

## **Citizens and Deficits: Problematic Paths toward Participatory Technology Assessment**

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*Participatory technology assessment (PTA) offers the possibility of democratizing technology through the incorporation of previously excluded knowledges, needs, experience, and values into the assessment process--pointing to a link between democratization and the problematization of dominant assumptions, explanations, and justifications. This paper examines the New Zealand experiment with consensus conferences on plant biotechnology not in terms of its impact on policy or debate, but in terms of whether it could have had a democratizing impact had it received attention from relevant actors. I argue that despite the good intentions of the organizers, underlying "deficit model" assumptions and efforts to manage bias through even-handedness undermined the democratizing potential of the consensus conferences by hindering the panellists' efforts to problematize and reframe the issue.*

### **Introduction**

Participatory technology assessment offers the possibility of democratizing technology through the incorporation of previously excluded knowledges, needs, experience, and values into the assessment process. This points to a link between democratization and the problematization of dominant assumptions, explanations, and justifications. It implies that public participation is likely to bring about the reframing of a problem or issue-area so as to incorporate important dimensions of human life and community that are excluded or devalued by the dominant discourse(s).

The Danish consensus conference is one mechanism that has been developed to facilitate such democratizing problematization. A consensus conference was held in New Zealand in 1996, on the topic of plant biotechnology. It was reconvened in 1999 for a re-examination of one of the questions posed by the 1996 conference. In this

paper I evaluate these consensus conferences not in terms of their impact on public policy or public debate (they had no discernible impact), but in terms of whether they *could* have contributed to the democratization of technology had they received attention from policy-makers and media.<sup>1</sup> I argue that while the organizers of the conference are to be applauded for their groundbreaking attempt to democratize technoscientific policy-making in New Zealand, the democratizing potential of the mechanism was undermined by their failure to facilitate problematization of the dominant discourses. Facilitating problematization is both crucial to realizing the democratizing potential of the consensus conference and more difficult than it may appear.

### **A New Zealand Experiment**

The New Zealand initiative emerged out of concerns among a number of public-sector scientists that the general public was becoming less supportive of, or even hostile to, science. The organizers of the conference, an ad hoc group built around some of these scientists, saw themselves as following the Danish model; however, it appears that the underlying rationale for the conference trial differed significantly from the mandate of the Danish Board of Technology. While the aim of the Board is to incorporate local knowledges, civic responsibilities, and counter-expertise into public debate and decision-making (Klüver 2000; Andersen and Jæger 1999), organizers of the New Zealand conferences saw them primarily as a way to improve the public's understanding of science and bring "rationality" into the public discussion

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<sup>1</sup> No independent evaluation of those conferences was carried out at the time. This paper is based on a retrospective study of the 1996 and 1999 conferences, which utilises published and unpublished documents as well as semi-structured interviews with key members of the organizing committees and with 11 of the 16 lay panellists. The unpublished documents include personal notes made at the time by one of the panellists as well as printed material distributed to the panel by the organizers and experts. I thank the panellist for generously sharing this material with me.

of gene technologies. The organizers' assumptions and rationale reflect the "deficit model," which attributes "science/society tensions" to the public's alleged lack of accurate scientific knowledge and/or rationality. As the assumptions and practice of science are *not* problematized in this view, increasing the public's knowledge of science is expected to increase public acceptance of (techno-)scientific activities (Gross 1994; Wynne 1993, 1995). These assumptions of the organizers importantly shaped the conference's construction of "scientific citizenship" (Irwin 2002).

Members of the working group judged the first conference in particular to be a success in the sense that it demonstrated that ordinary citizens could become well-informed on a complex technological issue, deliberate rationally about it, and produce a consensual report. With regard to content, they expressed the view that "any outcome is a good outcome." At the same time, some expressed disappointment that the 1999 conference produced a report that was more critical of the technology and of the regulatory apparatus. They attributed this apparent shift to sensationalist media coverage of the issue and to an apparent failure of the panel to "put an awful lot of thought into [the issue]" in the intervening years. Interestingly, panellists attributed the difference (which they generally saw as minor) to precisely their having devoted thought to the issue. They saw themselves as having become more educated and better informed as a result both of their greater interest in the subject and of the increase in media attention devoted to it.

