

**Polluted waters:
The UK Nanojury
as upstream
public
engagement**

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Summary

The UK Nanojury was a re-working of the well known citizen's jury approach to participation². Its most significant difference from the conventional method was that it contained two topics. One was exclusively framed by the participants – young people and exclusion. The other solely framed by the jury's funders and organisers - nanotechnologies. The Nanojury has been characterised among some UK analysts as coming under the umbrella of initiatives aiming to conduct public engagement “upstream”, before nanotechnology applications are developed and widely commercial available³.

On closer inspection, however, the Nanojury clearly demonstrates that upstream public engagement on science-related topics is often decontextualised from people's everyday life experiences and concerns. To avoid public engagement being a tool to engineer consent or that artificially divides topics into either “science” or “society”, we need to re-conceptualise upstream engagement. We suggest that public engagement on technology should start from people's own experiences and contexts, so that the development of new technologies can be better rooted in people's needs. We conclude that there is an urgent need to refine and extend the community co-inquiry approach to participation used here.

1. Introduction

'Because we want Britain to be the most attractive location in the world for science and innovation, we are setting a new and ambitious target of increasing UK R&D investment as a proportion of national income from its current level of 1.9 per cent to 2.5 per cent by 2014 over the next decade.'

Science and innovation framework 2004-2014, UK Treasury.

I am compelled to fear that science will be used to promote the power of dominant groups rather than to make [people] happy.

Bertrand Russell, *Icarus, or the Future of Science*, 1925

De-regulated markets and economic globalisation have resulted in much of the UK's traditional manufacturing industries migrating to countries where labour and other costs are cheaper. As a consequence, many workers across the UK have experienced lay-offs and redundancies with very few opportunities to gain employment outside the low wage service economy.

The UK government's strategy to counter this 'threat' has included an increasing investment in the 'knowledge-based economy' in general, and science and technology in particular. Developments in science, particularly molecular-scale and nano technologies, are seen as crucial for Britain's economic growth.

Since the recent science-related scandals such as genetically modified (GM) crops, BSE, MMR, and the justification of the latest war in Iraq based on faulty scientific evidence of weapons of mass destruction, public confidence in governance and scientific innovation is low. Those policy-makers wishing to invest in science are therefore being forced to reconcile their ambitions with the popular calls for greater influence on political decisions that are made on citizens' behalf.

This crisis of confidence in scientific progress among the UK public and demand for greater public participation in governance has led to what Alan Irwin has recently documented as a strategic shift in science-society relations. He quotes directly from a European Commission document, which describes how the supposedly "innocent" public, are increasingly being actively sought to 'express their views about the possible directions of science and its impacts on society'⁴. The increased commitment to engage the public in science-related policy and decision-making has been widely welcomed as a step in the right direction. Policy makers consider public engagement to bring transparency and openness into decision-making on technological developments, addressing public mistrust in science. Initiatives in the National Health Service since 1998 have also followed this trend⁵.

In the 1970s, sociologist Dorothy Nelkin reported that much of what passed for participation in governance could best be understood as attempts by the powerful to co-opt the public⁶. Thirty years later, the worldwide controversy on GM crops indicated that consultation processes occurring after a technology has been developed and commercially released can be used by those in power to create an illusion of public consent for the new technology. This has led some people to question the wisdom of public engagement initiatives such as GM Nation. Following the GM debate some have suggested that all engagement should occur upstream – that is before the technology has been developed - as this would allow the technology to be *shaped* through public involvement⁷. Furthermore, advocates of public engagement state that it ‘enables a society to discuss and clarify the public value of science’.⁸

The Nanojury was initially conceived as one of a string of public engagement initiatives that heralded the post-GM era of the upstream engagement. Along with many other public engagement processes the Nanojury provided a public space to debate issues that surround nanotechnology before the technology was fully developed or, in most cases, widely commercially available⁹.

