Processes of Inclusion, Cultures of Calculation, Structures of Power

Scientific Citizenship and the Royal Commission on Genetic Modification

Joanna Goven

University of Canterbury

The significance of political-economic context for scientific citizenship is argued through an analysis of New Zealand’s Royal Commission on Genetic Modification. My intention is not to provide an account of why the commission came to the decisions it did but to illustrate how the political-economic context and the culture of regulatory science both exacerbate public concerns about unacknowledged uncertainty and commercial influence and make it difficult for those concerns to influence the outcomes of public dialogues. The discursive flexibility of science as alternately predictive and provisional silences concerns about uncertainty, while a further interpretive choice of science as the autonomous activities of individuals unconstrained by political-economic context occludes the nature of concerns about commercial influence. Rather than the increasingly prevalent focus on processes of engagement, I argue that it is essential that researchers in this area attend to how public dialogue is placed in relation to the cultures and structures of regulatory science and neoliberalism.

Keywords: scientific citizenship; genetic modification; public participation; royal commission; neoliberalism

Values are often hidden or unnamed, and when this happens there is a danger of becoming lost in a debate about strategies and losing sight of what we ultimately want to achieve.

Report of the Royal Commission on Genetic Modification

Author’s Note: The author thanks the journal’s anonymous reviewers for their helpful suggestions and thought-provoking comments.
Introduction

The nature of the connection between the participatory turn (Jasanoff 2003) in technology governance and two decades of calls by scholars of science, technology, and society (STS) for the democratization of technoscience is unclear. Nonetheless, the rapid and widespread apparent conversion to dialogue signals the need for STS to go beyond calls for public participation to examine how and with what effects public involvement has been embraced.

One approach to these questions focuses on the notion of scientific citizenship. It analyzes participatory developments through a focus on how they implicitly define the meaning or generate the practice of the citizen in relation to technoscience (Elam and Bertilsson 2003; Hagendijk 2004b; Hagendijk and Kallerud 2003; Irwin 2001; Petersen and Bunton 2002). This approach, which often uses the Foucauldian concept of governmentality, is particularly adept at analyzing moves to “empower” the public by encouraging, enabling, or requiring it to become fit for engagement.

A second, complementary approach focuses attention on the often unacknowledged values, choices, and assumptions present in regulatory science and their implications for developing competent and democratically legitimate regulatory policy. For example, Sheila Jasanoff (2002, 2003) discusses problems generated by the claims to objectivity and assumptions of predictability and controllability characterizing modern science regulation’s “technologies of hubris.” Brian Wynne (2001a) argues that “science has become the culture of policy” (p. 472); this has meant the importation of unacknowledged and arbitrary human values and ethical commitments that then silently impose themselves on other societal values and commitments, and in doing so, undermine the possibility of democratic practice. Rosemary Robins (2001) has described how the regulatory process’s technical discourse of risk occludes its own value commitments and protects them from challenge by others, and Les Levidow and Susan Carr (1997) point to how regulatory systems’ creation of official bioethics attempts to compensate for the unacknowledged value choices within risk regulation itself, while also continuing to exclude concerns and problem characterizations arising from the wider public. These authors and others call attention to the need to make these underlying values explicit and to create participatory processes that can facilitate the consideration of other societal values.

Less prominent within STS is analysis of the role of political-economic context for shaping regulatory science and the terms of scientific citizenship. Recent research (e.g., Bekelman, Li, and Gross 2003; Healy 2004;
Kleinman 2004; Lexchin 2005; Wright 1994) indicates that scientific practice, particularly in the biosciences, is itself being reshaped by the increasing importance of commercial actors and goals. The influence of the post-Chakrabarty, post-Bayh-Dole United States intellectual-property regime, the commercial expectations now placed on (and commercial opportunities now available to) university researchers, and the business strategies of life-sciences corporations all have contributed to this (see, e.g., Atkinson-Grosjean 2002; Harvard Journal of Law and Technology 2004; Kleinman 2004; Rai and Eisenberg 2001; Wright 1994). These developments constitute important parameters within which exercises in scientific citizenship occur.

The regulation of science and technology takes place within regulatory regimes that themselves have been transformed significantly by neoliberalization, defined by Tickell and Peck (2003, 166) as “the mobilisation of state power in the contradictory extension and reproduction of market(-like) rule.” Waves of deregulation (of industry), privatization (of public-sector activities, including scientific research), and commodification (of knowledge, research tools, and organisms) have shaped regulatory processes and resources. Liberalized and reconfigured financial markets together with multilateral institutions such as the World Trade Organisation (WTO) have been well positioned to discipline national regulatory options. While these developments characterize what Tickell and Peck call roll-back neoliberalism, the consequent roll-out phase has been marked by a more technocratic, managerial (i.e., discursively depoliticized) orientation. Alongside the managerial implementation of key neoliberal precepts and practices, which have become taken for granted or “normalized,” the state adopts a more activist orientation toward some of the social consequences of neoliberalization (Tickell and Peck 2003; see also Newman 2001). While interventions into the lives of those categorized as unemployed, beneficiaries, and criminals often are emphasized in this regard, we can also include here other, often “dialogical” efforts to address purported deficits of social cohesion and trust—including trust in science and its regulation.

Science and technology are now typically placed at the forefront of national and regional economic strategies whose (both normalized and disciplined) aim is to attain or maintain “international competitiveness” through active development of a “knowledge economy.” National and regional regulatory authorities face increasing pressures for “harmonization” of regulation across jurisdictions. National regulations are also subject to scrutiny and challenge under various agreements of the WTO as well as under regional and bilateral free-trade agreements and by private auditing bodies such as bond-rating agencies and the World Economic Forum (with its annual Competitiveness
Index). At the same time, as noted above, new governance approaches—which both reflect the neoliberal reconfiguration of public/private power relations and react to the social and political disaffection that it has generated—are refiguring relations between government and various stakeholders. The relevance of these developments for public engagement on science and technology has rarely been acknowledged.²

My aim in this article is to demonstrate through an analysis of the outcome of a widely referenced public-engagement process—New Zealand’s Royal Commission on Genetic Modification (RCGM)—the significance for scientific citizenship of the interplay between the cultures of science, so well addressed by STS, and their political-economic context. Although I focus on the RCGM’s report, my intention is not to, provide an explanation of why the RCGM came to the decisions it did but rather to illustrate how representations of science and political-economic context can work together to undermine the ability of certain widely found public views to influence the outcomes of engagement. In doing so, I also begin to explore how the shifting relations of power signaled by the discursive shift from “government” to “governance” are reflected in the participatory turn.

In their critique of the social construction of technology approach, Klein and Kleinman (2002) argue that understanding technology development requires a greater appreciation of the role of social structure than has been typical in STS accounts.³ In particular, they argue for the importance of power asymmetries among social groups. The power of a social group is related both to the extent to which it is organized or concentrated and to its access to resources, among which Klein and Kleinman include economic resources, political resources, cultural resources (including both the taken for granted and its active harnessing by advertising), and technological legacies. Here, I wish both to locate public-engagement efforts within this structural approach and to emphasize the importance of neoliberalization for shaping these structures.

I develop this perspective through an examination of the report of the RCGM. I focus on the report both because it, rather than the wider discussion provoked by the commission, has become the key reference point for government on genetic modification (GM) issues⁴ and because it makes possible an examination of how views expressed by the public are filtered or reconciled by those authorized to hear the public. The RCGM itself is worthy of such attention for a number of reasons.

