

## New Scientist and Greenpeace Science Debates

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

#### What is 'natural'?

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Good evening. It's pretty scary actually being the first on the list as a sort of fully signed up nature worshipper. I was so worried that I lobbied quite hard to be sort of relegated to a lower order of the batting, but it was rejected, and I'm scared to sort of wound the intellectual spears of the reductionist scientist. But anyway, so here I am! So with some apprehension I open the batting.

I read a book in 1990 by a man called Bill McKibben called 'The End of Nature' and this had a very profound effect on me and, I hope I don't get this wrong, correct me later if I do, but his hypothesis was that we've interfered so much with nature as we viewed it before, both with the results of global warming etc that you can't any longer find a wilderness place or a place on the planet which you can really say is natural, because it's gone beyond that. And I was, I think a lot of people felt that he was touching something, and I worried about this and thought about it a great deal. And I suppose you can have two possible reactions, and I think there have been two possible reactions to that concept if you sign up to it, the end of nature.

One is to accept the hypothesis, to conclude that naturalness was just a myth promoted by people like me - irrational, semi-religious, emotional, sloppy thinking people, who use terms like belief and intuition - and that actually nature is some sort of accidental equilibrium of a culmination of evolution and physics, and that's actually what it is. So now, having accepted the myth of naturalness, let's get on with improving on nature. And the ultimate improvement, of course, is gene splicing, where you can produce designer animals and plants etc, according to our will. Oh you'd do it carefully of course, you have checks and balances, and you really put stuff through a screen, but nevertheless you've now got a licence to do that

because there isn't such a thing as naturalness. And that sort of dominion over nature approach is arguably business as usual, because arguably since the Enlightenment that has been the attitude that has directed the approach that science has taken.

Or you can take a very different approach and faced with the end of nature it actually could provoke the opposite response. It could reaffirm an interest in nature and naturalness and a search for what that really means, and I'd have to say that that's what it's done in me, and I think it probably did provoke that in many others as well. Why is that? It's partly very personal, it's to do with my experience in wilderness places, not primal wilderness because, you know, the Hebrides for instance are hugely altered by the activities of humanity. My involvement with organic farming – all farming is intervention with nature and yet for me farming's a dance with nature, it's working with nature, not dominating nature. I've felt personally fed by a lot of my involvement with nature. I have, and I think many other people do as well now, have a deep fear and suspicion of reductionism and this idea of improving on nature with technical fixes, and the splicing of genes without really knowing what the long-term consequences are. And I think that there is a new thinking which is starting to come of age, which is that we're not separate from nature, we're actually part of nature, and that's why we can still concede that the concept of naturalness in a post-McKibben world as it were. More conscious than other life forms, yes, and more knowledgeably hopefully, but nevertheless a part of nature. And with that relationship should go respect for nature, humility, and above all, responsibility for owning that relationship, otherwise you get into the sort of Gaian approach. And that means you're not arrogant, you don't reject all non evidence-based decisions as being unacceptable or, worse, subject them to ridicule.

And that I think is still in some circles the orthodoxy and I'd like to give you an example, somewhat at my own expense. There's an arable farmer who's actually a good friend of mine, called Guy Smith, who writes a column in a magazine which is Arable Farming, and he's very pro biotech and pro intensive farming and he writes a column called Soapbox. And in one of the Soapboxes, he sent me an article which was looking at the way, at the motivations of organic farmers and the practices of organic farmers, and he found that the organic movement, amongst other things, believes that plant growth is influenced by the moon and the planets, had a strong interest in feng shui, used homeopathic preparations including a strange herbal preparation buried in cow horns, and lastly, practised nude planting at midnight in the light of the full moon. Apparently this was a medieval practice. And I thought about this a lot because, you know, my name was actually in the article and the Soil Association certainly was. And the scary thing was that with the definite exception of planting at full moon in the nude, and certainly no interest in that, not of the agricultural type anyway, I am actually guilty as charged. I am interested in the effects of the planets and the moon on plants; I am interested in homeopathy; I'm interested in alignments of places; so this gives me a problem, because I don't want to be seen as being a sort of anti-rational, anti-science

person. I'm absolutely not anti-science, and I don't think those people who shared this perspective are either.

And I think that this proves the question of how when new technologies come along, such as genetic engineering, society as a whole makes judgements about their acceptability or otherwise. And whereas in the past we've made evidence-based decisions and we've waited for evidence of harm before we've acted, I don't think that is any longer good enough. I think the BSE experience should teach us that. And just one short analogy: I was a member of a standards committee, the Soil Association's Organic Livestock Standards Committee in the early 1980s, and we confronted a question of the feeding of animal protein to ruminants and we concluded after a long debate that this was against nature, it didn't feel right, there was a gut feeling that it wasn't appropriate to feed animal protein to ruminants, and it was just a common sense thing. We had absolutely no science, no evidence to base that decision on. Now we made the decision and arguably if society had embraced those kind of criteria, as well as evidence based criteria, then we might have suffered a less drastic impact from BSE.

And so my point really is that the role of intuition, of emotional influences, even of, a question is about a search for spiritual influences, the not yet understood, the open-minded approach is actually appropriate. And I think for people who share this sort of persuasion, there is a fear of the reductionism approach and the sort of accidental equilibrium approach. And our greatest fear perhaps is that the presumption of those scientists of certainty will lead to wrong decisions being made, because technology can do anything today, there's almost no limits to what we can do to innovate, and the question is how we make decisions. And I think now we need the combination of new criteria which include evidence based scientific thinking and non evidence based, including the precautionary principle, the possibility of the concept of nature, and by mimicry, something which is being more and more discussed now, that we're looking at natural systems and they give us an indication about the safety of new technologies.

And I think that if we take that approach, rather than continue to worship at the altar of rational reductionism, we can include the concept of naturalness, of intuition and of other levels of energy and even consciousness in our decision making. So it's the not yet understood which is, I think, important to remember. It's quite possible that the tools of science today are not developed enough to measure things which we will be able to measure tomorrow.

And I'll just end on this example: I was at a conference at Ditchley, which is a big house just up by Oxford, which holds regular conferences on issues like scientific innovation, and it was about GM, and we spent the day discussing the GM problem and debate, and there was a collection of scientists there and it was all very technical and very scientific. And then we had dinner, and after dinner I walked round the house with this eminent scientist and we were looking at this magnificent collection of art, and he said, to me, "You know, I'm a great, I've got a passion for art and music" and he said, "It's entirely irrational I know, but I keep this to my private life, I don't let it interfere in and pollute my rationality in my day job". And it struck

me that this is way in which society has gone, that people confine their scientific rational thinking to their 9 to 5 job and although they have emotions and they have intuition and maybe they go to church or have an inner search, they fragment it and keep it away from the rational decision making process. And it seems to me that that's really the thing we've got to move away from, and that somehow the context of naturalness is involved with that.

So my plea is for a marriage of minds around a new search for the connection between the coarse and the fine, the understood and the not yet understood, and the connection between science, naturalness and even spirituality. Thank you very much.