

Nanotechnology Public Engagement as an 'Upstream' Issue

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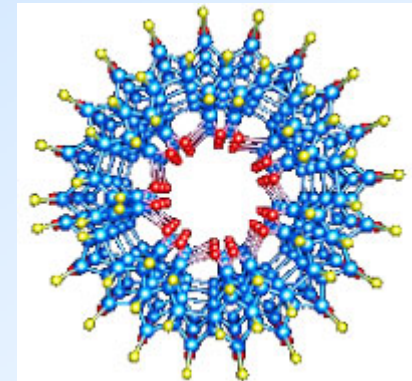
Why Now? Why Nano?

- UK Investment in nano & the deliberative turn
- The BSE (mad cow disease) legacy
- The GM controversy
- RS & RAE Inquiry



The Royal Society and Royal Academy of Engineering Report : *Nanoscience and Nanotechnologies: Opportunities and Uncertainties*

- Participating in 'upstreaming'
- Promoting 'upstream' dialogue
- (Reflections from stakeholders)



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Defining ‘Upstream’

Dialogue and deliberation amongst affected parties about a *potentially controversial technological issue* at an early stage of the Research & Development process and in advance of significant applications or social controversy.

Royal Society and Royal Academy of Engineering (2004) *Nanoscience and Nanotechnologies: Opportunities and Uncertainties*. London: RS/RAE.



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Upstream: (i) Early Enough?

- Nano as future focused
 - Most applications some way off
 - *Drexler's view of molecular manufacturing, spontaneous creation of materials;*
 - *Universal panacea; cure cancer, and make computers the size of pinheads;*
- ... 'two extrapolations way beyond the actual technical abilities of the field as it was then and as it is now actually'*
(scientist, interview, 2005)
- Approximately 100 nano-products on the market
- Nano as synthetic nano-particles with unknown effects



Upstream: (ii) Public knowledge

UK baseline survey Jan. 2004:

- 29% (262) were aware of the term,
- 19% (172) could offer any form of definition

Royal Society and Royal Academy of Engineering (2004)



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Downstream

- Post-product discussions
- Established/entrenched public opinion
- Technology trajectory basically set
- ie. asking people if people will accept something



Thoughts about moving dialogue up-stream

- moving 'downstream' questions upstream?

or asking

- Why this technology?
- Why not another?
- Who needs it?
- Who owns it?
- Who will benefit from it?
- Can they be trusted?
- Who will take responsibility if things go wrong?

(Wilson, J. 2004: 11 *Science and Public Affairs*).



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Points about Upstream Engagement

- Low awareness – sensitive instrument needed
- lack of familiarity may mean knowledge sharing needed
- Up-skilling on dealing with multiple conflicting sources
- small scale dialogue
- longer time period needed



Science-society engagement

There's no point in experts anymore standing up telling people there are no dangers, they don't believe them, that's what happened over GM, well it didn't happen over GM but by the time GM came along they didn't believe...

(Scientist, interview, 2004)



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Eliciting views on nano

It was not to do with nanotechnology...
because most of them had never heard
of it, it was that fundamental sense
that science and technology and its
regulation was out of control

(Scientist, interview, 2005)



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Reflecting on The Royal Society and Royal Academy of Engineering

- Eliciting opinion creates opinion
- Engaging stakeholders facilitates dialogue
- Recommended ‘upstream’ debate
- Recommendations ‘upstream’



RS & RAE Working Group Members

1. Prof Ann Dowling Prof. Mechanical Engineering
2. Prof. Roland Clift Director Centre of Env. Strategy Uni. of Surrey
3. Dr Nicole Grobert RS Dorothy Hodgkin Research Fellow
4. Dame Deirdre Hutton Chair of the National Consumer Council
5. Dr Ray Oliver Senior S&T Assc. Strategy Tech gp. ICI plc
6. Baroness Onora O'Neil Uni of Cambridge
7. Prof John Pethica SFI research Prof Dept. Physics Trinity College, Dublin
8. & visiting Prof Dept. materials Uni. of Oxford
9. Prof Nick Pidgeon Director of CER, UEA
10. Jonathan Porritt Chair of the UK Sustainable Development Commission and Programme Director for Forum for the Future
11. Prof. John Ryan Directory Interdisciplinary research collaboration on Bio- Uni. of Oxford
12. Prof Anthony Seaton Emeritus Pro. of Env. and Occ. Medicine Uni of Aberdeen & Hon. Senior consultant inst. of Occ. Med Uni of Edinburgh
13. Prof. Saul Tendler Head of School of Pharmacy and Prof. of Biophysical Chemistry, Uni of Nottingham
14. Prof Mark Welland Director Cambridge Nanoscience
15. Prof. Roger Whatmore Head of Advanced Materials , Cranfield Uni



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Selected RS & RAE Working Group Members

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Director Cambridge
Nanoscience
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Ethicist, Uni of
Cambridge
- Prof. Nick Pidgeon
Director of CER, UEA
- Dame Deirdre Hutton
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Consumer Council
- Jonathan Porritt
Chair of the UK Sustainable
Development Commission
and Programme Director for
Forum for the Future



Nanoscience and Nanotechnologies: Recommendations

1. Industrial application of nanotechnologies
2. Possible adverse health, safety and environmental impacts
3. Social and ethical issues
4. Ensuring responsible development of nanotechnologies
5. Regulatory issues
6. Stakeholder and public dialogue



The Royal Society and Royal Academy of Engineering Recommendation: Stakeholder and public dialogue

- **R19** We recommend that the government initiates adequately funded public dialogue around the development of nanotechnologies. We recognise that a number of bodies could be appropriate in taking this dialogue forward.



Cited example of nano dialogue

- Sciencewise
- ‘Small Talk’
- Nanotechnology, Risk and Sustainability project

Another is

- Nano Jury UK



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The Royal Society and Royal Academy of Engineering Recommendation: Ensuring Responsible Development of Nanotechnologies

- **R21** we recommend that the Chief Scientific Advisor should establish a group that brings together representatives of a wide range of stakeholders to look at new and emerging technologies and identify at the earliest possible stage areas where potential health, safety, environmental, social, ethical and regulatory issues may arise and advise on how these might be addressed.



The Royal Society and Royal Academy of Engineering Recommendation: Social and Ethical issues

R 17 We recommend that the consideration of ethical and social implications of advanced technologies (such as nanotechnologies) should form part of the formal training of all research students and staff working in these areas and, specifically, that this type of formal training should be listed in the Joint Statement of the Research Councils'/ AHPB's Skill Training Requirements for Research Students.



RS & RAE Moving dialogue up-steam...

- From post-product dialogue to technology development processes
- Early investigation of social and ethical impacts and regulation
- Early wide stakeholder involvement in investigation
- Early public dialogue
- Opening up science to discussion of social and ethical issues
- Opening up stakeholder dialogue pre-product issues

Why this technology?, Why not another?, Who needs it?, Who owns it?

Who will benefit from it? , Can they be trusted?

Who will take responsibility if things go wrong



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Public engagement into nanotechnology

...there is an opportunity now which there won't be in three or four years time and probably wasn't three or four years ago to ask quite deep questions about new technology development trajectories.

..in the UK it will be because the memories of the GM debate will fade, the furore will fade and so [will] the willingness of decision makers to take on board new lessons, new ways of working, new ways of thinking about things, lessons about technologies, society and interaction, ...

It's a political opening not a technological one although it does coincide with a technological one.

(Civil society member; interview 29 Nov. 2004)



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Can we improve on this definition? 'Upstream'

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