First, the RCGM has received international recognition and plaudits. Nature greeted the release of the report with an editorial calling it “a model of community consultation and scientific rigour that other nations may consider
emulating” and “a sound approach to GM debate” that produced a “valu-
ably comprehensive report” (Nature 2001, 569). According to a report in
The New York Times, the RCGM report’s breadth of scope makes it “the first
of its kind from an industrialized nation,” and it can be “expected to attract
interest from other countries grappling with the controversies arising from
biotechnology” (Coukell 2001). An article in MIT’s Technology Review
recently heralded the RCGM process and the regulatory approach it
approved as a “solution” to “the chaotic state of regulation and public opin-
on” on genetically modified organisms (GMOs) and portrayed New
Zealand’s post-RCGM regulatory system as “the gold standard” (Herrera
2005, 28, 30).

The RCGM also has become a standard reference point for international
organizations in their public participation capacity-building work. For example,
in the background briefing paper for a recent Food and Agriculture
Organization (FAO) electronic conference, “Public participation in decision-
making regarding GMOs in developing countries: How to effectively involve
rural people” (Food and Agriculture Organization 2005), the RCGM is one
of two “national policy dialogues” discussed; in another FAO study, the
RCGM together with New Zealand’s Independent Biotechnology Advisory
Council are described as “perhaps the best examples . . . of independent com-
missions or councils” being used “to facilitate dialogue within a country”
(Glowka 2003, 27). The RCGM also figures positively in work commis-
sioned for the United Nations Environment Program–Global Environment
Facility capacity-building “toolkit” for developing national biosafety
frameworks for the Cartagena Protocol (IDS 2003). In each case, the inclu-
sivity of the RCGM process is lauded, while according to Nature, the
RCGM’s emphasis on “taking account of the sensitivities of Maori” has
lessons for others engaged in “resolving questions of the ownership of
native biota” (Nature 2001, 569).

The biotechnology industry has harnessed the RCGM to press its case in
other jurisdictions. For example, in a booklet developed for public dissemin-
ation in India and Pakistan, Monsanto Ltd. (n.d.) cites the RCGM as having
“overwhelmingly backed plant biotechnology and recommended that New
Zealand keep its options open”; yet, it laments, “fallacies about biotechnol-
ogy based on emotive issues like economics, politics and religion, rather
than on sound science, persist” (Monsanto Ltd. n.d.).

Second, there is reason to believe that what is learned from this case may
be generalizable to other instances of public engagement. The RCGM’s
attention to inclusiveness and transparency of process reflects a widespread
focus on the procedural dimensions of public engagement. Further, because
the RCGM explicitly acknowledged the importance of values in decision making on GM, it is also representative of a strong current within the participatory turn that sees expression of a wider range of values as a major reason for public engagement. Scientists, it is argued, have no more right to impose their values on society than anyone else; values issues, therefore, are an appropriate domain for democratic input. The RCGM’s explicit treatment of values could even be interpreted as a response to widespread calls for greater reflexivity in science policy. The RCGM thus provides an example of how and with what effects public engagement might foreground the question of values.

The analyses and arguments of this article do not rest on peculiarities of the RCGM or its New Zealand setting. The question of what happens to societal values once they are articulated in dialogue fora is a key and under-explored question for scholars of scientific citizenship. Similarly, the role of political-economic context in shaping processes and outcomes of public engagement extends beyond commissions of inquiry, and the neoliberalization of that context extends beyond New Zealand.

In what follows, I briefly review the RCGM process and some of the responses to it. I then analyze the explicit treatment of values in its report, demonstrating how recognition of values serves paradoxically to marginalize them. This is followed by an examination of the commission’s response to public concerns about uncertainty and commercial influence. I argue that the commission’s explicit focus on values does not prevent the unacknowledged imposition of regulatory science’s implicit values, choices, and assumptions. While this imposition is facilitated by alternately representing science as predictive and provisional, a further interpretive choice—of science as the activities of autonomous individuals unconstrained by political-economic context rather than science as shaped and constrained by that context—underpins the commission’s response to concerns about commercial influence. These unacknowledged choices illustrate the ways in which the culture of regulatory science, in effect, defends the political choices imposed by neoliberalization; but they also illustrate that this is not without consequences for the practice either of science or of scientific citizenship.

The RCGM: Genesis, Process, Outcome, and Reception

Rising public opposition to GM food and crops in New Zealand led the Green Party to call in 1998 for the establishment of a royal commission of inquiry into GM. By October 1999, 92,000 signatures had been collected
on a petition calling for such a commission of inquiry, as well as for a moratorium on the release (including field trials) of GMOs pending further investigation. The 1999 election produced a labor-led minority government, dependent on the Greens for support in Parliament. In December 1999, the government announced its intention to create a commission of inquiry, and in May 2000, the Royal Commission on Genetic Modification was established.5

The commission was instructed “to adopt procedures that would encourage people to express their views on the subject matter, and to consult with the public in a way that allowed people to express their views clearly” (RCGM 2001a, 7, 367). In its own words, the commission set out to “be as open as possible, and as inclusive as we can [be], giving everyone who wishes to present their views to us a fair and reasonable opportunity” (RCGM 2001b, 128). As noted above, the RCGM has been described as exceptional with regard to these considerable efforts to be more inclusive of the “nonexpert” public (see also Hope 2003; Pollak 2003). These included public scoping meetings before the hearings themselves “to scope the questions for subsequent submissions . . . so that no issues additional to those already identified might be overlooked in the deliberations” (RCGM 2001b, 109). In addition to the formal hearings and submissions from “interested persons,” the commission invited submissions from members of the public who had not sought or had not been granted the “interested-person” status necessary to participate in the formal hearings.6 (It received nearly eleven thousand such submissions.) It held a further fifteen public meetings in various parts of the country, the purpose of which was “not to hear submissions but rather to allow the Commission access to the views and opinions on genetic modification of a wide cross-section of New Zealanders” (RCGM 2001b, 129). The commission was particularly solicitous of Māori opinion (Jackson 2001) and held ten regional and one national hui (meetings held according to Māori protocol) and twenty-eight workshops to familiarize Māori with the submissions process. The commission also held a youth forum. It received submissions from 107 “interested persons” and heard presentations from them and their “expert witnesses” during thirteen weeks of formal hearings. Because “participation in these Commission processes was by self-selection” and “at some meetings those present may have felt the atmosphere was not particularly conducive to the expression of views in favour of genetic modification technology,” an independent public-opinion survey was commissioned (RCGM 2001a, 7).

The RCGM also has been noted for the transparency of its processes. The commission’s Web site made available official documents (such as the warrant) pertaining to its establishment, background papers it commissioned,
summaries of scoping meetings, “interested-person” and public submissions, transcripts of the hearings, and the report itself. The hearings were open to the public.