The two major problems with the process identified by all members of the organizing committee interviewed were lack of sufficient funding and inability to attract media attention. The major problems explicitly identified by the lay panellists were insufficient time to deliberate and to prepare the report and lack of attention given to the report by policy-makers. From the perspective of problematization,

however, one can identify a different set of difficulties with the New Zealand consensus conferences, difficulties that hindered the panel's utilization of their own knowledge and experience and the full expression of their concerns. These difficulties relate to the organizers' strategies for managing bias and resultant obstacles in the way of problematization.<sup>2</sup>

### **Managing Bias**

The organizers of the New Zealand conferences were not unaware of the need to manage bias. As the organizing committee was dominated by those with quite friendly views toward the technology and quite sceptical views toward public opposition to it, the organizers sought to manage the possible resulting bias by ensuring that there were oppositional views expressed at the conference. However, managing bias through this "two sides" or "even-handed" approach does not facilitate the incorporation of local knowledges and normative considerations into technology assessment, because it does not effectively handle the problem of biased *framing*.

First, the even-handed approach does not counteract the tendency of those operating from within the deficit model to overemphasise the "education" of the panel at the expense of their deliberations. The activity of the preparatory weekends was heavily weighted towards informing the panellists about plant biotechnology, leaving little or no time for the panellists to reflect on what they had been told. Similarly, at the conferences themselves the time devoted to experts informing the panellists left insufficient time for panellists to discuss or debate among themselves; when preparing the report, panellists' contributions were largely limited to the question assigned to

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<sup>2</sup> The social location of the organizers also poses difficulties for problematization through its impact on strategies for managing bias. There isn't room in this paper to discuss that impact.

their subgroup, as there was insufficient time for the group as a whole to consider the work of the subgroups.

As the EUROPTA study has noted, this allocation of time reflects the lack of trust in the lay panel associated with "deficit-model" thinking (EUROPTA 2000). It also defeats the aim of eliciting a *thoughtful* lay response. The squeezing out of deliberative time, particularly when combined with the factors discussed below, reduced the likelihood that panellists would be able to construct the alternative framings that would allow their concerns full expression.

Second, the strategy of managing bias by ensuring the presence of both proponents and opponents also resulted in creating the impression of a unified scientific opinion. In the view of many of the panellists interviewed, the conference process did not suggest that there was disagreement *among scientists* on the issues being examined. A number of panellists' recollections of the conference speakers counterposed "scientists" who were "terribly enthusiastic and carried us along with [their enthusiasm]" to "greenies" or "the anti brigade" who were implacably opposed to the technology and "skulked around the edges" of various conference processes.

This raises problems of bias because only scientists were granted full expert status by the panellists. As one panellist put it, "I found it really hard, because it is such an emotive issue, I found it really hard, especially some of the people who were not scientists, to sort of, you know, gauge what credibility to give them." While most of those on the "pro" side of the balance were speaking in their professional capacity, most of those critical of the technology were speaking as advocates. In the words of a panellist, the advocates were "spouting off"; in the words of one member of the organizing committee, the panellists were given "expertise" by one side and "rhetoric"

by the other. This left panellists without an authoritative voice with which to express their own scepticism and concerns regarding scientific rationality.

Finally, an even-handed approach does not ensure that panellists have the opportunity to consider as *full* a range of implications and perspectives as possible. The "two sides" may even be operating within the same overall framing of the problem, whereas panellists may have concerns that grow out of alternative, unarticulated framings. In such a case, the even-handed approach may instead work to contain the panellists' deliberations within the dominant frame.

