CONTAMINATED DEMOCRACY

A Discourse Analysis of the Submissions to the Royal Commission on Genetic Modification

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Abstract

This thesis investigated the practice of democracy in the Royal Commission of Genetic Modification, using a constructivist discourse methodology that drew on Mannhiem's sociology of knowledge, with a critical analysis of institutional power. Conflicting worldviews materialised in the sampled Royal Commission submissions, revealing a vast majority of submissions united by a vision of a 'GE-free' New Zealand. This majority stance was however pushed aside, with views expressed in the largely pro-GM Interested Person submissions proving dominant, contaminating the ideal of democracy. The Interested Person submissions are however more complex. A century old bureaucratic legislation promoted the contamination of democracy. Section 4A of the Commission of Inquiry Act 1908 excluded individuals and various groups from being heard by the Royal Commission on Genetic Modification. A consequence of such excluding was that the Royal Commission report presented a skewed analysis of the Interested Person submissions, unjustly favouring a pro-GM stance.

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I would finally like to thank my family, especially my children Lenaia and Sage for putting up with me in the time it took to carry out this thesis, and for being interested in what I am doing (mainly in when I will be finished!).

Table of Contents

Appendices

List of Tables

List of Abbreviations

ADLS	Auckland District Law Society
CDA	Critical Discourse Analysis
COI	Commission of Inquiry
CRI	Crown Research Institute
DA	Discourse Analysis
ERMA	Environmental Risk Management Authority
GA	Government Agency (submission category)
GATT	General agreement on Trade and Tariffs
GE	Genetic Engineering
GM	Genetic Modification
GMO	Genetically Modified Organism
GP	General Public (submission category)
HSNO	Hazardous Substances and New Organisms (Act)
IP	Interested Person (submission category)
MAF	Ministry of Agriculture and Fisheries
RC	Royal Commission
RCGM	Royal Commission on Genetic Modification
WTO	World Trade Organisation

CHAPTER ONE
LAYING THE FOUNDATIONS

The genetic modification (GM) debate in New Zealand did not begin with the announcement of a Royal Commission on Genetic Modification (RCGM). The issues and events surrounding the GM debate have rather been gathering momentum over the last decade, to the point where in 1999 a RCGM inquiry was appointed to investigate and make recommendations as to the future of GM technology in New Zealand. To capture the GM debate, its discourse and its differing perspective are presented at length in chapters four and five. As an introduction to this type of discourse, two examples of submissions are presented here. One is a submission that was opposed to GM, and the other is from a supporter of GM. The narratives relayed here are archetypal of the arguments put forward by those on differing sides of the GM battlefield. The narratives are presented verbatim, with the following excerpt being typical of a submission that is clearly opposed to GM. This submission is part of the 'general public' (GP) category:

> I'm of the opinion that NZ should ban Genetic Engineering of any form, including imports of foods with GE ingredients and especially GE food trials. Apart from protecting it's population from new & unknown hazards, this could benefit our economy considerably by creating a unique position for the country as an environmentally safe haven. I have grave concern when I hear of Ge field trials approved by ERMA with the comment that there is 'limited' risk involved. The crucial issue is that we are dealing with unknown risks that will be prove [sic] to be irreversible (GP433)[1].

The discourse that comes through clearly in this extract is focused on the safety and regulation of GM food. Also mentioned is a 'vision for the future', and reference to the descriptive terms 'risk' and 'unknown' which are common throughout the submissions that are opposed to genetic modification.

This next submission extract comprises the executive summary of a submission, from an organisation that was granted 'Interested Person'[2] status. This submission is one that favours commercial embracement of GM in New Zealand. Most of the Interested Person

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[1] The number GP433 is a coding sequence, which stands for 'General Public' and the number allotted during sampling. This submission code can be found in appendix C along with others.

[2] An Interested Person (IP) is considered to have interests outside that of the public (Appendix A).

submissions were produced on official forms[3] that asked questions relating to what were deemed by the RCGM to be key areas. Many of the IP submissions although being asked about their views in many areas related to GM, are written around the specific interests of the particular group or organisation. For example, Landcare Research (IP22) is primarily concerned with the "sustainable management of land-based resources", and ZESPRI (IP54) is primarily concerned with the impacts of GM on the kiwifruit industry. In this case, New Zealand Agritech Inc Ltd are mainly concerned with agricultural technology, and the more expedient use of GM research to enhance agriculture, in an internationally competitive environment:

> As the representative of the majority of agricultural technology is [sic] should not surprise the Commission that the focus of this submission is towards our relationship with the world and particularly our ability to compete. We are not entering directly the debate of safety and threats of genetic modification, we like most in the scientific community believe given adequate controls the genetic modification of organisms can be controlled for the benefit of man. We recognise however that individuals are entitled to be concerned at these developments and have the choice to avoid them if they wish. On the other hand we are concerned that such concerns should not stop the progress of science and the significant benefits that this will be [sic] give to man kind and this country. To this end we believe that as a country we have a unique position to advance this science with significant national benefit and little risk. This is based as we expand A(1)[4] on our freedom from exotic disease and reliance on non crops. While recognising a need for an approval process we are concerned that the current process has become protracted is [sic] in hampering innovation. This can be corrected if the management of the final outcome is the basis of accessment [sic]. There should be an awareness and concern of the impact of our controls on genetic modification on our position as a free trading nation and also of increasing consumer and political concerns internationally. We believe the strategies we have outlined can be refined in new policies and legislation that can give us a very competitive edge in the world and protect our trade position and also the concern of consumers in New Zealand (IP29).

In this submission the concerns at losing potential research and progress possibilities within an internationally competitive market, as well as strict regulation which could hamper further research, were viewed as the biggest threats to New Zealand. The discourse in this submission chooses not to enter into any debate surrounding the risk or

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[3] A reproduction of the official submission form is available in appendix B.

[4] A (1) refers to a section on the official form where the discussion is expanded.

safety of GM technology, which is in opposition to much of the discourse provided in the GP or anti-GM submissions which view the science itself and the potential risks associated with non-contained organisms as being the biggest threat or risk. These two submission extracts demonstrate the two competing discourses evident in the thousands of pages of RCGM submissions. On one side there is a discourse of concern about the use of GM technology and its risky nature. On the other side there is a concern relating to a fear of not being able to compete. This thesis explores two discourses in themselves but also within a political frame.

Preceding the RCGM, the debate about GM was already rampant, and maybe even already contaminated. For some time the risks, fears, safety and benefits of the technology were being ardently debated, and the very concept of GM or genetic engineering (GE) itself has been (and still is) misconstrued and debated.

1.1. KEY CONCEPTS AND HISTORY

To ground this thesis within competing discourses it is essential that there be a clarification and defining of key terminology, as well as an overview of the context within which the GM debate has and is taking place in New Zealand. The very terminologies used to describe what is widely known as 'GE' or 'GM' are in themselves discourses and a subject of controversy.

The original terminology used by genetic scientists was 'Genetic Engineering' or 'GE'; this was until the 'engineering' slant was criticised largely by opponents of the technology in a pejorative light (Hager, 2002). The term GE suggests a technology that does in fact engineer or create new species, which has been viewed by some as attacking fundamental values related to human life or existence, and evolution (as is evident in some submission discourse). As a response, the term GE became 'GM'. Public relations companies and US companies such as Monsanto saw this term as being blander, and therefore less prone to negative connotations; in recent times, the term 'Genetic Enhancement' has been coined as an even better or less controversial way in which to refer to the technology (Hager, 2002). This history of the very terminology captures the discourses: why GM supporters more often use the term GM, and GM opponents will more usually use the term GE. In this thesis I have chosen to use the term GM, not to

indicate my stance on the GM issue, but because this is the terminology which was used in the RCGM[5].

A key question in relation to GM is 'what do people mean when they are talking about 'GM' or 'GE'?'. This question is problematic from the outset, as the issue is often based on misinformation and confusion. This is not helped by views from opposite sides of the GM debate each accusing the other of misinformation (as is again, clearly evident in submission discourse). There have been mixed messages put forward to the public regarding what GM is (from Public Relations companies for example[6]) and due to the public receiving or hearing partial or vague details of the GM issue. The definition of GM used by the RCGM was:

- The deletion, change or moving of genes within an organism, or
- The transfer of genes from one organism to another, or
- The modification of existing genes or the construction of new genes and their incorporation into any organism. (RCGM, 2001:5).

Defining of GM is variable and may not be the same as what is presented by the RCGM. There are those who see GM as simply an extension of selective breeding techniques (usually it is GM advocates who take this stance[7]), while there are others who are adamant that what sets GM apart form previous technologies is the crossing of the species barrier[8], which is not something that can occur in natural evolution. Whichever viewpoint is taken, it is clear that defining GM in the New Zealand context is an issue that is not going to go away any time in the near future.

In New Zealand the issues and concerns involving GM first came to public attention in the 1990s, and into the political arena in the late 1990s within a right-wing, neo-liberal political climate (Jesson, 1999). This political climate was very much market-driven and sought to commercialise previously non-commercial ventures, embrace foreign

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[5]Is this preference by the RCGM to use the term GM rather that GE indicative of their way of thinking about the issue? Was the outcome of the RCGM determined before the RC even had the inquiry, as could be contrived by their preference in terminology? These issues are addressed later in the thesis.

[6]See Weaver and Motion (2002).

[7]For example see IP submissions from Monsanto New Zealand Ltd (IP26) and The New Zealand Arable-Food Industry Council (IP2).

[8]For example see the IP submission from Commonsense Organics Ltd (IP7).

investment, and was committed to free trade via involvement in General Agreement on Tariffs and Trade (GATT) and the World Trade Organisation (WTO) (Weaver & Motion, 2002). Such a shift in climate put increased strength in the hands of larger businesses and private interests.

Simultaneously at this time GM technological development was occurring in New Zealand largely without interference from this shift in the political and economic climate. Thus GM developed in New Zealand for a number of years unchallenged, with the first GMO being produced around 30 years ago, and for the most part without any rigorous testing (Weaver & Motion, 2002; RCGM1, 2001). A legislative response was however eventually introduced to 'tidy up' GM technological development via the Hazardous Substances and New Organisms (HSNO) Bill introduced in 1994, and later implemented as the HSNO Act. This new Act meant that permission to do GM research or trials, had to be gained through the Environmental Risk Management Authority (ERMA) as of July 29, 1998. GM was developed in the 1970s in New Zealand (RCGM1, 2001) thus meaning that GM has ranged free in New Zealand for at least twenty years.

Throughout the 1990s Crown Research Institutes (CRIs) were very involved in GM research. These CRIs have a task of participating in research that is of benefit to New Zealanders in a competitive and economic sense, via promoting scientific innovation and encouraging employment in science (Weaver & Motion, 2002). Further to this, the CRI's rely on funding from the private user-pays sector, which means that vested private interests are involved in the promotion of GM (Weaver & Motion, 2002). Kelsey (1997:121, cited in Weaver & Motion, 2002) discusses the set up and development of CRI's:

> ...funded from user-pays research, and partly by competing with private researchers for funding from the Public Good Science Fund, controlled by the government's...Foundation for Research, Science and Technology. The government determined the size of that funding pool and its priorities - and hence the type of research carried out or funding by the state.

Two governmental roles need to be noted here: the construction of legislation on one hand, and the running of CRIs. These two roles point toward a natural conflict of interest.

Public interest in GM was aroused largely by four innovations (Weaver & Motion, 2002). Firstly from the realisation in 1998 that GM food was being sold in New Zealand, and that it had been for some time. The second innovation arousing interest in GM was that the government had no intention to test GM foods imported into New Zealand. And

third, the government had already allowed 238 field trials –largely without public knowledge, and including research with animals (Legat, 1999). Fourthly, adding to the heightened public awareness of GM was the fact that there was no labelling to indicate which products contained GM ingredients or were derived from GM processes. Nor did the New Zealand Government intend on introducing a labelling regime (the government had twice blocked a private member's bill which requested labelling of such food) (Weaver & Motion, 2002).

The issue of GM produce labelling gained increasing public interest towards the end of the 1999 election year. At the time there was objection to a labelling regime from the National government, even though the Australian and New Zealand Food Authority (ANZFA) received 3000 submissions on the issue with the majority wanting a labelling regime in place (Legat, 1999). When the National government eventually did agree to introduce a labelling regime which would aid in identifying GM or GM derived products, issues relating to international trade obligations were raised when the American Ambassador Josiah Beeman proclaimed that this would not be looked on favourably by the USA (Legat, 1999). This proclamation indicated that the USA would be more willing to act favourably in regard to a free trade arrangement with New Zealand, if New Zealand avoided introducing a GM labelling system.

These four innovations led to a public outcry which eventually propelled the National government into establishing an 'Independent Biotechnology Advisory Council' in May of 1999 whose objective was the consideration and exploration of biotechnology issues. Later in the year (October) the Green Party (of Aotearoa New Zealand) presented a petition to parliament that contained 92,000 signatures, calling for a Royal Commission of Inquiry into GM and a moratorium on GM field trials (RCGM1, 2001). Following this (December 1999), it was announced by the newly elected Labour government that a Royal Commission on Genetic Modification would be instituted. Along with this announcement the following initiatives were put forward in the speech from the Throne during parliament's opening on the 21st of December 1999:

> ... a moratorium will be imposed on the commercial planting of genetically modified crops. Very strict conditions will apply to the consideration of any application for field trials until such time as the Commission reports on the wider issues. My government will require a simple and comprehensive system of labelling of genetically modified food...and of any food derived from genetically modified organisms (RCGM1, 2001:50).

In April 2000 the government announced a voluntary moratorium on field trials and genetically modified organism (GMO) release for the period from June 14th of 2000 until August 31st of 2001, and the establishment of a Royal Commission on Genetic Modification (RCGM1, 2001).

Any Royal Commission (RC) has as its task the inquiring into of an issue or event, and the subsequent making of recommendations to the government (Shearer, 1974; ADLS, 1999). The issues investigated by a RC are of major public importance (RCGM1, 2001) and relate to policy or advisory objectives, as defined by section 2 of the Commission of Inquiry (COI) Act:

> Focus under section 2 of Act:
>
> (a) The administration of the Government
>
> (b) The working of any existing law
>
> (c) The necessity or expediency of any legislation (Fitzgerald, 2001:16).

Although a RC has legal validity, it does not have coercive power, but a RC of inquiry is considered more significant than a Commission of Inquiry. The subject brief of a RC is of "outstanding public importance" (Shearer, 1974:8). Genetic Modification was determined as being of considerable importance, thus the RCGM was sealed and approved on May 8, 2000.

Commissioners for an inquiry are selected by the Governor-General's advisors, based primarily on their competency in dealing with the issue at hand (Shearer, 1974). Recruited for the RCGM were the Right Honourable Sir Thomas Eichelbaum[9] (The Chair), The Right Reverend Richard Randerson[10], Dr Jean Fleming[11], and Dr Jacqueline Allan[12] (RCGM1, 2001)[13]. The Commissioners were responsible for conducting the inquiry, and for drafting the RC report, under the guidance of the Chair (Fitzgerald, 2001).

Any RC inquiry process operates according to 'Terms of Reference' that define the issues a Commission is created to inquire into, and which direct the Commissioners as to how to find a resolution to the issue/s (Fitzgerald, 2001). These Terms of Reference are

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[9] Eichelbaum's areas of expertise are legal and judicial issues (RCGM1, 2001).
[10] Randerson's primary area of expertise is in ethics (RCGM1, 2001).
[11] Fleming's expertise is in biotechnology: Fleming was an 'ANZAC Fellow in the GE Laboratory' in 1987, and has a strong interest in encouraging women into science (RCGM1, 2001).
[12] Allan is a General Practitioner whose expertise are medical and Maori issues (RCGM1, 2001).
[13] Full biographical details are provided of the Commissioners in the RCGM report, Appendix 1, in the section entitled: 'Operational detail: Commission members'.

drafted by officials, and provisionally approved by Cabinet (Fitzgerald, 2001). The RCGM inquiry involved a multitude of planning and public scoping meetings, written and oral submissions, formal hearings, Maori consultation, a youth forum, and a public opinion telephone survey (RCGM1, 2001[14]). This consultation culminated in the eventual release by the RCGM of a report and recommendations in July 2001. The main conclusion reached in the report was to 'preserve opportunities'. The major recommendations included:

- 6.8 (Conditional Release) -amending the Hazardous Substances and New Organisms (HSNO) Act 1996 to allow for approval known as 'conditional release'.
- 13.1 (Benefit Assessment) -the need for assessment of economic impact of GMO release, as well as the allowance for specific GM crops to be excluded from areas where they might pose a significant threat to non-GM crops.
- 13.2 (First Release) -an assessment of the likely economic and environmental impact before the first open or controlled release of a GM crop.
- 7.7 (Separation Distances) -the development of safe separation distances between GM and non-GM crops, by the Ministry of Agriculture and Forestry (MAF).
- 13.3 (Communication Networks) -the development by MAF of formal communication networks between farmers using different production methods.
- 13.4 (Sterility Technology) -that sterility technology be used as a way of preserving opportunities, especially regarding crops that are likely to cross-pollinate.
- 7.1 (Bt Strategy) - the development of strategies to deal with Bt toxin in sprays and GM plants.
- 7.3 (Bees) -MAF to develop strategies allowing for continued GM-free bee products, and to avoid cross-pollination by bees of GM and non-GM crops.
- 6.13 (Research) -that public research funding be allocated to support sustainable (including organic) agricultural systems (RCGM, 2001:338-400).

Following the release of the RCGM report in July 2001, and while the government was making its decision as to the future of GM in New Zealand, the largest rally in New Zealand for 20 years involving around 15,000 people took place in Auckland. The rally's

[14]Details relating to these processes can be found in the RCGM report, appendix one.

message to the government was to keep New Zealand a GE-free nation (Greenpeace, 2002). In October 2001, after three months of consideration, the government returned its decision saying that it would 'support' the RCGM recommendations, and announced the expiry date of the field trial moratorium as October 2003. Once the moratorium has expired, the intention of the government is to allow commercial release of GMOs into the environment under strict controls. As a result of the governments decision there have been ongoing protests and rallies held by those opposing the lifting of the moratorium. The discourse of most of these protests and rally's were 'heard' in the submissions to the RCGM.

1.2. WHY STEP INTO THE FIRING LINE?

The GM issue is one that has grabbed the attention of vastly different sectors of society, and is one that is often accompanied by fervent and critical discourse statements resulting from various individuals and groups seeing the issue very differently. So why then would anyone be mad enough to want to step into the firing line on such a contentious issue, from a critical perspective? The answers to this question stem from personal interest primarily, which has developed into wider concerns over the past two years in particular.

The personal interest that I referred to is in GM technology itself, and the repercussions of various applications of this technology in the New Zealand society, within a globalised world. Admittedly, I do have a strong position on this issue in certain areas, and this interest has grown rather than subsided over time as I have come to delve deeper into the issues surrounding GM. I have come to learn in ever increasing intensity, the implications which such a technology has for the future of New Zealand, and of the world.

Initially I wanted to know why the government decided to go ahead with the commercial release of GMOs into the environment, when 92% of more than 11,000 submissions put forward to the RCGM were opposed to the commercial release of GMOs. This interest became intensified the deeper I probed into the political aspects of the GM debate, and as this interest grew, so too did my desire to produce a meaningful thesis. What began as an interest in GM has expanded into and becomes a fascination with the inner workings of New Zealand society, and its democratic processes.

As well as GM reaching into the political arena, it also draws attention to the mass media, public relations, the roles and incentives of CRIs, private multinational and national enterprises and corporations, and many other organisations or groups. The sheer mass of social, economic, environmental, medical, horticultural, industrial, agricultural and political issues caught up in the GM debate is testimony enough for the importance of it within the discipline of sociology. Issues addressed in this thesis further add to the sociological discipline as they coalesce individual, national, and global level interests with historical circumstances. The GM debate exercises the sociological imagination.

In a more general literature there is a paucity of critical analyses of the Commission of Inquiry Act, particularly via an exploration of submissions made for a [Royal] Commission of Inquiry. Exploring the RCGM and the Commission of Inquiry Act 1908 section 4A, contributes to how an investigation of an issue can be explored. It is important to note at the outset the importance of section 4A, as this piece of legislation is essential in this thesis. It is responsible for outlining which members of society are considered interested enough in an issue to warrant having the right to be directly involved in democratic process. Section 4A is presented in appendix B. For the moment however, I seek to begin this exploration utilising discourse analysis.

1.3. A TASTE OF THINGS TO COME

This thesis is divided into seven chapters. Chapter two begins with an overview of two current research publications by Weaver and Motion (2002), and Hager (2002), which are related to GM in the New Zealand context. A third piece of New Zealand literature is also reviewed which addressed the processes involved in a Commission of Inquiry (COI). In reviewing the New Zealand research literature, comparisons are made to epistemological issues relating to how to deal with knowledge and the validity of knowledge. Following this is a look at the way in which worldviews and ideologies are constructed via sharing similar belief and knowledge systems. From here there is a glimpse given of the way in which power is produced and reproduced in language - namely written language as discourse. Scientific and political institutions and their influences, as well as the role of the mass media in reproducing knowledge via discourse are also discussed. The final section of chapter two addresses the concept of democracy, and draws in the underlying, interconnected mesh of influences upon the democratic

system. A discussion of the ideal of democracy is important in that this thesis argues that the RCGM inquiry processes did not serve the ideal of democracy.

Chapter three outlines the research method and design. It begins with a definition of discourse analysis (DA) and critical discourse analysis (CDA), before outlining the sampling and data collection methods used. Tables of general statistics are presented to gauge the views contained in submissions toward GM (that is, the numbers of submissions in favour of or against GM), compared with the RCGM analysis. A discussion of the framework developed for the presentation of data in subsequent chapters follows the outlining of sampling and data collection methods. The chapter concludes with basic statistics pertaining to those individuals and groups who applied for Interested Person status, but whom were declined (which will be further discussed in chapter six).

Chapters four and five are the data presentation chapters. Chapter four presents the general public (GP) submission quotes, including the hui submissions, as well as a section that focuses on the issues which were most pertinent amongst submissions presented within huis. Chapter five presents interested person (IP) submission quotes. Both chapters follow the same general format of discussing 'GM science and the ethical implications', 'personal health to environmental health', 'information, liability and regulation', and the future of New Zealand and GM, and the issues within each given theme.

Chapter six analyses the material presented in chapters four and five by putting the views expressed in the submission quotes into two categories based on submission worldviews and ideologies. The worldviews are established around anti-GM and pro-GM discourse. Four areas that were frequently mentioned in submission discourse are discussed, as a way of interpreting the emergent worldviews. Numbers of submissions for and against GM are revisited also, with the addition of exploring declined Interested Person applications (applications for IP status which were declined), and the RCGM survey (a telephone survey presented in the RCGM report). The Commission of Inquiry Act 1908 Section 4A which relates to 'interested persons' is the final discussion point of chapter six. This is where a move is made from worldviews to political process. The declined IP applications are drawn on extensively here, as a curious part of an analysis of

the Act[15]. Accessibility (to the RCGM) and exclusion (of individuals/ groups from the RCGM) are critiqued.

Chapter seven begins with a summary of the thesis. Within the 11,000 submissions containing competing pro and anti-GM discourse, a dominating political-economic or industrialist worldview emerged within the minority pro-GM submissions, coinciding with governmental ideology. This finding opens the way for a critique of New Zealand's democratic system. Five areas are discussed to demonstrate the way in which democracy was contaminated by the RCGM. Recommendations for future research are discussed. There is still much more urgent, important research to be conducted.

[15]Interestingly, the declined IP applications were mentioned only once (that I could locate) in the entire RCGM report: "At the conclusion of the two application hearings, the Commission had considered 292 applications for Interested Person status, deciding that 117 were considered to met [sic] the statutory criteria" (RCGM1, 2001:117).

CHAPTER TWO

KNOWLEDGE VALIDITY AND POWER IN DISCOURSE AS EXALTING IDEOLOGIES AND DETERMINING DEMOCRATIC PROCESS

This thesis has two main objectives addressed via one path. The path refers to the GM debate in the New Zealand context. The objectives are firstly, to present the RCGM submission discourse as a means of providing insight into how different groups in society view the issues surrounding the use of GM technologies. By presenting submission discourse it is then possible to address the second thesis objective of critically evaluating the democratic process of a Royal Commission of inquiry, reflecting and legitimating the unequal power structures within New Zealand society.

Classical and contemporary theoretical ideas have been incorporated into this thesis as a means of investigating the various areas of concern. Epistemological issues are discussed with Karl Mannheim and C. Wright Mills being drawn on, as their views of how to understand knowledge were deemed to be the most appropriate. Mannheim's views espoused in his sociology of knowledge are largely in line with the constructivist perspective, which as explained by Golinski (1998) does not involve itself in an assessment of whether the knowledge is true and valid, thereby avoiding epistemological validity problems. The preference for Mannheim in particular over a more general constructivism perspective is due to his engagement with the concepts of 'worldviews' and 'ideology'.

Once issues of epistemology have been addressed, a critical perspective is adopted for exploring the second thesis objective: the RCGM and democracy, along with other institutions and areas of influence. A critical perspective is apt as this is a means of exploring areas and issues of importance such as: "...new technologies and their impact on social and class structure, politics and culture..." (Kellner, 1989:231, cited in Underwood, 2000b). Areas investigated via a critical interpretation are the institutions of science, politics, the mass media and discourse, and their associations with power, as well as knowledge construction, formation and manipulation.

The chapter concludes with an exploration of the ideal of democracy, democratic process, and the multitude of influences operating in and around political systems. While

postmodernist thought, such as that discussed by Kellner in *New Technologies, TechnoCities, and the Prospects for Democratization* would provide an interesting avenue from which to explore future possibilities for democratic systems, it is not delved into here as it goes beyond the scope of this thesis.