2. The Nanojury Process

Initiators & Organisers

The idea of organising a Nanojury process came from Doug Parr of Greenpeace UK, together with materials scientist Mark Welland, of Cambridge University’s Nanoscience Centre. Greenpeace has a history of protest around GM and other scientific innovations and is traditionally sceptical of new government and business-led development. Along with other pressure groups they have developed sophisticated critiques of scientific developments led by government and big business, to evaluate their benefits and costs, rather than simply taking an oppositional stance. These are based on questions such as: Who is shaping the agenda on nanotechnology? Who will it benefit? Will it improve the lives of the many? Is it pro-poor? What will be the effect on the environment? It was these types of questions that drove and stimulated interest in nanotechnology. But importantly, Doug Parr and Mark Welland were both keen to adopt an approach that stimulated debate and encourage public participation into the issues that surround nanotechnology. The Guardian newspaper became involved as the project’s media partner. This led to the collaboration with PEALS, Newcastle University who have been convening public engagement for since the late 1990s.

Doug Parr was particularly keen to develop a process that could highlight the power issues that surround scientific development, and hence, nanotechnology would be a good case study for such an exploration. In particular, the process would enable an analysis that could highlight where the power in the development of science is concentrated, for instance the Department of Trade and Industry (DTI) and research councils. The Nanojury was an attempt to shift this power a little way from the funding bodies and the DTI to the wider public through a deliberative jury process which allowed open discussion of the policies and developments in nanotechnologies.

The Design of the Nanojury

Whatever the rhetoric that surrounds them, the vast majority of previous citizens' juries in the UK have been commissioned by decision-makers primarily to provide social intelligence for policy-makers, thus ceding no power to the jurors or their process. As a result 'consultation fatigue' is ripe across communities in the UK and many community leaders and workers are now reluctant to 'participate', after experience of decision makers not acting on people's views.

In the light of this, and learning from previous processes, the PEALS team considered it vital to arrange the content of the jury in a way that respected the reality of people's lives, based on an understanding of the political context in which the jury took place, and root it in people's prime concerns.

The two-way street engagement process for the Nanojury took place in Calderdale, West Yorkshire. It involved a first phase with a bottom-up process, where community members on the jury identified the issues that concerned them. In the second half nanotechnology was specified in a top-down manner by the funders and organisers of the process. The Nanojury was a twelve week process with six weeks dedicated to the bottom up approach, where jurors heard evidence from youth workers, detached community workers, drug rehabilitation workers and from senior police officers in relation to their chosen topic: young people and exclusion. During the second six-weeks participants went on to discuss the dictated topic of nanotechnology. When the deliberations were complete the jurors collectively produced recommendations, including a short drama, on the participant-led topic and on nanotechnology¹⁰. A separate film was also released by PEALS at a launch of the jury's recommendations in London in September 2005¹¹.

Box 1
The Nanojury process

The PEALS team used the electoral roll and attended a range of community organisations in West Yorkshire to recruit a diverse group of people (twenty-five in total) to the jury process.

A range of 'expert' witnesses, for, against, or ambivalent on, issues relating to nanotechnologies were invited to the jury to share their perspectives. Each witness was given 10-15 minutes to talk about their perspective on nanotechnology, following which jurors could ask for clarification on any of the points made. When the witness left the room small groups of jurors gathered with a facilitator to discuss the issues raised and produce questions for the witness. The witness was then called back to answer questions from the jury group in an open space for dialogue and debate, facilitated to ensure that everyone had their say. After hearing all the witnesses the jurors developed a series of recommendations on the development of nanotechnologies. Some of them also scripted, rehearsed and acted in a drama.

3. Reflections on the Nanojury

Controlling the process - the organiser-jury relationship

The two-way street style of engagement, with two separate issues and processes running consecutively, provided critical insights into the nature and quality of the jury process, and in particular the role of organisers in defining and influencing the process, participation and outcomes. In the jury on youth issues, the organisers played the role of a critical friend, and facilitated finding appropriate witnesses in conjunction with the jurors. During the nanotechnology component of the jury process, the organisers had a more powerful status, choosing the witnesses who were to take part and thereby framing the process.

