



Broadening our Horizons – Public engagement with the future of science

**A launch paper by Jack Stilgoe
and Diane Warburton**

For more info: jack.stilgoe@demos.co.uk

The **sciencehorizons** project, a year-long programme of public debate about the future of science, will consist of a series of events throughout the UK – in science centres, WI halls and people’s living rooms. The aim is to hear what ordinary people want from the future. This paper argues that experts have been in charge of the future for too long. We need to broaden our horizons to include members of the public.

Introduction

“Imagination is more important than knowledge. For knowledge is limited to all we now know and understand, while imagination embraces the entire world, and all there ever will be to know and understand.” – Albert Einstein

“The best way to predict the future is to invent it.” – Alan Kay

Science and technology point forwards. Their currency is the future. And as they play a bigger role in our everyday lives, society has become more forward-looking. Centuries ago, before things were modern, the future looked much like the past. Now, it looks very different. The future is a shiny world of opportunity, full of solutions to past problems. However, as sociologist Anthony Giddens reminds us, it is also worrying. “The world in which we live, rather than being a world of increasing certainty, is much more one of increasing uncertainty.”¹

Our society looks forward precisely because we have very little control over the future. Given the accelerating pace with which the future confronts us, it has become more and more vital to talk about what it might look like and what it might mean. Governments and businesses direct more and more energy and money towards foresight, scenarios, horizon-scanning, call it what you will. They invest in prediction so they can prepare better for what’s coming.

At the same time, it has become recognised that debates about science, technology and the future need to include a wider range of voices. Over the last five years, the UK has seen a move towards “upstream” public engagement in science.² Around the UK, experiments have blossomed, looking at emerging areas such as neuroscience or nanotechnology. Scientists and members of the public are coming together to ask new questions about the role of science, the future and the sort of world we would like to live in.

The time is now right to think about how we can bring these conversations together into a programme of democratic deliberation about the future.

Expert Futures

Until now, the future has not been very democratic. According to Sci-Fi author William Gibson, “The future is here. It's just not evenly distributed yet.” The future is seen as a place that only a few people have access to, because they are experts, or they are visionaries, or they are the people powerful enough to make it so.

¹ Transcript of Anthony Giddens's 1999 Reith Summary lecture, <http://www.lse.ac.uk/collections/alumniRelations/news/Archive/20001006t1521z005.htm>

² See Wilsdon J, Wynne, B and Stilgoe, J, 2005, The Public Value of Science, Demos <http://www.demos.co.uk/publications/publicvalueofscience>

The spiritual home of this sort of futurism is California. From Hollywood's fantasies to the dynamic industries around San Francisco, the future is big business. Accompanying the computing companies of the Bay Area is a network of futurists earning their living by predicting and presenting the future for wide-eyed businessmen.³ The futures that are traded in this environment tend to obscure uncertainty and prevent discussion. They are divorced both from the wider concerns of society and from the everyday uncertainties of scientific research.

This "great man" view of the future is driven by technology. It is an extrapolation from what technology does for us today to what future technologies will do for us tomorrow. And though it advertises itself by its predictions, its track-record is not great. We have all heard the stories in which technologists have been let down by their foresight ("*I think there is a world market for maybe five computers,*" – Thomas Watson, founder of IBM; "*Some day, every town in America will have one of these*" – Alexander Graham Bell talking about the telephone; and many more). A massive number-crunching model of the Vietnam War was designed to help the US Government rationalise its decision. In the thick of the conflict, the computer was asked to predict the end of the war. Its answer was that the war should have ended years ago.⁴

A more recent example might be Bill Gates' "The Road Ahead." Over 300-pages of mid-nineties techno-prediction, he mentions the World Wide Web just seven times.⁵ Even as his ink was drying, the Web was becoming the most important influence on computing in history.

As well as being unreliable, visions of the future that are driven by technologists and technologies normally exclude any sort of discussion of what people might want. At the end of the last millennium, Newsweek magazine asked a group of experts what they expected from the coming century. The predictions were almost exclusively scientific and technological: "Gene therapy and nanotechnology will cure disease, cars will drive themselves, pig hearts will be used for organ transplants, computers will become an even more ubiquitous part of life, the Internet and the Cybercafe will become the venue of choice for our relationships, and so on."⁶ There was no room for consideration of the role of people in the future. It is no coincidence that many pictures of the future leave out people. Monorails and hovercars fly facelessly beneath cloudless skies. When people are included in utopias, they tend to be homogenised. In sci-fi films, people all have the same haircuts and the same clothes. The slogan of the 1933 World's Fair, "Science

³ The author Hari Kunzru elegantly describes the futuristic excitement of Californians at the tail end of the dotcom boom in an essay called "futurecasting".