A core theme repeated throughout the entire chapter is that of 'power', and the many guises under which it appears and subsequently manifests itself. Discourse is one such guise from which power relations and inequalities are unravelled; although discourse and power are not categorically discussed in this chapter, they are interwoven throughout the discussion presented here. Preceding the outlined epistemological and theoretical discussion is a short review of current topical literature by New Zealand authors.

2.1. THE NEW ZEALAND CONTEXT

Two pieces of literature which have been published in relation to recent events in New Zealand with the issue of GM are Weaver and Motion's (2002): *Sabotage and subterfuge: public relations, democracy and genetic engineering in New Zealand*, and Hager's (2002): *Seeds of Distrust: the story of a GE cover-up.* Issues of power, trust, and democracy are central areas in both of these discussions. In particular Weaver and Motion's publication highlights the role of discourse generation in influencing opinion and, arguably, democracy.

The work of Weaver and Motion (2002) addresses and highlights the ways in which discourse and power operate, through their investigation of the public relations work undertaken in New Zealand in relation to the company King Salmon and their GM experimentation. Weaver and Motion link together some of the influences which operate within a democracy, and the role of public relations:

> In New Zealand, public relations practices have been inextricably linked to the neo-liberal political economy where the 'public interest' has been subsumed by corporate and market interests. Consequently, commercial agendas, relationships and meanings about genetic engineering were prioritised over the public's democratic right to make informed decisions about this science and its products. Indeed, public relations strategies attempted to deploy propaganda and secrecy as key tactics in the engineering of public consent for genetic technology (2002:340-341).

Of particular interest to this thesis, are how Weaver and Motion (2002:326) found that the private sector and the government of New Zealand engaged in a 'discursive struggle'

in an attempt to influence the meanings that circulated about genetic engineering, and how these meanings were couched in terms of the public interest. A central question which Weaver and Motion felt needed to be addressed was whether public relations were based on meeting the needs of society or of corporate interests. Weaver and Motion's choice of theoretical perspective was critical analysis. It was considered to be appropriate as it 'emphasizes the role of public relations in the establishment and maintenance of hegemonic discourses and relations of power and dominance' (Weaver & Motion, 2002:326).

Although Weaver and Motion's research examined the GM debate from the perspective of the role of public relations, the central themes of power and dominance are found to be pervasive within their research. They refer to a comment from L'Etang (1996:97, cited in Weaver and Motion, 2002:328) that "public relations services are only available to elite collectivities". Such a comment infers the hegemonic nature of access to services which serve a function of 'soothing' the public or those not 'in the know' through the presentation of a front which accentuates the positive, and plays down or even dismisses in the public view any negatives. Evidence of this is seen in this statement from the PR company 'Communications Trumps' who were employed by King Salmon:

> Our clients expect audiences to change their attitudes and behaviours, understand key messages or have fears or concerns minimised. To achieve these objectives existing perceptions have to be understood and often 're-engineered' (Communication Trumps 2001, cited in Weaver & Motion, 2002:334[16]).

Interestingly, when I endeavoured to find this particular excerpt myself it could not be found; instead, what was offered on the Communication Trumps web site, was this 'modified' version:

> Our clients expect their stakeholders and influencers understand and act on complex messages, they expect to see changes in attitudes and behaviours and see concerns or fears minimised. The achievement of these objectives requires a strategic understanding of issues, brands, client reputations and needs and the environments in which they operate (Communication Trumps, http://www.comtrumps.co.nz/strategic.htm, 18 July, 2002).

Weaver and Motion (2002:332) discussed the 'public front' presented by Communication Trumps who publicly handled the fact that the GM salmon experimentation performed by

[16] This quote was found at http://www.comtrumps.co.nz/services.html, on the 31 January, 2001.

King Salmon in the Marlborough Sounds, produced salmon with "lumpy heads". This PR front was however exposed by Jeanette Fitzsimons[17] in April of 1999, as was the fact that the PR company also worked for the Gene Technology Information Trust that was established by four Crown Research Institutes (CRIs) (Weaver & Motion, 2002). The role of the Gene Technology Information Trust was to provide 'impartial' information to the public, but when the funding for the trust is critically reviewed the impartiality of information becomes questionable. For example, a main funding source for Gene Technology was Monsanto (for example) who provided $27,500 to the trust (Weaver & Motion, 2002). An example of how this relates to monopolised power over the general public is evident in a statement from Communications Trumps with how to deal with "negative influencers" by identifying what they term allies. They write:

> ...identifying allies from institutions, such as universities and CRIs with whom you can share your work, without prejudicing and commercial or operational confidentiality. If you have allies, those allies can support you, and Bas [Walker of ERMA] can say he's been there and all looks fine (Communication Trumps, 1999:24[18], cited in Weaver & Motion, 2002:335).

This excerpt demonstrates a phenomenon described by van Dijk (1998) where power via social distance (between the public and the 'experts') leads to a trusting of the 'experts' from professional institutions via providing a united front to public. This drawing on of allies, particularly allies with certain prominence or expertise is a classic way in which factions can give the impression of having superior knowledge or power, and hence influence. Latour (1987:31) states that this can be described as the "argument from authority".

A prime example of how PR discourse uses spin or the skewing of information to make it more acceptable or desirable, in this instance to protect the interests of the powerful, is evident in the following extract regarding the GM salmon and how Communications Trumps sought to protect the interests of the 'dominant', and hide information from the public:

> Issues such as deformities, lumps on heads etc. should not be mentioned at any point to anyone outside - comments about these would create ghastly 'Frankenstein' images and would be whipped

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[17]Jeanette Fitzsimons is a Green Party of Aotearoa New Zealand co-leader.

[18]This excerpt was taken from a document, which was leaked to the Green Party, and was later released to the media.

> into a frenzy by Greenpeace. . . . Our message must be that the only difference is good, as can be seen from the fish in the ponds, is that they are larger (Communication Trumps, 1999:24, cited in Weaver & Motion, 2002:336).

Here is where the issue of power meets democracy. The public's right to be informed about issues which they as tax payers are helping to fund and which could be potentially hazardous are ignored:

> Clearly there was no consideration of the public's democratic right to know about the failure of the salmon experiments, or the risks that these might pose to the environment, despite the trials being partially funded by the taxpayer. . . . Also important is how we can continue to keep wraps on the project, when it is probably discoverable under the official information act (Weaver & Motion, 2002:336).

A parliamentary select committee inquiry into the Gene Technology Information Trust found that there was a conflict of interest in the activities of Communications Trumps yet no complaint has followed (Weaver & Motion, 2002:340). It seems that PR interventions are hindering democratic practice.

In the 2002 general election *Corngate* became a topic of interest. The so-called *Corngate* resulted from the publication of Hager's (2002) book *Seeds of Distrust,* which took a critical stance in questioning the Government's actions in dealing with an alleged GM corn contamination incident in New Zealand. The questioning of 'what is democratic practice?' is a critical part of Hager's (2002) discussion of the GE corn cover-up that was said to have occurred late in the year 2000, during the RCGM inquiry processes. Details relating to whether the corn in question was contaminated will not be discussed here; an inquiry into Hager's allegations has recently (October, 2002) been announced which seeks to find out more about what actually did happen. What was raised in Hager's book though, were issues relating to 'power' and 'dominance' within the context of democracy in New Zealand:

> My impression is that on a controversial issue like genetic engineering - where huge companies, worldwide agendas and lots of money are involved - the public relations strategies of the big players often have more influence on government decisions than public opinion, science or the public interest. That is the struggle of democracy in a business- dominated world (2002:7-8).

This thesis is not an exploration of public relations and GM, nor is it an exploration of a so called governmental cover-up of GM contamination, but there are overlaps with key

issues raised by Hager (2002) and Weaver and Motion (2002) with key issues discussed in this thesis. The work of Hager and Weaver and Motion found that the manipulation of information related to GM has been a constant feature underpinning the GM debate in New Zealand. The sociology of knowledge is a useful vehicle to explore the validity of this debate. Although a focus on worldviews is not a significant aspect of either of the above publications, worldview constructions are at work in each of them. This thesis works systematically to bring together the opposed sides of the GM debate in a way that allows the crux of the opposed views to be made transparent.

Institutions critical in shaping and bolstering worldviews such as the mass media, science and politics are discussed to a limited extent in the work of Weaver and Motion (2002) and Hager (2002). I propose to go beyond the scope of Weaver and Motion, and Hager's work, by utilising submission discourse as a method of exploring the GM debate. I also propose to look at how section 4A of the Commission of Inquiry Act 1908, and Commission of Inquiry processes contaminate the ideal democracy in New Zealand.

The 1908 Commission of Inquiry Act that underpins all Royal Commissions has been the subject of discussion. In a recent publication by the Auckland District Law Society (ADLS) the processes involved in a (Royal) Commission of Inquiry are critiqued.
Their critique resulted from the high court overturning the Winebox Inquiry (a highly controversial inquiry) in 1999 and ruling that there were legal errors in the COI report (ADLS, 1999). The ADLSs (1999) analysis considered three topics for review –the terms of reference of a COI, the appointment of Commissioners, and the relationship between government and Commissioners. These three problems they believed needed to be remedied:

> Because Commissions are inherently part of the Executive or Government and often set up to investigate political issues, this paper recommends there should be changes to the way in which terms of reference are set for Commissions of Inquiry, to the method of appointment of the Commissioner(s), and to the relationship between Commissioners and the Government after appointment (ADLS, 1999:3).

With regard to the appointment of Commissioners, the ADLS (1999:10) stated that:

> ...it is obvious that the outcome of a Commission of Inquiry can be influenced by the personal views or leanings of the Commissioner. Under the current system it is too easy for a Government to appoint a person from whom a particular outcome or result is expected.

The ADLS's recommendation for remedying the situation with the way in which Commissioners are appointed was that the appointment should occur within a transparent, consensual agreement with the leader of the opposition (preferably), or alternatively by the Chief Justice or a system which involves parliament. They also recommended the Terms of Reference be reviewed because with the Terms of Reference being determined and controlled by the Executive or Government, there is a danger of their controlling the COI itself. The ADLS (1999) recommend that once the terms of reference have been determined, they should instead be subject to the scrutiny of parliament before being accepted, or they should be determined in consultation with the leader of the opposition. In regard to the independence of a COI, the ADLS (1999:13) state:

> Given that at present Commissions of Inquiry and those conducting them are in reality agents or extensions of the Executive, the Committee's view is that it is essential that Commissions, once established and appointed, should be independent of the Government. It is this lack of independence that gives rise to controversy.

The need for Commissions to be independent of the executive or Government, was said to be best supported by enactment in statute.

The ADLSs (1999) report addressed key issues in relation to the processes involved in a COI; although their focus was on the Winebox Inquiry, their comments are entirely relevant to the RCGM, and such issues of process are discussed further in chapter six.

2.2. THE SOCIOLOGY OF KNOWLEDGE

GM science is a relatively new and complex science of which myself as a social science researcher has no capacity to engage in at any depth but with its knowledge claims. The sociology of knowledge establishes the epistemological basis of this thesis, dealing with the validity of knowledge and 'truth' provided in the submissions. Two main ideas and two key figures are prominent within the sociology of knowledge: the ideas are the treatment of knowledge validity (epistemological issues), and the understanding of knowledge, while the theorists are C. Wright Mills and Karl Mannheim.

Mills with his 'sociological imagination' posits that to be able to 'do' sociology there is a need to utilise the sociological imagination, which involves thinking in terms of the varying, individual contexts' within which knowledge is produced:

> The first fruit of this imagination -and the first lesson of the social science that embodies it -is the idea that the individual can understand his own experience and gauge his own fate only by

> locating himself within his period, that he can know his own chances in life only by becoming aware of those of all individuals in his circumstances (Mills, 1959:5).

Mills' is similar to Mannheim's, linking social structures, consciousness, historical periods, and the context of an individual's existence.

Karl Mannheim has come to be one of the most prominent names within the sociology of knowledge due to him essentially creating the sociology of knowledge as a basically autonomous discipline of its own (Dant, 1991; Evers, 2000). Mannheim was largely influenced by Dilthey, Marx, Hegel and although not commonly acknowledged, Durkheim and his ideas pertaining to understanding knowledge within its own epoch (Evers, 2000).

Dilthey's influence on Mannheim involved mainly methodological factors, but it is important to relay Dilthey's influence here as Dilthey considered that cultural (or social) sciences needed to be treated in a particular way requiring understanding and explanation (Evers, 2000). From Marx, Mannheim adopted the theory that ideologies existing within an epoch have a responsibility in determining the conflicts existent within various classes (Evers, 2000). Although I question the notion that classes are the singular category from which conflicts manifest, I do confer with the notion that held ideologies of different groups play a role in conflict formation and materialisation.

Hegel's contribution towards Mannheim's legacy was the view that all events or facts are related to other events and the trends and forces operating at the time: this adoption led to the development of Mannheim's concepts of historicism and relationalism (Evers, 2000). For Mannheim, it was not conceivable to be able to develop a sociology of knowledge which doesn't consider historical context, and which doesn't accept that within knowledge there is always a truth or right way, and a false or wrong way of understanding.

Similarly to Mills, Mannheim stated that the accumulation and validity of manifested knowledge needs to be accepted as a truth at the individual level, and needs to be accepted as knowledge which is informed via a multiplicity of sources within the given historical epoch. Mannheim's historicist approach is related to his conception of relationalism:

> Relationalism signifies merely that all of the elements of meaning in a given situation have reference to one another and derive their significance from this reciprocal interrelationship in a given frame of thought. Such a system of meanings is possible and valid only in a given type of historical existence, to which, for a time, it furnishes

> appropriate expression (Mannheim, 1936:76).

Mannheim's historicist and relationalism concepts point toward the understanding of knowledge being dependant on micro-sociological and macro-sociological circumstances and norms shaping and forming different ways of viewing the world. For Mannheim, the task was to respect and understand different embodiments of knowledge and worldviews (Dant, 1991).

Mannheim's perspectives could be viewed in a critical light as being too relativistic, and as ascribing to a cultural relativism. In countering accusations of relativism, Mannheim refers to his conception of relationalism, stating that:

> [relationalism] ...becomes relativism only when it is linked with the older static ideal of eternal, unperspectivistic truths independent of the subjective experience of the observer, and when it is judged by this alien ideal of absolute truth (1936:270).

From this position we are then faced with the question proposed by Mannheim of ".... which social standpoint vis-à-vis of history offers the best chance for reaching an optimum of truth?" (1936:71). Mannheim (1936:77) deduces that it is not a worthwhile endeavour seeking to discover "...fixed and immutable ideas or absolutes"; rather, Mannheim's (1936:76) view was that "Knowledge arising out of our experience in actual life situations, though not absolute, is knowledge none the less". Mannheim (1952:120) further stated that his method leads to a "...widening of our concept of truth which alone can save us from being barred from the exploration of these fields in which both the nature of the object to be known and that of the knowing subject make only perspectivistic knowledge possible".

To speak of knowledge validity is to question how meaningful or sound any given information is. The idea of knowledge validity has been discussed in recent times by Curry (1997:7) who views knowledge value as being reliant on its "informational, or ideational, content", that is, in basic terms the production, design, and advertising of a commodity. Curry relates knowledge to value within the modern world, and for this to flourish there needs to be a constant innovative process taking place in order to stay ahead of competitors, and thus retain a monopoly, which is all important in a Western capitalist world. Curry highlights the importance of considering knowledge as a 'value-laden commodity' within the current political and capitalist environment. Such a perspective can be related to the world of GM science, where development and protection of

intellectual property is of major concern to those scientists clamouring to be the first to patent or claim ownership of GMOs.

The acceptance of science as an area for sociological investigation was something that was condemned by Mannheim, as he believed that scientific knowledge could not be subjected to sociological analysis (Mannheim, 1952; Evers, 2000). Mannheim instead suggested that scientific knowledge progresses via the accumulation of true facts which are unaffected by the productions of larger social and organisational contexts (Mulkay, 1979, cited in Evers, 2000).

Mannheim's perspective went largely unchallenged until the 1970s when scientific knowledge was put to sociological analysis, and it was contended that social factors influenced the content of scientific knowledge. Evers (2000:3) suggests:

> Scientific facts are produced or "manufactured" by a network of scientists in specific social contexts and an element of social contingency is part and parcel of the development of scientific knowledge.

Foucault makes a similar point that even 'objective' knowledge (such as scientific knowledge) is associated with power, and will therefore always be subservient to social apparatuses of power (Gordon, 1980). Such dissension has led to the premise that scientific knowledge systems and expert knowledge that is proposed as being ahistorical and universal may be critically analysed (Brown, 1993).

Golinski (1998) has added to the later view of the acceptability of science as a matter that is suitable for sociological analysis, stating that there are different ways and developments by which a subject can be 'scientific', therefore implying that scientific development should not be taken for granted. This stance is important for this thesis as it opens the way for an investigative, critical analysis to occur. Dilthey, Mills and Mannheim's positions of considering the *understanding* and *explanation* of issues or events to be of paramount importance for cultural or social sciences, are also adopted in this thesis.

With Curry and Mannheim's discussions in mind, taking a view of knowledge within the current socio-political context is crucial. Within the data presentation the submission statements speak for themselves, and as previously stated, any arguments over what is truth or what is valid regarding the GM debate will be relayed within submission statements as people perceived them, so as to avoid problems associated with epistemological validity. A way of thinking of the submissions could be in terms of those

which are 'pro-GM' and those which are 'anti-GM'; these categories can in turn be seen as 'worldviews' with specific ideologies; a re-grouping of the submissions into 'anti' and 'pro' GM will be undertaken in chapter six. For the moment the following section looks more closely at worldview and ideology construction, and the underlying discourse that can be interpreted as way of constructing worldviews and ideologies.

2.3. EXPLORING WORLDVIEWS AND IDEOLOGY

A way in which to look at systems of ideas and views is under the guise of a 'worldview'. There are varying definitions of worldview, as there are with the related concept, ideology. Any given set of beliefs can be viewed as a 'worldview' that has ideological (and utopian[19]) dimensions (Evers, 2000). Solomon (1994:1)[20] explicates what he views as the best definition for worldview: "A worldview provides a model *of the world* which guides its adherents *in the world*". Taking this definition it becomes clear that all members of a society have a worldview of sorts which aids and guides the way people perceive and thus act in the world (Solomon, 1994; Heylighen, 2000). These worldviews are intermeshed with the way in which individuals live their lives: everyday we are exposed to various mediums such as the mass media, educational institutions and political views, which manipulate, construct and cement our own worldviews (Solomon, 1994).

Certain worldviews have been recognised as 'mainstream', having certain levels of influence during different epochs, thus demonstrating the way in which worldviews are ever changing as societies are ever changing (Solomon, 1994). One basic division of worldviews can be found between industrial and post-industrial worldviews (Mehta, 1994). This changing nature of worldviews is discussed by Mannheim in his development of the sociology of knowledge, which entailed a conception of worldviews or *weltanschauungen* and the related concept of ideology (and utopia).

Mannheim (1936) proposed that it has only become possible to develop 'a sociology of knowledge' since the onset of capitalism, due to previous milieus having isolated worldviews because of their limited social mobility and thus limited communication. Mannheim points to the pivotal consideration that it is with the increase in individual and

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[19] This concept is often mentioned in conjunction with ideology, as it refers to the dominated/ subordinated groups. This concept is not however delved into in this thesis.

[20] This definition of worldview was taken from Walsh and Middleton. (1984). *The Transforming Vision.* USA:InterVarsity, 32.

societal interaction (whether geographical or via the mass media) that there exists a multitude of ideals and ways of viewing the world. This point is significant in that it brings the role of capitalism and the mass media into worldview creation.

Heylighen (2000:1-2) discusses seven components that Leo Apostel[21] has developed as being constituents of a worldview. These components are:

1) *A model of the world* that allows for an understanding of the way the world is structured and how it functions.
2) An *explanation* for why the world is the way it is, and how it came to be the way it is.
3) A *futurology* or a consideration for which future direction to take.
4) A set of *values* that guide our understanding of what is good and what is bad: essentially this includes issues of morality and ethics.
5) A *theory of action* or praxiology that looks at how we should act.
6) *Knowledge acquisition* considering what is true or valid and what is false or invalid, or put another way, issues of epistemology.
7) *Building blocks* which defers to the other constituents of a worldview in that it recognises that any given worldview has to begin somewhere, and that it has various components which are based on pre-existing theories, models or concepts.

These seven worldview constituents are clearly evident in submission discourse presented in chapters four and five. These seven constituents have thus been useful in allowing a construction of two general worldview types found in submission discourse, a modernist / industrial, political – economic worldview, and a postmodernist, ethical type worldview. Such worldview construction is a great aid in framing the GM debate. Along with the concept of worldview being useful, so to is the concept of ideology.

Ideology can, in a general and non-evaluative way refer to the manner in which ideas are conditioned via social circumstances, or to put it more simply it refers to a "systems of ideas" (Evers, 2000; Kress, 1985a; Kress, 1985b:29). In this definition ideology has much the same meaning as 'worldview'. Historically though, the term ideology has more often been used to refer to the way in which systems of ideas held by the dominating segment of society, are distorted so as to conceal realities and keep the masses moderated.

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[21]Apostel is a Belgian philosopher who wrote and worked extensively on worldviews.

This understanding of ideology is consistent with Mannheim's (1936) understanding of the term.

Methodologically this thesis employs discourse analysis, and discourse has the function of expressing and being organised based on a specific ideological view (Kress, 1985a). Studying ideology in discourse, particularly in political discourse or public discourse with political implications, is a way in which to study domination and power (Seidel, 1985). The institutions of science and politics both yield significant influence over the way in which society views issues. Both institutions are interrelated and have profound abilities in shaping and controlling information.

2.4. SCIENCE AND POLITICS: INSTITUTIONS OF POWER

Touraine (1983) has looked at historical institutions that have been the crux of change or the precursors for societal transformation. Touraine found that the church and medieval monastery, followed by the palace during the renaissance, were the key institutions from which social change materialised. During the industrial revolution industrial firms or companies replaced the palace as the central institutions acting as catalysts for change. These institutions were very influential during their epochs, contributing to the way in which society is structured, and the belief systems and values held within a given society. Laboratories –the lair of scientists, were identified by Touraine as being the centres from which social power is exercised in contemporary society.

Touraine's (1983) assessment certainly holds true as political and social struggles very rarely occur without some input by way of validation or invalidation from science (Callon, Law & Rip, 1986). Callon et al. (1986:4) discuss how for agents to have any chance in wielding some power in society, need to "pass through the laboratory". Of importance here is in realising that science as the 'product' of the laboratory, is not something that is separate to politics (Latour, 1983, cited in Callon, et al., 1986). Science is politics strived for by alternate means, and the study of science leads one directly back to politics, as Mehta (1994:2) has stated "under the veil of modern science, the state acquires legitimacy". Alternately, as stated by Douglas (1992), politics requires its authority from science.

The politics of science involves power struggles in gaining external resources, and internal political battles for domination. Further to this, scientists also engage in the

construction of fact, where the 'text' is a very important factor in relaying power and influence, even over long distances (Callon et al., 1986). Foucault (1972) has stated that even when knowledge is viewed as being objective, it is nonetheless still shaped via its close relationship with power. Callon et al. (1986) agree with Foucault, arguing that there is no such thing as a science that has truth as its essence without power being involved. Political democracy in turn is vastly dwarfed by the power "...wielded by the masters of technical systems..." (Feenberg, 1992:1).

Science and politics then, are very much involved in games of power, and power struggles are an integral part of the production of knowledge that can be recognised within discourse (Evers, 2000). Discourse has essentially the same meaning as dialogue – whether it is written, oral, or expressed by signs and symbols, with the essential importance of the term being that there is a unification of beliefs. Discourse involves the way in which people talk and think about a particular issue or event, and different discourses may be in existence within the same epoch, giving rise to there being conflicting discourses, as is evident within the incompatible stances taken toward GM. Discourses therefore have the role of sustaining and protecting particular distributions of power.

Fowler (1985:61) suggests that power is something which is socially constructed, as is evident in his definition of the concept of power as: "...the ability of people and institutions to control the behaviour and material lives of others". Gramsci's (1971) conception of *hegemonic* power is even more apt within the context of this thesis, as hegemony refers to the way in which domination is achieved via ideological and political means. Although Gramsci was referring to the domination of one class over another, his concept of hegemonic power or domination is applicable in relation to the way in which scientists or those with expertise for example, have power over laypersons. In this thesis the vast majority of submissions by the general public (GP) can be considered to be these laypersons. An interesting factor with power is that the holders of power often treat their position as inevitable and incorruptible, and will utilise language or discourse to aid in their power construction (Fowler, 1985). Law (1986:67) exemplifies this point in his statement that "the text is the secret weapon of science", and validates this by saying that the very way in which scientific text is written (that is with complex and often indecipherable language) can scare people off.

Latour (1987) locates rhetoric, the way in which people are persuaded and influenced by the use of discourse into believing and behaving in certain ways, within the ways

public relations companies (for example) 'dress up' issues so that they can be presented in a more desirable way. Latour discusses how when a controversy arises or when a fact is disputed, individuals and groups go through much toil, drawing in wider and wider fields of written and oral discourse permeated with more and more technical jargon. All kinds of resources are presented so as to persuade or dissuade the opinions of others. This in turn draws in an even vaster range of resources that keep the subject or point of controversy going. Taking Latour's (1987) discussion into consideration, it becomes evident that to enable the public or lay persons' voices and concerns to be heard, acknowledged *and* acted on, involves being able to convince the decision makers utilising tools of the 'experts'. The tools of experts can be described as including copious amounts of empirical, jargon ridden documentation or discourse, backed up by humanitarian and philanthropic justifications for ones position, along with grim visions touting economic and social disaster if one's vision is not accepted. With contentious issues that involve 'risk', such as the issue of GM, " those who control the discourse on risk, will most likely control the political battles as well" (Plough and Krimsky, 1987, cited in Mehta, 1994). Such a statement suggests that debates involving risk are not essentially scientific debates, but ones caught up in politics and social conflict. At this point the general public seem to be kept at a distance (Mehta, 1994).