The nanotechnology process gave the jurors little more than a passive role. The organisers decided what expert witness the jurors required and thereby controlled

the knowledge to be debated by the public, unlike the first component of the jury. These power relations between organisers and jury members have been studied in detail elsewhere and pose a challenge in future design of public engagement processes¹². Organisers do provide a link between the jury and policy-makers. But at the same time the dynamic between organisers and the jury needs to be more interactive, less rigid and engineered. As Davies et al suggest, “in seeking to instate citizen deliberation in a context of handling strategic issues of policy direction, clarifying the grounds on which the citizens are being asked to speak – creating jointly with them, an expertise space...- is fundamental”¹³

Our reflection of the Nanojury is that the range of organisers created a complex dynamic with each organisation having a particular perspective and claim on how the Nanojury process should be conducted. How successfully these multiple agendas achieved the wider objective of democratising science is complex and requires further analysis by jurors, facilitators and others.

The constraints of the Nanojury - the juror-witness relationship

Although the issue of nanotechnology has so far been less heated than others such as GM or reproductive technologies, the witnesses fell quite neatly into “pro” and “anti” camps. There were great differences in opinion amongst the witnesses and opposing views were held with great certainty. This generated confusion among the jurors and caused a certain level of mistrust of the views presented by both “sides”. Interestingly, this was not so for the jury on young people, drugs and exclusion, where a greater sense of co-inquiry was established¹⁴.

It could be argued that the jury model encourages this kind of adversarial, oppositional debating. We understand from some of the witnesses on nanotechnology that they felt themselves, to some extent, to be “on trial”. Where participation is controlled by organisers and dialogue is narrowly framed there is little room for deeper political analysis. Hence the Nanojury, rather than providing a space that enabled contestation, led to discussions on the merits and risks of nanotechnology. These types of debates, like many other forms of public engagement, frame discussions where the origins or political interests a technology are not contested or problematised. By avoiding these issues, the Nanojury could be accused of merely being a tool, in Chomsky’s terms, with which to “manufacture consent”¹⁵.

Another problem with the jury model is that it encourages witnesses to take on the role of an expert, presents evidence and merely takes questions from the jurors, rather than entering into a broader debate about our common future with them as valued citizens. In turn, this can reinforce the jurors’ status as lay people, which can be disempowering and even oppressive. Visvanathan suggests that, for most of those who practice it, ‘*the idea of participation fundamentally accepts the expert’s definition of knowledge*’¹⁶.

Language was another issue impeding equality, participation and dialogue. The witnesses' perspectives were, by and large, rooted in a science framework and the explanations they gave predominantly used the specialist language of science and nanotechnology. Consequently, the jurors were boxed into discussing these problems using scientific language that was alien to many of them. The facilitation team encouraged the jurors to draw on their perspectives and life experiences when appropriate. However, we suspect that a number of factors relating to the original framing and model of facilitation used in the process, such as allowing the overuse of scientific jargon, deterred these connections from being made.

Ideally, a dialogue process should allow people to exchange views and perspectives on an issue and reach mutual understanding and respect. The second phase of the Nanojury process did not allow jurors or witnesses to develop a thorough understanding of each other's perspectives. The more that a participation process focuses on getting this dynamic right and creating space for mutual understanding, the more meaningful and valuable its findings will be. We need spaces that allow people to analyse, reflect and exchange perspectives, while respecting each other as equals. Only then can we foster a sense of trust and deliver science that is appropriate.