### **De-problematization**

In their study of consensus conferences on food biotechnology in Australia, Canada, and Denmark, Einseidel, Jelsøe, and Breck identified six areas of concern that featured in the questions posed by all three panels: health and safety; environment; public participation/information; economics; ethics; and regulation and international trade (Einseidel, Jelsøe & Breck 2001). Of these, the questions relating to public participation and information, economics, and ethics most explicitly challenged prevailing power arrangements around biotechnology. The questions of the Danish and Australian panels on consumer information ("How do we ensure that consumers have sufficient information on GM foods?" and "What information about GMOs should the public be made aware of at all stages of food production from paddock to plate rather than at the point of sale alone?") emphasized transparency and the public's right to know, while the Canadian panel pointed to the public's right to shape policy ("What kind of process would ensure that on-going public participation is integral to policy development and implementation?"). The Danish and Australian panels raised concerns about the power of multinational corporations, while the

Canadian panel simply asked "What are the social and economic impacts of genetically engineered foods?"--a question typically not posed by formal risk assessment processes. In their questions on ethics, the Danish panel most explicitly challenged the legitimacy of the existing practices of commercialized science when they asked: "Which values and ethical considerations should form the basis for research, development, and production of GM foods? How can ethical aspects be included in authorization and control procedures for genetic modification of animals and plants for production?" The Australian panel also pointed to wider social concerns with its question "What are the ethical issues involved in altering the fundamental building blocks of life through gene technology, including issues of ownership, control, and manipulation?" while the Canadian panel asked more neutrally "What ethical considerations govern food biotechnology?" Similar questions concerning the public's right to know, economic power, and the ethics of the technology were present in the report from the 1996 Norwegian consensus conference on genetically modified food (National Committee for Research Ethics 1997).

These categories and challenges appear at first to be missing from the 1996 New Zealand conference. The New Zealand panel did not pose questions targeting the distribution of economic and social power, the public's right to know, or the role of ethics in commercial science. Instead, the panel asked: "Who owns plants and who owns genes?"; "What provisions are being made for future education of the public and informing them of current and future areas of research?"; and "How are the values of Maori going to be considered and integrated in the use of plant biotechnology in New Zealand?"

Were non-Maori New Zealanders unconcerned about the economic and ethical implications of the technology? Did they not perceive problems of transparency and

accountability in the existing process? Documents and interviews suggest instead that the panel's initial approach was more challenging to and subversive of existing practices. When the expression of panellists' concerns is tracked from preliminary questions to final report, these initial challenges appear to have been defused and subsumed into the dominant scientific and economic rationalities. Below I examine the evolution of questions and concerns in the areas of public information, ownership, and values. I trace the subsumption of the panellists' concerns through processes I will call assimilation, resignation, and externalization. I argue that the conference report was shaped by the tendency of the conference process to assimilate some concerns into the deficit model, produce a sense of resignation to the "inevitable" with regard to other concerns, and externalize those remaining onto a particular social group whose concerns were seen as best handled elsewhere.

### *Assimilation*

Panellists' concerns with transparency and the public's right to know were assimilated by the deficit model and transformed into a problem of scientific illiteracy. The initial forty-four questions included five questions touching on the public's right to know:

How will people know if they are eating food from genetically altered plants, so that they have a choice to eat it or not?

The UN charter says consumers have the right to be educated on issues: if the scientists maintain control of all the various regulatory bodies, how can this be achieved?

[Request for] up to date information (constantly updated) in colleges.

Are current papers (scientific on GE) readily available to the public?

Through a facilitated process, the forty-four proposed questions were reduced to eight for the conference, including two concerning the public's right to know:

How will consumers be informed and protected? What consideration has been given to primary and downstream labelling of products containing GMOs, both in New Zealand and imported from other countries?

What provisions are being made for future education of the public and informing them of current and future areas of research?

The organizers then asked the panel to reduce the number of questions to seven by combining these two questions. The suggestion was made to the panel that the topic of informing consumers was already covered by the "future education of the public" and that the protection of the consumers was covered in a further question on regulation. Thus the question on informing and protecting consumers and its subquestion on labelling were removed.

