

# Technology is a form of politics and not a form of science

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John Monk

People who call themselves scientists work with molecules and atoms, planets and galaxies, plants and microbes, light and x-rays, DNA and enzymes and so on. Everyone of them using different instruments and different techniques. What they have in common is their self-identity as scientists and a search for causes and their effects and the integration of such causal relationships into descriptions of what happens around us.

Causal relationships can never be proved but evidence can be collected that shows a degree of correlation between cause and effect. The task is then to speculate on causal relationships and then to collect evidence that demonstrates the plausibility of those relationships. Usually that involves creating artificial environments that mask complicating factors. The causal relationships that science gives us, with confidence, are therefore about fragments of human experience.

Some scientists enter into contemporary political debate, deliberately or by accident, for example by proposing a strong link between greenhouse gasses and global warming or by proposing a strong link between global temperature and sea level. Their professional authority gives them the opportunity to provide components of a chain of argument linking individual action with desirable or undesirable effects. Their professional authority does not give them any privileges in talking about the desirability or not of any outcomes nor necessarily any special authority in commenting on other elements of an argument. Scientists can, therefore, affect the course of politics by providing solid building blocks for political debate or perhaps more effectively by demonstrating the weakness of critical components of an argument. But they can never do so conclusively. The work of the scientist is never done, more evidence can always be collected and their results are always uncertain.

A technologist's job is to make changes in the world and those changes affect relationships between people. The technologist may work, for example, on identity cards: a proposal to introduce identity cards is a symptom of a breakdown of trust between individuals since identity cards aim to change relationships by shifting the subject of trust from the card holder to some other agent such as the card issuer. The technologist may work on making smoother ice cream. Why? To give marketing people something to get their teeth into in order to change the relationship between consumers or potential consumers and the company, ultimately the shareholders, providing the ice cream. The technologist may be working on weapon systems or defence systems which are clearly intended to alter relationships between people. The technologist may be working on pumps for fresh water that will ensure the survival of children who would otherwise be drinking disease ridden and polluted water and this will have far reaching social consequences. The technologist, then, brings about social change by introducing new or altered artifacts. Inspiration about a change may come from developments in science, but equally it may come from a market study or a call for action or a failure of earlier technological proposals or devices.

However many, if not most, proposals for technological change are not carried through. New artifacts are proposed but never made because their worth is challenged and not proven. The technologist is therefore not so much involved in creating artifacts but in proposing them or proposing new uses or new ways of organising people and things and then promoting them. And in promoting an artifact the technologist will need to persuade directly or indirectly fellow technologists, as well as financiers, the public, safety specialists and so on that the proposition is worthwhile. The technologist will need to construct stories about the future and outline the causal relationship between the proposed artifact and some benefit. In constructing the arguments the collected scientific orthodoxy provides valuable tools for robustly explaining how the artifact might go about its work and how the proposition can be given a material form. But the scientific elements of the argument will have to be assembled into a specific case for an artifact and translated for the

variety of audiences that will be affected by the creation of the artifact. The inevitable gaps will be filled and complexities avoided by further investigations, references to tradition, rhetoric, demonstrations of prototypes and emotional appeals.

Traditionally many technologists have been cloistered within organisations that protect them from certain forms of challenge to their proposals. But, as governments begin to deploy yet more technology in the administration of nations while government is opened up to greater scrutiny (a product of developments in communication technology) and as challenges are made to the ethical behaviour of companies making and deploying technology so technologists are exposed to a greater variety of interested parties and are compelled to react in unfamiliar terms.

The education of technologists and engineers has not necessarily equipped these professionals to handle many kinds of criticism of their work since it has traditionally concentrated on the scientific. Once technologists are seen as people who propose actions that bring about social change, then it can be seen that technologists work in the realm of politics. Non-technologists may then want to see a greater democratisation of technology and technologists will then need an education that better prepares them with the skills to cope with such changes.

## **Re: Lecture One: Technology Will Determine The Future of the Human Race**

Posted: 07-Apr-2005 10:25 open2.net Reith Lecture Forum  
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It does seem odd, when looking to our future and perhaps attempting to control development, to isolate one area of human endeavour such as technology. Indeed it is questionable whether such an isolation is possible. We might instead look at influences and seek the one that is preeminent; for example economic conditions affect technological development but then technological development, for example, in oil extraction or gas transportation can affect energy markets and hence economic conditions. Technologies have enabled us to build elaborate religious buildings that play a role in reinforcing religious communities but it is the religious ardour that has played a part in inspiring the development and adoption of these building technologies. Similarly art affects technology and technology art. Politics, as the art of the possible, is affected by technology and technology by politics. Warfare and technology, medicine and technology, science and technology are all interdependent and it becomes impossible to isolate one field as being the universal cause for change in another.