4. Critical reflections on upstream engagement

Upstream engagement like the Nanojury can add some public value to science, open up the discussion around emerging technology to the public and improve decision-making in the sciences. Through the Nanojury, people were able to get more clarity on where and how decisions regarding nanotechnology are made, and they could articulate perspectives on the developments. In this respect the Nanojury opened up the policy arena on nanotechnology to the public, and provided a space for the public to talk about nanotechnology. What is unclear, however, is the influence that the Nanojury has had on policy development. As it stands, it is up to the power holders in business and government to voluntarily 'take on' the findings from the jury, there is no direct accountability to the recommendations and perspectives of the public. The DTI's promise, made in September 2005, of providing a response to the Nanojury's provisional recommendations "in the short term" has not been either fulfilled, or its absence explained¹⁷.

Two "one-way streets" – science and society

Scientists claim to respond to the problems and needs of society. However, if they cannot hear the voices from the ground, how can they direct their research to meet those problems? Jurors mentioned that they were concerned about crime, the state of

education and drug use, especially among excluded young people. It is these views and issues, not just debate about high-tech futuristic developments, which should be informing the science policy agenda.

The kind of two-way street engagement encouraged by the Nanojury rarely happens in the science and society area. While scientists and policy-makers took part in the process to get non-specialists engaged in their world, these experts missed an opportunity to be part of a mutual learning process on issues on which local people had developed their own expertise and wanted urgent policy changes.

A major learning from the two-way street engagement concerns the existence and strength of the science-society divide. Some of those involved in driving the Nanojury seemed to perceive a neat distinction between scientific and social issues, with more value given to the perspectives of jurors on social matters. It seems that a deficit of previous knowledge of nanotechnology, and scientific issues in general, translated in the minds of the organisers to a lower significance of the jurors' opinions and perspectives on these matters. This knowledge deficit did not, however, seem to apply to social issues.

The attempt at maintaining a duality between science and society appears to be a convenient way to maintain the status quo and continue hoarding power for the 'experts'. In the words of Visvanathan *'it is [this] dualism that maintains power'*. Upstream public engagement maintains and even strengthens that dualism by engaging the public on science issues on the terms set by scientists. It gives the veneer of involving the public in governance of technology, while stealthily identifying and introducing technological fixes to political problems. The key concerns about the direction in which science is taking society and how to reorient science towards fulfilling our social and human needs are not addressed by the current government agenda for upstream engagement.

New nanotechnologies have diverse claims to increase quality of life including addressing energy problems, improving what is questionably termed "national security", and reducing world hunger. But a debate on these technology-based remedies – often called "magic bullets" - in isolation does very little to highlight the political and societal nature of these problems and their solutions. Upstream public engagement becomes a de-politicised participatory space, replacing political discourse with technological reductionist fixes. There seems no commitment to develop science from the situated experiences of people, by and for the people. In this way, the science society divide is exploited to create distant safe governance.

5. Towards a community development model

The Nanojury succeeded in ensuring that people living in an area of recent economic decline had an opportunity to determine an issue on which they wanted action. As might be expected, rather than an emerging global technology, the urgent problems were more directly related to their locality. Some jurors certainly seemed to us to be demanding that future technological progress should be grounded in the values of community development, not a value-free science or technology. We believe that the jurors would not have been able to draw such a conclusion if it were not for the two-way street engagement process

Those of us seeking a world that values justice should not engage with people on purely scientific issues, unless simultaneously addressing their more central concerns. It is important that the Nanojury experience is presented to highlight the political dangers of framing issues around only technology, rather than human and environmental needs. Furthermore the jury, and participatory initiatives in general, are subtle and intimate processes that touch the lives of the people they seek to involve. With such intimacy it is crucial that engagement is done respectfully and its practitioners show themselves to be acting in solidarity with the lives of all those who are participants in the process¹⁸. Upstream public engagement fails to holistically engage with the public in this way.