In its report, released in July 2001, the commission emphasized that it was not expected “to conduct [its] inquiry as if it were a referendum” but that, nonetheless, “the views of all who have communicated with us through our processes . . . have been taken into account in forming our own opinions and in completing our Report” (RCGM 2001a, 7). While the vast majority (92 percent) of public submissions opposed the environmental release of GMOs—a view that also prevailed in the opinion poll, though with a smaller majority—the commission rejected these calls to keep GMOs contained until more was known about their interactions with the environment. The report’s overall message was that “New Zealand should keep its options open” by “preserving opportunities” and “proceed[ing] carefully, minimising and managing risks” (RCGM 2001a, 2). It maintained that coexistence with conventional and organic agriculture was possible, argued that current patent practices relating to genetic research and development did not raise any particular difficulties, saw no need for the general liability regime to make particular provisions for GMOs, and rejected most concerns about GMOs raised by scientists as “inconclusive” and “unproven” (RCGM 2001a, 73). Its major recommendations included a new category of approval (between field trial and general release) called conditional release; publicly funded research on “organic and other sustainable agricultural systems” and on socioeconomic and ethical effects of GMO release; the development of “strategies” and “codes of practice” in the areas of coexistence, Bt-toxin use, and maintaining GM-free honey production; explicit prohibition of the patenting of human beings “and the biological processes for their generation”; attention to pursuit of “cultural and intellectual property rights for indigenous peoples” in international agreements; ministerial review of the first decision to release a genetically modified crop into the environment; the establishment of a bioethics council; the establishment of a parliamentary commissioner (an oversight office independent of government and answerable to Parliament) on biotechnology; and the development of a national biotechnology strategy (RCGM 2001a, 352–60).

The prime minister and her environment minister praised the report as “thorough,” “measured,” and “balanced,” and as “inclusive of the many values that New Zealanders hold” (Hobbs 2001; MacLeod 2001; Young and Mold 2001). In October 2001, the government issued its response to the RCGM’s recommendations; of those detailed above, the government explicitly rejected
only ministerial review before first release and the establishment of a parliamentary commissioner on biotechnology. The government also decided to impose a two-year moratorium on applications for release of GMOs into the environment to “allow time for the issues which the Royal Commission found needed further work to be addressed” (Clark 2001). In February 2002, the government named biotechnology as one of three high-priority sectors in its economic-growth strategy (Office of the Prime Minister 2002).

Shortly after the release of the report, approximately ten thousand people demonstrated in Auckland for a “GE-free” New Zealand. Two years later, as the moratorium on release of GMOs was about to lapse, something between fifteen thousand and twenty-five thousand people demonstrated in favor of its extension. This mobilization was reportedly as large or larger than the previous high-water marks of the anti-Vietnam War and anti-Springbok tour (i.e., antiapartheid) demonstrations.

Some commissioners publicly attributed protesters’ reactions to their (allegedly) not having read the report (see, e.g., Fleming 2001). But the report itself came under criticism from academics as well as from activists for the quality of its argument as much as for its recommendations (Hope 2003; Jackson 2001; Le Heron 2003; Rogers-Hayden and Campbell 2003; Rogers-Hayden and Hindmarsh 2002; Wills 2003).

As the critics point out, an unfortunate feature of the report, given the aims and self-conception of the commission, is its frequent failure to present its own reasoning for accepting or rejecting arguments and for making or withholding recommendations. Explaining how people’s views have been taken into account is often noted to be of key importance to the transparency and legitimating influence of such consultations (Renn, Webler, and Wiedemann 1994) and to public trust in regulatory institutions (e.g., Jaffe 2004). The report instead tends to substitute juxtaposition for argument, signaling that it accepts or is sympathetic to a view by positioning it after a contrary view. The commission has not acknowledged or explained this failure to present its own reasoning.

“Worldviews” That Go without Saying

As indicated by the article’s epigram, the commissioners were not unmindful of the potentially important role played by what they called “unnamed values” in discussions of technology. Because “value identification goes some way to ensure congruence between goals and strategies, and to enable different groups to see their own goals more broadly and in relationship with others,”
the commission begins its report by identifying seven core values that “many New Zealanders would recognise as things we hold in common” (see appendix). These values are said to have been extrapolated from “weeks of hearings and . . . public meetings and hui around New Zealand,” while “the Warrant . . . also implied certain values by listing various matters we were to take into account. . . .” (p. 11), including “the health of ecosystems, human health, consumer choice, cultural and ethical concerns, and economic factors” as well as “the Crown’s responsibilities under the Treaty of Waitangi” (p. 24).

The commission translates the seven values into three “spheres or sets of criteria” to apply when assessing potential applications of genetic modification techniques: (1) cultural, ethical, and spiritual; (2) health and environment; and (3) strategic and economic. It claims to elaborate the criteria in the following three chapters, so that the criteria can be used in later chapters to assess the potential applications of GM (in research, crops, food, and medicine). The report explains the relationship between the core values and the spheres and criteria this way:

While there is some overlap, the cultural, ethical and spiritual sphere broadly reflects the values of the Treaty of Waitangi, freedom of choice, and participation. The values of uniqueness and sustainability, and aspects of the value of well-being, fall within the environment and health sphere. Global family values and other aspects of well-being belong in the economic and strategic sphere.

The commission identifies worldviews as the sources of people’s values. It names and discusses three worldviews: the traditional Māori worldview; the ecological worldview; and religious worldviews from the Judaeo-Christian tradition. These worldviews, they note, “were made quite explicit by the submitters”; in addition, while “others did not discuss their worldviews or cultural assumptions with us explicitly, . . . the importance to them of particular values and ethical commitments was nevertheless apparent” (p. 16). The commission makes no attempt to make those latter worldviews or assumptions explicit. Its only further reference to them, a paragraph titled “Other cultures and beliefs,” notes simply:

Others will draw their values from different sources, some religious, some philosophical [sic]. Some may have distilled a set of working values based on their experiences and reflections of life. Some may be guided by universal codes such as the United Nations Declaration of Human Rights.

Despite this, and mindful that “in a pluralistic society . . . it is not appropriate for one group to seek to impose their values on others” (p. 24), the
commission determined that it could indeed identify a common core of values, noting that “no one doubted . . . the need to preserve the life-giving capacity of our environment” (p. 24) and that “the future well-being of all New Zealanders . . . was never questioned” (p. 25). The commission also pointed to “convergences between different value sources” (p. 25):

Māori, for example, drawing on their spiritual and cultural heritage, have a strong sense of the sacredness and interconnectedness of the earth and all life forms. Judaeo-Christian groups draw on the biblical tradition to reach the same conclusion. Those who come from the ecological world view have a similar holistic understanding of ecosystems based on their perception of the intrinsic value of all life. (p. 25)

The relationship among values, spheres, and worldviews is represented diagrammatically in the report, with four pods representing Māori culture, ecospirituality, religious belief, and other cultures and beliefs, giving rise to seven “values we hold in common,” now labeled uniqueness, well-being, cultural, environment, global, freedom, and participation (see Figure 1).

Yet other specifiable worldviews are clearly operative within the submissions and within the report itself. One of these is what might be termed
a scientific worldview that is materialist, reductionist, and instrumental and that assumes and values the ability to predict and control—that is, the modernist, hubristic orientation that often has been the object of critique within STS (as noted above). Another could be called a neoliberal worldview; it is methodologically and normatively individualistic, equates rationality with calculative consistency, takes money as a universal metric, and privileges the freedom of choice of the market actor over other values. These two worldviews are never identified as such, or as cultural assumptions or values, yet they pervade the report. Together, they function within the report as a kind of doxa (Bourdieu 1977; see also Chopra 2003): self-evident, they serve as descriptions of “reality itself.”

Partly as a result of this omission, the act of naming worldviews results in their marginalization in two ways. First, because the values identified with named worldviews are seen as existing in “a pluralistic society” in which “it is not appropriate for one group to seek to impose their values on others,” these values can in effect be trumped by demonstrating that others disagree. This pluralistic imperative (which itself reflects a worldview), together with the failure to name and examine other powerful worldviews and their values, also may help to explain the tendency discussed above for the presentation of a contrary view to be assumed to trump a position without further argument: in any contest between a position seen as values-based and one not so recognized, the values-based position must have consensus to be legitimate.

