

# Should researchers welcome or avoid public engagement?

Dan Graur and Phil Macnaghten disagree



Genetically modified food: hysteria or intelligent public concern?

Dear *Phil*,

The fact that science is mostly paid for out of the public coffer is frequently interpreted to mean that the public has a legitimate interest in determining research priorities, methodologies, and aims. Direct public involvement is also recommended to counterbalance market-oriented agendas and corporate control.

Scientific knowledge and an understanding of the scientific method (that is scientific literacy) are the main conditions that must be met before the public is allowed to have a say in science. The rate of scientific literacy in the Western world is currently 17 per cent, thus, the public clearly fails the test.

Should we allow science to be guided by a public of whom 73 per cent believe in miracles, 61 per cent in the devil and 70 per cent in the survival of the soul after death? Science is not a democratic activity. You do not decide by referendum whether the Earth goes around the Sun. (Incidentally, only 63 per cent of the population know that the Earth revolves around the Sun.)

Science is disinterested in either consensus or majority voting. Rather, it requires specialist skills. When public values are allowed to impinge on scientific work, the results are always disastrous. For example, countries that outlaw stem-cell research for religious reasons deliberately choose to cut off work that has important medical applications. Interestingly, of all the people who oppose stem-cell research, only 9 per cent can define the term. Thus, the public relationship to science is doomed forever to resemble that of Pope Urban VIII towards Galileo.

Yours, **Dan**

Dear *Dan*,

While science and novel technology have brought undoubted benefit and improvement to human society, it is equally clear that people's experience of science and its impacts is at least double-edged. We need to look only at the dangers posed by nuclear disaster, global warming or indeed genetically enhanced 'humans'

to understand that through scientific advance we now face (inadvertently) massive and unprecedented threats.

**The public can make no useful contribution to the study of angiogenesis, superinsular synchronization, geomagnetic reversals, or microsporidian taxonomy**

It is not enough simply to assert that the undoubted dangers of science and technology can be adequately controlled by the scientific and expert community; or that the best way to assuage public concerns is through the communication of the benefits of scientific advance, as tends to be implied in your argument. Rather, we need to recognise that many of the most important scientific and risk issues of our time are ethical and social in character and thus require mature public debate to assure social resilience.

Indeed, as the pace of innovation accelerates over the coming decades we will face a mounting challenge of how we can harness the potential of new technologies and their convergence without giving rise to negative and polarised responses. And this challenge will be met only when the wider public trusts that the development of new science and technology is responsive to their concerns and anxieties. For this reason I argue that the public needs to be involved 'upstream' in research and development processes.

Yours, **Phil**

Dear **Phil**,

You raised the possibility that *Homo sapiens* may be endangered by scientific advance. Actually, science threatens no one. It is the application of science that may pose a threat.  $E = mc^2$  is an inoffensive little equation; atomic bombs, on the other hand, may obliterate civilisation. Thus, when discussing public engagement in science, we must distinguish between science and its applications (technology).

I hope you will agree with the statement that the public can make no useful contribution to the study of angiogenesis, superinsular synchronization, geomagnetic reversals, or microsporidian taxonomy. Thus, we only need to discuss public involvement in technology. Some technologies, such as vaccination strategies, are by themselves highly specialised sciences, and may benefit little from public involvement. In most other cases, the public is mostly influenced by fads, conflicting economic interests, and propaganda, and has shown, so far, little 'insight' beyond predictable herd behaviour.

The hysteria about 'genetically modified food' attests to the fact that irrationality and illiteracy are more powerful than science. The public does not know that wheat and bananas were genetically modified thousands of years ago, nor would it matter if it did.

The public needs education, not a licence to poke its nose into scientific affairs.  
Yours, **Dan**

Dear **Dan**,

Your notion of public engagement is, I suggest, a straw man.

I know of no deliberative process that would suggest that the wider public should manipulate research methodologies, and certainly no-one is suggesting that the public should decide scientific facts by referendum. Rather, we need to recognise that science takes place within society, that much of it is paid by the public purse, and for this reason it

is perfectly sensible to suppose that scientists should pay due regard to public values, aspirations and sensibilities. Dialogue about what kinds of science should be funded, for what reasons, and for what implied benefits, is an important element in a properly functioning democratic society.

Involving the public early in potentially controversial areas such as advanced genetics can in addition help to avert future upset. It is a mistake to suppose that the controversy over genetically modified foods was the product of an illiterate and irrational public; rather, the public was uneasy about scientific reassurances over safety, the integrity and adequacy of present patterns of government regulation, perceptions of the future pervasiveness of GMOs in food products, and latent public unease about 'limits' of expert knowledge.

If we had been able to tap into more diverse sources of public knowledge at the time, we would have recognised the value and intelligence of public concerns and their potential contribution to more socially robust policy.

Yours, **Phil**

Dear **Phil**,

I was shocked by the approving tone you used to describe the public unease with the limits of 'expert knowledge'. What other 'knowledge' is there? Should we accept Christ, 'In whom are hid all the treasures of wisdom and knowledge'? Or, should we concur with New Ageists and post-modernists, who claim that the scientific method is but one of many alternative means of acquiring knowledge?

The case of genetically modified food is a particularly good illustration of the prevailing irrationality. Dr Wolfgang van den Daele, member of the German Bundestag's fact-finding commission on genetic engineering, was asked to explain the persistent public view that genetically modified plants are 'unsafe'. He admitted to being dumbfounded. Despite the fact that no specific health risks have ever been identified, public concern is on the rise. Moreover, engaging the public turned out to be counterproductive. 'The more one tries to educate the public or to engage in public dialogue, the more this [negative] impression is reinforced. If we make a song and dance about it, people think there must be something fishy... There is nothing scientists can do,' he admitted.

Given its level of scientific literacy, the public should have as big a role in science as astrologers have in the practice of dentistry.  
Yours, **Dan**

Dear **Dan**,

In scientific controversy what tends to concern people is not knowledge about science but rather the place of science and technology in modern society. This matter will not be solved by a public that understands the vagaries of modern science, but by a society that is more at ease with the direction of science and technology and its ability to contribute towards sustainable solutions in an ethically sensitive manner.

### Dialogue about what kinds of science should be funded is an important element in a properly functioning democratic society

To return to the matter of genetically modified foods. The public were only modestly concerned as to whether GM foods were a direct and demonstrable harm to human health and/or the environment. Rather, people expressed unease about Monsanto's ambitions to control more and more parts of the food chain, the motivations and vested interests underpinning the developments of the biotechnology industry, whether there would be choice on behalf of consumers, their sense of powerlessness about the possible pervasiveness of GMOs in foods, and whether the very idea of genetic modification itself transgressed moral boundaries concerning the integrity of species boundaries.

If the scientific community fails to engage with public concerns to novel science and technology we will probably witness future controversy to the detriment of both science and its ability to contribute to a better society.

Yours, **Phil**

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