Contemporary theorists such as Underwood (2000b) and Wodak (1987, cited in van Dijk, 1998) have focussed on domination and / or power relationships of inequality as encompassing those of gender, ethnicity, and the individual versus the state. The incidence of inequality between the individual or general public / lay person versus businesses / organisations or 'experts' is of particular interest within the GM issue. The discourse that is associated within and between these groups is a tangible way in which exchanges of power and hence domination can be investigated.

Brown (1993) discusses three requisites for discourse to achieve power:

- The discourse needs to be perceived as specialised or unique.
- The discourse needs to be represented as useful to dominant groups.
- The discourse needs to achieve institutionalisation.

Brown (1993:153) continues to say how once this power is achieved, so to is "product identification, market allocation, and oligopolisation". The latter are required for investment so that intellectual production can continue. Foucault (1972) in *Archæologie du Savoir* has also highlighted how domination or controls in discourse are executed via

prohibition, rules of exclusion, and having a privileged or exclusive right to speak about a particular subject.

It is evident that language is an "instrument of inequality" (Fowler, 1985:62), and one which the institutions of politics and science are masters at controlling. Such a proposition is apparent in Fowler's discussion of how certain types of language are associated with prestige, authority and success while other types of language are associated with powerlessness. For example, Halliday (1970, cited in Fowler, 1985) states that particular language styles are adopted to suit the personal and social needs that the language is being used for. Professionals or experts hold a certain power because of the way they use language, contributing to the protection and naturalness of their power positions and the inferior power status of those who are not professionals (Fowler, 1985). Such use of language for the maintenance and said 'naturalness' of power preservation and inequality relates to the ongoing maintenance of worldviews and ideology keeping certain groups in more dominant and hence powerful positions, and which keeps others out. This is not a unique situation but an everyday occurrence. It is found in the daily media.

2.5. THE ROLE OF THE MASS MEDIA IN A DEMOCRACY

The mass media is an institution that goes hand in hand with scientific and political institutions. It plays an important role in shaping and manipulating the way in which lay people form opinions and view issues. Yet much of the news relayed via the mass media stems from political influences (McGregor, 1996). The mass media is in fact an expert at "manufacturing consent" in the area of political news management (McGregor, 1996:120). As a consequence of this the mass media's integrity has been the focus of much social theoretical debate and criticism.

Criticisms of the mass media have been aimed at how it represents and presses dominant ideologies (from a Marxist perspective, for example) and for working in favour of the interests of those who own the mass media (as with Chomsky's 'propaganda model') (Underwood, 2000a, 2000b). This criticism is well established. Althusser (cited in Underwood, 2000b) referred to institutions such as the mass media as 'Ideological State Apparatuses' (ISAs), which along with other apparatuses (such as courts, the military and prisons) are used to gain societal consent via persuasion and advising what is

best for society, but which in actuality best serves the dominant class ideology and interests.

The media does however provide a forum for increased social interaction and discourse within what Habermas (1990) described as the public sphere. The public sphere can best be explained as an event or institution coming into existence whenever individuals discuss matters of general interest, especially politics (Wood, 2002, pers. comm.). The problem with the public sphere is that it is more often accessible to the bourgeoisie or privileged within society. Take as a more modern example, the internet, which is not as readily available to everyone as say the newspaper or television media. Therefore, there is an inequality exercised between those who can access the mass media (various forms of), and those that cannot. For the moment inequality of public sphere exists.

Habermas's theory is important though as he discusses what he terms the 'fourth estate' or the mass media, as an increasingly profit driven enterprise. In response to this trend Habermas (1990) called on a reinstatement of the 'lifeworld' that has as its principle communicative rationality, free of profit and power motives. Carlyle (cited in Underwood, 2000a:1) speaks on a similarly positive note, of the media in relation to fulfilling the role of the fourth estate by being "the guardians of democracy, defenders of the public interest". It would seem that both Habermas and Carlyle have been a little too idealistic, as the media still has its primary motive, newsworthiness, the saleability of news stories to make a profit, swayed by political initiatives (McGregor, 1996).

Politicians utilise the mass media, seeking to present an image of themselves and their policies often through spin doctoring (van Dijk, 1999; McGregor, 1996)[22]. Spin doctoring has as its core objective, the manipulation of news so that a specific interpretation of an event or issue is presented as a way of gaining public acceptance (McGregor, 1996). Spin doctoring is something that occurs in two directions: forwards spin doctoring and backward spin doctoring. Of key interest here is that of backward spin doctoring, with 'damage control' as its objective. Backward spin doctoring seeks to prevent or play down news that is not deemed as favourable to particular political interests (McGregor, 1996).

The scenario of manipulation and news construction can be construed as an incremental process that is constituted of political influence ('validated' by science) on

[22] See earlier discussion of the King Salmon issue and how Communication Trumps' manipulated information regarding the salmon and 'lumpy heads'.

the mass media. It begins with the mass media influencing public opinion and information formation, which can in turn re-influence political perspectives, which are then relayed back to and by, the media, and so on. Within this process there is an amalgamation of interrelated forces in operation, working together constituting an influential cycle of news issues and events manipulation. The media has an important role in presenting issues, and in stimulating and proffering debate, in particular political debate, of which the issue of GM has to a large extent become. How then does a democracy operate within such an incremental environment?

2.6. THE DEMOCRATIC IDEAL

> *My notion of democracy is that under it the weakest should have the same opportunity as the strongest.* Ghandi.

I agree with Ghandi's idealistic statement, democracy by definition should allow all members of society to have an active and equal opportunity to participate within such a system. Unfortunately the RCGM of 2000-2001 would have left Ghandi somewhat disappointed.

Democracy is a system based on the choice of the people as to who governs a given country: the term 'democracy' means 'the rule of the demos', or the rule of the people. To elaborate further, Carver, Wallace & Cameron (1978:136) state that democracy means:

> 1. *nu* form of government in which people choose their rulers by voting in elections. 2. *nc* country having this form of government. 3. *nc* country having free elections, freedom of speech, protection of the individual, government by an elected parliament etc. 4. *nu* practice of treating all people as one's equals.

Of key importance for this discussion is the 4th point: "practice of treating all people as one's equals". It seems that the ideal democracy in New Zealand is tainted by influences other than that of the will of the people, and consequently the ideal democracy has shown to be undermined.

Amongst sociologists there has been much discussion of democracy. In the 1800s, Tocqueville looked at the political participation of subordinated groups in the USA (Christenson & McWilliams, 1962). Marxist exploration of democracy has looked at its relationship with capitalism (Przeworski, 1985), but contemporary focuses on democracy

are more complex. There is much interest being expressed in parliamentary democracy, and social development, for an example see van Dijk.

Political issues or debates are often influenced or controlled by national ad hoc social conditions, such as the economy and the power of the dominant party/s (van Dijk, 1999). The New Zealand political system operates under a modernist interpretation of democracy, whereby all members of society are able to openly discuss political issues, in a situation where human rights, the common good, and universal values are important (Best & Kellner, 1999). This modernist ideal of democracy seems fair at the outset, but as stated by Foucault (1972), power is everywhere. Further influences on the political world can be found at an international level.

At a global level, Best and Kellner (1999) describe what they see as happening in the political world today: the perfection and intensification of capitalism via burgeoning transnational corporatism that seek to resist control and regulation. Along with such regulatory resistance, such transnationals also add to economic inequality, via 'allowing' sweatshop and child labour, and increased privatisation of state apparatuses, while gaining increasing monopolised control of resources and technologies (Best and Kellner, 1999). With the increasing power and importance of big businesses and particularly of transnational conglomerates, it becomes clear just how much influence they have on governments, especially on governments who are as insignificant as New Zealand's when considered alongside the rest of the world.

It further needs to be kept in mind that one of the most rapidly growing multi-billion dollar businesses is that of the biotech / genetic engineering or modification industry (U.S. Newswire, 2002). This raises questions as to just how much power a small government like the New Zealand government has in relation to decision making concerning such a huge industry. Was democracy already contaminated even before the first submission was read?

CHAPTER THREE
METHODOLOGY AND DESIGN

Discourse analysis (DA) is used to analyse RCGM submissions, and as a methodological tool it has as its primary assumption the understanding that language or discourse performs a social function. Discourse analysis is neither quantitative nor qualitative, but a vehicle through which 'hidden' messages within a text may be realised. The particular 'version' of discourse analysis that is utilised here is postmodern in the sense that it consists of a critical approach that delves into the politics of both dominant and subordinate groups (U.Texas, 2002). Discourse analysis, and particularly critical discourse analysis (CDA) can then be viewed as methodologies that deconstruct text and provide interpretations (U.Texas[23], 2002) including the shortcomings and strengths of different groups. Discourse analysis and CDA can then create a situation where informed debate or analyses can occur (U.Texas, 2002).

Developed in the 1970s, discourse analysis's emphasis is on the 'content, function, and social significance of language', rather than a more linguistic emphasis focused on actual language (Kress, 1985b:27; van Dijk, 1985). Discourse analysis incorporates various theoretical approaches, with chosen theoretical approaches in turn guiding the method deemed most suitable for the understanding of sets of diverse constructed dialogue, metaphors, images, and symbols organised to form distinctive accounts of events (Burr, 1995; Georgakopoulu & Goutsos, 1997).

Discourse analysis is not generally used as a 'solution seeking' methodology, but as an action orientated, truth seeking, methodology (van Dijk, 1985; U.Texas, 2002). Discourse analysis and in particular CDA play an important part in the areas of social problems, power inequalities and dominance, as well as in political and social decision making, thus contributing insight into macro-sociological patterns within a given society (van Dijk, 1985, 1999; Seidel, 1985). Discourse can be viewed as "a site of struggle", a domain where views are presented and in turn challenged (Siedel, 1985:44). The RCGM submission discourse can best be described in van Dijk's (1999) terms as public discourse with political implications.

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[23]The abbreviation 'U.Texas' has been used here as no specific author(s) was cited for this particular article on the University of Texas web pages.

Various discourses exist within given social groups during different points in time, meaning that discourse is not neutral and carries with it its own limitations, potentials, and meanings for the groups utilising it (Kress, 1985b). It follows, and is a prerequisite that any discourse analysis must take into account the historical and social context or epoch from which the discourse is generated (Mannheim, 1936; U.Texas, 2002). This ties in with my emphasis in chapter two on Mannheim (1936) and Mills (1959).

Discourse analysis and critical discourse analysis are not without negative implications. Research that takes a discourse analysis or critical discourse analysis methodological approach needs to compensate for the much criticised point that they are approaches which are subject to researcher interpretation. To confront this criticism it is then necessary that the validity and credibility of the research analysis needs to be based on the strength and logic of the argument put forward by the researcher (U.Texas, 2002).

The criticism that discourse analysis undertaken is not free of the analyser's socio-political interests or position (van Dijk, 1985) implies that any analysis cannot be free of relativism. To address this point, it is important that objectivity be maximised. Although I certainly do have opinions and views on this thesis subject area, these will be largely reserved for the analysis and conclusion of this thesis. The submission discourse and arguments will be presented verbatim, and where there is a clash in opinion or views, it will be the submission discourse that highlights this. The sampling of submissions is done on a random basis, to further aid in maximising objectivity. In the following sections I discuss how submission samples were selected, and how a framework was developed for presenting the submission data. The last section of this chapter deals with applications which were made for Interested Person status but which were declined. They too tell an interesting tale.

3.1. DATA COLLECTION AND SAMPLING

The main data focus of this research is the submissions on genetic modification that were sent to the Royal Commission on Genetic Modification (RCGM)[24]. For the purpose of this study the most practical way to analyse data with the intent of further investigating the RCGM submissions and the underlying influences involved in such an inquiry, was to work within the RCGM submission categorisation or grouping. All the data used in this

[24]Note that the analysis of submissions sent to the RCGM was conducted by the Centre for Research, Evaluation and Social Assessment (CRESA).

research (apart from the declined IP applications[25]) was obtained through an online web site at http://www.gmcommission.govt.nz. Entry to this website gave access to the RCGM report and the RCGM submissions. Thus all submissions are readily within the public domain and no privacy issues were breeched.

The total number of submissions sent or presented to the RCGM was 11,001 –not all submissions were written submissions, some were orally presented. Submissions were assigned into two main categories: 'IP', 'interested persons' and 'GP', or general public. Interested persons are distinguished in the COI Act as including those who have an interest in the inquiry that is not an interest in common with the public (n = 117). The 'general public' category refers to any member of the public who is exempt from 'IP' status, but who is entitled to file a written submission (n = 10,861). In addition to these two main stratums, there are the 'government agencies' (GA) submissions: there were 12 GA submissions initially, but three of these were granted 'IP' status leaving nine GA submissions (n = 9). In addition, there were 11 huis held throughout the country, which resulted in the collection of 14 more public submissions (n = 14).

Determining which submission categories I should sample, and how many samples should be taken, has been influenced primarily by two factors: time and word limit constraints[26]. The desirability of sampling enough submissions so that those submissions selected would be representative of the sampled population in general was also a point of consideration for the data analysis[27]. It was decided that only three categories would be drawn on: IP, GP, and hui. All other related information in the form of meeting transcripts for example, were not sampled in this thesis, due to the need of having to limit the research to a manageable size. Out of a total of 11,001 submissions, 257 written submissions were sampled in this research. Excerpts from these 257 submissions are found in appendix C.

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[25]The declined IP applications dealt with in section 3.4 are different to the rest of the data, as the data was gathered later than the original data, as the appeal of exploring the applications was not realised until some months after the submission discourse had been sampled.

[26] With the suggested time frame for the completion of a MA thesis being approximately one year, and suggested maximum word limit being 40,000 words.

[27] The 'government agency submissions' are an exemption here, as being basically political submissions they have largely political aspirations or initiatives.

3.2a. THE GENERAL PUBLIC SUBMISSION SAMPLE

The largest group of submissions were the 10,861 general public (GP) submissions. From them I drew a sample of 500 randomly selected submissions. To obtain around 500 submissions every 21st submission was selected, starting with the randomly selected seventh submission[28]. The order by which these submissions were selected related to the alphabetically listed names of submitters as provided on the RCGM submissions web pages. Searching out the required submissions involved manually counting through all the submissions, then selecting and printing out the submissions in hard copy. Each submission was accorded a number relating to the order in which the submission was selected, that is, the seventh submission listed in alphabetical order was labelled with a number '1', then the 28th submission (the submission which was 21 submissions after the first submission selected) was labelled with a number '2' and so on. This eventuated in a total of 488 GP submissions being sampled.

After consideration on the enormity of the task I decided that a reduction in number of the GP sample should be undertaken, to create a smaller and thus more practical sample group. To reduce the sample size every odd[29] numbered submission was selected (1,3,5,7...), and the even numbered submissions were eliminated from the sample[30]. This method provided a more workable sample of 237 submissions.

Even this reduced sample was too large and one final reduction in sample size was undertaken to create a sample of 200. To eliminate the final 37 submissions, 37 submissions were drawn one-by-one from an archive box, which stored the submissions. They were drawn in no particular order, other than 'as they were taken' from the archive box.

The sampled submissions themselves differed in size. Most were one page or less long (184 submission's were one page or less in length). Ten submissions were two pages long, three submissions consisted of three pages, and the remaining three submissions

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[28]The 7th submission 'start-point' was chosen by randomly selecting a card numbered '7' out of a bag which contained cards numbered from 1 to 21.

[29]By 'odd' numbered, I am referring to the numbers that I allocated to submissions during sampling.

[30]To decide how to further reduce the sample, I threw a dice to determine whether to retain the odd numbered submissions or the even numbered submissions: an odd number was thrown, and thus the odd numbered submissions remained to form the GP sample group.

were, four, 14, and 17 pages long respectively. It was decided the discourse of each submission would be analysed in its entirety.

The first sort of the general public submissions resulted in a tally of those for and against GM, with the figures in Table 1 closely replicating the RCGM findings of those for and against GM.

	RCGM	Current
Against GM	92.1% 9,999	93%[31] 186
For GM	1.9% 204	1% 2
Mixed	6.1% 65	6%[32] 12

Table 1. Positions taken toward GM in GP submissions within the current research compared to the RCGM inquiry.

Of the 10,268 written GP submissions, the RCGM found that 9,998 submission (92.1%) were 'strongly against' and 'tends to be against' GM (RCGM 3, 2001[33]). This compares to the current research where 186 submissions (93%) were found to be 'against GM'. RCGM general public submissions which were 'strongly for' and 'tended to be for' GM numbered 204 (1.9%) (RCGM 3, 2001). This compares to the current research where two (1%) submissions were found to be 'for GM'. There were also 'mixed' submissions with both 'for' and 'against' GM comments. The RCGM general public submissions contained 65 mixed submissions (6.1%), as compared to the current research where there were 12 mixed submissions (6%).

Percentages of females and male submission contributors were also analysed in the current research. This was a crude analysis based on determining whether the first names of submitters were male or female names. It turned out that there was more female than

[31] The RCGM included 'strongly against' and 'tended to be against', where as the current research included submissions that were simply 'against'.

[32] Note that within the current research, 7 of the 12 'mixed' position submissions were actually against GM, apart from for contained, medical purposes.

[33] Abbreviations will be used when referring to the various RCGM reports: RCGM, RCGM 1, RCGM 2, and RCGM 3.

male submitters: Fifty-five percent of submissions were from females, while 31.3% were from males. There were also 12.8% of submissions which were unknown or indeterminable, and 0.9% were from combined or 'on behalf of' submissions.

3.2b. THE INTERESTED PERSON SUBMISSION SAMPLE

The Interested Persons (IP) submissions were made from various organisations, umbrella groups, industries, and governmental departments. It was a difficult group to determine an appropriate sample size for, due to the wide variety of interests presented from the multiplicity of different groups and organisations. Many of the IP submissions were also very large and had Witness Briefs [34] attached.

Around half of the 117 IP submissions were sampled for analysis[35]. The sample of IP submissions was selected from every second submission listed on the RCGM web site[36]. To determine the starting point for sample selection, a die was used until either a '1' or '2' was thrown: number '2' determined the starting point for selecting submissions. A total of 50 submissions were selected for analysis, from a possible 107[37]. The final number of submissions selected in the 'IP' group was less than half the total submissions due to two reasons: some submissions were listed in groups of two or more together, and some of the submissions were not made available to the public due to their being considered objectionable, or for legal reasons of confidentiality or commercial sensitivity (Hampton, 2002: pers. comm..)[38].

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[34]The main points made in witness briefs were generally referred to in the main group submission, so it was not deemed necessary to include these briefs to gain a full picture of the submission.

[35]A larger proportion of IP submissions and hui submissions (see the following section) were selected compared to the GP submissions, due to their being less submissions in these categories. The intention here was to generate a sample which was relatively representative compared to the overall population of submissions in each category.

[36]This list was dated 16th of August, 2000, and was found at http://www.gmcommission.govt.nz/inquiry/schedule_ab.html.

[37] (117 IP submissions were made and accepted in total by the RCGM commissioners, with 10 of these not being available for analysis due to there not being a written submission [RCGM1, 2001]).

[38]Hampton, Robyn. (robyn.hampton@mfe.govt.nz). (2002, March 1). Query re RCGM submissions. E-mail to C. Tucker (tuckerc@ihug.co.nz).

The IP sample of 50 generated over one thousand pages of data (enough to nearly full two archive boxes), much of which was repetitive due to the format used in the submission forms. The next sampling step was to determine which sections of the submissions would be used for analysis.

In all but three of the selected IP submissions there was an introductory section entitled the 'executive summary'. The executive summary proved to be the most appropriate section for analysis, as it described the main points contained within the entire submission, and was of a manageable length for analysis (it was required by the RC to be no more than three pages long). In the three IP submissions that did not have an executive summary, a relative equivalent to an executive summary was used[39].

The Witness Briefs attached to the majority of submissions were not used in this analysis, as this would have generated too much data. The Witness Briefs were presentations from individuals whom had some involvement with the organisation or group making the submission. The major points made in the Witness Briefs were referred to in the submissions and the executive summaries.

As with the GP submissions (Table 1), a basic statistical comparison of submission positions for or against GM was made between the current research and the RCGM analysis is shown in Table 2.

	RCGM	Current
Against GM	30% 32	38% 19
For GM	59% 62	50% 25
Mixed	10% 10	12% 6

Table 2. Positions taken toward GM in IP submissions within the current research compared to the RCGM inquiry.

[39]The organisation 'Dupont New Zealand' for example, did not provide an executive summary, so the main points have been drawn from their entire submission to substitute for their exclusion of an executive summary. In the case of the 'New Zealand Jewish Community' and the 'Soil and Health Association' where the formal format was not used, the introductory sections were drawn on in place of an 'executive summary'.

The IP submission positions that were either 'for' or 'against' GM in this research were again comparable with the RCGM (2001:27) findings, although not as identical as in the GP sample. The number of submissions that were in favour of GM in the current research was 25 (50%), where as the RCGM submissions which were 'strongly for' and 'tended to be for' GM numbered 62 (59%). Submissions in the current research 'against GM' numbered 19 (38%), where as the RCGM found that 32 (30%) submissions were 'strongly against' or 'tends to be against' GM. The number of submissions that were 'mixed' in the current research was 6 (12%), and in the RCGM findings there were 10 (10%). The RCGM also found 1 submission to be 'indeterminable'.

3.2c. THE HUI SUBMISSION SAMPLE

The 14 'hui' submissions were sampled, selecting every second submission and as with the IP sample the starting point for selection was determined by throwing a '1' or '2' on a die. A '1' was thrown, thus beginning the sampling with the first listed submission. Out of 14 submissions listed on the RCGM web site, a sample of seven was selected for analysis.

The seven hui submissions ranged in length from one page to 25 pages, and due to the variety both in the length of submissions and in content, it was decided the entire discourse of the submissions would be used for analysis.

Six of the seven hui submissions sampled were not in favour of GM embracement. Although not explicitly stating a stance toward GM, one hui submission appeared to be in favour of medical research involving genetic techniques.

The hui submission data is presented with the GP submissions in Chapter four, in line with the RCGM report which presented the hui submissions with the GP submissions. A point that differentiates these two groups (apart from the emphasis on some issues being different) is that the hui submissions were advanced within hui situations, and the other GP submissions were not.

3.2d. THE GOVERNMENT AGENCY SUBMISSIONS

The final submission category recognised by the RCGM were the Government Agencies (GA). This group was the most difficult to sample, due to it being of a slightly different nature to the other groups. The GA submissions were mainly comprised of various ministries or government departments that had special interests in particular areas.

For example, The Ministry of Consumer Affairs submission dealt almost exclusively with issues relating to food and labelling of food.

The GA submissions were included not only in the GA category, they were also found amidst the Interested Person category, where three GA's were granted IP status. There were other confusions also. For example the General Public category also contained Government Agency submissions, from local body government in the form of Councils for example (which were not recognised under the RCGM's GA section). After some consideration it was consequently decided that this relatively small number of GA submissions would not be sampled, apart from if they happened to be found and sampled from either the IP or GP categories. The GA submissions were thought to be of most use when used to support the discussion and analysis of submissions where clarity on an issue or other information might be required.

3.3. DEVELOPING FRAMEWORKS FOR DATA ANALYSIS

Constructing a framework to make sense of submission data was a very time-consuming 'trial and error' task. The easiest way to accomplish a framework for analysis would have been to use the same format as the RCGM report. Instead I opted to provide a framework that directly reflected the concerns voiced by individuals and groups, allowing the language and validity bases of submitters' arguments and concerns to be expressed verbatim. Ultimately this was a discourse analysis.

I began the task by reading through the submissions to gauge the issues that were being raised, and the kinds of attitudes that prevailed amongst the submissions. The idea was to be able to go through the submissions selecting verbatim quotes, and organising these quotes within 'themes'. This alone was a daunting task, as the discourse used in the submissions referred to a wide assortment of political, social, economic and social issues. The way in which some individuals' and groups' expressed their thoughts also added to the difficulty in developing a framework. Some submissions were not entirely coherent or readable!

Eventually a framework of themes was developed, consisting of headings and sub-headings. The main headings or themes that were derived initially were:

- The culmination and future epitome resulting from current decision-making.
- Risks versus benefits: the argument.
- Structural entities: political / legal / media role.

Once these themes were established, quotes from the GP submissions were located in their appropriate sections. After working through a number of submissions, it became clear that the framework organisation was not going to work for two reasons. First, the framework had to not only be able to cater to the largely homogenous GP group, it also had to deal with those submission quotes that were not of a similar mind to the majority. It second needed to be kept in mind that the IP submissions, rather than being largely homogenous, were more divided in their attitudes and opinions toward GM embracement.

Developing a framework for all the RCGM submissions (particularly the IP submission quotes), involved rethinking how the data would ultimately be presented. One option was for each groups' data to be presented within one framework which could be constructed in such a way that it allowed for both 'sides' of the debate to be presented within the one framework. A second option was to present the different groups' submission quotes from the perspective of being either 'pro-GM' or 'anti-GM'. The latter meant that data from individual submission categories would be combined, and presented as against or for GM.

Eventually a decision was made to keep the categories of submission quotes separate, and develop a flexible framework to cater for 'mixed' stances amongst the submission quotes. The initial themes (described above) were then revised a number of times on paper, although this did not help as much as was hoped in redeveloping a framework. However, after more reworking on paper, a more drastic move was taken where each of the initial main themes and their sub-themes were written on paper and then literally cut up, to produce individual pieces of paper with different themes / ideas on them. These pieces of paper were then arranged and rearranged on a wall in my house, using 'arrows' to determine relationships between themes. Eventually a new framework was developed which was organised in quite a different way to the initial framework.

A determination was made that all the submission groups' data would be imputed into the same basic framework, but with the flexibility of being able to redefine the various themes to more succinctly and accurately represent the content of the submissions within the given themes. This resulted in the following basic themes being (re)developed:

- GM Science and the Ethical Implications.
- Personal Health to Environmental Health.
- Information, Liability and Regulation.

