University of Salford
A Greater Manchester University

The limits of engagement in emerging technologies

Rob Flynn, Paul Bellaby and Miriam Ricci

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Contact: r.flynn@salford.ac.uk

THEMES OF THE PAPER

- Context: debate about public perceptions of risk and use of analytic-deliberative methods
- Critique of the ‘deficit model’ in the public understanding of science
- Proliferation of participatory paradigm: ‘Dialogue’ and ‘Public Engagement’
- ‘Upstream’ Public Engagement (UPE): its problems and limitations
- Case-study of hydrogen energy technologies – an ‘emergent’ technology
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THEORETICAL LITERATURES

- Sociology of Scientific Knowledge (SSK) and Science and Technology Studies (STS) critique of orthodox ‘public understanding of science’ approach
- Irwin, and Irwin & Wynne challenge expert dominance and use of ‘deficit model’; they stress importance of lay knowledge
- Risk Analysis and Analytic-Deliberative methods (Renn): importance of incorporating citizen perspectives to enhance legitimacy and trust
- Deliberative-participatory methods – citizens’ juries, citizens’ panels, consensus conferences – active engagement?

‘UPSTREAM’ Public Engagement?

- Public consultations over controversial technologies and innovations: e.g. Genetically Modified food; Nanotechnologies

- Wilsdon & Willis (2004):

  “ASK DEEPER QUESTIONS ABOUT VALUES, VISIONS AND VESTED INTERESTS”

  - facilitate debate at the earliest stages of agenda-setting, as well as during Research and Development

  “Why this technology? Why not another? Who needs it? Who is controlling it? Who will benefit from it?” etc, etc.

Criticisms of Deliberative methods

- Procedurally fair and competent?
- Representativeness of participants: differentiated and heterogeneous ‘publics’
- ‘tokenism’ – legitimating policy rather than forming policy
- Technocratic: limited or non-empowerment of citizens

Criticisms of Upstream engagement exercises in the UK

- Cf. GM and Nanotechnologies (Horlick-Jones et al; Pidgeon et al)
- Involvement of the public is too late
- Procedures are insufficiently ‘deliberative’
- Continuing uncertainty about the impact of consultation/deliberation on policy
- Asymmetrical relationship between experts and citizens remains
- Wynne (2005) highlighted the “extravagant optimism” surrounding the “mirage” of UPE
- Stirling (2005) argued participatory discourse may “close down” rather than “open up” debate
- Petts (2008) shows how deliberative UPE may *undermine* public trust rather than build it

PROBLEMS & LIMITS of UPE?

- How realistic in scientifically uncertain and embryonic (or emergent) technologies?
- How far ‘upstream’ can UPE effectively go?
  - at the experimental or laboratory stage?
  - at the trials, pilots or demonstration project stage?
  - throughout the Research & Development phase?

- Wilsdon and Willis (2005) and Cornwall (2008) argue that UPE should be an ongoing, continuous process at all stages.

- But how feasible? How meaningful for consumers/citizens?

WHY HYDROGEN ENERGY TECHNOLOGIES?

- Quest for alternatives to oil-based fuels, due to outstanding challenges posed by climate change and energy (in)security
- Attractive fuel and ‘energy carrier’ - clean at the point of use
- Can be produced from all primary energy sources
- Visionary claims: Rifkin – H2 to democratise the energy order
- BUT many uncertainties and knowledge gaps:
  - Huge infrastructure yet to be developed
  - Applications still at lab stage; competition among research teams
  - Few available prototypes; competition among industrial stakeholders
  - High cost; and no immediate market demand
  - Knowledge of hydrogen as a fuel still under development
  - Regulatory framework still under development
  - Outstanding scientific and technological challenges to overcome (such as storage)

THE RESEARCH PROJECTS

UKSHEC - www.uk-shec.org.uk

- Sustainable Hydrogen Energy Consortium, funded by EPSRC Supergen Programme (1st phase completed, 2nd ongoing)
- Combines scientific, engineering, social & economic research on how a sustainable hydrogen economy might be realised
- Social research (conducted in collaboration with PSI & KCL) addressing public understandings and perceptions of hydrogen in 3 areas of the UK with distinctive 'embryonic' hydrogen economies:
  - London: part of the EU-funded CUTE bus demo project
  - Teesside: industrial facilities, infrastructure and skills
  - South Wales: hydrogen to be part of 'sustainable economy'

