

ENGAGING SCIENCE: CREATIVE ENTERPRISE OR CONTROLLED ENDEAVOUR?

By Clare Matterson

A dance inspired by epigenetics, the potential impact of new GCSE science curricula, a re-enactment of an 18th-century arm amputation, new online tools for public involvement in policy making: the range of activities carried out under the umbrella of public engagement can seem bewilderingly large.

All these topics and events – and much more – featured in the Wellcome Trust's Engaging Science conference, held in Manchester in spring 2006, which brought together a stimulating mix of people interested in the interactions between science and the rest of society. A notable aspect of the conference was the way people from a multitude of disciplines had the chance to meet and engage with each other. Science centre executives rubbed shoulders with artists, scientists shared coffee and experiences with educationalists, and theatre directors compared notes with website publishers.

While it was undoubtedly stimulating to see so much interdisciplinary mixing going on, it does raise some potentially troubling questions. Are there any common themes underpinning this diversity of work? Does the diversity reflect a flourishing forest of creative solutions or a mushrooming multitude of isolated efforts? And do we know whether all this endeavour is actually having an impact? With public engagement maturing as a discipline, now is a good time to examine these and other difficult questions.

New beginnings

'Public engagement with science' is not so much a new label as a new concept. We've moved on from 'listen and learn'; understanding is out, engagement is in (Tim Boon, pages 8–13).

But public engagement remains an amorphous entity; it does not have any widely agreed coherence. As a term, it means different things to different people. For some, it refers just to 'dialogue', where there is genuine discussion between scientists and the public; for others, it is about the importance of the public voice being fed into scientific policy making; for others still, it covers the full panoply of activities in which scientifically trained or active individuals interact in some way with people or groups without a scientific background.

Similarly, people do public engagement for different reasons. Scientists may want to share the excitement of their discoveries; educationalists strive to improve the schooling of young people; artists may see science as a rich source of ideas and thinking. We have funded, among numerous other projects, websites providing insight and resources on issues in biomedical ethics, a play and associated discussion tackling the rights and wrongs of using animals in research, continuing development opportunities for teachers, and fabulous mechanical figures illustrating science in action. In short, the past five years can be characterised by a blossoming of ideas and activity in public engagement.

In praise of diversity

Although diverse – and that in itself is part of the fascination of public engagement – it is possible to see how such activities form part of a bigger picture. Any definition of public engagement has to recognise, however, that the immediate objectives of activities vary – different projects are attempting to achieve different things. A consultative public engagement exercise, for example, will have different goals and target a different constituency from, say a science and art exhibition. This, of course, has important implications for evaluation (Ben Gammon and Alex Burch, pages 80–85).

Within this context, it is clear that there is no one simple answer to public engagement, no magic wand that will render all other approaches obsolete. So although the vogue recently has been for public engagement that impacts policy making, there is no reason why this should be the only approach adopted. Indeed, it may be positively harmful if it is. Old-style 'public understanding of science' may have neglected to consider the benefits of listening to people. But in rejecting the 'deficit model' so forcefully, a narrow view of public engagement ignores the clear public appetite for science, the thrill of scientific discovery, as well as the way it can aid people in their lives. Individuals can benefit significantly from an awareness of emerging medical opportunities, of risk and safety, and of the role of the media in reporting medical science.

This does not mean we should be promoting uncritical support – far better that we have a discriminating populace able to exercise their own judgement on topics from stem cells to nuclear energy. Indeed, there is a danger that by using public engagement as a catch-all term, scientists could continue to believe their role is to explain and promote science, rather than embrace the more challenging task of genuine dialogue and debate.

As populations go, then, public engagement might be said to be a high-biodiversity field. Ecologically, that's a good thing. We all know the dangers of monocultures, and maintaining and enhancing the public engagement gene pool will be important as we go forward.

FACE TO FACE

What's in a face? Bringing together history, culture, art and the latest technologies, the *Future Face* exhibition encouraged the public to contemplate the many different aspects of the face – in the past, the present and in possible futures.

Future Face, a Wellcome Trust exhibition at the Science Museum, attracted more than 125 000 visitors between October 2004 and February 2005, and was named one of the *Times Higher Education Supplement's* research projects of the year.

Those who came were reintroduced to the significance of their faces, through an inspired collection of imagery and artefacts encouraging visitors to question precisely what a face is, what it does and what it may become. Curated by Sandra Kemp, Director of Research at the Royal →

FUTURE FACE (WELLCOME TRUST 'MEDICINE IN CONTEXT' GALLERY AT THE SCIENCE MUSEUM)

Support
£200 000 (2004, direct activity)

Curator
Professor Sandra Kemp,
Royal College of Art

More details
[www.sciencemuseum.org.uk/
on-line/futureface/](http://www.sciencemuseum.org.uk/online/futureface/)

Left: 'Dana_2.0' by Michael Najjar, from the *Future Face* exhibition.



Learning

Nevertheless, it is still reasonable to ask what we have learned and whether we have had an impact. We now have a reasonably coherent view of public attitudes (Sir Robert Worcester, pages 14–19) and know that, despite what is often assumed, trust in scientists is high and rising. We know that scientists are keen to communicate, but see serious obstacles preventing their participation (Nancy Rothwell, pages 38–42; Worcester).

What of science communicators, the intermediaries between science and the public? They face a tough challenge – trying to please sponsors with one agenda while also appealing to consumers with quite another (Colin Johnson, pages 26–31). How can they demonstrate long-lasting impact, to show sponsors they are effective, without spending a fortune or influencing the findings by measuring the impact (Johnson; Gammon and Burch)? The mass media are among the key information sources for the public about science. Many are quick to blame it for providing overly negative or stereotyped views of science. But such preconceptions do not always stand up to close scrutiny (Jenny Kitzinger, pages 44–49) and we need a more sophisticated understanding of the ways in which a plural society relates to science in the media.