Moving out of the polluted stream

It doesn't matter how far you move upstream if the stream is polluted, unable to meet the needs of the people and weak on issues of justice. We fear that upstream public engagement will continue to be a phenomenal force in policy development and will continue to drive the public mistrust of science, ensuring that the artificial and damaging science-society divide continues. Instead of more attempts at upstream engagement we need to move beyond simplistic upstream-downstream thinking, with its unfortunate connotations of gravity-driven inevitability.

The Nanojury highlights that we need to move out of a "stream", the direction of which seems to have been pre-determined by the scientific-industrial complex rather than society at large. Instead we need initiatives that move into community centres, youth clubs, places of worship, pubs, football pitches, parent and toddler groups - to where the people are and where they have created communities. This is where there should be justice and participation. The Nanojury did move into these community spaces and heard what people needed but most nanotechnology specialists, social scientists and policy makers only listened to the discussions directly about nanotechnology.

We need to learn this and other lessons from the Nanojury in order to build diverse strategies to overcome the science-society divide. One way we could do this is by adopting a community development model to address the direction of science,

rooted in the development of a community and its environment, not of an independent valueless science divorced from the community and everyday experiences. Public engagement requires a more nuanced approach in delivering science that is open to and shaped by the public. Community development tends to identify the needs of people and attempts to respond to these needs. If we want a science that is accepted and of real value to the public then we must learn from the community development model and identify the needs of the community and, if appropriate, apply scientific methods and processes to those needs, without dominating the discussion with scientific language.

Using a community development model will produce better science as it will be a science that will be genuinely co-produced by the community – capturing and utilising their knowledge in the production of science. Past attempts at science shops – particularly in the Netherlands and Denmark - have, in part, adopted this strategy, as have participatory crop breeding programmes in India and elsewhere^{19,20}.

The community development model we propose (see Table 1) should not exclude the scientist as one of many perspectives. However, it should ensure that proposed solutions are analysed in relation to current political reality and that solutions are shaped by a co-inquiry conducted with the people it is meant to benefit. It should be accountable and open to interrogation and the outcome should change if required. The technology’s objectives should be co-produced between specialists and the non-specialist “publics”,

Table 1: Some examples of differences between a standard model of upstream engagement and a more community development or co-inquiry approach.

Upstream engagement	Community co-inquiry
Participants intended to be a cross-section of a particular population or region, often at random.	<i>Participants chosen non-randomly to be fully inclusive of groups that experience oppression or marginalisation.</i>
“Lay” people (i.e. non-specialists) invited to discuss a potential scientific or technological development pre-determined by the organisers via the facilitators.	<i>Mixture of specialists and non-specialists begin by discussing what issues matter to them in their lives and what they’d like to change, without any imposition of ideas from the organisers or facilitators.</i>
Non-specialists asked to reach judgements, having been informed by the receipt of scientific “facts” from specialists.	<i>The perspectives of non-specialists and specialists are valued equally, as they all draw on rich experience and are open to be debated by the group.</i>
Specialists act merely as informers of non-specialists.	<i>Specialists and non-specialists work with citizens on an equal footing in reaching conclusions.</i>
Process happens in facilitated sessions totalling around twenty to fifty hours, usually spread over a few days or weeks.	<i>Open-ended process that continues for as long as participants remain interested.</i>
Form of output (usually a report) determined by funder and/or facilitator.	<i>Form of output decided jointly between, funder, facilitators and participants.</i>

A slower process based on the principles of community development, rather than an adaptation of an off-the-shelf consultation tool, would ensure that participation of the public would be more likely to produce science that is rooted in justice and related to community needs and insights. In such a slower process, no perspective would be given out and out authority; people offer 'partial perspectives' and not absolute authority. For instance, a recent community x-change experiment brought people together to discuss and find solutions to climate change²¹. It ensured that there was community and expert analysis on climate change, but that these analyses and areas of knowledge were exchanged. It emerged that climate change could only be challenged if solutions were integrated into solving community defined problems, such as feelings of powerlessness and a lack of collective meeting centres. A community co-inquiry model would use peoples experiences as a valuable tool in shaping solutions to development, not keep solutions to problems in isolated sciences or society boxes

6. Conclusion

The Nanojury has already gained lots of media attention as a pioneering process of upstream engagement. But the Nanojury was more than just opening up a new area of science to public deliberation. As a two-way street process, it has highlighted key questions about the science-society divide and how it leaves peoples problems unheard and thus further alienates people from the developments of science.

