Radical Science and Alternative Technology: *From the 70s to the Present.*

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GM debate

- GM debate sparked off when Monsanto promoted GM crops in Europe 1996-7
- The public and NGOs responded by informing themselves, raising awareness and taking action: debates, open and covert removals of crop trials, sparking many judicial processes, setting up movements and campaigns
- De facto moratorium for several years across EU – very few GM crops grown
- problems of GM now clear – serious backlash – industry and government

GM Nation debate 2001-3

The Agricultural and Environment Biotechnology

Commission (AEBC) – we need a different kind of debate

- Self selected participants at round tables around the country funded by government, run by local councils, groups, individuals and NGOs
  - People are generally uneasy about GM
  - The more people engage in GM issues, the greater their doubts and more intense their concerns
  - Mistrust of government and multi-national companies
  - Broad desire to know more and for further research to be done
  - Some mistrust of process, as re Iraq war
  - total attendance up to 20,000

UK dialogue on Synthetic biology 2009-10

http://www.bbsrc.ac.uk/web/FILES/Reviews/1006-synthetic-biology-dialogue.pdf

- One hundred and sixty members of the public were engaged in the process, with three workshops each in London, North Wales, Newcastle and Edinburgh
- Public carefully selected not to be 'issue publics', in contrast to GM Nation, yet they showed themselves well able to engage critically and ask searching questions
- Scientists and social scientists involved
- EcoNexus was on oversight committee

Time, information – and bias

- Sufficient time to discuss and clear unbiased information for participants were both key issues
- A lot of work was required on the information cards provided to participants
- Work was also required on framing the dialogue:
  - the process at one point was meant to begin with a focus on the benefits of technologies experienced by participants
- Some scientists gave biased information or made inaccurate claims to participants

Five central questions for researchers emerged from the dialogue

- What is the purpose?
- Why do you want to do it?
- What are you going to gain from it?
- What else is it going to do?
- How do you know you are right?

Further questions the public had for researchers

- motivation: why are you doing this research?
- how has your research shaped your relationship to society or the world?
- who is really driving the process?
- who are the winners and losers?
- do scientists need help to understand the potential impacts of their research?
- What are health and environmental impacts of applications?
- lack of transparency concerning emerging problems with the technology.

What the public want for future work

- Finding **new and meaningful** ways of engaging people in debate is important
- We need **social and institutional innovation** to direct and control these technologies in the future
- Future dialogue is not just about talking **to** the public; it is also about **embedding public views on synthetic biology in the cultures and practices of research**…
- But participants were concerned their views would be ignored and the 'government would go ahead anyway'

geoengineering

- Geoengineering: we face a climate catastrophe, so extreme and highly risky measures are justified
  - sulphates in stratosphere, mirrors in space, light reflecting crop plants, salt water seeding of clouds, fertilising seas with iron filings, grinding up billions of tons of carbonate rock to counter acidification, burning and burying billions of tons of biomass
- The modelling on which many of these 'solutions' are based is clearly inadequate
- It reveals the engineering mindset very clearly
- Systems are extremely complex, we do not understand them well enough to intervene
- Absence of sustained public debate on the issues

Dialogue organised by Natural Environment Research Council, Sciencewise and the Royal Society

Conclusions

- Consider participants' concerns around perceived 'naturalness' re future geoengineering research and deployment.
- Geoengineering should be assessed in terms of
    - controllability; reversibility; effectiveness in terms of costs and benefits; timeliness;
    - and potential for fair regulation
- Assumes it goes ahead - example of a manipulated dialogue
- No discussion of the engineering mindset of the 'anthropocene'

Some conclusions

- The engineering mindset emerges clearly
- Intervention rather than observation and understanding
- Attitudes to public: at a recent meeting on synthetic biology, two people claimed public happy to let experts get on with it
- Public distrusts experts, feels corporate solutions and products will be forced on them, that they have no choice…
- Scientists abandon scientific discipline of uncertainty
- Government, PR and industry want certainty
- Principle of precaution derided, distorted and subverted

International oversight

- Public called for international oversight - without knowing about Convention on Biological Diversity
- CBD has played a key role
  - Work of key governments and NGOs to get issues properly debated
- International decisions – seeking at least to delay deployment
- Its moratoria under attack, including moratorium concept itself

Technology assessment

- Are we serious about assessing new technologies and truly involving the public in such assessments?
- What would being serious really involve?
- Are we capable of having a real debate about a new technology before it is deployed **and deciding not to deploy it?**
- Are we prepared to apply the principle of precaution rigorously?