At the conference, the remaining question ("What provisions are being made for future education of the public and informing them of current and future areas of research?") was addressed entirely from within the deficit model. None of the experts chosen to answer the question addressed the issue of the accountability of researchers and developers to the public; rather, they discussed ways to rectify a postulated deficit in the public's understanding of science in general and biotechnology in particular. The experts selected were a Professor of Plant Biology, the editor of a New Zealand science magazine, and the CEO of the Royal Society of New Zealand (the primary objective of which is "the promotion and advancement of science"). The Professor of Plant Biology described the provision of education in biotechnology by tertiary educational institutions. The editor described provisions for teaching biotechnology at secondary school and criticized the infrequent and sensationalist treatment of science issues in the media. The head of the Royal Society lamented the "image problem" of scientists and technologists, and argued that in order to help itself the science and technology community should "get the media interested and better informed," "train

scientists as better communicators,” “improve the perception of science ... [and] improve the image of the individual scientist,” “seek to get role models in science (the hero not the ‘nerd’ image), [and] influence decision makers”. He told the panel that they were a valuable part of the process because “scientists may be very good at research but that doesn’t make them experts in promoting their work,” and invited the panel to enlighten the scientists as to how they might more effectively promote their work.

The answer given by the panel in their report reflects back the assumptions of the deficit model contained in the expert testimony rather than the concern with secrecy and lack of accountability that appeared to motivate many of their original questions:

New Zealanders of all ages have insufficient access to scientific information. This is unfortunate, as the experience of the panel has proved that scientific education can be as fascinating as it is informative. The power of the media is being under-utilised as an educational tool. Its pursuit of sensationalism tends to detract from its ability to report in a credible and reliable manner. A proactive approach is to be encouraged in the media in order for it to capitalise on the intrinsic interest modern New Zealanders have in science. To this end we recommend exposure via regular newspaper features, motivating television coverage and other appropriate forms....Scientists have an obligation to inform the public of their current research, not only via traditional research documents but in lay terms and more readily accessible literature. In this market driven age there is a need for science to sell itself and enhance its public image.

The original concerns with lack of transparency and accountability among researchers, corporations, and regulators were in this way transformed into a problem of public misunderstanding of science and ineffective science communication.

### *Resignation*

In the area of ownership and economic power, the evolution of the panellists' concerns shows a shift from a stance of active questioning to one of passive resignation. A number of the original forty-four questions point to the power relations

operating in techno-scientific decision-making, combining concerns with economic power, ethics, and transparency in a number of ways:

Why are consumers not involved in decision-making where approval is being required for GE substances, etc., e.g., ACNGT [Advisory Committee on Novel Genetic Techniques]?

Is plant biotechnology a priority area of funding for research, i.e., government funding? If so, how was that decision made?

Can we have confidence in International agreements on and controls of genetic engineering? (Bribery is a possibility; corruption)

Society can be blackmailed to take a more liberal stand on ethical issues. Could this be a problem?

Many benefits are available through plant biotechnology (e.g., food production, medical advancement, etc.) but for how many of these [is] plant biotechnology necessary? [Or is it a question of] distribution of wealth? Distribution of food? Corporate interest/control?

If children in third world countries are dying from malnutrition, how could addition of vaccines, etc., to food increase their food supply per se?

The "final" eight questions included the following question and subquestions:

Who owns plants and who owns genes?

What is ownership?

Who will profit?

What is New Zealand's stance on gene patenting and will we necessarily comply with international legislation?

How is it proposed to deal with ethical considerations associated with ownership?

In the conference report only the main question was recorded (however, it is possible that the speakers were also given the subquestions). While the subquestions invited critical examination of the assumptions governing the development and use of biotechnology, this invitation was taken up only by the speaker designated to present a Maori perspective.

The question was addressed by an "ethicist" (an Anglican priest and former director of plant research for a government agency), a patent attorney, and a solicitor

on behalf of those Maori who lodged a claim (known as the Wai 262 claim) with the Waitangi Tribunal<sup>3</sup> concerning Maori rights over and responsibility for native flora and fauna. The ethicist told the panel that:

From an ethical viewpoint there are six key points to be considered.

1. Individuals and groups have rights to property.
2. One must have respect for others and for what belongs to them.
3. Ownership may confer rights to use property as one wishes.
4. Ownership established in law is not always agreed to by others.
5. History of plant breeding is of free access worldwide.
6. In a developmental chain original ownership seldom has a claim to any returns from that development.

