angry. After an intensive session of dialogue they may feel exhausted, but they all love each other, especially the ones that disagreed most at the beginning! – because they've had to invest so much in understanding one another's points of view. In summary, he concluded, dialogue matters because it creates and underpins collaborative partnerships; acknowledges and values differences; encourages new ideas; helps people to take responsibility; enables people to cope with risk and complexity; and facilitates the taking and ownership of difficult decisions.

Finally, Richard Wilson, of Involve, talked about the theory, practice and impact of public dialogue in three different contexts: social research, market research and conflict resolution.

Within social research, citizens' juries are often used, and lead to option assessment. Within market research, user panels are employed to help understand consumer behaviour. Within conflict resolution, dialogue is one tool that is used, to help build relationships. Of course, different approaches lead to different outcomes and since 75-80% of a practitioner's time is spent on process design it's important that we gain a more sophisticated understanding of what processes lead to what outcomes, so that we

can be sure that our processes are demographically and democratically sound – which GM Nation, for example, was not. He has, he said, observed convergence between the approaches of different organisations, however.

The discussion that ensued covered a very wide range of subjects. Key points included the need to define the purpose and the context of the dialogue – and only then to design the process around that knowledge. Concern was expressed that dialogue be proposed for conflict resolution on scientific issues – since conflict should have been pre-empted by appropriate upstream consultation.

There was also some doubt about the value of dialogue in bringing in those who completely reject the basis of science. One possible solution here is the deliberative poll – when the participants vote on an issue, deliberate on the facts, and then vote again. This did not answer the question of another, who wanted to know what should be done if the outcome of dialogue was something you didn't want to hear – such as a recent example he had experienced in which participants agreed that science should no longer be used simply to generate wealth and that in fact they were all happier to make lifestyle changes to help minimise damage to the planet.

Another suggested that dialogue could do something in between informing outcomes and deciding them, which was to influence them. Many agreed. Meanwhile a point was raised about the opportunities that could arise from forming links between the scientific communication community and the dialogue community (although there was some doubt as to whether it can be called a community just yet!).