Second, the commission’s model for ethical decision-making requires any values-driven proposition to be compatible with the situational context (see Figure 2). Despite its attempt, quoted above, to associate values with all three spheres, the report’s division of values from situational context in fact results in worldviews and their values being treated both as defining of the cultural, ethical, and spiritual sphere and as external to the substantive issues of the environment-health and strategic-economic spheres. This acts continually to reconstruct a risk-ethics boundary (Levidow and Carr 1997; Wynne 2001a). As a result, significant public concerns—those pertaining to the institutionalized hubris that denies the limitations of scientific knowledge and those pertaining to the purposes and power relations embedded in the technology—are elided, while the existence of values within the situational worlds of science and economic strategy is denied.

The marginalization of named worldviews and their associated values is manifested in the organization of the report. While each of the three chapters following the initial discussion of core values is meant to develop the values corresponding to its particular sphere, in fact, only the chapter titled “Cultural, ethical and spiritual issues,” in which the discussion of
worldviews takes place, mentions values again (with some instructive exceptions, noted below). While values are regarded as integral to the cultural, ethical, and spiritual sphere, they drop out of view when attention turns to science and the economy. As the discussion of cultural, ethical, and spiritual issues does not include an examination of the values underlying or embedded in science, technology, or the political economy approach within which the commission is operating, these unnamed worldviews are left to govern the substance of the majority of the report.

Instructively, the only mention of values in chapter 4 (on environmental and health issues) occurs in relation to the commission’s dismissal of the precautionary principle. Here, values figure only as a source of disagreement and unreliability. The values underlying the notion of precaution are contrasted with risks and acceptability to the public, which are presented as more appropriate factors than precaution to inform the management of genetic modification.

Although we heard much discussion of the precautionary principle and the precautionary approach from those who opposed the release of genetically
modified organisms into the environment, there was no consensus on the meaning of either term. The meaning of precaution often rests in the values held by the speaker.

The commission considers there is more merit in hearing and responding to the message contained in the words than in seeking to define the meaning or determine how the principle should be applied. In any event, we were not convinced that a single principle could be applied across the board to the use of genetic modification in New Zealand. Decisions on the use of the technology must rest on a range of factors, including the risks and acceptability to the public of the proposed use. They are factors that should inform the process of managing genetic modification. (pp. 67–68)

The precautionary principle is represented as particularistic, contested, and subjective, entangled in individual values. In contrast, risk and acceptability to the public are portrayed as independent of particular value systems; objective attributes, they are “measurable and manageable” (p. 73)—part of the nonnegotiable situational context of decision making.

The commission’s rejection of the precautionary principle is illustrative of the marginalization of the named worldviews: the report already had noted the three named worldviews’ consensus on the need for humans to exercise a role of stewardship or care with regard to the natural world, as well as on the importance of humility and the danger of arrogance in our approach to the natural world and our knowledge about it. Here, that shared orientation is regarded as subjective confusion that gets in the way of “managing” genetic modification. Of course, our ability to “manage” genetic modification is precisely what advocates of the precautionary principle were attempting to call into question.

In chapter 5 (economic and strategic issues), the only mention of values (of the nonmonetary kind) appears in an introductory paragraph: “Of those values [discussed in chapter two], those most relevant to this chapter are ‘being part of a global family,’ ‘the well-being of all’ and ‘freedom of choice.’” The content of the chapter makes it clear that being part of a global family is interpreted by the commission to mean that New Zealand should avoid actions that could precipitate a complaint against it within the WTO (pp. 90–91, 206–7). “The well-being of all” is translated as economic growth (p. 76–99) and “freedom of choice” as permitting “farmers and companies to pursue GM opportunities where they offer advantages” (p. 84). While here the commission is reflecting its neoliberal context, its restrictive, neoliberal interpretation of these values has the effect of silencing submitters’ alternative, nonneoliberal visions of global family, well-being, and freedom: visions that emphasize, for example, responsibility for the well-being
of others, including those in the global South; future generations and non-human beings; or freedom of conscious collective choice that may require curbing the activities of market actors.

A parallel argument has been made by Moana Jackson (2001) with regard to the commission’s marginalization of Māori testimony. Treating the testimony as values- and culture-based, it denied the cognitive (intellectual and scientific) content of the testimony, while also, as noted above, occluding the culture of GM technoscience. It then:

dismiss[ed the testimony] on the grounds that although the Crown had an obligation to heed such values through consultation[,] “[i]t would be contrary to the spirit and principles of the Treaty were the spiritual and cultural values of either Treaty partner given pre-emptive standing.” It did not seem to occur to the commission that the consequence of its approach was to actually give pre-emptive standing to those who sought to belittle Māori concerns. (Jackson 2001, quoting RCGM 2001a, 308)

Somewhat ironically, it may be that the commission’s approach to Māori input, to which the commission was obliged to attend, also provided a model through which other oppositional worldviews could be handled; its category pluralistic society functions similarly to its interpretation of Treaty obligations to subordinate concerns that have been defined as values-based.

“Science” and Uncertainty

One of the major sources of concern expressed in the submissions was the degree of uncertainty surrounding the effects of gene modification technologies (RCGM 2001a, 74, and throughout, especially ch. 4; see also Goven and Wuthnow 2004; Hope 2003; Rogers-Hayden and Campbell 2003). Concerns were raised, for example, about the unpredictability of the behavior of GMOs caused by the randomness and instability of genetic constructs; the lack of knowledge regarding the disease-generating possibilities of the use of viral vectors; the lack of knowledge of the longer term impacts of the use of antibiotic-resistant markers; and the lack of knowledge and of adequate approaches to understanding impacts on complex ecosystems. Submitters were pointing to a range of types of incertitude (Stirling 2001), reflecting whether or not available knowledge permitted estimates of probability or identification of possible consequences. These include not only what technical risk-assessment measures generally recognize
as risks (where potential harmful consequences can be identified and there is a good basis of evidence for probability estimates), but also instances of much greater uncertainty regarding probabilities and of ignorance regarding potential consequences (Stirling 1999, 2001; Wynne 1993, 2002). Similar concerns have been raised in consultations with the public and research on public attitudes in other jurisdictions (e.g., Einseidel, Jelsøe, and Breck 2001; Grove-White et al. 1997; Grove-White, Macnaghten, and Wynne 2000; Marris et al. 2001; National Committees for Research Ethics 1997; PDSB 2003).

Studies of the unacknowledged values, choices, and assumptions embedded in regulatory science help elucidate the commission’s treatment of these concerns. Particularly useful is attention to the discursive flexibility of science. Wynne (2001b) has noted a pattern of constructing science as predictive or provisional, depending on context; he terms this the “janus-face” of science:

This is the way in which science is regularly presented as offering definite predictive knowledge of the consequences of new technologies, in the form of institutionalized risk assessment, yet at the same time (when the hidden uncertainties underlying such assessments and corresponding assertions become apparent in the form of unpredicted effects) it is exonerated from assumed blame because after all, scientific knowledge is known to be, following Popper, inescapably and forever provisional. (Wynne 2001b, 4)

This duality, in effect, allows both the premature closure of public controversy (“science can manage the risks”[prediction]) and the evasion of responsibility by authorities (“we couldn’t have known these effects would arise”[provisionality]).