- Solutions? GM-free versus GM Embracement (this heading differs between the IP and GP data presentation so as to be more descriptive of the views expressed amongst the quotes in the section).

Due to the sheer mass of (over 500 pages) of data generated, it was not possible to present every quote within the relevant chapters. To deal with this issue and to present the crucial issues discussed by various individuals and groups, an appendix of quotes is provided (see Appendix C). This presents submission quotes in thematically designed categories directly related to the presentation of the data in chapters four and five. The data presented in chapters four and five is acknowledged with a referral code, simplifying data presentation. All coded sequences and the submitters to whom they refer are available at the beginning of the appendix (C) of quotes. The GP submissions (including the Hui submissions) are presented in chapter four. Chapter five follows with the IP submissions. Before proceeding to these chapters, discussion of the declined IP applications is supplied. Given that the overall thesis examines democracy at work, the IP declined category may have been democracy's first victim.

3.4. DECLINED INTERESTED PERSON APPLICATIONS

The declined IP applications totalled 175 according to the RCGM (RCGM1, 2001). After much investigation and crosschecking the applications, I located a total of 186. Reason for the discrepancies found are not explained, but I can confirm that there are no duplicates amongst the 186 located declined IP applications[40]. The reason for this discrepancy remains a mystery.

Successful applicants who attained IP status were discussed at length in the RCGM report, but those applications that were denied IP status were not discussed. To fully analyse and provide a critique of Section 4A of the COI Act, it was found to be necessary to look not only at who was granted IP status, but also at who was denied IP status.

This investigation of the declined IP applications was done at the National Archives (Wellington, NZ) and involved searching through two files entitled 'Interested Persons declined'. Of interest were several key areas / issues:

- Attaining a general overview of the positions that applicants took in relation to GM.
- Whether the application was from an individual or a group.

[40] Applications that were withdrawn are not included in the final figure of 186.

- The reason/s given for why the applicant believed they had an interest outside of that of the public (why they believed they should get interested person status).
- The RC's responses as to why applicants were denied interested person status.

Table 3 presents the information that was found in the declined IP applications, showing the positions taken toward GM (where applicants clearly indicated their position or view). Of the declined IP applications, there were 45 (24.2%) applications where the stances taken in applications toward GM were indiscernible or mixed, that is, from reading the applications it was not discernible how the applicants felt toward GM. The majority of applicants who were denied IP status were from individuals/ groups who were opposed to GM.

	Individual	Group / Organisation	Total
Pro-GM	14 (10.4%)	9 (17.6%)	23 (12.4%)
Anti-GM	88 (65.2%)	30 (58.8%)	118 (63.4%)

Table 3. Positions taken by declined IP applicants towards GM, by group and individual applications.

Individuals made the majority of applications: 135 (72.6%), while 51 (27.4%) of the applications were made on behalf of organisations or groups. Reasons given for why applicants believed they had an interest outside that of the public were varied, with some applicants being concerned about their livelihoods as organic farmers or horticulturalists, and an emeritus Professor of zoology who wished to contribute his considerable knowledge to the RCGM. This matter, as well as reasons provided by the Royal Commission for declining particular applications, and the feedback and comments provided by applicants are discussed further in chapter six. The declined IP applications provide an entry point into considering the processes of the RCGM, questioning issues of accessibility and exclusion of individuals and certain groups in participating in democratic process.

CHAPTER FOUR

THE SILENCED MAJORITY?

The largely homogenous general public submissions presented to the RCGM proposed a very negative view of embracing GM technology. The common points raised throughout GP and hui submissions were:

- Scepticism in view of the safety and benefits of GM.
- Consideration for ethical concerns.
- The right to be able to choose (GM or not GM) via easily accessible information.
- Fear of what could happen to entire ecological communities (including humans) if GM were to be more widely embraced.

GM technology was basically viewed as being too risky in GP submissions, and in many instances not necessary or justifiable. The best strategic option overall was deemed to be an embracement of organic production technology, ultimately with GM technology being kept out of New Zealand. If GM was introduced the most acceptable place for it in New Zealand was foreseen as being within containment for medical purposes.

Themes in these submissions can be divided into four main sections, with each theme encompassing a series of issues. The first set of issues looks at the science of GM, and presents views pertaining to how people see this science and associated ethical implications. This section is encompassed within a broader overall framework of risks versus benefits. The second section examines health from a personal level through to environmental health and well-being. Section three focuses on the formation of peoples' views and how they believe that the issues intrinsic within GM should be dealt with. The fourth section moves into a futuristic theme. The quotes provided highlight submission views on the path that New Zealand should take in relation to GM. Issues raised in the hui submissions follow these four sets of issues. There the added emphasis was on Maori cultural and spiritual values and the role of the treaty of Waitangi in shaping how GM issues should be addressed[41].

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[41] A note of caution: the quotes presented are verbatim, and the information presented in these submissions may not always be completely accurate or factual. My intention is not to argue the true or false nature of what was submitted, but to simply present what is stated in the submissions.

4.1a. WHY THE FUSS? GM SCIENCE AND ETHICS

Eighty-nine of the 200 general public submissions sample said GM is too risky. But why was GM considered to be so risky? Thirty-three submissions stated that the risk was due to 'unknown / unknowable effects'. Twenty-six submissions cited the 'irreversibility' of GM once in the environment as the reason. The issues conveyed in this section therefore centre around six topics including:

- The risks of GM technology.
- Dispelling the justifications given for GM use.
- Ethical issues encompassing the motivations for using GM.
- The patenting of GMOs.
- Religious, spiritual and cultural values.
- Consideration for future generations.

'*GM as a risky technology*' was highlighted in submissions in mostly negative ways. Comments ranged from persons having no faith in the safety of GM technology to those seeing GM as technological gambling, too hypothetical or a potential disaster. Overall the fear was a sense of the unknown. Here three comments underscore these concerns:

- As well as positive uses of the technology, it is open to misuse, abuse, and the potential for catastrophic error (GP65).

- It is basically a form of social and technological gambling.... It seems foolish to compromise our borders and our protected ecology by using unproven technology in uncontrolled situations (GP257).

- The benefits of genetic modifications are undeniable, but as an independent scientist I recognize that our qualified genetisists [sic] are only at the beginning of their research. Their work is hypothetical and they have no rite [sic] to expose the public to general experimentation (GP389).

Not all submissions were this pessimistic. A sole submission among those sampled saw possibilities as long as GM researchers were accountable:

- As long as this research is driven by accountability to our social whole, rather than to individual or corporate profit, then it seems possible to reduce the risks and partake of at least some benefits of genetic technology (GP257).

Dispelling justifications for GM use was commonly addressed in GP submissions, accompanied by much scepticism as to the motivations of scientists or corporatists involved in GM technology. These submissions saw GM research being driven by self-interest and profit. Anti-GM submissions were also critical of the touted benefits of GM

that claimed that the science was simply an extension of traditional breeding and production practices, able to feed the worlds' hungry, and that it was too late to halt GM technology given that it is already in widespread use. These five submission extracts below encapsulate the scepticism surrounding both the advocated benefits of GM and the questioning of scientific integrity:

- ...it doesn't really feed the world at all. On the contrary, it destroys diversity, local knowledge & the sustainable agriculture systems that farmers have developed for millennia, thus undermining our capacity to feed ourselves (GP361).

- It is misleading to represent these techniques as essentially similar to the selective breeding techniques that have been used for centuries (GP307).

- One of the reasons advanced by politicians for the acceptance of these activities is that "the genie is out of the bottle". This is a pathetic argument. The genie is out of the bottle on any number of activities involving technology or other scientific expertise...but that does not mean that they are acceptable (GP173).

- ...little faith in scientific integrity (GP157).

- The benefits of GE are the large profits for the controlling companies who patent their GE techniques or processes (GP87).

Religious, spiritual and cultural values were issues of consideration intertwined with ethical considerations, and with GM science itself. Submissions made were opposed to the use of GM for reasons of the science conflicting with religious, cultural and/or spiritual beliefs. Concerns ranged from GM interfering with God's integrity, with nature, and with the manipulation of species:

- The wholesale sundering of the species boundaries is an irreverent disruption of God's integrity -creation, so I wish to separate myself as a matter of religious principle (GP125).

- Only by recognising a divinity in everything can we appreciate the sacredness of all life and the sanctity of the place and thus reject as desecration such activities as genetic engineering (GP173).

- The Maori world view does not sit easily with the type of manipulation of parts of species that GE technology entails' (GP367).

Ethical issues also resounded around the question of how far would GM science go? Submissions questioned the right of GM scientists to 'play God' and mess with the intricate balance of nature:

- Transferring genes horizontally between species and insert [ing] them into a

> completely unrelated species; something that cannot happen in nature. This has mind-boggling implications and raises questions both ethical and practical... Surely this ability to "play God" with genetics raises profound ethical and moral issues... (GP331).

- Modern science as a mindset seems largely incapable of recognising the idea that life is sacred and is therefore ill equipped to check its own activities from an ethical perspective... It is by the grace of God and 2000 million years of evolution that we exist not because of our own hubristic [sic] tinkering... (GP1).

Future Generations and their well-being involves ethical concerns, where questions were asked relating to trying to explain any damaging consequences from today's GM use to future generations:

- What do we say to our grandchildren if they inherit any negative effects of genetically modifying organisms and products? (Oops sorry!) (GP81).

The issue of future generations also spanned into the broader issues of personal and environmental health.

4.1b PERSONAL HEALTH TO ENVIRONMENTAL HEALTH

The underlying theme of 'risks versus benefits' is continued here within the presentation of submissions quotes expressing concern for the health of individuals both medically and via what we consume. These concerns lead into more holistic concerns for the environment and ecologies within which we live and are summarised under three broad headings:

- Medical use of GM.
- GM food.
- The health of the environment.

Medical use of GM is an area where there was a notable exception in the largely held opposition to GM. There were 7 (3.6%) out of the 192 GP submissions sampled opposed to GM that acknowledged benefits for human health via medical uses of GM techniques:

- Reducing chances of acute health problems (GP143).
- Reduction / removal of disease related to humanity (GP137).

There was however still some opposition to GM being used for medical or health purposes due to fears about how GM could be interfering with peoples bodies, and due to the bizarre nature of GM research being planned:

- Some of the most grotesque GE endeavours and proposals are being done in the name of medicine (GP1).

- It's [GM] no good for any of us (GP275).

GM food was the area where the biggest reservations were held about GM. Submissions stated that the food could be dangerous due to it being unnatural, and due to the possibility of if creating new diseases and increased allergies:

- I don't want to eat food that may be dangerous or altered in any unnatural way (GP357).

- '...increased toxic residues in food (GP49).
- ...the risk of incurable diseases (GP305).
- People's allergies have already been discovered to spread from one food to another when their allergic food is genetically engineered with another (GP079)[42].

The health of the environment and concerns about ecological communities were expressed articulating the perceived importance of the environment and ecosystems. GM used for environmental purposes attracted a wide range of support from those who saw benefits for the environment and ecological systems or communities, through to comments that foresaw dire consequences for the entire earth. Submissions which saw positive implications for the environment discussed areas such as the preservation and even bringing back of extinct species, and benefits for growing plants:

- Faster growing, more disease resistant plants (GP347).
- Preservation of certain species (GP379).
- ...moa's roaming, woolly elephants, giant tui's, eagle fantails... (GP249).

Comments expressing concern for the environment ranged from seeing GM as bringing about the eventual demise of the planet, through to more national concerns about preserving New Zealand's clean and green image.

- Our fragile Earth's ecological balance is under siege (GP3).
- To be GM free.... It would enhance New Zealand's clean green image (GP41).

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[42]Some concerns are not expressed very clearly (as in the statement relaying fears for the spreading of allergic reactions), or are based on extreme views and sometimes misunderstandings. My interpretation of what this submission is expressing is the concern for increased allergic responses to foods, as genes from foods which some people have allergic reactions to (for example peanuts) are introduced into other foods or GMOs, thus 'spreading' the potential for allergic reactions to occur in a food which is not, for example, a peanut.

- New Zealand's competitive advantages lie in its relative isolation from the rest of the world, and its reputation as a "clean green" country (GP331).

New Zealand's clean and green image was also a point raised, with the importance of maintaining this image being of paramount concern. Contamination or pollution from GM crops to other plants, and the preservation of species were viewed as being of concern in the maintenance of New Zealand's clean, green image:

- What will happen if it is brought into the country and cross-pollination between G.E. & natural crops occurs? (GP345).
- ...inability to control pollen spread (GP271).
- Artificial vectors and genes they carry have the potential to spread horizontally to a wide range of species, to recombine with their genes to generate new viral and bacterial pathogens (GP361).
- Pollution to soil and environment' (GP261).
- [Risks of GM]...decimate wild plant species & threaten plant diversity (GP221).

The viewing of issues from a risk versus benefits analysis in these two sections now moves into looking at how submission statements suggest the risks (and benefits) believed to be associated with GM should be dealt with, primarily via legislation.

4.1c. INFORMATION FORMATION, LIABILITY AND REGULATION

The availability of 'reliable' information, and the concern of wanting to have submission views heeded by the RCGM are discussed under six broad headings. These include:

- Information and misinformation.
- Law Formulation.
- The Treaty of Waitangi.
- Consumer choice and labelling requirements.
- Liability and responsibility
- International influences.

These areas are where sampled submissions have taken the opportunity to put forward often, strong criticisms, observations and recommendations. This is where submissions look toward formulating ways of coping with the risk element of GM technology.

Information and misinformation has always been central to the RCGM debate. The controversy was introduced in chapter one, and was again elaborated on in GP submissions where there was concern that as lay people, their anxieties would not be listened too. There was further concern expressed in the submissions at the lack of honest or reliable information available to public:

- I sincerely hope that the concerns of non-scientific individuals such as myself are taken into serious consideration (GP367).

- Science should be democratic - we should know what is going on, and have a choice (GP33).

- This whole issue has been kept in the dark, insignificant publicity or debate...I believe there needs to be much more discussion, education and knowledge imparted to the public on GE before such a huge decision can be made (GP85).

- Large multinational biotech groups are spending millions to brainwash and influence the public to believe in their "so called benefits" of genetic engineering (GP3).

Overall scepticism was voiced concerning the sources of information related to GM received by the public. This indicates that there was some scepticism about the RCGM and democratic process for laypersons even before the RCGM begun.

Law formulation is an area that was turned to as a way of expressing what various submissions believed should happen or believed should exist in regard to GM. A key message being relayed in GP submissions was that there was no place for GM in New Zealand beyond the laboratory door. A whole miscellany of ideas were put forward with regard to what should or should not be done, including supporting the precautionary principle[43], having a referendum, or having more stringent and translucent processes for dealing with GM:

- No commercial GE crops, No GE field trials, and No GE food... (GP57; GP53; GP133; GP141; GP211; GP213; GP385).

- A nationally binding referendum seems the only democratic process that can appropriately solve the contrasting calls from industry and the wider citizenry (GP65).

- I support what has been termed the Precautionary Principle (GP307).

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[43] The precautionary approach or principle was originally developed in German law, based on the German principle of *Vorsorge* or foresight. The principle or approach was referred to in the Rio Declaration, and basically has as its objective the avoiding of threats to the environment.

- The uniting of all commissions and committees etc relating to GE/ Mod and on experiments in the laboratory eg ERMA so that all decisions will be followed through in all areas (GP27).

- There must be a strict permit regime for all work on GM organisms and material, with strict guidelines as to how the material will be destroyed ...there must be an open process to explain why GM is thought to be necessary (GP303).

Legislative concern for New Zealand was a common feature within submissions. Honouring involved of the *Treaty of Waitangi* as a partnership with tangata whenua, and recognition of the importance of the Treaty were viewed as important in regard to progressing with GM technology. These are two examples:

- The partnership with tangata whenua must be fundamental in determining our national identity, goals, vision and what risks from GM are socially, ethically, environmentally, economically or spiritually acceptable in Aotearoa / New Zealand (GP65).

- Te Whanau Poutirirangirora a Papa believes that any forum so established must recognise the authority of Tangata Whenua under the Treaty of Waitangi (Hui1).

Consumer choice, although related to food consumption, is also an issue of a legal nature, as the right of consumer choice is acknowledged in New Zealand law[44]. The threat to consumer choice was largely derived from there being uncertainty as to what is *in* the food people consume. Sampled submissions unanimously stated that people should have the right of consumer choice in being able to make informed choices as to what they wanted and did not want to purchase:

- ...it is my right to know what is in the food I eat (GP19).
- To be GM free is what people prefer given the choice, especially in the food we eat (GP41).

- It is a violation of the laws of nature and human rights. We have a democratic right to choose in NZ... (GP361).

Labelling of GM products was seen as a method allowing for consumer choice to be realised. One submission in particular criticised the way in which organic producers need to earn a label (as opposed to GM labelling not being mandatory in all cases):

- At the very least, GE food should be labelled so as to grant the consumer the informed choice (GP45).

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[44]The Ministry for Consumer Affairs RCGM submission discusses consumer choice, labelling, and other related issues in some detail.

- ...all medicines should be labelled and conventional options made available (GP1).
- Producers fear labelling, while organically produced products need to earn their label (GP59).

Liability and responsibility concerning any GM mishaps were addressed in submissions. The primary argument being put forward was that it is not the tax payer or everyday person who should be accountable if something goes wrong, but it should rather be those who are more directly involved in the science itself:

- ...a robust set of rules to ensure that all risks and costs that could ultimately impact the greater community are carried by those engaged in the practice of G.E. not the taxpayer (GP63).
- Penalties for non-compliance must involve mandatory prison for individuals, as well as crippling fines for organisations... (GP257).

One submission felt that it would be the average person that ended up bearing the consequences if something went wrong:

- ...No matter who pays, in the end it will be us ordinary people who will feel the price increase in food, insurance payments or taxes (GP337).

The international influences on New Zealand were also commented on with submissions believing that New Zealand was following and bowing to the pressures of other countries:

- ...we shouldn't do it just because everyone else is (GP55).
- As a global citizen New Zealand must use its voice to defend national rights or see the foundations of national democracy further eroded (GP65).

The next section focuses on a future for New Zealand.

4.1d. SOLUTION: A GM-FREE, ORGANIC EMBRACEMENT

In line with previous sections of this chapter, submission discourse largely continues to contest the use of GM. Most of the recommendations made for the future focussed on discrediting GM as a possibility, and instead adopting at minimum a GM-free future, and optimally organic nation. This next section brings in the 'organic ideal' and issues raised here are based around justifying a GM-free future, visualisation of a GM-free or organic

future, and warnings as to what the future may hold if this GM-free vision is not actualised. It is organised around two main headings:

- Learning from past mistakes and overseas experience.
- The organic future ideal.

However, as far as the possibility of a co-existence of the two technologies, the opinions that came through very clearly discredited the idea of organic and GM production being able to coexist:

- Organic & GM crops [are] incompatable [sic]...(GP221).
- There are 2 ways we can go ORGANICS or GM. It should be organics (GP33).

Learning from past mistakes and overseas experience were drawn on as justification for supporting a GM-free future. Here the themes ranged from humans moving too fast in invoking change, past creations that have ended up as tragedies, and looking overseas at what others want or don't want. The overall sense was that GM would end up creating more problems, which would just add to the already existent myriad of human made disasters:

- ...history has taught us that the greater the rapidity of human-induced changes, the more likely they are to destabilise the complex system of nature. "Fools rush in..." (GP361).

- In recent times the scientific community has many times been wrong, having given safety assurances, and cannot be trusted - especially as much new science is driven by big business. (E.g. Thalidomide, DDT, asbestos, ... cell phones, plastic, lead in petrol, BSE etc, etc) (GP171).

- ...agricultural bioregionalism, crop diversity, localised control and self-reliance and ecological sustainability. GE is a continuation of these mistakes on a bigger scale.... Should we continue to trust the intentions of, or hope the best for the outcomes of a modern scientific way of thinking which has already given us the ability, through nuclear technology, to annihilate ourselves and the biosphere, as we know it? (GP1).

- Third world countries are objecting to Genetic Engineering. They want farmers to be able to sustain themselves, not be forced to buy food from some giant food company overseas... (GP79).

The organic future ideal closely follows justifications of why GM embracement in New Zealand should not be adopted. Submissions suggest a future of New Zealand embracing the idea of New Zealand as an organic nation. The justifications for this were complex, ranging from New Zealand being better of financially and health wise, with

sustainability being a key concern. A GM future was rejected and an organic future embraced in these three submissions:

- We should be encouraging the growth of the organic industry so it can become cheaper and more accessible to everyone so that we can all be healthy & a healthy nation (GP373).

- ...cement organic ideals in front of the world -"the organic garden" a marketers dream (GP63).

- ...in 10 years time other countries will be coming to us for seed stock as all organisms will be effected by G.E. (GP101).

Submissions were concerned about the possibility of a GM-free and organic future not being realised. Submissions foresaw many risks resulting from GM being embraced, including risks for the organic industry and the clean and green image of New Zealand. Coupled with these risks were a resulting loss of revenue and control over the future of New Zealand:

- There can only be huge "risks" in the future" [if GM is embraced] (GP213).
- Its consequences could be particularly disastrous for a country like NZ which relies on its primary products and pristine countryside for food exports and tourism income (GP53).

- The acceptance of genetic modification could kill our fast growing a [sic] lucrative organic food industry (GP39).

- ...the possibility of global biological crisis or ecological breakdown. Loss of what control we now have over our economic and political systems (GP393).

A GM-free nation is clearly what these GP submissions sought. Similar sentiments were put forth in submissions forwarded during the huis held throughout New Zealand.

4.2. HUI SUBMISSIONS: THE CENTRALITY OF TE TIRITI O WAITANGI

The hui submissions typify much of what was said in the GP submission discourse. GM was a risky technology, but here ethical concerns focussed on Maori cultural and spiritual values. The personal through environmental health concerns echoed comments made in the GP submissions. However one submission saw possible benefits in medical usage of GM, yet the remaining submissions only saw risks. Legislative concerns, and

visions for the future again echoed the views of the GP, with the Treaty of Waitangi being a prominent issue with regard to legislative consideration. The same headings used for the GP above are used here.

GM safety and risk issues were commented on, resonating concerns relayed in the GP submissions:

- I understand and accept advantages in the introduction of genetically modified organisms.... there are too many things we do not know about genetically modified organisms (Hui5).

Ethical concerns were also similar to the GP concerns yet the main area discussed in hui submissions concerned Maori cultural values, especially whakapapa:

- Our traditional cultural beliefs are in direct conflict with this science, and the interference with "whakapapa" (genealogy) is creating widespread concern among Maori. Genetic modification damns the "mauri" (life force) and wairua (spirit), which is intrinsic to Maori and fundamental to our wellbeing... ...any form of genetic modification irreparably damages our cultural inheritance... (Hui3).

Personal through to environmental health and the associated perceived risks and benefits again echoed the GP submissions:

- ...there was some support for genetic therapy (Hui1)[45] in one submission.

Generally though the areas of health and environment were equated with concern and risk. This waiata presented in one of the submissions sums up views that were pervasive in many of the Hui (and GP) submissions:

Toitu te marae o Tane	If the domain of Tane survives
Toitu ti marae o Tangaroa	and the domain of Tangaroa likewise remains
Toitu te Iwi	So too, will the people...
	(Maori wiata; presented by Harmer).

Environmental and biodiversity benefits were not mentioned as problems in the hui submissions, but concerns were expressed with regard to ecosystems and future generations:

- The effects on our ecosystem are unknown and therefore a potential danger, unable to be quantified... ...we have over many, many years seen parts of the eco-system wantonly damaged in the cause of progress, and then at a much

[45] The use of the term 'genetic therapy' in this instance appears to reflect the contents of the submission, which spoke of the way in which medical professionals have used genetic technology for tracking a gene, which was found to contribute to high incidences of a particular cancer that runs through the submitters' family.

later dare seen attempts to rectify the resultant damage caused, on a too little, too late basis (Hui3).

- We cannot and must not act alone and be oblivious to the needs of our communities. What is achieved cannot be done at a cost to any future individual, community, to the environment or to the future (Hui5).

Information availability, legislation, liability and regulation involving GM technology ran parallel with concerns expressed in the GP submissions. Emphasis was placed on the Treaty of Waitangi in forming legislation related to intellectual property in this submission:

- The intellectual property of Maori will be destroyed by the introduction of genetic modification.... the Treaty of Waitangi specifically provides protection for intellectual property (Hui3).

Future visions in relation to GM did not have much mention in hui submissions, and when the future was mentioned sentiments given generally replicated the GP submissions, including the idea of an organic future:

- Genetic engineering...does not have a future prospect here in Aotea-roa (Hui7).
- NZ needs to approach an organic future, in which we can rely on safe, clean, unadulterated food, water and air -is this not our natural birthright (Hui6).

In sum, the views expressed by the GP were largely homogenous and consequently were principally unanimous in their collectively rejecting GM beyond the laboratory, and opting for a future that would see New Zealand as an organic nation. This unanimity is generally followed through in the hui submissions, with the only area being of some difference in emphasis being where hui submissions more often emphasis Maori cultural and spiritual concerns, and the honouring of the Treaty of Waitangi. The general consensus found amongst the GP and hui submissions was also found in around one third of the Interested Person (IP) submissions. A basic point that sets the GP apart from the IP outlined in the next chapter was that the IP group were comprised of groups with more varied and diverse points of views and interests than the GP, thus establishing a more heterogeneous group. While there is strong opposition to GM in IP submissions, there are even more submissions exerting strong support for GM. This chapter has focussed on the laypersons. The next chapter focuses on those submissions considered 'interested persons'. Did the RCGM consider them both as important contributors or was one group more important than the other?