<http://www.harikunzru.com/hari/futurecasting.htm>

⁴ Kunzru, Futurecasting, op cit

⁵ Scott Rosenberg, "Why Bill Gates still doesn't get the Net", Salon
http://archive.salon.com/21st/books/1999/03/cov_30books.html

⁶ Brown, N, Rappert, B and Webster, A, 2000, *Introducing Contested Futures: From Looking into the Future to Looking at the Future*, introduction to "Contested Futures: A Sociology of Prospective Techno-science", Ashgate

“Science Finds, Industry Applies, Man Conforms” makes sense only in the realm of sci-fi.

The utopia that Gates paints is a geek’s utopia, focussing on a closer relationship between the individual and his computer. This is far from everyone’s ideal world. Interestingly, this lack of imagination about what is desirable also impacts upon technology. The growth of the web was unpredictable precisely because it emerged with the support of the masses, rather than at the whim of a few. To get a better picture of what the future might look like, and what we might want it to look like, we must place ourselves in it. The question is: how can we put people back into the future?

Deliberate Futures – The challenge of engagement

As well as being bad at predicting and bad at imagining what different sorts of people might want, visions of the future (“scenarios”) are often presented as inevitable. The Road in Gates’ title is a common metaphor. The future is the end of a straight line going from the past, through us in the present, and onwards. If we look back at technology, the series of decisions and assumptions that brought us to where we are now looks like a line. Wrong turns, unpopular technologies and bad decisions are erased from view. Betamaxes, Sinclair C5s and flat-earthers are pushed to the sidelines. And so our position looks inevitable, as does our direction.

In reality, the range of future possibilities is enormous. This point might seem obvious but, when we are talking about public engagement, it could not be more important. If we are to engage people in a conversation about the future, and the desirable roles of science, technology and society in it, we need to get away from the “Science Finds, Industry Applies, Man Conforms” myth. We need to recognise that the future is not inevitable, it is ours to shape. Not only is public deliberation about the future possible, it is vital.

Realising the importance of open thinking about the future, the UK Government has created a Horizon-Scanning Centre within the Office of Science and Innovation. The Centre's aims are:

- To inform departmental and cross-departmental decision-making
- To support horizon scanning carried out by others inside government
- To spot the implications of emerging science and technology and enable others to act on them⁷

These are difficult tasks, requiring not only foresight – an ability to see what might be coming – but also insight – an ability to make sense of what might be coming. These are not tasks that can be achieved by a group of experts sitting in a smoke-filled room. They require new perspectives and new approaches. Perhaps the most interesting aspect of this sort of futures work is that it brings together new groups of people to talk about new things and what they might mean.

⁷ http://www.foresight.gov.uk/HORIZON_SCANNING_CENTRE/index.html

As with other Government work on the future, there is a growing realisation that the Horizon-Scanning Centre needs to broaden its discussions to include the general public.⁸ This is why they have asked the general public, via **sciencehorizons**, to contribute to their work. The Horizon-Scanning Centre sits at the heart of government, and it presents a rich opportunity for influential public engagement. But there are some real challenges that need to be explored.

Two paradoxes of engagement⁹

Much public engagement with science has focussed on things that have already arrived – GM foods, nuclear power, animal experimentation and the like. With these issues, members of the public can hear evidence and come to their own conclusions relatively easily, and these conclusions are likely to make sense to both science and government. Experience of public engagement with nanotechnologies, which have only just started appearing in everyday products, suggests that it is much harder to have public conversations about the future. The invisibility and intangibility of future technologies makes for a different sort of conversation, one centring on possibilities and responsibilities.

This is the *first paradox of engagement*. We need public engagement to take place when decisions are still open, but this means that it might not always be clear exactly what we are talking about. A common public frustration with technology talk is that it takes place in the language of hype, generated by technologists trading on the promise of their research. As we demand more from our future, this has become more prevalent. But we should not ignore it. Promises of the future, whether they come from government, industry or universities, provide a hook on which to hang public engagement. Visions can start conversations. But we need to think about how these conversations are limited by particular technological areas.

Until now, public engagement has been placed neatly into particular scientific boxes. We invite discussion about nanotechnology, about GM food, about designer babies. If we take seriously claims that the Next Big Thing will be the coming together of some of these areas (sometimes referred to as “convergence” – acronymed as NBIC – nano, bio, info, cogno)¹⁰ we need to think about how we start public conversations about science and technology in general. And we need to explore how talking about the future of science and technology is different from talking about what is already around us.