The commission’s response to concerns about the lack of adequate knowledge illustrates this tendency. This discursive flexibility of science enables the commission to regard instances of unanticipated harmful effects of GM techniques as routine and then to assimilate routine into manageable. For example, in its discussion of concerns about the possibility that the use of viral vectors may generate new potent disease organisms, the report relates testimony about the use of mouse pox virus as a vector to deliver a gene that would result in the mice producing antibodies against their own ova. While the original mouse pox virus was relatively harmless, the GM version “was so lethal that it also killed half of all the mice that had been vaccinated against mouse pox” (p. 46). This lethality was entirely unexpected. This was presented to the commission as an illustration of GM techniques generating risk in a context of ignorance, suggesting the need for greater reflexivity within the GM research enterprise;
but the commission does not recognize it as such: “Unexpected results such as these are a part of and, to some extent, the purpose of research” (p. 46). The example was taken instead as an illustration of normal, routine, and sound research practice—which, by definition, progressively eliminates ignorance and decreases risk—and therefore as offering nothing but confirmation of the reliability of scientific knowledge.

Later, in the risk-assessment section of the same chapter, the character of scientific knowledge changes from provisional to predictive. The report quotes virologist Terje Traavik on the subject of unpredictability in relation to horizontal gene transfer:

There is already sufficient evidence on the unpredictability of genetic engineering techniques and the interaction of genetically engineered organisms with the environment to indicate that we do not understand enough about the short, medium or long-term consequences of their release. Horizontal gene transfer from GMOs is a real option. Such events may result in extensive and unpredictable health, environmental and socioeconomic problems. Under some circumstances the consequences may be catastrophic. Our present level of knowledge about horizontal gene transfer is inadequate for reliable risk assessments. This applies to GMOs in general as well as to any particular GMO. (p. 69)

The commission signals its rejection of this view by immediately following it with contrary testimony—in this case, utilizing a representation of science as, in Wynne’s description above, “offering definite predictive knowledge of the consequences of new technologies.” These paragraphs conclude the section on risk assessment and are worth quoting in full:

However, Dr Cohen, a scientist in the HortResearch Plant Health and Development Group, said that scientific methods had been developed to evaluate and quantify the two components of risk assessment: assessment of the probability that something might occur and assessment of the consequences that might follow in the event of an occurrence.

In addition, the Association of Crown Research Institutes (ACRI) and other organizations involved in researching genetic modification did not accept that gene technology was inherently unpredictable or that there was insufficient scientific knowledge to assess the risks adequately. In its submission, ACRI said:

... that sufficient reliable research information exists, or is being rapidly developed, to allow society’s decision-makers to have a workable understanding of the risks of the technology.
The Commission also heard evidence that some of the anticipated risks of genetic modification were unlikely to arise, or would arise only in specific circumstances and were, therefore, capable of being managed. (p. 69; see also pp. 174–78, 227–29)

This passage demonstrates the link between the discursive flexibility of science and the failure to grasp the distinctions among risk and other types of incertitude, which, as ample research has shown, are well-grasped by the public and inform their concerns about GM (Grove-White, Macnaghten, and Wynne 2000; Marris et al. 2001). The “trust in numbers” (Porter 1995) expressed here by the commission is, of course, an aspect of the instrumental-predictive worldview that goes unnamed in the report and unquestioned by the commission.

Despite its foregrounding of values, then, and despite what could be construed as submitters’ requests that it do so, the commission failed to problematize or reflect on the hubristic culture of regulatory science. The commission chose to regard all instances of incertitude highlighted by submitters as (manageable) risks when it concluded “we should proceed carefully, minimising and managing risks” (p. 2).

“Science” and Science in Context: A Vector for Neoliberal Politics

The discursive flexibility of science extends beyond the janus-face of provisional-predictive, however. There is also the frequently occluded distinction between an idealized republican science (Fuller 2000; Polanyi 1962)—an open society of autonomous truth-seeking equals—and science in context. The context for science today is increasingly commercial. There is growing evidence that, in the biosciences in particular, the imperatives of commercialization and commodification significantly shape and constrain research priorities, the flow of information, and even research findings (Bekelman, Li, and Gross 2003; Campbell et al. 2002; Healy 2004; Kleinman 2004; Lexchin 2005; Shorett, Rabinow, and Billings 2003; Stelfox et al. 1998).

In New Zealand, concerns among the public and scientists themselves about commercial influence on scientific research often focus on the consequences of the reorganization of public-sector research organizations (part of the New Zealand experience of roll-back neoliberalism) in the 1980s and 1990s. While still formally part of the public sector, these
organizations are required to operate on a commercial basis and to seek partnerships with the private sector. According to one university biochemist:

The conversion of the [Department of Scientific & Industrial Research] into a series of semicommercial Crown Research [Institutes] (CRIs) has brought about a sea change in the way in which science is done. . . . CRI and University researchers are encouraged and indeed forced, to seek research funding from outside providers who also have distinct economic and financial outcomes in mind. The intellectual property associated with research is perceived as a valuable resource to be protected and exploited. . . . [W]e are forced into situations where acceptance of funding to carry out the work means that the disposition of the intellectual property will be largely to the benefit of offshore interests. (Tweedie 2004, 21; see also Barton et al. 2004; Hammond and Devine 1993)

Many of the concerns expressed to the commission were linked to issues of purpose, control, and power raised by this transformation of the context of science (Fleming 2003; Goven and Wuthnow 2004; Hope 2003). The commission notes the existence of these concerns across a number of sections of the report. In the chapter on environmental and health issues, in consecutive sections titled “The corporate context” and “Concern about scientists,” it describes public concerns about the effect of commercial interests on “the integrity of science, of scientists and of the scientific process” (p. 63) and notes a “lack of trust of scientists . . . explicitly linked to the relationship between commercial interests and the funding of science” (p. 64). It quotes the testimony of the parliamentary commissioner for the environment on the findings of that office’s qualitative research on attitudes toward using GM for pest control, in which he describes widespread concerns over the control of research:

[The] New Zealand community’s asking, how independent is our science voice today? Who actually owns that voice? . . . [A]nd there’s a widespread perception that the soul of science is, or has been, bought, and . . . the objectivity, rightly or wrongly that was bestowed upon science in previous decades, is not seeking to be as strong as it was. (p. 64)

The report also notes concerns that corporate involvement in the development of GM products introduces an inappropriate and risk-generating logic to research and decision making. Because “commerce cannot afford not to develop its products, not . . . to sell its products,” “the commercial” imperative gets in the way of the decisions that need to be made” and “scientists and
corporate developers of genetically modified products might not carry out proper assessments of the risks of releasing genetically modified organisms” (pp. 63–64).