Leaving aside the fact that genetic engineering is a faster and more targeted technique of plant improvement than classical plant breeding, there is really no difference between the two techniques--both set out to improve certain characteristics of a particular plant species.....The answer to the original question, from an ethical viewpoint, has to be "the provider of the original unimproved plants, with due recognition of the effort that has gone into improvement." This may be an impractical response in many cases.

This presentation (the only one by a designated "ethicist") is notable for what is leaves out--for example, the ethics of patenting life or the ethical impact on humans of attempting to manipulate and control life in this way--as well as for what it delivers: a view of ethics founded on individual property rights, and the message that one should expect ethical concerns to be superseded by "practicality."<sup>4</sup>

The second speaker to this question, a patent attorney, discussed patent and plant variety rights and the relevant treaties to which New Zealand was a signatory. Panellists and organizers indicated that his presentation was "pitched at the wrong level" and "over the heads" of the panellists. The third speaker described a Maori

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<sup>3</sup> The Waitangi Tribunal is a permanent commission of inquiry whose role is to make recommendations regarding claims for restitution and compliance brought by Maori under the Treaty of Waitangi and to determine whether government actions are consistent with the principles of the Treaty.

<sup>4</sup> It also exhibits "transgressive competence" (Nowotny 2000) in the assertion that "there is really no difference between the two techniques," which was perhaps particularly potent given the speaker's

worldview in which "humans and nature are not separate entities but related parts of the unified whole." She described the dominant concept of ownership, in which "ownership denotes one who has complete control over something," as "consistent with the compartmentalization of man from nature" and "foreign to the Maori world view." She pointed to the dangers present in efforts to accommodate Maori perspectives within national practice, including on the one hand romanticizing indigenous knowledge and on the other "assimilat[ing] or integrat[ing] the two world views into a single system."

In its report the panel seem to have become resigned to their inability to act on their concerns, rather than to have satisfied or resolved them.<sup>5</sup> The tone is oddly passive. Concerns are raised but not followed with recommendations to address them; or potential remedies are suggested then weakened or dismissed by reference to the "realistic" and the "practical." And their concerns have come to be defined largely in terms of the impact of the ownership regime on indigenous peoples.

*In a perfect world, the ownership of plants and their genes would be global with preference given to indigenous populace owning indigenous species. However, this is not the case in reality. Plants can be owned by individuals or organizations and we believe that in order to be practical the New Zealand model should reflect this...*

*[W]e accept that the intellectual property rights of current New Zealand legislation differs [sic] from the views of Maoridom...*

*Multi-national companies..should... be required to make reparation to the original owners from which the modified material was derived.... Obviously there are going to be some practical limitations to this process and a realistic approach should be adopted. There is a concern that there will not be a fair and equitable sharing of the benefits amongst communities and third world countries...*

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background (known to the panel) as a director of plant research combined with his conference status as expert ethicist.

<sup>5</sup> Plesner (1999) points to the prevalence "utterances of powerlessness" in her study of fifteen Danish consensus conference reports, noting that such expressions are "what you would expect when lay people move into a professional domain, where discussions ... involv[e] a lot of technical references," and also that such utterances were "defied discursively" with calls to action. But the Danish reports (or at least the ones I have seen) strike one as remarkably activist in comparison to the New Zealand report examined here.

*Finally, while we accept the ethics involved and the perspective of various cultural groups, we believe that plant ownership is a reality and issues of practicality seem to take precedence over ethics. [emphasis added throughout]*

The panel's initial concerns about the effects of unequal economic power have been muted by a lack of agency, particularly New Zealand's relative lack of agency within the international economic order. The challenge to the existing intellectual property rights regime implicit in the subquestions seems to have been transmuted into acceptance of New Zealand's position of subordination in that area. The use of "seem" in the final sentence is interestingly ambiguous. While it could imply that it is wrong for practicality to take precedence over ethics, the context implies that is necessary that practicality should do so. It illustrates the way in which the panel is caught between, on the one hand, their concerns about the relationship between plant biotechnology and economic power and, on the other, the lack of a frame that would facilitate the expression of these concerns (and little time to construct one). As a result, in the report remnants of their original concerns are juxtaposed awkwardly with summaries of the expert presentations, producing few recommendations for action and a tone of resignation to the inevitable.