CHAPTER FIVE
A CLASHING OF WORLDVIEWS

The IP submissions differed markedly from the GP, and were largely responding to a whole different set of concerns. Interested Person submissions formulated opinions and views parallel with views expressed in the GP submissions, yet more often views expressed were very much the opposite, such as fully embracing GM for the betterment of New Zealand as a whole as opposed to the anti-GM submissions which sought to reject GM for the benefit of New Zealand as a whole. Overlaps and differences between the GP and IP submissions are featured in this chapter. In general the sample of 50 IP submissions expressed these three concerns most frequently:

- Formulating legislation (to make GM research either more affordable and accessible, or conversely to make legislation stricter).
- Education about GM and making public information more readily available and accessible.
- The right of consumers and producers to be able to choose 'GM or not GM'.

The data provided in the following sections follows the same general framing as the previous chapter:

- GM science and the ethical implications.
- Personal health to environmental health.
- Information, liability and regulation.
- Solutions: GM-free versus GM embracement.

As with the previous chapter a list of those quotes not presented in this chapter are available in appendix C.

5.1a. GM SCIENCE AND THE ETHICAL IMPLICATIONS

The power of GM as a technological tool, and the related scientific and ethical issues was a prominent discourse. The range of issues covered here include:

- The risks versus benefits of GM.
- Justifications for embracing GM
- Challenging GM justifications
- Ethical issues

- Cultural, spiritual and religious issues.

A *risk versus benefits* analysis of GM focussed on the power of GM and its associated potential benefits. These include precision in safety estimation, economic, social, and environmental benefits, and are discussed in these three submissions:

- Genetic Engineering is a very powerful technology with even greater ability to transform our planet than the industrial revolution (IP11).

- GM research has lead to new more precise methods of safety assessment (IP26).

- ...we consider the prudent use of gene technologies will make an invaluable contribution to New Zealand's economic, social and environmental well being. ...There is a critical need to retain research options including GM and biotechnology.... to attract the necessary investment capital to exploit opportunities. Knowledge applied to our natural resources provides the platform for product development and the base for new add-on industries to emerge (knowledge economy) (IP25).

Accompanying the proclaimed benefits of GM technology were submissions that warned about the risks associated with GM technology, such as risks from the uncontainable nature of GM and risks associated with GM science still being in its infancy:

- Consequences, especially considering the relatively early stage of development we are at with this young science, could be exceedingly grave (IP45).

- The inherent uncontrollability of the GM technology itself and witnesses will attest that this leads to unpredictability of GM organisms with unacceptable and irreversible risks if they are released (IP17).

- The Worm Federation of New Zealand does not endorse genetic modification of agricultural products in New Zealand until sufficient research has been done. Our members are concerned that it can take 40 or 50 years to determine the real downstream effects of our "inventions". Traditional GM testing does not work for determining soil health (IP42).

Justifications for embracing GM in New Zealand ranged from the need to retain scientists and researchers in New Zealand, the accuracy and precision which GM can offer as a science, feeding the worlds hungry populations, and meeting increasing consumer demand. Together these justifications welcomed GM science:

- [GM science as necessary to] ...retain our scientists and researchers in New Zealand by offering them a good reason to stay; that is, the opportunity for them to grow and be challenged, and financial and regulatory support for research (IP9).

- Classical and plant breeding and agricultural biotechnology methods are conceptually the same, except the latter is much more precise and the desired outcomes occur more frequently (IP2).

- ...biotechnology and GM food will play a critical role in feeding the worlds population of 9 billion by 2025 (IP4).

- ...to enable primary producers to meet the growing demand for products made to specification (IP13).

Challenging GM justifications, such as those presented above, was also a focal point in IP submissions. Anti-GM submissions suggested reasons for why New Zealand would not benefit economically from GM. These submissions also stated that GM was not wanted, was not safer than traditional techniques, and would not feed the world's hungry:

- GE crops are bad for the US economy & will be bad for NZ economy. ...US corn exports to Europe dropped by 96% in 1999 because the US cannot provide non-ge corn. US soybeans sales to Europe dropped from $2.1 billion in 1996 to $1.1 billion in 1999 (IP44).

- It is not possible in traditional breeding processes to breed across species let alone across biological families (IP7).

- Studies world wide show that the general populations of countries do not want this technology (IP11).

- To feed the world takes political and financial will, it's not about production and distribution... (IP28).

Ethical issues were brought in, often discussed in relation to patenting and control of GM. These submissions recognised the need to act ethically with GM science, critiquing the patenting of GMOs as creating monopolisation and control over life forms:

- We do not see the technology of genetic modification itself to be in conflict with ethical values. However most human inventions can be used to benefit or to harm, and there may be uses of GM which are unethical or unwise. Human activity, including GM, must therefore be ordered to... "the integral good of the human person". How we use genetic modification will be a statement of what we value as a society, and who we are as a people (IP31).

- Life forms that have for, literally millennia, been public property are now being owned privately. ...many international trade agreements now favour the rights of private corporations over the environment and health needs of people. Looking overseas we see that indigenous life forms have been patented, depriving local

people of the use of plants and animals that are essential to their well being and way of life (IP11).

Cultural, spiritual and religious issues enmeshed within the ethical realm challenged the notion of GM science. This one submission stood alone in stating that ethical issues should not impinge on the right of others *to utilise* GM technology:

- Cultural and spiritual issues should be dealt with at the levels of education and / or consumer choice and should not be allowed to impinge on the rights of those who wish to use, research or deploy GE substances or organisms (IP41).

More common however were anti-GM submissions that pointed out the importance of recognising cultural, religious and spiritual rights. Featured in these submissions were Maori cultural concerns, Jewish beliefs, and the spiritual or sacred quality of the natural world, or simply 'playing God':

- Protect the integrity of the whakapapa and Taioa of the Tangata Whenua (IP37).
- The Torah (the 'Old Testament') explicitly forbids certain forms of cross breeding (IP36).
- [If we] Destroy/alter/change the natural state of the elements than that which we hold dear will no longer exist (IP37).
- The term "playing God" reflects deep concerns some people have about GM, which may be justified if science and economic interests are left to make the major decisions about its use (IP31).

Overall, the sampled IP submissions focussed more on the benefits than the risks of GM in marked contrast to GP. In personal health and environmental health these differences are continued.

5.1b. PERSONAL HEALTH TO ENVIRONMENTAL HEALTH

The risks and benefits of GM are further explored within the continuum from human health to the health of the environment, and to Earth's various ecological communities. This health continuum is arranged under these four main headings:

- Medical applications of GM.
- GM food.
- Environmental and ecological well-being.
- Contamination and pollution.

Submission discourse in the area of health encompassed a wide range of views, from those submissions that foresaw devastation as a result of the further employment of GM to those that foresaw a huge array of benefits. In general there was more diversity in IP than GP submissions.

Medical applications of GM technology drew in a mixture of viewpoints. As with the GP submissions, medical usage of GM for new drug and vaccine development (along with it's use as a diagnostic aid) was an area that gained support:

- Many drugs, vaccines and medical diagnostics have been developed in the health biotechnology industry using genetic modification. These GM products are often safer alternatives than existing product (IP16).

- New Zealand must keep in mind the current and future health needs of its citizens and focus on the needs of people whose condition may be relieved by G.M. technologies (IP18).

Submissions also criticised medical applications that utilised GM technology. These criticisms were based around the safety of GM applications:

- ...drugs, vaccines and medical diagnostics... These products are often touted as being safer, yet very little evidence supports such statements (IP27).

- [Concerns about] the long term effects of the use of this technology on the health of this generation and our descendants... (IP6).

GM food was the area that attracted the most concern with potential health risks. IP submissions discussed consumer rejection of GM food, the safety of GM food and unpredictable reactions occurring from GM food:

- Consumer research studies around the world have shown a significant level of concern about GM foods. ...ZESPRI marketing staff in Europe have confirmed the adverse reaction of consumers to GM food (IP54).

- The risks occur especially in human health if GM foods behave unpredictably... (IP17).

- ...rats developed tumours when fed GE crops. ...incidences of soy food allergies have increased corresponding with the sale of Roundup Ready soybeans. ...GE corn can cancel out the effect of antibiotic treatments for illnesses... (IP44).

The following two submissions countered the risks stating that GM food was beneficial in that more can be produced without needing to use more land, and GM food is safe:

- ...providing more food while reducing the need to bring fragile or forested lands into food production. Provide enhance nutritive value for livestock and people (IP10).

- Proteins produced in genetically modified crops have a long history of safe use, and risks form genetically modified crops are the same as for conventionally produced food (IP26).

Environmental and ecological well-being was a matter taken very seriously in IP submissions. Similarly to the above quotes that posited benefits to be attained from GM food, submission quotes posited benefits for the wider environment by way of reduced chemical usage and biological control of pests. These submissions discarded any risks associated with GMOs in the environment:

- Success in health technology can be extended ... to benefit the environment (IP16).

- The potential to improve production sustainability, reduce agrichemical use, protect and improve the environment... (IP40).

- Provide new products, such as fuels, polymers and pharmaceuticals, from renewable resource[s] (IP10).

- [GM as being used for] ...protecting threatened species, controlling introduced animals which are pests of the conservation estate and vectors of animal diseases (IP22).

These benefits to the environment were offset against submissions highlighting the risks associated with the environmental applications of GM technology. These four submission quotes, for example, comment on the unpredictable nature of GM being used in the environment, the belief that GM in the environment would lead to more, rather than less, chemical usage, threatening New Zealand's clean and green reputation, and endangering New Zealand species:

- We are concerned that the existence of organisms genetically modified for agricultural forestry or horticulture purposes could have unpredictable and unforseen effects in the environment... (IP24).

- ...increased use of pesticides and of herbicides... (IP45).

- ...our status as a country admired internationally for its green reputation, ...[will be] lost forever in the foolish pursuit of an unnecessary and at this stage infant technology in agriculture (IP44).

- ...gene technology is supporting monocultures, and threatening biodiversity (IP11).

Contamination and pollution was discussed quite commonly in relation to environmental risk with some submissions playing down any risks associated with possible contamination, saying that risks are either minimal or irrelevant:

- In a controlled and monitored trial this is not a relevant issue in terms of environmental hazard or biodiversity (IP14).

- The scientific evidence does not support concerns about GM and potential environmental contamination and demonstrates that any risks are no greater than those already present from conventional plant breeding (IP2).

These three following submissions, however, show great concern at the risk of contamination from GMOs, and at the danger of GM toxins, now and in the future:

- To organic farmers this presents a threat of pollution not unlike that of spray drift. The difference is that whereas spray drift damage can be rectified over a period of time and organic certification regained, genetic pollution may never be eradicated. The ever present toxins in GE varieties provide the opportunity for immunities to that toxin to develop (IP7).

- Toxins from genetically engineered Bt crops accumulate in the soil, killing organisms and altering soil ecology... (IP44).

- No one knows what the results of transferring genes within species let alone from one species to another are going to be, particularly over time (IP7).

There are two issues thus far. First, GP and IP submissions differ in that there is more diversity in IP submissions. Second, with IP submissions the benefits of GM are prominent. It is important to look at how the IP submissions suggested dealing with GM science via public information, legislation and regulation, because it is perhaps here, that the greatest difference between IP and GP discourse is found, and it is the statements made in IP submissions regarding legislation which could possibly shape the future laws and regulations governing GM and the extent of its application in New Zealand.

5.1c. INFORMATION FORMATION, LIABILITY AND REGULATION

This section is host to issues that were raised by IP submissions more frequently than any others. The submissions saw a need for improved public education, with clearer, honest and more accessible information as key concerns. They also wanted legislation to better fit with what was deemed more practical or desirable with GM. The honouring of

the Treaty of Waitangi was again mentioned, as were issues pertaining to consumer choice and labelling of GM products. International obligations and influences also featured in submission discourse, but in general the discourse was one of change for a new world. These issues are presented under six headings:

- Public information.
- Legislation formulation.
- The Treaty of Waitangi.
- Consumer rights.
- International pressures and obligations.
- Liability and responsibility.

In general IP submissions want more public understanding and new legislation construction to better cope with the new technology of GM.

Public information that is honest and reliable in relation to GM was a key area discussed in submissions. This is interesting and contentious at the same time, given that as Mannheim discussed, knowledge truth and validity vary for different people, in different places and times. This raises the question of whether it is possible to have a singular version of what is honest and reliable information. Some scepticism was shown in submissions toward the reliability of information that has been presented to public:

- Public education and consultation processes are needed, so that an informed community can also participate fully in the discussion (IP31).

- Much of the national and international debate over GM is fuelled by misinformation and political considerations, ignoring scientific fact (IP2).

- The public are manipulated by misleading advertising from the biotech companies promulgating the perceived 'potential' to 'feed the world' (IP28).

Legislation formulation was one of the most frequently commented on areas within the IP submissions. A significant amount of contradictory suggestions were put forward as to how, and by whom, the law should be formulated to cope with GMOs. These included recommendations about the current moratorium on GM, the possibility of a referendum and issues surrounding intellectual property. These two submissions emphasise that decision-making should be made according to what the public want, and that GM should be used in a responsible manner:

- [Decision making should] ...lie in the social and public domain (not in the private, technical or commercial domains) (IP49).

- [Recommendation that] ...a referendum on the issue of GE...[should be held] (IP45).

- ... a social charter for the responsible use and development of gm in New Zealand [should be developed] (IP49).

These three submissions again focusing on legislation surrounding GM saw current legislation as being too strict or unnecessary:

- The current moratorium on field activities with GM crops in New Zealand is unnecessary and a liability to the competitiveness of New Zealand's agricultural industries (IP4).

- The compliance costs ... with current statutory and regulatory processes are excessive compared to what is necessary to assure safety, and are inhibiting research involving the use of genetic modification in containment (IP52).

- [Processes could] be made simpler and more to the point (IP9).

Alternately, some IP submissions believed that legislation was not strict enough, suggesting that there be a global moratorium on GM. At the other end of the scale there was discussion of how protection of GM data needs to be more thorough:

- In the light of indisputable evidence of harm and irresponsibility, genetic engineering in our food and environment should be immediately halted and a global moratorium on genetic engineering instigated (IP28).

- ...a data protection provision be provided... [with] ...the period of protection to be ten years. ...a protocol be developed setting out guidelines for handling requests under the Official Information Act 1982 for release information provided by applicants for HSNO Act approvals... (IP1).

Part of this call for more rigorous legislation involved the need for more translucency and clarity in decision making by regulatory bodies such as ERMA, and in legislation. This too was seen as important:

- ...the clarification of current regulations [should be made] with respect to the interpretation of the precautionary principle (IP34).

- All GMO work should be permitted through ERMA. The processes of ERMA must be transparent with processes set up for regular monitoring of facilities and research work (IP3).

- The regulatory system must be robust and transparent and include a case by case assessment of environmental, health and economic risks and benefits to New Zealand (IP40).

This IP submission was direct, accusing a regulatory body, ANZFA (Australia New Zealand Food Authority), as having used false information, and consequently it was believed that they could not be trusted:

- ...ANZFA has a track record of using false, falsified and even fabricated data to establish food standards. NNFA experience also leads it to having zero confidence in the TGA being able to regulate GE technology in a manner commensurate with good regulatory practice. The NNFA has no confidence in ANZFA's ability to undertake objective, and transparent risk analysis ask [sic] required by law (IP27).

The Treaty of Waitangi, though an important part of legal considerations within New Zealand was not given its due importance in either the GP or IP submissions. The Treaty and its principles, as well as the rights of Maori in accord with the Treaty were discussed in these three submissions:

- The principles of the Treaty of Waitangi must be fully integrated into any ethical framework to be used for decision making on issues associated with genetic modification (IP31).

- ...the use of GM in New Zealand contravenes the Treaty of Waitangi (IP15).

- ...Article II of the Treaty of Waitangi, which gives Maori exclusive rights to their Taonga. ...ownership rights must be given entrenched legislative status (IP37).

Rather than the Treaty of Waitangi being a feature area of discussion, the Treaty was considered in a similar vein to other issues or areas, such as consumer choice, investigated by the RC. If New Zealand is a bicultural country, then the Treaty should be prominent in GP and IP submission discourse –but it is not.

Consumer rights and 'freedom of choice' were issues commented on fairly frequently in IP submissions (as they were in GP submissions), as was the related issue of GM labelling to allow for consumer and producer choice. Interested Person submission statements all agreed that consumers should have the right to informed choice about what they choose to consume, and to a labelling regime that would allow consumer choice:

- Allowing of avoiding [sic] some uses of GM may give liberty to one group, but deprive another group of liberty, or threaten the economic viability of a group or individuals. Decisions concerning GM should not remove the rights of

individuals to distance themselves from GM if conscience precludes use of the technology or its products (IP31).

- There cannot be expected to be consensus of the use of GM...so policy should be designed to allow consumer and producer choice (IP12).

- ...ensure all products containing any GM components are labelled comprehensively (IP47).

Having presented these statements, the overwhelming sentiment is that GM should be introduced but is should be well labelled. But is this really choice?

International pressures and obligations included discussion related to trade obligations and the economy. Interested Person submissions placed importance on considering how actions in New Zealand have repercussions overseas and with the WTO in particular. Also how New Zealand needs to continue with GM so as to benefit the economy and be competitive was discussed:

- There should be an awareness and concern of the impact of our controls on genetic modification on our position as a free trading nation and also of increasing consumer and political concerns internationally (IP29).

- New Zealand has a number of important international obligations. In particular, New Zealand's membership of the World Trade Organisation limits the extent to which we can impose restrictions on the import of goods, including goods containing GMO's, unless restrictions are based on scientific evidence. ...it is critical for reasons of competitiveness that we remain in step with our trading partners (IP25).

- Internationally, the race is on to develop and patent economically important applications (IP49).

Within the overwhelming positive GM discourse there was dissent. This submission warned that bowing to the WTO and OECD would threaten New Zealand's sovereignty and have a negative affect of poor countries:

- The Church has concerns about the globalisation agenda of organisations such as the World Trade Organisation and the OECD, both from the point of vew [sic] of a threat to our sovereignty, and the effect on poorer countries (IP21).

Liability and responsibility was muted in the IP submissions given that there was a belief that common law could adequately take care of any issues of liability (IP10). This submission stated that those involved in the producing and selling of GMOs should be made responsible:

- ...companies producing and selling GMOs should be prepared to take legal responsibility for any unintended negative effects and that the law should establish clear liability in the event of damage being done (IP17).

5.1d. SOLUTIONS: GM-FREE VERSUS GM EMBRACEMENT

After all the preceding concerns and issues have been considered what immediate and future action did the IP submissions suggest, and why? Recommendations for future directions were varied and ranged from a vision of New Zealand as a completely organic nation with no room for GM in the environment (similarly to many GP submissions) to submissions that posited that GM embracement was the only way to go in the future if New Zealand was to be a productive and competitive country. In the IP submission discourse the latter dominated, just as it did in the RCGM report.

The organisation of issues pertaining to the future direction of New Zealand were organised around these headings:

- Justifications fro a GM embracement.
- Praxiology in embracing GM.
- Futurology of GM embracement.
- Justifications for a GM-free future.
- Praxiology and futurology of an organic embracement.

A question to begin with however, is can organic or conventional technologies co-exist with GM methods? Amongst IP submissions there was a lot of variance in attitudes as to whether the different food production methods are compatible, from GM technology being seen as beneficial for the organic industry to it being absolutely incompatible with organic production:

- New Zealand can maintain both organic production and the production of GM crops. GM offers the organic industry an opportunity for improving both product safety and quality... (IP2).

- The system of agriculture carried out by GE proponents is completely contrary to the principles of organic growing: they cannot co-exist (IP45).

- GMOs are currently not permitted under any organic standard...(IP7).

In addressing the very mixed responses as to the future of GM in New Zealand, views favouring a 'GM future' are discussed first, followed by those wanting to embrace a 'GM-free future'.

Justifications for a GM embracement in the future featured economic growth, international competition and social benefits being offered:

- Biotechnology research and development contribute to economic growth and wealth creation (IP16).

- The industry's ability to compete successfully will be undermined if it is not able to take advantage of any biotechnology that is developed and deployed by competitors (IP34).

- Social benefits accrue to investment in rural areas and in the human resource which is in great demand globally to fill many positions created by biotechnology from plant breeders and agronomics to molecular biologists, salespeople, management, regulatory and especially communicators (IP4).

Praxiology in embracing GM refers to what practical steps can be taken toward embracing a GM future. These submission quotes suggest that there needs to be continued investment in GM, and more promotion of GM science as a career choice:

- Continued investment in GM research in support of national priorities... Increased investment in food safety methodologies and ecosystem impact research (IP49).

- ...the promotion of science as a career option... (IP23).

Praxiology moves on to futurology, with the question of what is there to look forward to in a 'GM future'?

A *futurology of GM embracement* was clearly recognisable in IP submissions. Benefits for all New Zealanders were asserted by way of medical and health developments, economic benefits, environmental benefits and meeting consumer needs:

- Dupont's future plans for New Zealand include the potential sale of products such as genetically enhanced seeds for corn and wheat and food products derived from biotechnology. ...biotechnology offers the potential for enhancing a wider range of treatments and methods in crops than was previously available, providing safe products and significant value for farmers, consumers and the environment (IP10).

- ...create unique products and services which fulfill customer requirements (IP40).

GM proponents also claimed that there was much to be lost if GM was not embraced in New Zealand, including economic loss and medical limitations:

- There is a significant risk of others gaining IP at NZ's expense. In this scenario we then pay royalties to offshore parties to access the technology and new products. As a result, we forfeit the opportunity to be ahead of competitors in

exploiting productivity gains and the opportunity to generate additional sources of export revenue (IP25).

- Without access to recombinant products, the consequent demand for plasma derived product would (1) Create supply problems. (2) Not meet patient expectations to select the best clinical choice to meet individual needs (IP18).

Justifications for a GM-free future, in opposition, pursued an organic alternative to GM as the most desirable option. Also mentioned was the threat to the organic industry as the area most at risk if GM were to be further embraced in New Zealand:

- The introduction of GE into New Zealand would effectively destroy decades of hard work of New Zealand citizens and the positive economic opportunity awaiting our country in developing sound sustainable Organic agriculture produce, environments and related knowledge (IP43).

- There are too many unknowns and, like DDT genetically modified organisms are being announced as being safe without taking the time to really find out if it is or not (IP42).

Praxiology and futurology of an organic embracement was favoured in these submissions which saw organic technology as preferable to GM technology:

- Organic production be encouraged (IP47).
- The results from this preliminary analysis [through Lincoln University] show that the greatest positive impact on NZ income is the GM free strategy where it is assumed such markets as the EU and Japan have a large switch in preference away from GM food, followed by a 20 per cent preference for GM free (IP32).

A fear of what would happen if the future of New Zealand was not GM-free according to those who reject GM, was emphasised in this submissions which stated that organic production would end:

- ...should genetically modified crop and animal production be approved in New Zealand there is no doubt that organic production will come to an end (IP6).

5.2. THE INTERESTED PERSON SUBMISSION VOICES

In summary, there was a clearly defined mixture of views expressed among the IP submissions. Much of the submission discourse was formed around a risk versus safety analysis that involved either justifying or dispelling reasons for why GM might be needed (or not). An analysis of discourse found that the most support for GM was in the areas of

health or medical research and use, and environmental and ecological research and applications. Other key areas of support for GM were found in potential economic opportunities and incentives, as well as the need to fulfil international trade obligations or expectations. In raw figures they were:

- Medical / Health research and use (12 submissions).
- Environmental / ecological research and application (12 submissions).
- Economic incentives and opportunity (10 submissions).
- International trade obligations and expectations (9 submissions).
- Social benefits / employment opportunities (6 submissions).
- Solutions / technical fixes for problems (6 submissions).
- Being internationally competitive (5 submissions).
- Food research and development (4 submissions).
- The need for progress (2 submissions).

The foremost areas justifying why GM should not be used in New Zealand were that GM is too environmentally and ecologically risky, followed by the preference to embrace organic or GM-free alternatives. Other key reasons put forward for rejecting GM were health and medical risks, and that the patenting or ownership of GMOs is ethically wrong. A list of the main areas of objection to GM include:

- Environmentally and ecologically risky (15 submissions).
- Organic or GM-free alternative is preferred (10 submissions).
- Medical or health risks (6 submissions).
- Patents / ownership of GMOs is ethically wrong (6 submissions).
- Spiritual and religious objections (5 submissions).
- GM has not proved beneficial so far (5 submissions).
- GM food is risky or undesirable (4 submissions).

Of particular emphasis amongst the IP submission group was information and legislation formation -especially in the area of consumer choice, labelling and the need for or duration of the current GM moratorium:

- Need for clear, balanced public information on GM (16 submissions).
- Rights of consumer / producer choice with GMOs (16 submissions).
- Need for labelling of GM products (nine submissions).
- Extended moratorium needed (seven submissions).
- Moratorium should be ended (five submissions).

When it came to 'the future', IP submissions contained mixed attitudes, with anti-GM supporters opting for a GM-free future, preferably embracing organics. GM proponents on the other hand suggested that organic industries could survive and flourish alongside GM industries, and that it would not be in the best interests of New Zealand to turn away from GM. A particular anomaly here, was that anti-GM supporters focussed a lot of attention on justifying why an anti-GM approach as opposed to a GM approach to the future should occur. Much of the refuting of a GM embracing future by anti-GM supporters was based on past errors and distrust of scientists and corporate bodies. Supporters of GM did not go to the same extent in trying to justify a GM future, except in relation to expounding the potential environmental, health and economic benefits of GM. Here they focused on the need to compete at an international level and not to be 'left behind'.

A read of the IP submissions suggests that the pro-GM submissions have the more dominant voice, because they speak largely in terms of medical and health needs, economics, international expectations, and of the need for progress and competition. The voice of the anti-GM submissions was somewhat dwarfed in comparison. Their concerns were more often based on principles, or morality and risk prevention. There is therefore a GP and IP split in views, and there is furthermore a split in views amongst the IPs.