The commission’s response is a denial of the possibility that control of research funding can translate into influence over scientists’ research priorities, design, or findings:

In New Zealand, scientists are guided by the code of ethics promulgated by the Royal Society of New Zealand. . . . as long as scientists [retain] their integrity and independence, the source of funding [is] not an issue. (p. 64)18

During the hearings, the commission approached the concerns about compromised research noted above through a binary of possibilities: either scientists were amoral (which, presumably, would be cause for concern); or scientists had ethical standards, and therefore, there was no reason to be concerned about the identity and interests of funders. They then sought confirmation that scientists were not amoral.19

In addition to ignoring evidence that strongly suggests that the source of funding is indeed an issue, this omits a number of other considerations that may be relevant to concerns about purpose and reliability, such as scientific cultures that assume and/or value predictability and control (or pragmatism and the benefits of economic growth). But the commission’s approach also reflects an individual-agency-centric view of human society, in which social structures such as the ownership and control of the production of wealth have no particular relevance for human action. This view is consistent with the neoliberal celebration of markets as coercion-free arenas of individual freedom. It is also consistent with the view of science as an egalitarian community of autonomous truth seekers abstracted from particular political-economic contexts. The commission treats this idealized science as if it constituted a refutation of the concerns generated by science-in-context, concerns that grow out of a recognition (and often direct experience) of the structures of incentive and constraint in which scientific research actually takes place.

The control of research funding by those with particular interests is not seen as a threat to the integrity of research, because scientists have integrity and (are free to) act accordingly. By extension, it is the—presumably rare—individual scientist lacking in integrity who is more likely to constitute a threat to society. The commission appears to bracket within this category scientists (typically without ties to industry) who have attempted to give early warnings (Stirling 1999) of possible harms (pp. 52–53, 72–74,
While which this misinformation who peddled by political-economic claims of benefit is irresponsible, causing unnecessary “polarisation” on the GM issue and undermining “balanced, informed debate” (pp. 73–74).

In a public lecture approximately one year after the report was issued, a commissioner described one of these scientists as “deliberately peddling misinformation about the apparent dangers of GM plants” and called for such scientists to “face the same penalties as scientists who are dishonest or careless in their work” (Fleming 2003, 40). The danger to society, in this view, lies not in asymmetries in the control and deployment of economic resources; the ways in which economic power, through structuring research and career opportunities, can shape what it means to do science or be a scientist remain invisible here. The danger, according to the commission, lies instead in the possibility of individual rogue scientists lacking in integrity, who try in some way to derive personal benefit from alarming the public.

This failure to acknowledge the possible import of political-economic context is underpinned by a pluralist approach to the actors in the GM field. By pluralist here, I mean the attribution of equal agency to all actors, unimpeded by structural inequalities and constraints—a component of the unnamed (neo)liberal worldview. Not surprisingly, the commission’s failure to identify a neoliberal worldview impedes its ability to grasp the implications of neoliberal practice in relation to GM. But this blindness to political-economic context also is exacerbated by the commission’s acceptance of an idealized science innocent of power relations, including especially the power relations inherent in the current role of commercial interests in research and development in the biosciences. In effect, science as an idea (and ideal) is adduced as evidence to deny the realities of science in context. By insisting on the inherent transparency and truth-seeking nature of this idealized scientific enterprise, the commission renders incomprehensible claims that GM technoscience constitutes a challenge to democratic control of the exercise of power. In this way, (idealized) science acts as a vector through which economic liberalism (or neoliberalism) trumps democracy.

In performing this role, ideal(ized) science is self-consuming. Despite the fact that the discourses of science and neoliberalism share attributes such as instrumentalism, reductionism, and a fetishization of calculability, the requirements of science also come into conflict with neoliberal imperatives. This is perhaps nowhere more apparent than in the treatment of research data. While republican science depends on the free flow of information among researchers—essential to both its transparency and its truth seeking—the
effect of neoliberalism’s extension of commercialization and commodification has been to restrict that flow (see, e.g., Bekelman, Li, and Gross 2003; Blumenthal 2003; Shorett, Rabinow, and Billings 2003). This was argued before the commission by MIT’s Jonathan King. The report recounts King’s argument that

because oral reports, abstracts, grant proposals and published papers all constitute prior art, individuals or groups planning to file for a patent have to avoid public disclosure of the work before the filing of the claim. Patent attorneys regularly advise researchers to restrict presentations to colleagues, so as not to jeopardise planned patent submissions. Professor King said that the resulting undermining and reversal of the scientific culture of open communication and exchange was one of the most destructive impacts of gene patents. (p. 278)

The commission counters with a justification of patents drawn directly from the testimony of the New Zealand Institute of Patent Attorneys (NZIPA), which the commission appears to regard as source of neutral expertise (p. 271). It accepts the NZIPA argument that “the patent social contract” already requires “full disclosure of the patented invention and the best way of practising that invention” (p. 278) and that “in the absence of the disclosure required by patents,” research data would be “held even more tightly” (p. 295). In any case (again drawing on NZIPA), “the economic benefits of intellectual property systems are generally considered to be positive,” and “removing biotechnology developments from coverage by patent or property rights systems” would put “New Zealand inventors and investors . . . in an invidious position against the rest of the world [and] would . . . place New Zealand in breach of its obligations under major trade agreements” (p. 295). Rather than moving toward decommodifying research data and restoring the flow of information, the commission recommends a further restriction on the public’s access to “commercially sensitive or confidential supporting information” provided to regulatory agencies when seeking approval to develop and release GMOs (p. 295).

Here again, the idea of science (assisted perhaps by the idea of NZIPA testimony as value-free technical expertise) has occluded the power relations inherent in real-life biotechnoscience. In doing so, it also necessarily occludes the constraints that this context places on science itself. As a result, both the scientific culture of open communication and exchange and democratic accountability are undermined further.
Conclusion

Public engagement is now widely prescribed as a remedy for the public’s failing trust in science and its regulation. In addition to recognizing in this prescription another reincarnation of the deficit model (this time, the public’s lack of trust—rather than scientific and regulatory institutions’ lack of trustworthiness—is the cause of its opposition to certain technoscientific developments; Hagendijk 2004b; Levidow and Marris 2001), it is important, I have argued, to acknowledge the political-economic terrain on which it is played out. I have described this terrain as neoliberal and have highlighted the ways in which neoliberalization has shaped the structures relevant to science and its regulation.

One effect of neoliberalization has been to enhance the fungibility of economic resources in relation to others (e.g., political, cultural, and intellectual), thus increasing the significance of economic power asymmetries. Related changes in the research environment include the increasingly commercial orientation of public research funding, the active encouragement of public-private research partnerships, and new opportunities for scientific researchers to double as company owners or executives. Peer review processes are increasingly complicated and limited by conflicts of interest and provisions for commercial confidentiality (Nature Genetics 2004). Neoliberalization also has affected the regulatory sphere significantly. Regulation must be reconciled with the hegemonic values of economic growth and competitiveness—itself continually measured and ranked against other national and regional economies—as well as the pre-eminence and extension of private-property rights. These values have been empowered and institutionalized through the agendas of multilateral institutions and deregulated financial markets, generating pressures for “streamlining” regulatory processes (such as risk assessment) and “harmonizing” regulations.

It is not difficult to see how these changes reinforce regulatory science’s cultural proclivity toward denying or downplaying uncertainty and ignorance. Indeed, submissions to the RCGM and much social-science research (Einsiedel, Jelsøe, and Breck 2001; Goven 2003; Grove-White, Macnaghten, and Wynne 2000; Marris et al. 2001) indicate that this is well grasped by various publics, who repeatedly have expressed concerns about the ways in which commercial incentives and influences may not only shape research agendas but also discourage acknowledgement by researchers and regulators of the limitations of their knowledge. It can be argued that neoliberalization undermines the trustworthiness of science and its regulation (which
is not to say there are no countervailing pressures), and that the public’s “lack of trust” reflects the accuracy of its perception of the situation. We seem to have a closed circle of mutual reinforcement, when, as in this case, the discourse of “science” can deflect attempts to have these problems of trustworthiness addressed, and scientists who threaten commercialization agendas by challenging the adequacy of available knowledge are demonized as fraudsters.