With the growing momentum of upstream engagement, and its likely outcome of debating science independently of people's daily life experience, it seems that the Nanojury should serve as a gentle reminder to challenge the corporate-government tendency to undermine attempts at technology democracy through upstream engagement²². For us, the Nanojury analysis is a call to move out of the polluted stream towards science that is incorporated into community development.

We offer these initial thoughts to others involved in the Nanojury process, so that they can add their analysis to our ongoing co-inquiry. We acknowledge that our perspective on the process is only partial and are keen that witnesses, funders and other stakeholders, particularly jury members, are able to reflect on our views and be provided with the resources to respond.

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Notes

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² Wakeford T et al. 2007 The jury is out: How far can participatory projects go towards reclaiming democracy?. In Bradbury H and Reason P (ed) *Handbook of Action Research* (2nd edition), Sage, New York.

³ Willis, B and Wilsdon, J (2004). See Through Science: Why Public Engagement Needs to Move Upstream. DEMOS;

⁴ Irwin, A 2006. The Politics of Talk: Coming to Terms with the 'New' Scientific Governance. *Social Studies of Science* 36/2 299-320

⁵ Davies C et al. 2006 *Citizens at the Centre: Deliberative Participation in Healthcare Decisions*. Polity Press, London.

⁶ Nelkin D. The political impact of technical expertise, *Social Studies of Science* 5 (1975): 37.

⁷ Willis and Wilsdon (ibid).

⁸ Stilgoe, J et al. 2005 *The Public Value of Science: Or how to ensure that science really matters*, DEMOS

⁹ See Nanologue (www.nanologue.net/index.php?seite=164), Smalltalk (www.smalltalk.org.uk), Nanodialogues (www.demos.co.uk/projects/thenanodialogues/themes/~nanotechnology)

¹⁰ The script of this drama is available at www.nanojury.org.uk

¹¹ Available online via www.nanojury.org.uk

¹² Davies et al. ibid.

¹³ Ibid. p.220-21.

¹⁴ We use co-inquiry as a short-hand for a co-operative inquiry process – see Reason, P and Heron J 2001 The Practice of Co-operative Inquiry: Research with rather than on people. Chapter 16 of P. Reason & H. Bradbury (Eds.), *Handbook of Action Research: Participative Inquiry and Practice* (pp. 179-188). London: Sage..

¹⁵ Herman, E.S., Chomsky, N. 1988. *Manufacturing Consent. The political economy of the mass media*. New York: Pantheon

¹⁶ Visavanathan, S. 2005 Knowledge, justice and democracy. In: Leach, M., Scoones, I., Wynne, B. (eds.). *Science and Citizens. Globalization & the Challenge of Engagement*. London: Zed. pp. 83-94

¹⁷ nanotechweb.org 2005 *NanoJury gives its verdict*, 27 September, <http://nanotechweb.org/articles/news/4/9/14>, Institute of Physics Publishing, London.

¹⁸ Dean J 1996 *The solidarity of strangers: Feminism after identity politics*, London, University of California Press.

¹⁹ See www.scienceshops.org.

²⁰ See Pimbert M 1994 The Need for Another Research Paradigm *Seedling* 11:20-26 (www.grain.org/seedling/?id=390)

²¹ www.the-ba.net/the-ba/ScienceinSociety/_EventsandProgrammes/CommunityXchange/.

²² See, for example, http://practicalaction.org/?id=technology_democracy and http://en.wikipedia.org/wiki/Public_engagement