The science communicators of the 1940s saw the public just as passive audiences that needed their ‘receivers tuned’ (Boon). But the thesis that the more the public know about science, the more they will support it does not hold water. Despite some correlation, we now know this is an oversimplification (Dietram A Scheufele, pages 20–25) and we seem to have only limited understanding of how public thinking about science is influenced. The media are conventionally assumed to play a pivotal role here, but they may often reinforce existing attitudes rather than changing them (Kitzinger). People are complicated and, perhaps, the diversity of public engagement activities reflects this complexity.

‘Consultative public engagement’ in the UK – public impact on policy and practice – is going through a difficult adolescence (Alan Irwin, pages 50–55). There is a danger of it becoming a glib phrase that ticks the right boxes but leaves no real impact and a host of unanswered questions. Give the public a chance to air their thoughts and everyone goes home happy. But who should be involved? How? At what point? How far should it go? Are sponsors duty-bound to integrate public sentiment? Or will public engagement look like a public relations exercise in another guise? Like most adolescents, the reality can be messy and chaotic. Organisations running consultations may be uncomfortable with this idea. Nevertheless, when they finally develop their adult identities, adolescents usually turn out fine, and in time we will likely see a more grown-up and poised face of consultative public engagement.

Technologically, there has been an explosion of opportunity, particularly with the growth of the internet and the increased potential for ‘user’ involvement and control. The ability to produce materials simply and cheaply means the ‘set-up costs’ for getting involved in public engagement are much lower than they used to be. Internet-based approaches have been used in consultative public engagement, particularly in North America (Edna Einsiedel, pages 56–61), but have played only a small part in the UK and Europe. This is surely one area likely to expand significantly in the future as the first generations growing up with the web reach adulthood.

Public engagement has brought arts/humanities and scientific disciplines together in new and unique ways. It seems clear that artistic practice – in its many forms – has derived inspiration from scientific activity and endeavour (Stephen Webster, pages 74–79). Where the scientists stand on the value of such interactions varies greatly, and this still seems to be open to debate. Has public engagement enabled the narrowing of the gap or is this simply a flirtation that peters out after the initial thrills of attraction?

What of formal education? Here we are at a crossroads. We seem to have reached a point where ever-improving academic achievement (at least as measured by exam results) is being mirrored by ever-decreasing satisfaction with the teaching of science. Children leave school with a clutch of GCSE passes and an innate aversion to science. As a young man interviewed for the Engaging Science conference memorably put it, “I do like science but it’s not very interesting.”

The education system inevitably separates scientists from everyone else, as they go on to accumulate the specialist knowledge for research or technically specialist roles. Curriculum reform (Robin Millar, pages 68–73) has recognised that different approaches are needed for training these future scientists and for equipping non-specialists for life in a technologically advanced society. But it is by no means certain that this issue has been cracked. Some will lament falling standards and ‘dumbing down’. Perhaps we should see it as ‘smartening up’, providing a better education tailored to different needs.

Almost everyone who is involved in public engagement shares a view that science is a hugely important human activity, practically and intellectually. And everyone sees benefits of narrowing the gap between scientific activity and the rest of society. The diversity of activities we have seen over the past decade has laid the foundations. Now, we need to continue to experiment, and at the same time embed the ‘things that work’. And hardest of all, as we build on its foundations, public engagement needs to be able to continue to prove that it is making a difference.

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→ College of Art, the exhibition took the human face as its starting point. It then probed the cultural and scientific significance of this remarkable piece of biological engineering.

Split into five major sections, *Future Face* explored different aspects of the human face. ‘The anatomy of the face’ revealed what lies beneath, with art and scientific illustration detailing the underlying architecture that breathes life into a face. This intimate facial anatomy was juxtaposed with ‘Concealing faces’, which examined the role of masks throughout human culture and history, and their unique power to transform the bearer’s identity within the context of rituals and theatrical performances.

‘The limits of the face’ explored the

history of facial modification, from the healing alterations made by pioneering surgeons in World War I to our current preoccupation with beauty and surgical ‘improvements’. If the face is the core of our identity, might such approaches start to erode what it means to be human?

Within ‘Interpreting and identifying faces’, the notions of thoughts, feelings, personality and consciousness were examined. The face is a master of both conscious and unconscious communication, and an indicator of our emotional state. Facial expressions are universal: no matter where we travel, a smile means happiness.

The final section asked the question: ‘What is the future face?’ As the faces we see in magazines or in virtual

environments become more removed from reality, how will our expectations and perceptions of identity be altered?

As an attempt to encourage fresh thinking, *Future Face* was a great success, combining factual material with exhibits of cultural, artistic and historical interest. More than half of the visitors questioned felt that they left the exhibition having learned something new, with the vast majority inclined to give further consideration to the issues presented in the course of their visit.

Future Face exemplified the approach pioneered at the Medicine in Context Gallery, in which topics of scientific interest are considered against a broader cultural background. In practical terms, the end result may appeal to those who would not

be attracted to a straightforward ‘science’ exhibition; more conceptually, it is a reminder that science is not an isolated activity but a human cultural endeavour.

This multidisciplinary approach will serve as a model for the larger thematic shows to be run at the Wellcome Trust’s new public venue, Wellcome Collection, at 183 Euston Road, London, which is due to open in 2007.