This discourse analysis suggests that the IP submission voices can be viewed in polar opposite terms: on one side there is the economic focus. On the other there is an ethical principles and precaution focus. Economics appeared to rule over ethical principles and precaution. This could perhaps be due to the pro-GM submissions sharing a similar ideology to the Government, that is, an ideology which is very much caught up in the "global technology-driven economy" that has only limited sensitivities to environmental and ecological issues (Peritore, 1999:x). GM science has become central to a technology embracing world, and environmental and ecological risks are an implicit part of GM science given that the science is very much still in its infancy. What is clear is that democracy was dwarfed, as equal consideration was not given to all participants in the RCGM inquiry. The concerns of the opponents of GM were put aside, while proponents of GM, including the government, downplayed the environmental and ecological risks of GM while emphasising the potential economic and other benefits that GM science could bring.

CHAPTER SIX
FROM WORLDVIEWS TO POLITICAL PROCESS

This chapter provides an analysis of sampled submission discourse and categorises submissions into those that are in favour of a wider embracement of GM in New Zealand, and those which reject any further embracement of GM. This categorisation provides an avenue for exploring first the worldviews of submissions and second, the consequently ideological bases of the conflicting pro-GM and anti-GM submissions. The anti-GM and pro-GM discourse within worldviews is established by exploring four areas discussed in submissions. These areas have been selected, as they are key areas of conflict in submissions:

- Science, risks and trusting the experts.
- Validations and justifications, with a subsection New Zealand GM Food Research.
- Consumer / producer choice and labelling.
- A future vision.

These contrasting areas in submissions make it possible for discourse from anti and pro GM groups to be interpreted in terms of worldviews. A categorisation of submissions into worldview types highlights the way in which anti and pro GM groups have conflicting ideologies. This interpretation finds that a modernist or industrial worldview based on politics and economics is identifiable within the discourse of the pro-GM submissions. A post-industrial worldview is inherent within anti-GM submission discourse, holding moral considerations or principles and precaution as key priorities.

The categorisation of submissions by worldview also provides a foundation for critiquing the RCGM in terms of how it may have contributed to or undermined the democratic practice. This link between worldviews and political process is twofold. Firstly there is a link between the worldview found amongst pro-GM submissions and government ideology, that is, they operate from a political-economic worldview. This raises suspicion as to the impartiality of the RCGM, as a shared way of viewing the world existed before the RCGM began. Second, there is conflict with the democratic ideal as the IP submissions are given more consideration than GP submissions. The interesting point is in exploring how it is that certain submissions are considered more important than

others, and how this is justified within a democracy which has as an ideal, the equal participation and consideration of all citizens.

The undermining of democratic process occurred at three levels. Firstly the basic architecture within gross numbers of submissions for and against GM. At this level the clear majority of submissions, RC survey respondents, and declined IP applications are all against further embracement of GM. Secondly, the processes of the RCGM itself undermine democracy by having for example, limited advertising of the RCGM processes and limited time frames available to those wanting to participate as an interested person in the RCGM. Thirdly the role played by section 4A of the Commission of Inquiry Act 1908 is crucial. Section 4A outlines whom has the right to be heard in person by Commissioners. This alone undermines democratic process considerably.

6.1a. SCIENCE, RISKS AND TRUSTING THE EXPERTS

Hager (2002) in *Seeds of Distrust* voices many of the fears and concerns expressed in the anti-GM submissions. Hager views the issues of responsibility and trust as significant in his research of the alleged corn GM contamination within New Zealand. He discusses the issue of trust in relation to governmental processes surrounding GM, and in relation to perceptions people have of scientists or experts. Hager (2002:6) points out that it becomes difficult for people to trust an enterprise which is moving rapidly in order to "cash in on commercial applications", and that science being done in such haste is not deemed safe.

Anti-GM submissions made it clear that they dismiss or do not trust the 'experts' and when they do look toward law formulation to alleviate or deal with this mistrust their focus is on accountability and liability when, or if, something goes wrong. There was a view that legislative and regulatory measures (if made strict enough) may alleviate risk, but that the risk issue itself with GM is not something that can completely go away, as risk is an inherent part of the science itself. The only conceivable way to deal with the risk factor for many people is to not let the potential risk *become* a risk, via containing that risk until such a time when knowledge of GM science is more thorough, and implications and repercussions are known (for some there is no place for GM due to ethical, spiritual and religious reasons). The opening of 'Pandora's box' and referral to

the precautionary approach or principle[46] are advanced as reasons for not proceeding further down the GM path.

A line commonly used to soothe the concerns of those questioning the safety of GM was that the technology was simply an extension of previous production / breeding techniques, with the difference being that with GM techniques are more precise. Weaver and Motion (2002) highlighted this pro-GM argument when they discussed the Gene Pool (pro-lobby group) brochure. This is an excerpt taken from the brochure:

> What is gene technology? Biotechnology has been used for thousands of years - the Egyptians learned how to ferment wine and make bread rise, and the Greeks grafted plants to enhance fruit production. Selective breeding of plants and animals over centuries has produced the food sources we use today (Gene Pool brochure, cited in Weaver & Motion, 2002:338).

Weaver and Motion (2002:338) continue citing the brochure: "The brochure did not explain the difference between selective breeding and transgenic experiment". Anti-GM submissions did not accept the argument that GM was only the 'continuation of selective breeding techniques', there the reference was instead made to the point that GM science crosses the species barrier, and is therefore inherently different to anything ever done before. Anti-GM submissions seemed informed on this issue.

Evidence for why GM advocates should not be trusted was put forward in anti-GM submissions. For example, they discussed past examples of new technologies that were considered to be safe by the experts, such as DDT, cigarettes, and asbestos. Current overseas incidents of GM contamination, and posited benefits of GM technology not living up to expectations were further cited as reasons for not trusting GM technology and/or scientists.

Rather than dwelling on all the risk elements discussed quite frequently by those opposed to GM, pro-GM advocates have tended to say that there is only a very minute chance of any problems occurring, and that any risks evident could be controlled. From this perspective, many GM supporters then suggested that there is a need to make legislation more permissive in cases of 'low risk' use of GM technology.

Viewed from opposing sides of the GM debate fears or risks are very much at odds with each other and put into a worldview perspective a key theme emerges. The main incentive with anti-GM submissions was for the overall safety and health of people and

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[46] See the HSNO Act section relating to the precautionary approach: appendix b.

the environment, now, and in the future, through avoidance of possible risks. On the other hand, the pro-GM submission perspectives were often derived from a 'trust us, we are the experts' stance positing a declared need to progress with GM. This need to progress was accompanied by an emphasis on GM being of minimal risk and hence having the potential to address many of today's problems. This was coupled with the need to be competitive on an international market, which denotes economics and politics as being primary incentives. On both sides the tools used to validate their positions were pronounced.

6.1b. VALIDATIONS AND JUSTIFICATIONS

The French Marxist Latour stated that for an opportunity to be made to the masses to accept a certain position or product, it is important that the position or product appeals to the explicit interests of those people. Equally speaking from the position of a kind and tolerant citizen or organisation is also a strategy used to influence the spread of attitudes in everyday interaction (van Dijk, 1985). Both proponents and opponents of GM have employed these two tactics to validate and justify their contrasting positions.

The most frequently offered validations used by GM supporters for needing to progress down the GM path were based on the need to develop environmental and medical or health products to assist in looking after New Zealand and its people. These appealing validations were offered alongside the need to stay competitive internationally, coupled with the fear that if 'New Zealand' fell behind overseas competitors, then 'New Zealand' would loose out economically and become a somewhat inferior country. A further justification of the need for GM was also found in the suggestion that GM would 'feed the world'. Moreover, there was a sense that a great deal of GM research was already underway.

6.1b.i. NEW ZEALAND GM (FOOD) RESERACH

Genetic Modification research has been commonplace in New Zealand for over 20 years (RCGM1, 2001). It has been most commonly used to:

- Identify genes and their functions
- Investigate pest and disease resistance in animals and plants
- Investigate livestock fertility
- Understand, diagnose and treat human disease

- Investigate control of environmental problems
- Educational purposes (RCGM1, 2001:84-85).

The New Zealand Grocery Marketers Association (NZGMA) provided a list for the RCGM report (RCGM, 2001) showing current GM research being undertaken in New Zealand in relation to food. Eleven different modifications were listed which included the food types potatoes, rice, corn, soy, tomatoes, garlic, strawberries, cereal grains, milk and seafood (RCGM, 2001:189). Interestingly none of the modifications included producing higher yields of the given foods, or the adaptation of such foods to drier environments, but focussed more commonly on increased nutritive and health values such as modifying potatoes so that they would absorb less fat when they are fried (RCGM, 2001:189). All this research sounds promising, but what happened to GM research that would enable the world's increasing population and the world's hungry to be fed? Perhaps a look at GM work that has done with plants in New Zealand will provide an answer.

The RCGM report provided a list of plant modifications that have either been developed or tested in New Zealand. Of the 14 plant varieties listed, just four were for the purpose of 'increased performance': wheat, barley, onion and triticale (RCGM1, 2001). It seems that experimentation to help feed increasing populations is scarce in comparison to other GM work.

Some anti-GM submissions denounced the pro-GM claim that GM could feed the world with assertions that it is not a matter of how much food is produced, but rather, it is a political matter regarding distribution of food. When this point is taken into consideration in relation to the RCGM outline of the kinds of modifications currently being researched, it seems that 'feeding the world' is somewhat irrelevant. Current research appears to be more concerned with producing more desirable 'designer' food for those who can already afford to buy it, that is, those in developed, rather than developing, third world nations.

The claim that there will be flow on economic benefits for New Zealanders from GM was plagued with scepticism in anti-GM submissions. Much of the scepticism relates back to the 'experts' or those pushing for widened GM use being distrusted. This distrust relates to views that GM advocates seem to be pushing their own agendas, therefore it would be the producers of GM goods alone, who would benefit, not the farmers, and not the everyday person.

Anti-GM submissions took a reactionary position in regard to validation and justification claims (such as disputing the claim that all New Zealanders would prosper as a result of GM), whilst pro-GM submissions were more inclined to take action and put forward claims. Two processes are at work here.

In terms of constructing a worldview the anti-GM group are happier to meander along, stopping only when there is the desire to make a complaint about something that does not fit with the usual ways of doing things. It could be said that they are simply afraid of progress or change. On the other hand, those advocating the wider use of GM seem to be racing ahead as fast as possible for fear of 'missing out' or 'falling behind'. It could be argued that GM advocates are tossing aside unfitting accusations, and spinning justifications to proceed for fear of losing the race. While there are probably elements of truth in both sides, in light of worldviews the anti-GM proponents would seem more content to go through life at a slower pace, with the attitude of 'if it isn't broken, don't fix it'. Pro-GM advocates it would seem are more concerned with winning the race -or at least not losing, and by doing so creating new ways to fix that which already exists. A flashpoint for both sides is within the labelling of goods.

6.1c. CONSUMER / PRODUCER CHOICE AND LABELLING

The labelling of GM items and the rights of consumers and producers to choose what they eat or grow was discussed in many anti and pro-GM submissions. A point of divergence exists however between anti and pro-GM groups concerning when labelling of GM goods should occur, and why.

Anti-GM submissions basically suggested that consumers have the right to know what they are eating, and therefore a detailed labelling of products containing or derived from GM techniques should exist. Pro-GM submissions had the same basic emphasis, but also mentioned that consumers *and producers* should have the choice to use GM products[47]. Thus the statement that consumers and producers should have the right of consumer choice seems fair, however it does seem strange when considering consumer preferences, which many of the submissions (both anti and pro GM) acknowledged tended toward consumers avoiding GM goods rather than seeking them. With this trend of rejecting GM goods being evident and acknowledged across the entire spectrum of submissions, it

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[47]In medical terms there was some concession with this from submissions that were opposed to GM in other areas -therefore the focus here is more on food and other consumable products.

would seem ludicrous that any producer (particularly private producers) would find the idea of growing GM produce or breeding using GM derived technologies to be a good idea. If consumer demand is not the 'driving force' behind GM production, there must be other motivations.

Some of the pro-GM submissions stated that consumers would get used to the idea of GM in time, and will hence 'come around' as fears dissipate, and as GM becomes more common (Langdon, 2001). Along with this idea of consumers getting used to GM, there was discussion about how consumers have been simply misinformed and have been influenced by 'scaremongers' with the visions of 'Frankenstein foods' which were plastered across the media and propelled by groups such as Greenpeace (Middlebrook, 2001).

'Misinformation' for example, was an issue mentioned by pro-GM advocates (just as it was in anti-GM submissions). The accusation of misinformation in anti-GM submissions was aimed at pro-GM lobby groups and large corporations who were seen as trying to manipulate the masses toward their way of thinking, in accepting or even embracing GM produce. Hager (2002:69) discussed some of the criticisms made by pro-GM advocates of anti-GM supporters:

> When we hear accusations thrown at New Zealand critics of genetic engineering - that they are anti-science, extreme, misinformed and even terrorists -such arguments have usually been imported from other countries where other industry funded 'life sciences' lobby groups are pushing corporate agendas.

The government has been party to this information presented to the public. A government body which deals with issues pertaining to consumer rights and which discusses the issue of GM labelling is the Ministry of Consumer Affairs (MCA). They view labelling produce 'GM-free' as negative labelling, but labelling information about the inclusion of any GM elements is viewed as positive labelling (MCA, 2000)[48]. This distinction is interesting in light of consumer preference / demand where I would have thought that the inclusion of labelling providing information of any sort relating to GM 'status' would be considered 'positive', for the simple fact that it is there, and is considered of interest to consumers as highlighted in the sampled submission discourse.

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[48]This and other points are discussed in The Ministry of Consumer Affairs submission to the RCGM; see: http://www.gmcommission.govt.nz/publications/Govt_submission.html.

The MCA identify eight consumer rights (based on Consumers International): safety, choice, a healthy environment, information, consumer education, satisfaction of basic needs, representation and redress (MCA, 2000). Of particular interest with regard to comments made about consumer choice and labelling in submissions, are two aspects of these rights as described by the MCA (2000:2):

- Choice - this is about encouraging consumers to acquire only what they want or need...
- ...consumers' rights to information necessary to choose safe products, be able to compare products, not be misled, have information to make informed choices...

It would seem that in the instance of GM derived products that consumers rights are not being addressed satisfactorily, under the rights set out and acknowledged by the MCA. For consumer rights to be satisfactorily addressed would require a thorough labelling system that would indicate the inclusion of any GMOs or GM processes used in the production of the good, regardless of the amount of GM content, and regardless of where the good was produced. Although certain experts may not deem this necessary, it would certainly go a long way towards allaying consumer anxiety, and upholding consumer rights.

The MCA concede that consumers may have a different view of GM foods as what *others* do:

> Consumer perception of food safety and health risk is, however, likely to differ from that of scientific and regulatory agencies. Consumers have a *subjective* definition of risk that is based on their existing knowledge, which may not be accurate in terms of actual risks and benefits when objectively defined. This is particularly so in respect to new technologies such as GM (MCA, 2000:4; *my emphasis*).

The word *subjective* is interesting in regard to issues of power and dominance. The statement points to 'scientists and regulatory bodies' as being the objective experts when it is clear that those in favour of GM foods have agendas, just as those opposed to GM foods do. Also of note is the preferred terminology being 'GM' rather than 'GE', which when considering the development of these terminologies suggests a 'pro-*GM*' stance from this government body in charge of consumer affairs. A sceptic would point out that this view of scientists and regulatory bodies being able to think objectively, coupled with the MCA's choice of terminology being 'GM' rather than 'GE, implies that the MCA believes consumers are not being driven by 'fact'. With consideration of the MCA's

contribution it appears that the views of the 'pro-GM' advocates are supported by this government body, otherwise why would the issue of GM labelling have had such a polemic history when the simple solution would be to give the lay consumers what they want in the form of detailed labelling?

Whether GM food is 'safe' or not should not be the issue here, it is rather the fact that over 68% of written submissions to the RCGM stated that they found GM food to be unacceptable, as did the Commission's own survey find wide spread concern about the use of GM food (RCGM, 2001); sixty-nine percent of people surveyed by the RC saw more disadvantages than advantages with GM food (RCGM, 2001:190). The RCGM response to this concern was that it did not consider it viable to halt GM food production, importation or sales (Langdon, 2001), and that:

> ...government facilitate the development of a voluntary label indicating a food has not been genetically modified, contains no genetically modified ingredients and has not been manufactured using a process involving genetic modification[49] (RCGM, 2001:234).

The RCGM made no recommendation for foods (regardless of composition in relation to GM) to have mandatory labelling in respect of any GM elements, although there is a 'minimalist' labelling regime in place, which has many concessions. For example, food prepared on the premises does not need to be labelled, thus making it quite pointless in relation to what submissions appear to be asking for in a thorough labelling system.

Worldviews of those sampled move in two directions here. First, the anti-GM submissions wish to be able to make informed choice in regard to food (in particular) regardless of whether the food product has been deemed 'safe' by the appropriate bodies. Second, the pro-GM submissions acknowledge that consumers should be able to choose, but instead emphasise that GM food is safe, has been in the supermarket shelves for some time already, and that it is merely a matter of time before wider acceptance becomes evident as GM produce becomes more common. Pushing GM goods until there is such saturation of goods that consumers do not have any choice but to accept them appears to be an objective of pro-GM lobbyists. Anti-GM advocates are simply asking that they have the right as consumers to informed choice -a basic right, with pro-GM supporters gesturing that they agree on this point, yet they still push for the acceptance of GM foods. At the same time there was not any indication that pro-GM submissions were pushing for

[49]This is the RCGM's recommendation 8.2.

thorough, mandatory labelling of GM derived products to allow that consumer choice to be realised. Pro-GM submission discourse instead aimed to change consumer opinion by pushing their own agenda of acceptance of GM goods against consumer preference and desires. In the next section, 'a future vision', pro and anti GM visions remain.

6.1d. ENVISIONING THE FUTURE

The vision opponents and proponents of GM have for the future of New Zealand is opposite. Many anti-GM submissions made suggestions as to how New Zealand could benefit by avoiding wider embracement of GM. Such suggestions were based on New Zealand becoming more attractive to tourists and to those producers and consumers who want to grow and / or source GM-free consumer goods. Some anti-GM submissions went beyond a GM-free vision, to having a vision of New Zealand as an organic nation, touting this as the optimum in 'clean and green'.

Anti-GM submissions had a future vision for New Zealand which centred on the health and well-being of future occupants, often coupled with perceived dire consequences if New Zealand did embrace the GM path. They saw consequences such as economic loss from the rejection of New Zealand produced foods which cannot be deemed 'GM-free', a threatening of the existence of organic food production and certification, and decreased species diversity from mono-cultural food production practices.

Pro-GM submissions discussed a different future of economic and health advantages for all New Zealanders in developing and utilising GM technology. The stance taken here placed more emphasis on the shorter term 'need' for technological progress. Suggestions were made (as previously mentioned) in pro-GM submissions of how New Zealand would be left behind the rest of the world with regard to research and technology, implying that there would be technological and economic loss for New Zealand if GM were not embraced.

While the pro-GM submissions were more short-term, practically orientated, and driven by international and national 'needs', the anti-GM submissions had a more ideological vision for New Zealand, which extended well into the future. This suggests that anti-GM submissions had longer-term aspirations. Both 'sides' foresaw economic and health advantages for opting for their desired direction, and dismal loss and missed opportunity if their desired direction were not embraced. The key difference then is found in the consideration of the future: the pro-GM future visions were of a much shorter duration than the anti-GM submissions.

6.2. WORLDVIEWS INTERPRETED

The four key submission topic areas discussed thus far in this chapter included:

- Science, risks and trusting the experts
- Validations and justifications (and New Zealand GM food research)
- Consumer / producer choice and labelling
- The future vision

These areas have been used to construct worldviews based on the values and ideas put forward in anti and pro GM submission discourse. Apostel's (cited in Heylighen, 2000) seven constituents of a worldview: a model of the world, explanation of the world, futurology, a theory of action, knowledge acquisition, and building blocks (see page 24), provide an outline from which anti-GM and pro-GM submission worldviews can be further developed. Note though that a worldview construction cannot be too complex given that information has been gathered via pre-determined discourse rather than by wholly qualitative means that would allow for more in-depth questioning and insights to be realised.

Many anti-GM submissions presented a model of the worldviews that held the world and its inhabitants as sacred in some way, whether due to ecological, religious, spiritual or cultural values or ideals. This in turn portends the belief that (mere) human beings do not have any right to delve into and manipulate or alter at a genetic level that which has come to exist by 'the hand of God' or from millions of years of evolution (for example). In association with such beliefs was the ideal that humans should instead aim to preserve and look after what exists, rather than delve into that which is still relatively unknown (GM). Many anti-GM submissions advanced an ideal future for New Zealand that incorporated a vision of a healthy, 'clean and green' nation, which would be the envy of the rest of the world.

It could be deduced then that anti-GM submissions have as their value basis, the safety, health, and general well-being of today's and tomorrows generations, based on valuing the integrity of the life systems as they exist in nature. The underlying theme is very much based on issues of safety, morals, and ethics, with a valuing of what nature / God has provided, and the preserving of and working with nature to ensure the future existence of all. Such a worldview could be interpreted as a "post-industrial worldview", which is described by Mehta (1994:4) when discussing anti-nuclear groups, as including preference for:

> ...smaller scale technologies which are de-centralised, environmentally benign, sustainable, foster more equitable distribution of wealth and political power, and allow citizens to understand and participate in the formulation of social and technological policy.

Mehta's description of a post-industrial worldview, although referring to anti-nuclear groups, has similarities to ideas put forward in the anti-GM submissions. Peet's (1992:6) discussion, which critiques the political-economic worldview, also identifies commonalities with anti-GM submission ideas:

> Deeply human ideas, such as leaving resources for one's grandchildren or planning allocation by need rather than by greed, have no clear place in its [a political-economic worldview] calculus; that sort of behaviour is labelled as irrational. (Proponents of economic rationality commonly apply this label to those who disagree with them, especially to those who value the environment highly).

Peet's discussion indicates that anti-GM supporters are 'deeply human', while the accusations directed at anti-GM supporters tend to fit with accusations made in pro-GM submissions toward anti-GM submissions. Pro-GM submissions fit with Peet's idea of a political-economic worldview, and also with Olsen, Lodwick and Dunlap's (1992, cited in Mehta, 1994:4) description of an 'industrial worldview' which consists of those who "...are most likely to defend technology in general, as well as economic and industrial growth".

The pro-GM sample of submissions were from a variety of groups (as well as from two individuals amongst the sampled GP submissions) with their main focuses and/or interests being in these areas:

- Biotechnology Research (excluding medical): eight submissions.
- Medical / Health Research: seven submissions.
- Food Production (excluding organic): five submissions.
- Environmental / Ecological: four submissions.
- Other: four submissions (including two GP submissions).

The list indicates that GM / biotechnological research is top priority for many of the pro-GM submission sample[50]. Coupled with research as a key interest or priority was the need for economic support for the continuation of research. Revenue gained via

[50] The RCGM indicated that a total of 15 submissions were made from biotechnology organisations amongst the IP group –this group was the largest category of IP submissions heard by the Commissioners.

research is then (understandably) a desired outcome of research. As indicated in the worldview construction of pro-GM groups, economic gain is a key driving force behind the desired embracement of GM. This is not to say that there are no motives that are more 'socially' acceptable -GM developments such as new medical diagnostic aids and treatments for illnesses, and of technologies that aid in wiping out pest populations such as possums. Primarily though, the need for funding and desire for revenue from GM developments, intermeshed with politics underpin the desire for expeditious embracement of GM technology beyond the contained research already under progress.

With differing and opposed worldviews came different, adamantly opposed value bases, as each worldview was based on the premise of a preferred value system or outlook on the world. The divergent nature of the GM debate could be represented as competition between different risk hypotheses. One that was positivistic, modernist, and technically inclined. The other was socially constructed and post-modernist (Mehta, 1994). It can thus be argued that the New Zealand government's own values i.e. economic growth and embracement of the 'knowledge wave' (both of which are argued to be contributed to by GM technological development), has as evidenced by the governments chosen path for future development of GM, a different sets of values to a large sector of the general public of New Zealand who reject further GM embracement. Anti-GM views expressed were focussed more on longer-term interests and were largely of a precautionary nature with a concern for morals and safety at a personal and environmental level. The anti-Gm submissions are suggestive of ethics, safety and precaution being of higher concern than the potential economic revenue gained in the short to mid term, via scientific and corporate means in exploitation of GM technology.

It needs to be noted that in making the preceding conclusions, I am not suggesting that all those wishing to further pursue GM have no consideration for ethics or safety, nor am I suggesting that people who are more opposed to GM are not in favour of progress or of economic gain. As is evident in the sampled submission discourse the most concern about GM was voiced in relation to it being used 'outside of the laboratory' and in the food chain. Therefore, the majority of the anti-GM discourse was not saying 'do not do GM research', but was rather saying 'continue to keep GM in the laboratory' until the science's safety has been (further) substantiated (or not).

Clearly there was a divide in values between pro-GM and anti-GM groups. Various political and governing bodies have different ways of viewing the world to the general public. Consequently different ways of valuing the world based on their beliefs were

established based on the perception of what was best for the economy and hence the public good. It can be argued that a political governing body will generally act in a way that is consistent with their beliefs and values of what is best for the public good. This means that within the context of the GM debate the governing body of New Zealand marginalized and subordinated the anti-GM group by not practically valuing their concerns and hence worldview. Indeed, Callon et al. (1986:) have argued, "political efficacy cannot concern itself overmuch with the principled precepts of moral law".

For public concern to count, how do the public persuade the decision makers? Equally, how did the decision makers attempt to convince the public that they were doing the right thing? This delicate mix is at the heart of this thesis. Three general areas are considered demonstrating how democracy has been undermined in the instance of the RCGM: in terms of the numbers for and against GM, the COI processes, and section 4A of the COI Act. Together they explain how the government constructed the publics good.