I have noted that roll-out neoliberalization is characterized by a technocratic normalization and discursive depoliticization of the value-laden political choices that construct and maintain neoliberalism and by a more activist government orientation toward some of the social consequences of neoliberalization. From this perspective, the participatory turn reflects a more activist orientation toward some of the political consequences of neoliberalization—but firmly framed by the normalized values of neoliberalism. What kind of scientific citizenship does this permit?

Here, it may be instructive to compare the RCGM and the 2001 Dutch GM food debate analyzed by Hagendijk and Egmond (2004). While the former process explicitly constructed the public as the repository of values that should guide decision making, the latter constructed the issue as a pragmatic one and participants as pragmatists, implicitly denying the relevance and even legitimacy of an approach based on principle. According to Hagendijk and Egmond, participants were “given to understand that many ethical issues may be or should be rephrased in terms of consumer choice . . . and are not a matter of state policy or interventionism” (p. 33). Yet, for all the RCGM’s emphasis on public values, the result was much the same: in this case, the filtering (rather than framing) out of those values that could not be fitted within the parameters of neoliberalism. Here, too,

> economic liberalism and dependency on international agreements [were] sacrosanct in ways that delimit not just the political domain but also the substantive agenda for debate. NGOs that wish to frame the questions in a more principled way [were] consistently delegitimized. (Hagendijk and Egmond 2004, 33)

So in the current political-economic context, what does it mean to incorporate the public’s values? What can scientific citizenship mean in a context in which crucial political choices cannot be contested? What does it mean for the public to be heard as one of many stakeholders within a pluralistic model of governance, in a political-economic context in which fungibility of economic resources is intensified and distribution of such
resources is extremely unequal? Is there any way such a discussion can result in anything other than the privileging of individual freedom of choice and the marginalization of those positions that require, for example, significant limitations on private property rights or the rejection of regulatory harmonization?

It has been argued here and elsewhere (e.g., Levidow and Marris 2001) that public engagement is an attempt to address the legitimation crisis generated or exacerbated by what I am calling neoliberalization. This does not mean that the participatory turn must be dismissed out of hand as a mere legitimation exercise. But it is, I argue, essential in evaluating public engagement both to examine whether the neoliberal context has foreclosed public contestation of key political choices and to consider whether, and with what implications, engagement has been instrumentalized. This may seem obvious, but instead, the burgeoning field of social-science research on public dialogue in relation to science and technology is in danger of generating a new set of techniques with which to pacify, intimidate, or evaluate the public itself (Rayner 2003). This danger is exacerbated by the notion that participation mechanisms can be evaluated completely independently of their relation to the cultural and structural forces I have discussed here (see, e.g., Rowe and Frewer 2000; Rowe, Marsh, and Frewer 2004). Rather than the increasingly prevalent focus on processes internal to the mechanisms, I have argued that it is essential to attend to how the dialogue is placed in relation to these cultures and structures. Without such attention, the major outcome of the participatory turn may well be a proliferation of techniques of legitimation.

Appendix
The Seven “Core Values” Identified by the RCGM

The uniqueness of Aotearoa/New Zealand
The environment of any country is unique, and New Zealand’s is made more so by its geographical isolation, its relatively low population density, and the ecosystem, flora, and fauna specific to this nation. Decisions need to be tailor made to fit those features and circumstances that are uniquely ours.

The uniqueness of our cultural heritage
The Treaty of Waitangi created a special relationship between tangata whenua (people of the land) and tangata tiriti (the settlers who came later). New Zealanders
recognize the essential element of Māori heritage in the New Zealand culture of today.

Sustainability
The need to sustain our unique but fragile environment for generations yet to come was mentioned often and passionately by many. Tangata whenua use the word kaitiakitanga (stewardship) to describe the same concept. Any estimate of benefits and costs must include sustainability as a central criterion. An environment that is cherished and cared for is not just a survival mechanism; it is, for many, also a source of spiritual and cultural hope.

Being part of a global family
To be geographically isolated is not to be isolationist. New Zealanders are very much world citizens in terms of travel, trade, and partnerships of knowledge and endeavor. While safeguarding those things that are uniquely ours, we also share in global developments. We live in a creative partnership with other nations, being influenced by them and yet also having the capacity to exercise leadership among them.

The well-being of all
Meeting the needs of all New Zealanders requires a robust economy with equally robust systems to ensure positive educational, health, and social outcomes. Economic and social goals are not mutually exclusive. They are, in fact, symbiotic. A strong economy makes possible the provision of effective educational, health, and social systems, and a population that has benefited from those systems contributes in turn to a strong economy.

Freedom of choice
As a nation of diverse peoples, cultures, and beliefs, we need to recognize such plurality by allowing for maximum freedom of choice. Freedom to make my choice, however, also means allowing others the freedom to make theirs. In a democratic nation, freedom in diversity requires a flexible and cooperative spirit to ensure that as far as possible, everyone’s freedoms are maintained.

Participation
A democratic nation requires effective systems of consultation and shared decision making. The commission has sought to consult with as many New Zealanders as possible and to value the viewpoint of “the average Kiwi” as much as the viewpoint of well-resourced organizations. National policies are most likely to succeed when they arise out of processes of participation, and we hope that this report reflects this fundamental value.

Source: RCGM 2001a, pp. 11–12.
Notes

1. For New Zealand illustrations of this trend, see Office of the Prime Minister (2002) and MoRST (2003).

2. For an analysis of how neoliberalization has affected scientific citizenship around biotechnology in Finland, see Häyrinen-Alestalo and Snell (2004).

3. They define structures as “specific formal and informal, explicit and implicit ‘rules of play,’ which establish distinctive resource distributions, capacities, and incapacities and define specific constraints and opportunities for actors depending on their structural location” (Kleinman 1998, 289, cited in Klein and Kleinman 2002). It should be clear that what I am calling neoliberalization would have the effect of reshaping structures.

4. See, for example, the RCGM’s recent recourse to the report to justify its stance on terminator technology (Hobbs 2005).

5. Royal commissions and other commissions of inquiry are a form of public inquiry in which a panel is appointed by government for a limited time to investigate a particular incident or inquire into a particular issue and produce a report. They “have powers of compulsion in regard to witnesses, documentation and awarding of costs, which enables them to uncover information which might otherwise be difficult to obtain. They also have credibility in the eyes of the public as, once in train, the Government cannot interfere in the direction taken by an inquiry or influence the findings” (NZDIA 2001, 10).

6. “Interested persons” were those individuals and organizations the commission recognized as entitled to appear before it. The commission argued that it was required by the relevant legislation to limit “interested persons” to those who could satisfy the commission that they have “an interest in the inquiry apart from that in common with the public” and that it did its best to overcome these limitations by holding public meetings, permitting public submissions, and commissioning an opinion poll (RCGM 2001b, 140–41). However, it appears that the commission could have interpreted the legislation’s requirements regarding “interested persons” more liberally (see NZDIA 2001, 55). It is also not clear why the commission reversed its position on whether those appearing before it would be under oath between its opening statement of August 7, 2000 (“Oral evidence will be given on oath or affirmation”) and its “Notification to Interested Persons” of August 31, 2000 (“The Commission does not intend to request witnesses to swear an oath or affirm”). Its otherwise detailed account of its processes (RCGM 2001b) does not discuss this. Both of these decisions are relevant to an analysis of how the processes of the commission constituted scientific citizenship, which is outside the scope of this study.