So Lord Broers' thesis "Technology Will Determine The Future of the Human Race" encourages the thought that technology alone determines our future. But I felt as Lord Broers admitted in answer to a question that there was some hyperbole in what he had to say. And perhaps in looking to the future and attempting to regulate it, the message is that "we should not ignore fields of endeavour or perspectives". Lord Broers' thesis then becomes "we are not paying adequate attention to the work and points of view of the engineers and technologists". We should do so because alongside the work and standpoints of others, engineers and technologists will affect our social development. Indeed by remaining ignorant of the details of technology and the dreams of technologists, undermines our understanding of what could be.

As President of the Royal Academy of Engineering Lord Broers seems to be indicating that the profession is fearful of the consequences of widespread ignorance of technology which must surely be greater uncertainty and hence increased insecurity.

Maybe there is a fear that wider understanding of technology will give greater power to technologists. But knowing more about technology is not the same as giving technologists greater authority, it can also mean gaining the ability to usefully, constructively and effectively criticise their plans.

# Parliament of Things

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Speaking as a “technologist” Lord Broers believes there should be greater public engagement so the technologists understand public concerns. And he bemoans the prejudice and ignorance of the public. He believes governments should regulate only after engagement with the public but appears to suggest that companies, institutions and universities establish their own ethical guidelines independent of the public.

His predictions, or perhaps his vision, is a world where technologists impose greater control over businesses, economies, health systems; that is control over larger units of organisation. But here is the contradiction: larger units involve more people, more hearts and minds, more capital investment, more time to establish and to alter, but large organisations are much more difficult for individuals to influence. He explains that our electricity system, for example, is “highly centralised” and because of the vulnerability of such a system and our reliance on a continuing supply, there is a huge burden placed upon the engineers. Putting this another way we have a huge system that is under the control of engineers who will most likely engineer our way out of problems. An alternative might be technologies that are decentralised, that tolerate variations in the availability of energy and that make individuals less dependent on an elite of engineers. But this is as much a matter of social change, changes to ways of life, as it is a matter for technological change.

He preaches that the “developing world needs to join the developed world in changing to sustainable technologies” and in doing so exposes his support for developed world technology over and above the traditions of the developed world. As an example he hints that we should be working on higher speed trains so energy hungry air travel is a less attractive option, but he casts the whole problem in terms of his own lifestyle where getting from Glasgow to London quickly is seen to be valuable. Of course, there may be great value, not only in terms of energy savings, in travelling from Glasgow to London slowly but that does not have a place in Lord Broers' vision. Again the difficulties arise, because of adherence to a particular way of life.

In a way what he has to say is puzzling, since it is clear that individuals do engage with technology (cars, buses, Internet, television, medicines, phones, cameras and so on). What they lack is access to the decision making machinery that determines what technologies are developed. They lack access because many decisions are made in private, they lack access because issues are often transformed into a technical language and they lack access because of the scale of developments (55 tons of documents were produced for the Sizewell nuclear power enquiry)

Lord Broers offers a technocratic future where public engagement means that the public should learn about how to use technology to fix their problems. I would expect Lord Broers to be an advocate for technology but while he posed a problem he offered little prospect of a solution. I would have expected him to explain to us “What is it about the technologies that we are currently deploying and planning that make it difficult for individuals to engage?” and “Are there ways of organising, doing, building and operating things that make it easier for individuals to engage?”. I had hoped there would be some suggestions for new tenets of technological development that gave us technologies we could easily influence, suggestions for reforms that expanded individual skills in offering informed criticism of technological options and suggestions for reforms that created institutions that listened and responded to such criticism --- suggestions like Bruno Latour's proposal for a “Parliament of things”.

## **Re: Undergraduate interest in engineering topics**

Posted: 06-Apr-2005 22:13 open2.net Reith Lecture Forum  
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I have just returned from a visit to the Far East. I attended an international conference on engineering education and had the opportunity to speak with teachers in a number of Universities from across the globe and with local teachers. Universally they spoke either of a decline in interest amongst young people in engineering studies and/or that applicants were ill-prepared for engineering studies. In Singapore, for example, they have felt the need for an extensive publicity campaign to encourage applicants. In Hong Kong young people are shifting to business studies and this can be explained in terms of special and local change, but for most it is a phenomenon with no clear and obvious cause though it was widely thought that engineering is perceived to be "difficult". Or perhaps the decline in interest arises because engineering, which is a profession that affects millions of lives, is not seen as the "caring" profession it ought to be.

In spite of a decline in interest, it should not be forgotten that there are still huge numbers of engineering students intending to complete their degrees and enter the profession.