THE RESEARCH PROJECTS

PEwfH2 - www.iscpr.salford.ac.uk

- Public Engagement with Future Hydrogen Infrastructures in Transport, funded by the Department for Transport, Salford-Manchester University collaboration (completed)
- Innovative exercise seeking to engage public in debate and deliberation about possible futures involving hydrogen as a major fuel in UK transport
- Also elicited opinions and perceptions relating to the infrastructure of production, storage & distribution supporting the use of hydrogen
- Covered 3 TTW areas of contrasting transport characteristics but with no hydrogen developments:
  - Norwich: semi-rural area very dependent on private car
  - Southampton: multi-transport hub
  - Sheffield: conurbation with a history of public transport policy

Lay perceptions of hydrogen energy: combined key findings from both projects focus groups

- General awareness of climate change and energy crisis
- Very low level awareness of hydrogen energy and its technologies
- Ambivalent or agnostic attitudes towards hydrogen economy: neither accept nor reject
- Frequent questioning of broader issues and contexts of use: demands for information about “the bigger picture”, and implicitly requiring a ‘whole systems’ assessment
- Concerned to know how it would affect their personal circumstances, what difference it would make to their everyday lives, and what its local impact will be (on the economy, employment, environment, safety).

KEY UKSHEC FINDINGS

- Safety and risks were not a predominant concern; it was expected that any hazards would be ‘engineered out’ before public use
- Overwhelming factors influencing public acceptability were cost and convenience; the potential environmental benefits were secondary
- Reluctance to express unequivocal statements, especially until they had personal experience (with demonstration projects and knowledge of the wider system or infrastructure)
- Widespread cynicism about public consultation processes; many people were distrustful of business, industry and government

KEY DfT FINDINGS (1)

- Little knowledge or awareness of hydrogen, but high levels of interest in obtaining detailed information
- Numerous questions asked about how hydrogen was produced, and whether it was a genuine supplement or alternative for fossil fuels
- Concerns about the relative efficiency (and cost) of hydrogen as an energy carrier compared with conventional fuels
- Concern over potential hazards, and the regulation of safety, especially in localised production and re-fuelling in transport
- Difficulties expressed over imagining a future hydrogen economy and its infrastructure for production, storage, distribution and use.

KEY DfT FINDINGS (2)

- Many participants unwilling to express opinions about hydrogen until more information was provided from trusted (independent) sources
- Attitudes were contingent upon knowing how hydrogen energy technologies would be used in practice, and how it would affect their lifestyles
- Many demands for evidence of the benefits expected from the new technologies
- Consistent view that it was unrealistic to discuss hydrogen energy in isolation
- Mixed views about the value and importance of public engagement
- Widespread cynicism about public consultation and its effect on policy

CONCLUSIONS (1)

- Involving citizens in upstream public engagement is a worthwhile but highly problematic goal
- UPE is extremely difficult where the science is uncertain (or contested) and the technology is still embryonic or emergent.
- Can meaningful deliberation take place during the fundamental or basic research, or during the R & D phase, or only at the demonstration and applications stage?
- In scientific and technological innovation, there are various (competing) stakeholders in business and industry, different university research teams, and various governmental regulators. How can different ‘publics’ engage with them all?

CONCLUSIONS (2)

- The case-study of hydrogen energy suggests that it is not simply the contested nature of the science, or the competing ‘visions’ among the stakeholders, or problems in communicating information about risks, which results in citizen *ambivalence*
- Rather, it is the difficulty of providing meaningful and realistic *scenarios* for citizens which might enable them to deliberate about, and evaluate, alternatives
- Geels et al (2007) noted that to gain public acceptance of science and technology innovations, these must be ‘’societally embedded’’ in consumers’ cultural practices and values. At present, the narrow ‘technology-push’ approach is dominant in hydrogen energy
- But this ignores (or neglects) citizen expectations to be shown how these future technologies connect with their practical use

CONCLUSIONS (3)

- Upstream public engagement will remain a ”Contested Concept” in theory and in practice