7. While generally recommending that the existing regulatory system be permitted to make decisions about applications to release GMOs on a case-by-case basis, the commission, noting that “the first release would be very much a watershed decision” (RCGM 2001a, p. 338), recommended that before release is allowed to proceed, the minister for the environment should exercise existing “call-in powers” to evaluate the effects of the first release of a GM crop “in order to assess the likely overall economic and environmental impact on the preserving opportunities strategy” (RCGM 2001a, p. 339). This recommendation, which would have located responsibility for this watershed decision transparently with the government of the day, was rejected. According to the prime minister, it “left the state like a possum in the headlights, not knowing when to expect an application and not in the near term having completed the further work the Commission itself recommended before approving any release” (Clark 2001). It isn’t clear why the Environmental Risk Management Authority (ERMA), which was
left with jurisdiction over this decision through the case-by-case approach to GM regulation, would be any better prepared in such an event. A perhaps cynical reading of these events is that the commission passed the buck to the government, and the government passed it to ERMA.

8. Oddly, it was regarded as adequate that such research should simply be initiated, not completed, before the moratorium was lifted.

9. See Hope (2003) for a thorough dissection of the report’s reasoning, or lack thereof, on key issues.

10. All citations of the report from this point forward refer to RCGM 2001a.

11. The Treaty of Waitangi was signed in 1840 between representatives of Māori and the British Crown.

12. While spheres may be accurate, sets of criteria is not; the commission does not develop such criteria in the report.

13. Here, the Treaty of Waitangi stands for New Zealand’s commitment to biculturalism.

14. Later, in the chapter “Economic and Strategic Issues,” the commission also includes freedom of choice among the values relevant to this sphere.


16. The failure to name these worldviews is all the more remarkable given their explicit identification by other “interested persons” and the fact that some of the passages in which this identification occurs are quoted in the report. The commission draws evidence from the submissions of various “interested persons” to substantiate its characterization of the Māori, ecological, and religious worldviews. In this evidence, the “interested persons” contrast their views to others they associate with many of the scientific and commercial interests advocating development of GM. They describe these other assumptions and orientations, such as materialism, reductionism, instrumentalism, anthropocentrism, and determinism, at some length. Despite the fact that there is abundant evidence in the submissions of such attitudes (see Goven and Wuthnow 2004), the commission does not find a worldview in them.

17. The final section of this chapter, which occupies just more than one page, is titled “Social Equity” and includes arguments by various NGOs that the spread of GM food and crops is likely to increase social inequalities and entail an inequitable distribution of risk. The commission leaves this section without any comment or recommendation. It could be argued that the commission’s call for more research on socioeconomic (and ethical) issues (Recommendation 6.14) is a response to these concerns. However, the discussion leading up to the recommendation (see pp. 134–5) indicates clearly that what it has in mind is research into “attitudes, social learning, and public acceptance.”

18. Their entire response (pp. 64–65) consists of the passage quoted, followed by, first, a statement by the immediate past president of the Academy Council of the Royal Society of New Zealand that “guidelines specifically for researchers in the field of genetic modification” have been drawn up and probably would be incorporated into the Royal Society’s general code of ethics, and second, an excerpt from the testimony of a microbiologist and medical ethicist representing the Interchurch Commission affirming that integrity is important to scientists.

19. This confirmation was taken from the testimony of Dr. Audrey Jarvis, the Interchurch Commission representative mentioned above, and was the result of the following exchange (only the words in bold italics were quoted or referred to in the report):

MR. UPTON [counsel for the commission]: It may not be something that you can comment on, but are scientists seen as having ethical values and standards in New Zealand, or are they seen as being amoral?
DR. JARVIS: No, I don’t think they’re amoral, having been one and having a husband who is one. No, I don’t think they’re amoral, but . . .

MR. UPTON QC: They bring their own standards?

DR. JARVIS: They bring their own standards, they bring their own values.

MRS. PENE [another representative of the Interchurch Commission]: They do.

DR. JARVIS: But at times, I think they’re all extremes of a continuum and I think at this Commission we have seen people representing what they hope experiments will achieve in a rather unrealistic way and a very, sort of, blinkered way. We have had scientists who say that only the scientific, the economic, the pragmatic matter, but of course it’s the whole continuum of people, and I’m not sure you can generalise and we’re certainly not saying that scientists have no ethics. And, in fact, in our proposal we have acknowledged, and I can’t find the place now, we have acknowledged the need for scientists, we have acknowledged their creativity, and we have acknowledged that there are concerns about the problems imposed on them by having to get permission and get through regulatory bodies, and I know that this is a trial at times for them and it is a major problem, but it’s not something that can be ignored. But we’re not saying scientists have no ethics.

MR. UPTON: You see, one of the suggestions, and I suspect it’s more related to overseas than New Zealand, is that some scientists are very much in the pocket of corporations, and that they provide results which they know will then get more funding from the corporate.

DR. JARVIS: Well, let’s face it, within New Zealand people still have to get funding and you direct your funding to something that you see will get your research, to what will get funding, and the Government has specific priorities, whether it’s possum control or child health or Māori health. And so people direct their applications toward those priorities. So, people are driven by the need to get research funds, and I guess people are funded at times by industry and by pharmaceutical companies; by other people.

MR. UPTON: And that in itself is not wrong, is it?

DR. JARVIS: Is not wrong. [sic]

MR. UPTON: I mean I’ll put it on a more positive note. That in itself can be acceptable?

DR. JARVIS: Yes, it can.

MR. UPTON: Presumably as long as the scientists remain independent and retain their integrity?

DR. JARVIS: That’s right, and the integrity is terribly important. This has always been important for scientists. There will often be the odd scientist who does not have integrity, that a white mass is painted black, or whichever way it was. I guess any person can not have integrity, and in what we’re saying we’re not saying that scientists don’t have integrity. We have scientists on our Commission, I’ve been to talks, been involved with scientists involved with ERMA, who have been on ERMA, who are on ERMA, and they have concerns about the ethical issues, and we’re not denying that there’s not a conscience in the scientific community at all.

20. This qualifying language is necessary because, as noted above, there is little direct argumentation or reasoning by the commission in the report.

21. The commission also seems to blame another scientist associated with early warnings, Arpad Pusztai (who was prevented by his employer from continuing his work or accessing his
data), for the incomplete nature of his research on GM potatoes when they write: “It was unfortunate that the process of peer review was pre-empted by premature media release, thus preventing further scientific assessment” (p. 209). While Pusztai perhaps can be blamed for the premature media release, he cannot be blamed for the lack of follow-up research.

22. This meaning is derived from the classic pluralism of Truman (1951) and Dahl (1956).

23. For the contradictory logics of economic liberalism and democracy, see Mouffe (2000); in relation to public dialogue on science and technology, see Hagendijk (2003, 2004a).

24. This is not to argue that this flow was unrestricted before neoliberalization, but that neoliberalization has further restricted that flow to a significant degree (see Kleinman 2004 on restrictive practices).

References


Joanna Goven is senior lecturer in political science at the University of Canterbury, New Zealand. She is also deputy director of the Centre for Integrated Research in Biosafety. She leads a research project on incorporating social, cultural, economic, and biosafety dimensions into an integrated approach to assessing the risks of biopharming, and she is also involved in several projects that explore the possibilities and politics of participatory approaches to technological decision making.