⁸ A recent evaluation of the Foresight process concludes that it is valuable to bring together new combinations of experts and stakeholders to consider futures, but that more needs to be done to involve the public in these discussions from the start, rather than as a bolt-on. http://www.foresight.gov.uk/Publications/Current%20round%20General%20Publications/Foresight_Evaluation_2006/Foresight_Evaluation_Final_Report_June_2006.pdf

⁹ This phrase is from an ESRC seminar. See <http://www.sci-soc.net/NR/rdonlyres/47A33181-D5E5-4E9F-9233-B099FA285139/383/Workshopreportfinal.pdf>

¹⁰ Parliamentary Office of Science and Technology, “Debating Science,” POSTnote, Number 260, March 2006 <http://www.parliament.uk/documents/upload/postpn260.pdf>

The *second paradox of engagement* is that while we need deep debate, we also need wide debate. If we are serious about building an inclusive view of the future, we need to include a wider cross-section of the community in discussions about science and technology. As well as focussed deliberative exercises, we need to reach out, tapping into collective wisdom, exploring a broader democratic mandate for science. For some processes, it makes sense to look for a cross-section of views representative of general public opinion, especially where the policy area is relatively well-defined and practical options can be considered. Further upstream, diversity will be more important than representation, and experiments in engagement can bring people together in different ways to help them explore their values and aspirations.

Ways of talking about the future

There is now an arsenal of well thought-out methods for public engagement with science. Consensus conferences, Citizens' Juries, Deliberative Polls and other approaches all provide channels for members of the public to air their views and contribute to decisions.¹¹ But they are most applicable where topics are well-defined. When questions are more open, as they always are when we are looking to the future, public engagement is about exploration.

A recent collaboration by Demos, the University of Lancaster and the Environment Agency called itself a "People's Inquiry" to represent this sense of collective exploration. The aim was to bring together scientists and members of the public to discuss an emerging issue – in this case, nanotechnology and the environment. More ambitiously, the "Meeting of Minds" experiment that took place in nine European countries in 2005-6 asked "How are we going to use our new-found knowledge of the brain?" The discussion was incredibly rich. It took place over five full weekends, with more than a hundred members of the public and hundreds of scientists to help them. The report, whose conclusions are deep and far-reaching, is a fascinating picture of a democratic future for neuroscience in particular and science in general.

"An initiative like Meeting of Minds showed us that scientists often appreciate hearing the opinions of lay people. They can even benefit from this kind of dialogue and feedback on their work."

- Report of the "Meeting of Minds" project

www.meetingmindseurope.org

These processes are intensive, and they provide only a few people with the opportunity to take part. An interesting next move will be to embrace and experiment with a broader set of ways to engage members of the public. We need to tap into people's interest in science and we need to reach out to new groups. In science centres, museums, festivals and cafes throughout the UK, we have seen a recent blossoming of public engagement. Where once the public listened to science, there is now a growing public debate.

¹¹ See, for example, 'People and Participation. How to put citizens at the heart of decision-making', published by Involve, November 2005

The next challenge for public engagement is to find the connections to empower this activity. First, we need to connect it to policy. The invitation to contribute, through public engagement, to the work of the Office of Science and Innovation should be welcomed. The Government are interested in how public visions of the science and technology futures can inform, critique and enrich existing policy-driven visions.

Second, we need to build connections with the science that is going on in the UK, which means getting scientists involved. We have seen in the recent report from the Royal Society that there are still barriers stopping scientists from getting as involved as they'd like in public engagement activities. Despite this, a growing number are doing so. And they are enjoying it and learning from it. Public engagement, if it is done well, puts scientists in quite a difficult position. It asks them to think, talk and write differently, putting what they do in public context, casting it in a different light. It asks them to reflect on their worries, as well as what they think is new and exciting. It asks them to be citizens as well as experts. It asks them to think about what world sort of world they would like to see, as well as what they think science can do. For upstream public engagement to work, it requires openness about the uncertainties and limits of scientific knowledge.

Public engagement about the future will always be exploratory. As well as finding out what people think, it's about finding out where people want to take the discussion, and following them. It means scientists and members of the public coming together to think differently about what is possible. Deliberation between scientists and members of the public allows either group to test their views and challenge their assumptions in a new context.