#### *Externalization*

In the responses to the question on ownership it can be seen that the representation of alternatives to the dominant discourse was effectively assigned to Maori. This tendency is strongly reinforced in the way in which "values" issues were handled elsewhere in the report. The only question of the final seven addressing the issue of values explicitly asks "How are the values of Maori going to be considered and integrated in the use of plant biotechnology in New Zealand?" In this case, the question was originally formulated as: "What degree of input is there/will there be

from a Maori/cultural perspective in regulations surrounding plant biotechnology? Should New Zealand's unique cultural makeup be reflected in a safeguarding regulatory regime for this area?" In my reading, this is a more inclusive question, which does not assign "cultural"--and, hence, "values"--considerations to Maori alone.

The practice of acknowledging and then setting aside Maori views is repeated in the answer to this question.

*It is beyond the ability and scope of this panel to answer totally how values of Maori are going to be integrated into the debate about plant biotechnology in Aotearoa/New Zealand....*

Maori values will be addressed both through the consideration of Claim Wai 262 and by consultation with iwi [tribal groups] as part of general *consultation under other legislation* pertinent to GMOs....

The impression of the panel is that plant biotechnology is seen by some Maori to interfere with the integrity of species and the essence of life itself. *It is very difficult to integrate that viewpoint into plant biotechnology without addressing the underlying grievances relating to all Maori rights.* [emphasis added throughout]

The effect of these patterns--assigning "values" concerns to Maori, then setting them aside as too difficult to address in public debate--is that ethical, cultural, or "values"-based concerns effectively dropped out of the report's recommendations.

Overall, the incorporation of moral and ethical concerns into the panel's report was undermined in two ways. Faced with a framing of the problem that was incompatible with their ethical or values-based concerns, the panel counterposed the "ideal," in which ethical and social concerns are expressed and addressed, to the "real," in which there is little or no agency for such concerns (or those who hold them). This is what I have called resignation. Secondly, through the expert presentations and the panel's response to them, the concerns were externalized to a distinct social group with a unique legal relationship with the government and thus to the process and institutions specifically responsible for negotiating that relationship.

In this way, the challenges posed by biotechnology to the values and culture(s) of the remaining population were elided, and the issue was framed in terms of mutually reinforcing scientific and economic rationalities on one side and Maori spirituality on the other. In this way, non-Maori New Zealanders lose the ability to raise ethical or cultural objections, and "Maori concerns" can be portrayed as an obstacle--or *the* obstacle--in the way of scientific and economic progress.

## **Conclusions**

I do not contend that the New Zealand conference was deliberately manipulated; rather it appears to have been a good-faith effort to allow lay panellists to make their own decisions. However, good intentions are insufficient to realize the democratizing potential of the consensus conference. Regardless of intentions, the underlying assumptions of the organizers shaped their strategies for managing bias; these strategies hindered, rather than facilitated, the articulation of concerns not recognized by dominant scientific and economic rationalities. Rather than providing "counter-expertise and an open debate" sought by the Danish model (Klüver 2000: 183), under these (not unusual) conditions, a consensus conference *may work to reinforce an already dominant expertise and the existing restrictive framing of the debate.*

The primary challenge facing efforts to democratize science and technology is often seen as enabling citizens to break the monopoly influence of expertise in decision-making on techno-scientific issues. One family of strategies to overcome expert dominance involves the explicit problematization of the "objectivity" of expert knowledge, within participatory technology assessment and more generally. An alternative, or even complementary, strategy may be to expand the range of expertise included in such processes. The biotechnology controversies highlight the fact that

scientific expertise is not the only rival to citizens' power. The economic power embodied in corporatized, commercialized techno-science is, if anything, a greater challenge to democratic control. When scientific and economic rationalities are mutually reinforcing, citizens' sense of agency can be overwhelmed. As long as "expertise" continues to carry authority in society (as it apparently does, despite a decline in the trust accorded to "experts"), the participants' sense of agency and their ability to articulate their concerns may depend in part on the inclusion of expertise--as expertise, not advocacy--that can explicitly problematize the technology's political-economic context.

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