6.3. A QUESTION OF NUMBERS

The RCGM found that 92.1% (9,999 out of 10,861) of GP written submissions (compared to 89.4% in the current research) were opposed to GM, and that 30% (32 out of 107) of IP written submissions (compared to 38% in the current research) were opposed to GM. This means that out of a total of 10, 968 written IP and GP submissions sent to the RCGM, 10,031 (or 92%) were opposed to GM.

The RCGM also conducted a public opinion telephone survey (22 March - 8 April, 2001) to ensure that "...the opinions of the general public were fairly canvassed in a representative way" (RCGM1, 2001:154). The public survey needs to be mentioned briefly due to the reasoning posited by the Commissioners for conducting it. It would seem that the survey was an attempt to undermine the large number of general public anti-GM submissions sent to the RC. By surveying the public of New Zealand, the Commissioners were able to report that the New Zealand public did not view GM as a very important issue (RCGM3, 2001). This appears as a contradiction of reality given th4e amount of public interest and media attention paid to the GM debate.

The survey found a mixed response from those surveyed towards GM, according to which categories of GM use were being addressed. Eight categories of GM usage were considered in the public survey (RCGM3, 2001):

- Commercial crops
- Farm animals
- Pest control
- Processed foods
- Medicines and vaccines
- Research using plants
- Research using animals
- Medical research

Combining the eight areas surveyed in relation to the use of GM resulted in 48% of respondents seeing more advantages than disadvantages in using GM technology (chiefly with medical research, medicines and vaccines); while 42% saw more disadvantages than advantages (chiefly with food and animals) (RCGM3, 2001:208-210). This indicates that GM technology was looked on as being more advantageous, albeit by a small margin.

With the RC appointed survey in mind, and considering the conditions under which different types of GM research is conducted, it is of interest to take a look at how the above figures would look if medical based research was removed from the equation, given that research which takes place within the controlled and confined environment of a laboratory is not usually the major concern for anti-GM advocates. Moreover, given that a key focus and outcome of the RCGM was the expiry date of the GM moratorium for commercial GM 'release', medical use is an issue of quite a different nature to others. With medical research, and medicine and vaccine development excluded, just 40% of respondents see more advantages than disadvantages with GM, while an increase to 50% is found for those who see more disadvantages than advantages with GM (RCGM3, 2001:208-210). This result is still close, but given that more concern has been voiced around the commercial release of GM into the environment, it would seem more practical to consider these figures which indicate that there are more disadvantages foreseen in the commercial / non-laboratory use of GM than there are advantages. It is interesting that the Commission chose not to present the survey findings in this way, as I believe that this would have provided a clearer picture of what the survey respondents deemed as appropriate GM use in the future.

Along with GP and accepted IP submissions, there were applications made to gain IP status or the right to be heard by the RC that were declined. An analysis of the stances taken toward GM by the declined IP applicants is also noteworthy here, as it was found

that of the applications where stances toward GM were discernible, 118 applicants (63.4%) were anti-GM, and only 23 (12.4%) were pro-GM. The RCGM report presentation of IP stances toward GM would have looked quite different if the processes by which IP status is granted were more democratic, that is, if every citizen was heard and considered equally. Table 4. presents the stances taken in IP submissions, and in declined IP applications, as well as the combined total of successful IP applicants and declined IP applicants.

	Pro-GM	Anti-GM	Other
RCGM report IP submissions	59%	30%	11%
Declined IP Applications	12.4%	63.4%	24.2%
IP submissions and Declined IP applicants	29.2%	51.5%	19.3%

Table 4. Stances taken toward GM by Interested Persons and declined Interested Person applicants.

'Majority in numbers' then did not seem to of been a factor in the Government's decision to lift the current moratorium on GM in October 2003, based on the submissions, the RC's survey, and the declined IP applications. Was the government's decision determined based on misinformation? Even though strong arguments, validations and evidence were presented in both anti and pro-GM submissions, it seems that the 'minority' ruled over the masses. If it wasn't numbers, then what was it?

6.4. A CLOSER LOOK: 'INTERESTED PERSON' STATUS

Interested persons were one group of submissions where there were more favourable stances taken toward further embracement of GM than there were anti-GM stances taken. The interested person group needed to go through a process of registering their interest, forwarding a written application, and appearing at a hearing before knowing whether they could make an IP submission and be heard by the RC or not.

Democracy does not always appear to be heard. Certain people and groups have an advantage in gaining participation in discussion of important matters, and thus more influence in decision-making. Richardson (1989:1) discusses this point along with others,

demonstrating that certain groups and interests have more influence over a Commission of Inquiry than others:

> In any inquiry there is a need to recognise that the most articulate and concerned sectional interests and those who get closest to the commission have an advantage. It is that the commission may be unduly influenced by those very practised in making submissions, by the providers of services in health, education, welfare and so on, by those who see themselves as the immediate beneficiaries and so at risk from any change, by the departments of state immediately affected, and by the secretariat usually consisting of officials who through providing the paper flow and through involvement in drafting the report may have a significant influence over its form and content.

Where does this leave those who are concerned enough to go to the trouble of making a written application asking to be heard by a RC, but who do not 'have' what is deemed to be an appropriate enough reason to be granted the opportunity to be heard in person by a RC?

To be heard by a RC and take part more directly in democratic process, IP applicants need to satisfy Commissioners of their eligibility to be accepted as an IP. This can be done by justifying to Commissioners that an applicant has an interest in the inquiry outside that of the public, or by satisfying the Commission that evidence given to them may adversely affect the applicant's interests. In relation to Section 4A and COI processes, there are two issues of significance that will be discussed: accessibility and exclusion.

6.4a. ACCESSIBILITY

There were complaints about the invitation to take part in the RCGM democratic process. Three declined IP applicants commented on the difficulty of understanding the language used in an advertisement placed in 22 national daily newspapers on the 29th July, 2000 (see appendix B for the advertisement). In addition, there were eight comments made by declined IP applicants regarding the lack of or limited advertising, and on the general difficulty in gaining further information or clarification on applying for IP status in general; here are three of the comments made by declined IP applicants[51]:

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[51] Quotes used in this section and in subsequent sections of this chapter are drawn from declined IP applications only. Due primarily to time constraints, I did not locate the successful IP application forms at the Wellington archives.

- Why no public notice –no media release –just one small ad buried in the World section p.6 of one issue of the NZ Herald? Not a good look for people in such an important role (Hudson, 2000, ACBZ 8035/W5225).

- ...the advertisement calling for applications was so obscure and legalistically phrased that I actually saw it -and ignored it... (Blackmore, 2000, ACBZ, 8035/W5225).

- Despite having asked to be on your email list for information I only heard about this process on Friday evening via other sources (Potts, 2000, ACBZ 8035/W5225).

Criticism and frustration was also expressed at the limited amount of time available to go through the process of applying for IP status. Eleven declined IP applicants commented on issues to do with the lack of time or limited time available to undertake the process of applying for IP status, with these three quotes being typical of remarks made:

- Note - that I have been panicked into a very hasty decision to put in this application, due to the extremely short notice and lack of information (both in the information and by phone from RCGM) on the implications of "Interested parties" status... (Blennerhassett, 2000, ACBZ, 8035/W5225).

- Unfortunately, short notice means that it will not be possible to present this application in person... (Law, 2000, ACBZ, 8035/W5225).

- At short notice, I would find it difficult to attend the meeting in Wellington... (Tawharu[52], 2000, ACBZ, 8035/W5225).

The limited time available to IP applicants is evident in the following timeline:

July 29th, 2000: advertisements placed in 22 national newspapers notifying the public about the requirements for seeking IP status.

August 4th, 2000: IP registration closing date.

August 10th – 11th, 2000: Application hearings (in Wellington) for those not granted IP status based on their written applications.

August 17th, 2000: Notification of successful IP applicants posted on RCGM web site.

August 31st, 2000: Notification to IP's outlining procedures (for example, filing written submissions).

September 2nd, 2000: Location, time and commencement date of formal hearings advertised in 22 national daily newspapers.

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[52] Note that this applicant applied as an individual, and later on applied on behalf of the 'Australasian Ayervedic Practitioners Assoc. Inc., after being informed that individuals would not be considered for IP status.

September 5th, 2000: Second application hearing held (Wellington) for late applicants, and those who could not attend the first hearing.

September 25th, 2000: Deadline for IP written submissions for those appearing in first week of hearings.

October 12th, 2000: Formal Hearings for IP's begin. (Mostly in Wellington; but also in Christchurch February 23rd 2001, and Auckland on November 13th 2000 and February 15th – 16th of 2001).

The above time frame meant that there was only six days available to apply to the RC for IP status (July 29th – august 6th), 12 days available to get organised for hearings pertaining to IP status (July 29th – august 10th/11th), and for those IPs being heard in the first week of hearings, there was only 20 days available to have their submissions and any witnesses organised. To fulfil all the requirements within the given time frames would have involved much time, energy and financial expenditure in many instances for those applicants wishing to attain IP status. Understandably the Commissioners have to work according to time frames and in accordance with resource allocation also, but for those smaller groups (or individuals) who were making applications the time frame would have been daunting.

Along with 'time frame' frustrations, some applicants had problems in finding or downloading the formal interested person application form. Nine applicants[53] noted difficulties with the RCGM website, particularly with the accessing of forms. These three applicants commented on the difficulty of accessing the official form through the RCGM website, and the availability of information on the website:

- Attempts to access the formal application form…repeatedly produced a "page not found" error (McMahon, 2000, ACBZ 8035/W5225).
- I tried on a number of occasions to access your website for further information but it was not available (Blackmore, 2000, ACBZ 8035/W5225).
- …note difficulty with your e-mail address… (Petrey, 2000, ACBZ 8035/W5225).

[53] One of the nine applicants noted here withdrew their application, and is therefore not included in the total number of declined IP applications found.

Such difficulties as evidenced in these few comments with accessibility would undoubtedly have meant that people who wanted to be a part of the RC at the IP status level, would have missed out. Such difficulties with accessibility are only the beginning of issues involving exclusion. In general, the public had problems getting into the public debate. And for those in, many went on to be excluded for various reasons.

6.4b EXCLUSION

The clearest example of exclusion so far would be the fact that there was only one initial advertised hearing for IP status applicants (the later hearings in Auckland and Christchurch were not mentioned in the July 29, 2000 public notice) to be held in Wellington. In addition there was less than two weeks available for applicants to prepare for the hearing. This declined IP applicant mentions the (extended) time-frame and notes that individual 'persons' were excluded:

> Elizabeth Beal has said that applications for Interested persons, would be considered before the deadline of September 5th. Some of us had made applications as individuals only to be told that no individuals would be considered. Hence this group submission has been forwarded late (Tawharu, 2000, ACBZ, 8035/W5225).

Excluding individuals is interesting, as the Act itself does not say that it excludes individuals, instead it uses the term, for example: 'any *person* who satisfies the Commission...'. When referring to Section 30 of the Interpretation Act 1999 however, *person* is defined as including "... a corporation sole, and also a body of persons, whether corporate or unincorporated". The definition of what constitutes a person is confused. Further instances where the term person was referred to as implying an individual (or organisation) were included in a document available on the RCGM website[54]. This document stated that "The category of "interested persons"... is a *particular type of person*, accorded special rights by the legislation" (Allan, Eichelbaum, Fleming & Randerson, 2000:1; *my emphasis*). The July 29, 2000 advertisement calling for IP applicants referred to 'person' as though including individuals:

- *...any person* (including organisations) who satisfies the Commission that such *person* "has an interest in the inquiry apart from any interest in common with the public"....

[54]http://www.gmcommission.govt.nz/inquiry/decs_app_interestedperson_1708.html.

- Those intending to make application should give Notice to the Commission ... stating the name, address, telephone, fax and e-mail address *of the person or organisation...*

Although the advertisement and website appear to state that individual persons could apply for IP status, the Commissioners decided not to accept applications from individuals. If it is to be accepted then that 'any person...' does not actually mean 'any person...', the question remains of why it is that an individual *person* does not have the right to be interested?

The exclusion of individuals is the issue that I found most incredible of all the factors within the RCGM inquiry. Williams (2000, ACBZ, 8035/W5225) highlighted and critiqued the issue of interested persons:

> You [the commissioners] have decided that no individual persons have standing, regardless of any special interest, philosophically, by virtue of their knowledge or commercially. There is then no point in pursuing my application. I would, though, note the irony of a legal interpretation of "Interested person" that excludes every single person in New Zealand. One would wonder why the term "person" was used in the Act. While groups and corporate bodies do have a legal status as "persons", seeing interest greater than the public at large in terms of group aggregation seems to me an odd approach. The list seems to be more about corporate structure than relative interest. I would not agree with your comment "that every conceivable aspect of the public interest has been included". While you will no doubt get a wide range of views from the groups you have approved, the list does not read like a comprehensive and well balanced one.

There appears to be a blatant bias against individuals, given that individuals have been accepted as IPs in the past i.e. the COI into the treatment of cervical cancer at the National Women's Hospital granted IP status to all who sought it, including individuals (Fitzgerald, 2001). This decision goes some way to explaining distortion of democracy. Why did Commissioners not make it clear in the July 29th, 2000 advertisement that individual persons would not be considered for IP status? What happens to all those individuals who went to the trouble of applying for IP status when the Commissioners had already decided they were not going to hear individuals? When did the RC choose not to hear individuals?

There is another issue of relevance to consider. What consideration was given to those individual applicants who were involved in organic production (for example), who felt that their livelihoods were under threat from GMOs introduced commercially (based on

overseas and now national incidences of contamination from GMOs)? Allan et al (2000:5) commented on the applications from those involved in some way with the organic industry:

> ...there were many applications by growers and other individuals or entities engaged in or connected with organics, whether directly or indirectly. .... In the case of both these classes [scientists and organic growers] we were not satisfied that as individuals their interests were apart from those held in common with the public, practically all of whom, as we have already said, will be touched in some way by developments in the GM field, or their limitation or absence.

On one hand, Allan et al (2000) are saying that the Commissioners are not satisfied that the interests of such persons constitute an interest outside that of public, yet they comment that they acknowledge such persons "will be touched in some way by developments in the GM field...". What exactly are the Commissioners saying here? It appears that they are saying they accept that these persons will be affected by GM developments, but they will not be affected enough to be considered an interested person! Such a comment from the Commissioners (that is, Allan et al, 2000) reeks of subjectivity.

The Commissioners in the RCGM consultation process did have restrictions placed upon them:

> Clearly there will be practical limitations; everything we would like to do, or people would wish us to carry out, will need to be accommodated within the limits of our resources, both of time and in physical terms (RCGM1, 2001:115).

Even in respect of such resource limitation, there still appears to be a bias, when the Commissioners allowed 13 biotechnology organisations to be heard, but only six "organic networks or associations" (RCGM1, 2001:26).

To help Commissioners cope with resource restrictions, a preference was made by the Commissioners for the "consolidation of their [individuals] interests": "We regard this as essential, both in the interests of the industry, and to assist the proceedings of the commission" (Allan, et al., 2000:5). (I was unaware that democratic process had a deadline). Yet the Commissioners also stated in judgement of umbrella organisations or consolidated groups, that some "were not of such substance to justify regarding them as having an interest apart from that of the general public" (Allan, et al., 2000:4). Allan et al.'s statement is rather vague, and there still remains what seems to be a privileging of institutional interests.

Organic industry applicants appear to fit the criteria outlined in section 4A(2) of the COI Act: 'Any person who satisfies the Commission that any evidence given before it may adversely affect his interests...', yet it was stated in appendix 1 of the RC report that "No person made application under this provision" (RCGM1, 2001:114). Furthermore, the July 29th 2000 advertisement did not mention that applicants could apply to be heard under this provision of the COI Act. This leaves me wondering whether applicants were aware that they needed to make application according to a specified provision? Advertising for the RC was obscure in general but the Commissioners certainly did not make this point known to the public in their press releases. Unless applicants had knowledge of the COI Act section 4A, it is highly unlikely applicants would be aware of needing to specify which part of section 4A they would be asking to be heard in accordance with.

There also remains the problem with informing the public of processes in a more 'time friendly' way, and with public accessibility to information which added to the indirect exclusion of persons. In such an information age it would not have been too difficult for Commissioners to allow more information and time for IP applicants to get themselves organised.

GM is a powerful tool that has implications for everything from the food we eat, to the running of the global economic and trade environment. This said, then surely if an individual or group believes that they have a particular interest, then they are an interested person on the basis that GM technology will have if not direct, then certainly indirect implications for them. Furthermore, anyone that cares enough to want to be involved in political decision making should have the right to do so in a democratic environment.

CHAPTER SEVEN
CONTAMINATED DEMOCRACY

This thesis set out to explore the RCGM. A constructivist, discourse analysis methodology was utilised for exploring sampled submissions, presenting and highlighting key issues and concerns regarding GM, and the future of GM technology in New Zealand. Two main categories of submissions were analysed. These categories were the 'general public' (GP) and the 'interested persons' (IP). The vast majority of submissions were found to be opposed to further embracement of GM, with a definitive, united 'anti-GM' voice coming forth from the GP submissions.

The GP submissions, which included submissions forwarded during huis, were largely opposed to GM being allowed in the open environment, and in food. The GP expressed much concern at the risky nature of GM science, and concluded that such science should remain in the laboratory indefinitely, and when it was in the consumer domain (such as in food items) there should be clear and thorough labelling indicating its presence. The submissions forwarded during huis had a common focus on Maori cultural concerns and the Treaty of Waitangi or *Te Tiriti o Waitangi.*

The IP submissions were comprised of both anti and pro-GM stances, both of which put forward strong cases for their position. On one hand there were IP submissions that shared common views with the GP submissions. On the other hand there was strong favour for further progress with GM, with many health, social, environmental and economic benefits posited as justification of the need to further embrace GM

The presentation of submission discourse was divided into the GP and IP. To analyse the discourse, submissions were divided into opposing stances towards GM, resulting in the emergence of conflicting worldviews. The anti-GM submissions were found to be representative of a post-industrial worldview, valuing morality and ethics while utilising precaution with possible risks that cite concern for future well-being. A definitive vision for many of 'Aotearoa' as an organic haven was offered.

On the contrary, submissions that proved to be dominant emerged from pro-GM submission discourse, largely materialised from biotechnological organisations. Their greatest concern was economic gain, which was expressed in a number of ways. These ways included the need to progress as fast as possible to remain competitive, the desire to protect intellectual property and gain patent rights as swiftly and economically as

possible, and through promises of GM providing benefits for all New Zealanders. In pursuing economic incentives, risks of GM were minimalised. Pro-GM submissions corresponded to a political-economic or industrial worldview that perceives quick-fix technological development as fundamental to addressing the world's problems. The dominant worldview held within the pro-GM submissions generated commonalities with current Government ideology, given their neo-liberalist market driven incentives and their adoption of the knowledge wave with biotechnology being a key area within this.

In the process of analysing submission discourse I found that those granted IP status had the most influence in a Commission of Inquiry. Of intrigue were the circumstances surrounding the attainment of 'Interested Person' status, which became the impetus for a change in direction to an exploration of (Royal) Commissions of Inquiry and democratic process. Section 4A of the COI Act emerged as a key piece of legislation, as its purpose is to outline the requirements for being granted IP status, and thus the right to be heard directly by commissioners. Issues pertaining to inquiry processes were explored largely through analysis of whom were declined the right to be heard by the RCGM. Exploration of archival 'declined Interested Person applications' revealed that there were frustrations accessing required information within restrictive time frames, furthermore, it was revealed that the vast majority of declined IP applicants were opposed to GM. In sum, democracy was undermined during the RCGM.

7.1. THE CONTAMINATION OF DEMOCRACY

Huxley (1958:344) defines democratic institutions as "devices for reconciling social order with individual freedom and initiative, and for making the immediate power of a country's rulers subject to the ultimate power of the ruled". Huxley highlights a key aspect of democracy, stating that 'rulers' should be subject to the 'ultimate power of the ruled'. However, the analysis of the sampled submissions indicates that the New Zealand Government in the RCGM episode did not base its decision on what persons within the public and social domain sought, but rather, on what the submissions presented from personnel in the private, technical or scientific, and commercial domains wanted. Equal consideration and participation of New Zealand citizens did not occur. Democracy, as a political system was contaminated during the RCGM, and such contamination can be discussed in five ways:

- In relation to the 'ordinary' New Zealander.

- In relation to those granted Interested Person status.
- The Commission of Inquiry activities and processes.
- At a national level with Maori concerns.
- In an international context.

The ordinary New Zealander only had a limited opportunity to be involved in the RCGM. The New Zealand public were limited to contributing to the RCGM in two ways. They could send in a written submission, which were later analysed and described in the RCGM report Appendix 3. Or the public could join in discussion at one of the scoping meetings, public meetings or huis, which received meagre attention in the RCGM report, and thus was not a significant part of the RCGM report at all. Even with the limited opportunity to take part, there was an overwhelming response from the New Zealand public, who forwarded 10,861 submissions to the RCGM. Although 92.1% (9,999 submissions) of the GP submissions sent to the RCGM opposed further GM embracement, the Government of New Zealand chose to lift the current moratorium on GM anyway. The voices of the general public were acknowledged by way of the RCGM report Appendix 3, but it appears they were not *heard.* In contrast, interested persons comprised a category of people who *were* heard.

Those wishing to attain IP status, and be heard in person by the Commissioners made nearly 292 applications to the RCGM. Of those applications, nearly 175 were denied IP status. Individuals, including those who felt their livelihoods depended on outcomes reached by the RCGM, along with experts in particular fields related to biotechnology, were either randomly or sweepingly (as with individuals) excluded from being heard by Commissioners. The privilege and rights granted to those 117 of the 292 who did attain IP status however, were the most in line with what an ideal democracy would suggest *all* citizens have the right to. These 117 IPs, were able to address, and be addressed by the Commissioners directly. The IP discourse generated the contents of the RCGM report Appendix 2. At the same time however, the inclusion of the *IP category* attacks the democratic rights *of the general public* of New Zealand, because 'interested persons' as a privileged category, excludes those who don't have IP status from being directly involved, on an equal par, in issues of national significance. In short, the IPs attained rights within their category of equal and direct participation, which *all* citizens should be able to enjoy within a democratic system.

The Commissioners stated that "Many people are 'interested' to differing degrees of intensity but by itself, being concerned about genetic modification is not the kind of 'interest' envisaged by the legislation" (Allan et al., 2000:2). Moreover, the Commissioners later said in relation to satisfying the Commission that the applicant is eligible for IP status: "Whether the test has been met is a question of fact for the Commission..." (Allan et al., 2000:3). This appears ironic, as Commissioners have previously (see chapter six analyses and above statement) made it clear that there is some discretionary judgement involved in deciding who can and can not be involved as an IP in a COI. The process of acceptance and exclusion was more realistically a matter of "...subjective judgement on the part of the Commission" (Perry, P., 2002, July 19, pers. comm.). Considering that the Commissioners expertise were described as including medical and Maori issues (Allan), science –including biotechnology (Fleming), ethics (Randerson) and legal and judicial issues (Eichelbaum) (RCGM1, 2001), it could be further argued that there is substance in claiming that the Commissioners were biased in their selection of whom was accepted to be heard. Perhaps the Government was also biased in whom they chose as Commissioners, given the preceding information, and the concerns raised by the Auckland District Law Society in chapter two?

So what would a more democratic selection of Commissioners look like? There were no Commissioners appointed with expertise in the area of organics or environmental impact, but there were two Commissioners appointed who have had involvement with biotechnology (Fleming and Allan). Even more curiously, there was no layperson/s to represent the general public. I am not in a position to judge whether any of the Commissioners had preconceived ideas about the future of GM in New Zealand, but there is sufficient reason, to suspect that Commissioners were not impartial to the matters addressed in the RCGM.

The Commissioners prerogative to choose and exclude who was an IP and who was not, challenges the need for section 4A, as the inclusion of this section directly undermines a fundamental aspect of democracy by being responsible for outlining how New Zealanders can be divided into 'privileged' (IP) and 'less privileged' (GP) persons. The nature of the selection processes based on section 4A further weaken the portrayal of the 'successful' IP submission' stances as presented in the RCGM report (RCGM2, 2001), as their selection is often discretionary rather than objectively defined. It is

surprising that the report even presented such statistics[55], given that some applications for IP status were declined, even though they may have, for example, been from applicants who have valuable knowledge and experience in the area of biotechnology.

The presentation of the RCGM IP statistics would be different if the COI Act was more democratic. A true representation of interested persons would have included all those applicants who fulfilled the criteria set out in section 4A -whether they were an individual or not (for example). Table 4 (see page 88) showed a near 30% decrease in support of GM when declined IP applications are combined with the successful IP submissions, and a 21.5% increase in opposition to GM. Such changes would drastically alter the representation of RCGM findings. Representation of findings in turn, influence the way decisions are made, and the outcomes of such decisions. Perhaps the government was misled by the RC report and findings? Or perhaps the 120 million plus dollars of public funding spent in the area of GM in New Zealand in the years preceding the RCGM (Mann, 2001) was an incentive for the Government and/or Commissioners to find that progressing forward with GM was necessary? To be more in line with the democratic ideal would mean including individuals and groups, regardless of the basis and extent of their interest.

The issue of Commissioner selection is related to a third area whereby democracy was undermined, the COI processes. One such problem area with COI process involved the notification of RCGM activities to the public. This was problematic for four reasons:

- *Language use:* there was difficulty noted by declined IP applicants with the language used in the public notice. The public notice and information provided on the RCGM web site could have been written in such a way as to be more accommodating to laypersons, who may not be familiar with COIs.
- *Insufficient advertising:* there was only one advertisement placed in 22 different national newspapers. One inclusion in newspapers alone pertaining to the RCGM activities, does not seem sufficient to allow all with interests in the RCGM to be informed of its proceedings.
- *Insufficient time*: there were problems with the limited timeframes of the RCGM. The Commissioners could have given more notice that it intended requesting applications for IP status, prior to its first announcement on July 29th, 2000, which left potential IPs less then two weeks to prepare for the formal hearings.

