

## New Scientist and Greenpeace Science Debates

**Science, technology and our future: the big questions**

**Technology: taking the good without the bad**

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**Robin Grove-White:** Thank you very much Brian. That's a bit of a cheer up after Ian and like you, and like the others, I want technology the good but not the bad but my contribution to this crystal ball exercise, perhaps I can sum it up with the proposition which is that I think we should prepare for new and unfamiliar forms of politics, of argument and of conflict around emerging technologies of the kinds that Ian was speaking about.

It seems to me that the political system that we have now is ill adapted for coping with these difficulties and it's vital when talking about the technologies, to talk about the wider context in which we will be considering them. So, before I touch on the good and bad, I would just like to locate this succession in the likely real world political context over the coming period, certainly the next decade, as far as we can see, perhaps beyond.

I'll just mention four features of current political economy, which seem to me very significant for this discussion. The first is that we are in a world now where science

and commerce are increasingly bedfellows. We've seen this with information technology, communications' technologies. We've seen it with biotechnology; that is a fact and it is ripe for all sorts of tensions. Secondly, we are... The development of technology is happening in the context of global free trade regimes which see technological diffusion generated by these processes of science imbedded with commerce, if you like, as intrinsically a good, and the World Trade Organisation ground rules effectively imply that.

But, it 's also a world in which there are highly opinionated publics now, not just in northern countries but throughout the world, publics in culturally plural societies as well as more homogenous ones and they have increasingly little faith, it appears, in governments and that is why NGOs have emerged, not least in relation to the big questions about the side effects of the globalisation processes. And the fourth factor of current political economy, significant I think, is that we now have 30 years' experience at least of the bad as well as the good of new technologies, experience of actually understanding in a more sophisticated way than in the booster of years and decades and centuries that preceded the last 30 years, of what the limitations of particular technologies may be and we have this, whether I cite nuclear power or CFCs and the ozone layer or the problems we now have with the car and our endorsement of the car culturally or of a chemicalised agriculture. And, of course, this environmentalism in a sense has been one response to (a selective response but a response nevertheless) to some of these, as it were, limitations of new technologies and we've seen it most classically, as Brian said, in relation to BSE and more recently in relation to GM crops.

So this is the turbulent context, I suggest, in which these powerful, emerging and synergising technologies that Ian's referring to, driven by the self-interest of large corporations, which we require them to do, is going to take place. I won't duplicate what Ian has said about the new convergences between biotechnology, IT and nanotechnology and artificial intelligence and, indeed, robotics. But what is striking about all of these, it seems to me, is the range and depth of the new questions and challenges that they bring with them and biotechnology and nanotechnology are manipulating the minutia of living and non-living matter. I mean, in principle, that is what they are about. Changing nature itself, if you like, I put it more dramatically, and potentially transformative on a massive scale.

The question immediately arises, at whose command, on whose initiative, on whose terms? And similarly, and I don't speak as an expert, plainly, but with robotics or

artificial intelligence they equally raise their own very fundamental questions for human, social organisation and relationships. And the implications they have it seems to me, and I'd like to underline this point, are of two distinct kinds: On the one hand one can speak of risks, if you like, at the biophysical level, risks, potential risks, which give rise to concern about potential impact on health or the environment but also, and I think that this is what is particularly germane, they also give rise to social, political and ethical implications because, if nature and inorganic matter are being changed, new processes of change are being introduced; in whose name we ask, by whom, for what confection of benefits? Whose values are being reflected both in the development and the trajectories of the particular manifestations of the technologies that ultimately translate into products? Who takes responsibility for issues... unforeseen issues, for surprises? Who defines, indeed, what the relevant range of issues to which this particular convergence of technologies is to give rise?

So how well placed is our political culture to cope with these sorts of challenges? Well briefly, from my own experience as a member of the Agriculture and Environment Biotechnology Commission, which, as some of you will know, was set up by government as a strategic advisory body after the big rows about GM crops 2 years ago. And admirable and interesting as this body has been, it's just brought home to me vividly the difficulties for social debate in both the categories of risk vis-à-vis new technologies and wider social and political implications more generally.

On the risk side, where we're talking about GMOs, what one encounters is that the ground rules, the very ground rules of risk assessment are scientific risk assessments, as embodied in legal and political requirements at European Union level and domestically, ensures that overwhelmingly they look only... That these risk assessments look only at direct one-to-one causal relationships, not at wider uncertainties, wider cumulative potential consequences, secondary, tertiary consequences, unknown. I mean, risk assessment rather reminds me of the policeman coming upon a drunk, looking around under a lamplight at night, searching around and he says, oh, I dropped £10 and the policeman says, where did you drop the £10? He says, over there. Well, why are you looking over here? Well there's only any light here. And the risk assessment for handling these big, social and political and ethical challenges is really inappropriate and my experience has been that there's great reluctance on the part not only of scientists but of politicians and, indeed, officials, to give legitimacy to this wider range of concerns which lie outside the formally sanctified processes.

On the other hand, what about the wider social and political implication about ownership, about consequential implications, about possible alternatives? Well again, these are not... These have no political status currently under WTO or EU ground rules. Under those rules, those who develop the technologies, provided they stay within the law, are doing nothing objectionable. So my experience so far on the most progressive, if you like, of the advisory committees set up in response to the sorts of issues we're talking about today, is that there are great difficulties in gaining political interest or getting a willingness to take political responsibility for the wider implication or the differences of value or the differences of interpretation one might expect in multicultural societies, in relation to these technologies, despite their fundamental importance for all of us.

The result is that these wider implications, because they have no political standing, because they lack political standing, remain poorly articulated, poorly defined, unrecognised largely, in the continuing GM debates, frequently labelled irrational or non-scientific in a disparaging fashion. And it seems to me that the new technologies which Ian's talking about, the new synergies if you like, are themselves being developed in isolation from this issue of the wider social values that ultimately may come to bear on them when they are introduced into the political arena.

So what are the implications for this new generation? I simply say this in conclusion. Firstly, I believe that conflicts and differences of political value and on ethical questions are going to condense onto features of these technologies and I think that's absolutely unavoidable and, in the circumstances which Ian's been describing, I can see this causing great confusion and dismay. Secondly, I think that these conflicts will tend inevitably to build on familiar patterns about power, about ownership and about equity, in relation to technologies, which will be perceived as having very wide implications for all of us. Thirdly, I think that the difficulty that the political institutions at the moment are having in accommodating, in adapting their thinking to these wider issues, will see outside resentments with the possibility of what will again be dubbed irrational upsurges and reactions.

What to do? It seems to me that as part of the great flurry of constitutional reform that's going on now, we might well turn our minds, this dimension of new technologies, which are going to be so influential might well be incorporated. The Netherlands and Denmark have institutionalised processes of public debate about new technologies, emergent technologies, integrated with their parliamentary practices. So I would conclude simply, as you might expect, with a clarion call to the

political class of the need to understand and internalise these new political dynamics of technological society, to maximise the chances that we can have a relatively frictionless progress to getting the benefits of them for sustainable development purposes. Remember Monsanto. Thank you.