Albert Einstein thought that imagination of the future was more important than knowledge. This is a good starting point for discussions of the future. But it's easy for him to say that – he knew more science than most people. Just as public engagement can't take place in a policy vacuum, nor can it take place in an information vacuum. Time and again, when we give people a chance to talk about science, they emphasise how valuable they find their new knowledge, and how much more they'd like to know. Often, participants will leave a citizens' jury or a science café as explorers, empowered to find out more. And it is easier than ever to find things out.

"We need to find ways to make it easier for scientists to engage in a genuine dialogue with the public so that those outside of the scientific community can better understand, support, and indeed challenge, the science that is being undertaken in our universities while, at the same time, helping scientists understand public interests and concerns."
– Sir David Wallace, vice president of the Royal Society

This is why the participation of scientists and the science communication community is so vital in this next stage of public engagement.¹² They can act as guides for public exploration of new issues. Experience so far with public engagement suggests that the more people get involved, the more they want to find out, and the more they find out, the more they want to get involved.

Learning from engagement

For public engagement to grow from a set of interesting but disconnected events to an integral part of a new approach to science policy, we need to learn what works, what's interesting and what makes sense to people. Evaluating public engagement is still relatively new and everyone is learning. Evaluation needs to look at the 'success' of the exercise (e.g. Did it reach the people it was supposed to? What impacts did it have on those involved and on policy outcomes?). But it also needs to help those involved think through what happened so that the learning can be better understood among those taking part as well as being shared more widely. We need a process of collaborative reflection as part of engagement processes.

Experience suggests that formal evaluations are necessary but not sufficient. We need to find ways of involving new groups of people – especially policymakers – in public engagement processes. Where policy-makers have really listened to policy deliberations, they have found the public demonstrate great sense and commitment.¹³ No evaluation report can fully capture the positive energy of a good public engagement process. Public engagement is essentially about human interactions and needs to be experienced personally to be fully understood. The learning from engagement processes should become integrated, helping improve the processes as they develop as well as contributing to the future development of public engagement more widely.

There is plenty of experience on public engagement methods out there. But we now need to shift up a gear. The potential public interest in the debate on the future of science provides a unique opportunity to innovate - to test different engagement methods with different sectors of society and different degrees of involvement (from short informal discussions to several days' intensive deliberation). Diversity and innovation will maximise opportunities for learning about what works best, what helps develop new knowledge and curiosity among the public, and what public engagement can deliver to scientists and policy-makers. There is still a great deal to learn about public engagement in science and it will be essential that there is a wide range of opportunities for scientists and science communicators to collaborate in these learning processes.

¹² David Dickson eloquently argues for a new role for science communication in dialogue. Editorial, 27 June 2005, SciDev.Net
<http://www.scidev.net/Editorials/index.cfm?fuseaction=readEditorials&itemid=162&language=1>

¹³ This was shown, in the Evaluation of Your Health, Your Care, Your Say final report, published by the Department of Health August 2006.

sciencehorizons – Getting engaged

In partnership with the Office of Science and Innovation, **sciencehorizons** provides a forum for public engagement with the future. It acts as a network in which scientists, science communicators, public dialogue specialists, members of the public and government can connect their conversations to policy.

Over the next year, the hub of this network will work with the Horizon-Scanning Centre to produce materials for a programme of deliberative public engagement with the future. At the same time, its' spokes will reach out to existing science communication and public engagement activity around the country, as well as to groups who might not normally talk about science.

Our project will provide a way for people to get involved and for their involvement to connect with the Government's work on science. Using information compiled by the Horizon-Scanning Centre, we will be putting together some visions of the future. But these will not be predictions and there will be no right answers. They will be designed to start conversations rather than end them – to engage rather than amaze. Rather than starting with technologies, we will be starting with people. Our scenarios will fit into some broad themes – futures for work and leisure, mind and body, home and community and people and planet.

These scenarios will become a discussion pack, used to trigger conversations at three levels. The first will be in science centres, museums and festivals up and down the UK. Visitors will be asked for their visions of the future. The second will be a small deliberative group who will meet on a number of occasions to talk in depth. The third level of conversation asks people to come together and talk wherever and however they wish – at their WI hall, in their living room or at the pub – and tell us what they think.

When it reports in a year's time, the project will tell a story about the future that is scientific and democratic, informed and imaginative. This story will be the end of a series of conversations about science, but we hope it will be the start of many more.

If you're interested, and would like to get involved, visit www.sciencehorizons.org.uk or send an email to contact@sciencehorizons.org.uk.

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