[55] See examples on pp21-22; pp26-30; p32 and p231, RCGM2, 2001.

- *Selection of Commissioners and determination of Terms of Reference*: the processes whereby Commissioners and the Terms of Reference for an inquiry are selected by the Government without the Government having to be answerable to anybody else in their selection of Commissioners and Terms of Reference.

These four areas of governmental process indicate an inadequate democracy. This inadequacy is apparent at a micro-political level.

Democracy can be viewed in terms of how well the RCGM addressed the bicultural relationship in New Zealand between the treaty partners Maori and the Crown (Parliamentary Commissioner for the Environment, 1988). Were the principles of partnership and protection enshrined in the Treaty given due weight? Key concerns presented by and about Maori in submissions focussed on three areas primarily:

- GM and whakapapa, that is the mixing of genetic material via transgenic processes (Cram, Pihama & Barbara, 2000).
- GM and Te Tiriti o Waitangi.
- The need for Maori to be consulted in relation to GM developments and issues, which is related to the partnership founded in the treaty.

An assessment of how such concerns and needs were addressed in the RCGM is not the focus here but rather did the outcome of the RCGM honour Treaty principles? Were Maori concerns pivotal in the RCGM findings? With submission discourse as an indicator of how much concern there was for New Zealand bicultural partnership, it seems that Maori issues were not given their deserved attention. Further research would be well founded in this area, as would issues of democracy in an international context.

The New Zealand governing body is not only answerable to New Zealand citizens, but decisions made here often have implications globally and vice versa. Hager (2002) discusses how the US based AgTrade Coalition wanted the World Trade Organisation (WTO) to prevent countries (such as New Zealand) from putting bans on the importation of GM seeds. With corporations pushing for the free movement of GM seed throughout the world, and influencing the WTO, it is therefore no wonder that a small and somewhat insignificant country like New Zealand feels pressured. As stated by Best and Kellner (1999), transnational conglomerations (including biotechnology organisations), seek to set in motion their own agendas, resisting control and regulation in the process.

GM technology is then an issue of international consideration. The international context is thus key regarding the path that New Zealand takes with GM in the future.

Hager (2002:107) stated: "Political management.... means deferring to power -to big business in national affairs and to the United States in international affairs". Callon et al (1986) have suggested that politics gains verification from science, and Touraine (1983) has said that laboratories are the institutions from which social power is exercised. This suggests that New Zealand has limited choice in the future with GM technology, given the close relationship between political and scientific institutions. Maybe the RCGM was a case of taxpayer money being squandered, if eventually New Zealand would have to bow to overseas nations so as to keep 'a foot in the door' with international trade, and keep pace with technology?

7.2. UNANSWERED QUESTIONS AND RESEARCH IMPLICATIONS

Issues and unanswered (or unsatisfactorily answered) questions have arisen during the course of this research, creating further potential areas for research. The relationship between the Treaty of Waitangi and the RCGM mentioned previously is an obvious area for further research. A fundamental theoretical problem relating to dealings with knowledge validity, or epistemological issues arose at the onset of this research project, where a decision was needed as to how someone such as myself who is not in the field of biotechnology, could conduct a critical evaluation of submissions discourse and worldviews, based on a subject matter which I only have a lay persons understanding of. A key question was how much knowledge is necessary before one is considered adept in making a valid contribution to the GM debate? This question can be posed in relation to my own knowledge of GM, and to the knowledge put forward by those participating in the GM debate through submission and application discourse.

Karl Mannheim's sociology of knowledge suggested that issues could be explored without getting involved in 'truth versus fact' claims, by accepting the validity of knowledge as truth at an individual level within one's epoch. Both Mannheim's (1936, 1952) and C Wright Mills' (1959) positions were found to be useful in this thesis and were therefore adopted, allowing the submission and application discourse to speak for itself.

The ideas of Teun A.van Dijk (1998, 1999) were also drawn on in the approach taken toward analysing submission discourse. Van Dijk is particularly interested in political discourse via critical discourse analysis. Such an approach allowed me to look critically at what was being put forward in discourse, bringing forth power conflicts, and dominant

ideologies that were either being proposed or negated in submissions and applications. As Seidel (1985) has suggested, it is the dominant groups who have a greater chance at being able to create meaning that people will listen to. Seidel's point was found to be true in this thesis, with power being held by dominant groups or experts in biotechnology who spoke in terms of the need to progress for the betterment of all. Expressions of power and dominance are evident in the submission discourse, especially in the pro-GM discourse, which states that there will be positive outcomes to be enjoyed by all if GM technology is embraced.

A shortfall and further point of contention expressed in submissions was related to the amount, and kind of discourse or information available to public about GM. Submissions expressed a need for more widespread and trustworthy information to be available to public to allow for a more informed debate. Indeed, Weaver and Motion (2002), McGregor (1996) and Hager (2002) were all critical of the way information is presented to public.

The role of the mass media in providing information to public comes to the fore in this thesis, given the concerns expressed in submissions regarding conflicting information provided to the public. Jurgen Habermas (1999) in discussing the *fourth estate* highlighted the need for what he calls *lifeworld*, whereby information is relayed by the mass media, free of power motives and profit. It is however difficult to imagine such an institution in a professional setting, as media productions cost money, and thus have to be financed some how. The possibility of the mass media operating free from power motives and profit seems unlikely, given that the mass media needs funding to operate (The Commission of Freedom of the Press, 1947).

Moreover, information broadcast by the media is often directly influenced by governments, which have their own agendas (Rourke, 1961). An example of media attention which has relayed a recurrent, and somewhat biased accusation at anti-GM advocates, can be found in the various description of GM opponents as acting based on 'emotions', 'irrationality' and 'fear' (McAuliffe, 2002; Wong, 2002; Middlebrook, 2001). Weaver and Motion (2002:340) further highlight how information about GM has been presented in a biased way: "...commercial agendas, relationships and meanings about genetic engineering were prioritised over the public's democratic right to make informed decisions about this science and its products". If the mass media is not capable of relaying information impartially, then how could more impartial information be presented to the masses? There are members of public who are complacent when it comes to

engaging in discussion of significant issues. Perhaps unbiased information relayed to the public would boost interest in important issues? Increased public information does, I believe, nourish involvement and participation, and is vital if a more egalitarian democracy is to be exercised. This would in turn, further encourage those responsible for acting on behalf of the public to feel more obligated to act based on public benefit, rather than in the interests of the powerful and influential 'few'.

Alain Touraine's (1983) discussion of how laboratories are the central institution from where change is initiated in contemporary society, adds credence to the claim that issues of power are very much involved with GM technology. When political institutions and scientific institutes combine, there is an almost infallible force constructed, whereby, as demonstrated in the GM debate, it is near impossible for the everyday person to penetrate and be heard above the noise of the powerful few. Taking these two institutions, and their economic led incentives, it seems a given that opposition to GM would be crushed.

Theoretical research regarding the materialising of a risk society is also pertinent, given that submission worldviews were often constructed around the concept of risk. Mehta (1994:15) stated: ""...modern social conflicts which involve risk are really debates about the future form of society and the role of citizens in shaping the future" (Mehta, 1994:15). The emergence of a risk society associated with GM development and possible future impacts is an area which would be well worthy of investigation in the future. Ulrick Beck would be a useful figure in pursuing such an exploration. A discourse analysis, or critical discourse analysis would provide a sound methodological starting point for investigation of the risk society, just as it was a useful tool in this thesis.

If I were to do this research again, there are things that I would do differently. This thesis began as an exploration of submission discourse, then as my interests were caught by the significance attached to an Interested Person, an exploration of democratic process was undertaken, drawing in a vast range of issues that were not anticipated at the beginning. I am not sure that there is anything that could have been done about this, apart from keeping focussed on the task at hand –a discourse analysis of submissions. This would have been extremely difficult given that I found the issues surrounding and involved in democratic process intriguing.

Methodologically, improvements could have been made by presenting a thorough content analysis, and through selecting the submissions based on attaining a statistically representative sample. I originally anticipated including a content analysis of submissions as a way of quantitatively substantiating claims made throughout the submission data

presentation and analysis. Although a crude content analysis did occur in areas (such as how many GP submissions made reference to the term risk in describing GM technology), this could have been undertaken in a more widespread and thorough way. The number of submissions sampled and parts of the submissions sampled could also have been undertaken based on the attainment of a statistically representative sample, which could then be scrutinised statistically. With these methodological issues, the influential factor was how much time was available to undertake a more quantitatively thorough analysis.

7.3. A FINAL WORD...

Currently, the world is entering a critical era of development and change, where decisions made now and in the near future will by and large decide the life-span and hence fate of the Earth (Irvine, 1996; Brown, Flavin & Postel, 1991). Even with new technologies and developments being designed to improve society "the fabric of society is...coming apart at the seams" (Irvine, 1996:1).

There is no denying that new technologies can drastically alter every aspect of life (Kellner, 1997), and GM technology is no exception, but rather is a prime example. This said, GM is a technology that can and does provide many benefits, particularly at an individual level with evolutionary and 'other' forms of research that induce further understanding of and about the world in which we live and its inhabitants. Taken any further this new GM technology is being undertaken amid a barrage of backward thinking, tending to be in line with the modernist or industrial worldview, that technology will fix and save all.

It is the modernist way of thinking that was reflected in the RCGM. This thinking ignores many of the problems occurring in the world. Issues such as population growth, global warming, nuclear and chemical pollution, all have the commonality amongst them that in the past and even now, these issues have been swept under the blanket as 'non-issues'. Such problems have been considered 'non-issues' because some way or another there will be a techno-fix available which will allow humankind to control nature to the point where human made problems rather than being prevented, will be cured. GM is touted as one such technology that could provide miracle solutions to problems. What seems to be neglected though by those promoting the technology is that GM is also contributing to many problems already in existence, and creating new ones. GM

contamination of other crops is just one proven example of a newly created problem. A change in the way humanity thinks needs to occur.

The Earth is a finite space with finite resources, and if current values and ways of thinking persist the Earth has a finite life span also. The old saying that 'money makes the world go round' needs updating: money is the mechanism which drives the way in which we live on Earth, but it does very little to look after the health of the Earth, without which we could not survive. There is an increasing need to acknowledge this fact, with particular reference to those advocates for GM technology who propose that GM can 'feed the world' and can create new consumer items. By advocating these points as beneficial to humanity, GM-proponents are adding to the already problematic consumerism and population growth issues, said to be amongst environmental philosophy and theory, two of the greatest evils facing the world (McKibben, 1998; Durning, 1992). When these said benefits of GM technology are viewed in light of the proposed humanitarian benefits, an even larger Pandora's box is opened which puts into question the very way in which people in Western or developed nations in particular, live. Solutions based on sustainable principles are not being made often enough at present, quite possibly due to decision-making bodies not seeing beyond the immediate future. A logical solution then would be to encourage individuals as consumers, and as members of society, to act according to sustainable values that enhance rather than further deteriorate the delicate foundations of society.

This thesis left me with two disappointments. The first disappointment is an obvious one that was shared by most of the general public, that is, the expiry of the GM moratorium in October 2003. The expiry of this moratorium could make New Zealand unnecessarily vulnerable to new risks. The second disappointment to emerge in this thesis was within the contamination of democracy. The democratic Commission of Inquiry system in New Zealand was shown to work in the interests of selected groups, namely the Interested Persons. The everyday person, the 'GP', was largely excluded from being an integral part of the RCGM process, by being *read*, but not *heard*. The democratic system in New Zealand needs a rethink, as the modernist outlook expressed in Commission of Inquiry Act will, I am sure, be further challenged in the future by those such as myself, who feel disillusioned at being shut out of decision making.

It is not too late to augment change. Legislation and democratic process can shut out laypersons, but money talks. Lay persons as consumers have the power to influence change by choosing to be informed, and then acting accordingly. If the general public

does not want GM, then the general public have the choice not to purchase or use GM goods. The public right of *choice* and *participation*...isn't *that* what democracy is all about?

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Appendix A

Submission ("Interested Person") Form 1

Royal Commission on Genetic Modification

1. Contact Information (Not for Publication)
Name and Address of Submitter *This should be the name of the organisation accorded "interested person" status* **Name** Response **Postal Address** Response **Courier Address** Response **Phone** Response **Fax** Response **Email** Response

Address for Service in New Zealand (if different from above) Postal Address Response **Courier Address** Response

Contact Person for the Submission (if different from the name of the submitter)
This person should have sufficient knowledge of the submission to be able and available to respond to queries from the Commission. This may be the name of Counsel representing the "interested person" **Name** Response **Position** Response **Postal Address** Response **Courier Address** Response **Phone** Response **Fax** Response **Email** Response.

2.

I. Confidential Information (Not for Publication)
Confidential Information Please indicate whether or not your submission contains any confidential information Yes / No Please provide an explanation for any sections of the submission that you wish to remain confidential to the Commission *These sections should be removed from the body of the submission and provided as a separate document marked CONFIDENTIAL Confidential information should follow the same format as the submission Clear reference to the existence of confidential information should be included in the body of the submission.*

Response
Submission Description (Not for Publication)
Submission Description Please provide a *descriptive title* for the submission of no more than 255 characters (including spaces) *The statement will be used as a long title in the Commission's information management system*

Response.

(For Publication)

Name of Organisation/Person accorded "Interested Person" Status
Response

Submission Executive Summary

Executive summary Provide an overarching summary of your submission and recommendations made [in respect of items (1) and (2) of the Warrant]. The Executive Summary should be no more than **3** pages in length *Please note that individual section summaries will be required and therefore the Executive Summary should focus on summarising the issues addressed in the submission and provide cross references to the sections in which the issues are covered rather than summarising the substantive content*

Response

Witness Briefs Attached

Witness Briefs Provide a numbered list of the names and positions of witnesses from whom briefs are attached, including an indication as to whether or not you intent to present the witness at the formal hearings *Witness briefs must be provided to the Commission with your submission Witness briefs should be prepared on Form 2.*

Response

8.

9. Submission by Section (as specified in the matters set out in the Warrant)

Submission by Section submissions are to be structured in line with the matters specified in the warrant and the sections numbered accordingly Each section should stand alone, and include a Section summary, identifying the issues addressed in the section. **Submissions may address all or only some of the sections (as specified in the Warrant).** However section numbers should be retained, for example, if a submission addresses matters (a), (c) and (e), the sections shall be numbered (a), (c), and (e), rather than a, b, and c Submissions may, within each section, adopt a sub-section approach using different headings; however, each paragraph should be consecutively numbered.

Section A Recommendations

The Warrant has set the Commission the task of recieving representations upon, inquiring into, investigating, and reporting on the items set out in Section A (1) and (2) below

Section A (1)

A (1) the strategic options available to enable New Zealand to address, now and in the future, genetic modification, genetically modified organisms, and products

Section A (1) summary

Response

A (1)

Response

Section A (2)

A (2) any changes considered desirable to the current legislative, regulatory, policy, or institutional arrangements for addressing, in New Zealand, genetic modification, genetically modified organisms, and products.

Section A (2) Summary

Response

A (2)

Response

Section B Relevant Matters
The Warrant has set the Commission the task of receiving representations upon, inquiring into, and investigating, the matters set out in Section B (a) - (n) below

Section B (a)
B (a) where, how, and for what purpose genetic modification, genetically modified organisms, and products are being used in New Zealand at present.
Section B (a) Summary

Response

B (a)

Response

Section B (b)
B (b) the evidence (including the scientific evidence), and the level of uncertainty, about the present and possible future use, in New Zealand, of genetic modification, genetically modified organisms, and products.
Section B (b) Summary

Response

B (b)

Response

Section B (c)
B (c) the risks of, and the benefits to be derived from, the use of avoidance of genetic modification, genetically modified organisms, and products in New Zealand, including: **(i)** the groups of persons who are likely to be advantaged by each of those benefits **(ii)** the groups of persons who are likely to be disadvantaged by each of those risks.
Section B (c) Summary

Response

B (c)(i)

Response

B (c) (ii)

Response

Section B (d)
B (d) the international legal obligations of New Zealand in relation to genetic modification, genetically modified organisms, and products
Section B (d) Summary

Response

B (d)

Response

Section B (e)
B (e) the liability issues involved, or likely to be involved, now or in the future, in relation to the use, in New Zealand, of genetic modification, genetically modified organisms, and products
Section B (e) Summary

Response

B (e)

Response

Section B (f)
B (f) the intellectual property issues involved, or likely to be involved, now or in the future, in relation to the use in New Zealand of genetic modification, genetically modified organisms, and products
Section B (f) Summary
Response

B (f)
Response

Section B (g)
B (g) the Crown's responsibilities under the Treaty of Waitangi in relation to genetic modification, genetically modified organisms, and products
Section B (g) Summary
Response

B (g)
Response

Section B (h)
B (h) the global developments and issues that may influence the manner in which New Zealand may use, or limit the use of, genetic modification, genetically modified organisms, and products
Section B (h) Summary
Response

B (h)
Response
Section B (i)
B (i) the opportunities that may be open to New Zealand from the use or avoidance of genetic modification, genetically modified organisms, and products
Section B (i) Summary
Response

B (i)
Response

Section B (j)
B (j) the main areas of public interest in genetic modification, genetically modified organisms, and products, including those related to: **(i)** human health (including biomedical, food safety, and consumer choice) **(ii)** environmental matters (including biodiversity, biosecurity issues, and the health of ecosystems) **(iii)** economic matters (including research and innovation, business development, primary production, and exports) **(iv)** cultural and ethical concerns
Section B (j) Summary
Response

B (j)(i)
Response

B (j) (i)
Response

B (j) (ii)
Response

B (j) (iii)
Response

B (j) (iv)
Response

Section B (k)
B (k) the key strategic issues drawing on ethical, cultural, environmental, social, and economic risks and benefits arising from the use of genetic modification, genetically modified organisms, and products
Section B (k) Summary
Response

B (k)
Response

Section B (l)
B (l) the international implications, in relation to both New Zealand's binding international obligations and New Zealand's foreign and trade policy, of any measures

that New Zealand might take with regard to genetic modification, genetically modified organisms, and products, including the costs and risks associated with particular options

Section B (l) Summary

Response

B (l)

Response

Section B (m)

B (m) the range of strategic outcomes for the future application or avoidance of genetic modification, genetically modified organisms, and products in New Zealand

Section B (m) Summary

Response

B (m)

Response

Section B (n)

B (n) whether the statutory and regulatory processes controlling genetic modification, genetically modified organisms, and products in New Zealand are adequate to address the strategic outcomes that, in your opinion, are desirable, and whether any legislative, regulator, policy or other changes are needed to enable New Zealand to achieve these outcomes

Section B (n) Summary

Response

B (n)

Response

Appendix B

Commissions of Inquiry Act 1908
Commenced: 4 Aug 1908

4A Persons entitled to be heard

[4A. Persons entitled to be heard - - - (1) Any person shall, if he is a party to the inquiry or satisfies the Commission that he has an interest in the inquiry apart from any interest in common with the public, be entitled to appear and be heard at the inquiry.

(2) Any person who satisfies the Commission that any evidence given before it may adversely affect his interests shall be given an opportunity during the inquiry to be heard in respect of the matter to which the evidence relates.

(3) Every person entitled, or given an opportunity, to be heard under this section may appear in person or by his counsel or agent.

Hazardous Substances and New Organisms Act 1996
II: Purpose of Act

4 Purpose of Act

4. Purpose of Act - - -The purpose of this Act is to protect the environment, and the health and safety of people and communities, by preventing or managing the adverse effects of hazardous substances and new organisms.

7 Precautionary approach

7. Precautionary approach - - -All persons exercising functions, powers, and duties under this Act, including but not limited to, functions, powers, and duties under sections 29, 32, 38, 45, and 48 of this Act, shall take into account the need for caution in managing adverse effects where there is scientific and technical uncertainty about those effects.

The Royal Commission on Genetic Modification (Public Notice 27 July 2000)[56]

The Commission has been appointed to receive representations on, inquire into and report on the following matters:

1. The strategic options available to enable New Zealand to address genetic modification, genetically modified organisms and products, now and in the future; and
2. Any changes considered desirable to the current legislative, regulatory, policy or institutional arrangements for addressing genetic modification, genetically modified organisms and products, in New Zealand.

Scoping Meetings

The Commission invites assistance in scooping the issues arising from the Terms of Reference contained in the Warrant appointing the Commission. Meetings solely for this purpose will be held on **Monday 7 August, Tuesday 8 August, and Wednesday 9 August**, in the **St James Theatre, Courtenay Place, Wellington** starting at **9.30 am** each day.

The meeting will commence with a Powhiri followed by the Commission's Opening Statement at 9.30 am on Monday 7 August.

The questions will be discussed in a facilitated group setting, with everyone free to participate via a link with our website. The Commission will not require formal submissions on the nature or form of the questions.

A package of information relevant to the Scoping Meetings, including the full Terms of Reference, may be obtained from the Commission, or at its website.

Formal Applications

In terms of Section 4A(1) of the Commission of Inquiry Act 1908 any person (including organisations) who satisfies the Commission that such person "has an interest in the Inquiry apart from any interest in common with the public" shall be entitled to appear and be heard at the Inquiry. The Commission will hear any applications from such persons on **Thursday 10 August 2000** at Hearing Room 6, 5th Floor, **Wellington District Court**, Balance Street, Wellington starting at **9.30 am**.

Those intending to make application should give Notice to the Commission no later than 3 pm on Friday, 4 August 2000, stating the name, address, telephone, fax and e-mail address of the person or organisation, and identifying the way in which the applicants' interest is different from that of the public.

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[56] This public notice can be found on the following web pages: http://www.gmcommission.govt.nz/media/public_27Jul.html; http://www.scoop.co.nz/stories/Poooo7/500123.htm.

Public Hearings

The Commission will commence public hearings in Wellington on **Monday 18 September 2000**. After the Scoping Meetings, there will be a further advertisement with details of the timetable, and of the procedure for public submissions.

Information

The Commission's offices are at Dalmuir House, 114 The Terrace, Wellington; PO Box 3554, Wellington; Tel (04) 4959151; Fax (04) 495 9153; e-mail info@gmcommission.govt.nz. The Commission's website is at www.gmcommission.govt.nz.

Appendix C

Submission Sample and Codes

GENERAL PUBLIC SUBMISSION SAMPLE [57]

GP1	Stephen Abel	GP3	G H Ahlers
GP5	Robert Allely	GP7	Pam Amy
GP9	Murriana Annan	GP11	Cleone Armon
GP13	Peter Ashton	GP15	Laura Austin
GP17	Chris Bain	GP19	Laureen Bamford
GP21	Georgia Barnaby	GP23	N P Bantup
GP25	Allan Baylis	GP27	Marion Beenen
GP29	Brett Bennely	GP31	Natasha Berman
GP33	Sarah Bierre	GP35	Dominic Blaazer
GP37	Lawrence Edward Blankenbyl	GP39	Eric Bodley
GP41	Christine Boraman	GP43	Donnamarie Bowes
GP45	Paul Bradley	GP47	Valma Brewer
GP49	Christine Brockes	GP51	Dawn Brown
GP53	Joy Browne	GP55	Erin Buckley
GP57	J Burgess	GP59	Mirjam Busch
GP61	Bridget Caird	GP63	M J D Camm
GP65	Jon Carapiet	GP67	Emma Carter
GP69	Peter Caugher	GP71	Christine-Anne Chapman
GP73	Christine Chevis	GP75	Rosamund Clancy
GP77	Lynne Clarkin	GP79	Claire B Cochrane
GP81	Kate Collins	GP83	Daniel Cook
GP85	Adrienne Corfe	GP87	Adrian Cowie
GP89	Norma Crawford-Meads	GP91	Bob Crowder (2)
GP97	L P Davidson	GP99	Monique Caroline Davis
GP101	Anne de Borst	GP103	Carolyn Deed
GP105	Luke Devereux	GP107	Sally Dinneen
GP109	David Dome	GP111	Carole Dowell
GP113	Kush Drinkwater	GP115	Joanna Claire Dugdale
GP117	D Dyer	GP119	Rachel Ede
GP121	Karen Eketone	GP123	Tehimana Ellis
GP125	Ann Erwin	GP127	Steve Fala
GP129	Carmen Faulknew	GP131	Maria Field
GP133	John Fitzgerald	GP135	Chris Flip
GP137	Liam Forde	GP139	Emma Frank
GP141	Isabel Frehner	GP143	Josh Fyfe
GP145	Alcina Garae	GP147	Lynsey Gedye
GP151	Pamela Gillies	GP153	Bruce Goble
GP155	Kathryn Goodman	GP157	Richard Gow

[57] NB. If any of the submitters' names have been incorrectly spelt then I apologise for this. The spelling of submitters' names has been directly taken from the spelling obtained from the RCGM web site. Also, gaps in the coding sequence are where submissions were not retrievable from the web site, or were unreadable.

GP159 B Grant
GP161 Andrew Green
GP163 John Grieve
GP165 Marianna Groth
GP167 Tikiana Lawrence Guthrie-Bassett
GP169 Sue Haisn
GP171 Michael Hamblett
GP173 John Hampton
GP175 Debbie Hardaker
GP177 A M Harrington
GP179 Jude Harrison
GP181 Monique Haslimeier
GP183 Philip & Margueritte Haycock
GP185 Josie Heap
GP187 M Henderson
GP189 Victoria Herrick
GP191 Melanie Hight
GP193 Jonathan Hindry
GP195 Patricia Hodson
GP197 David Holmes
GP199 B Hopkins
GP201 Barbara Hoskins
GP203 Charlotte Hudson
GP205 Jennie Hunt
GP207 Michelle Hutchinson
GP209 Carol Insley
GP211 Eldon Jackson
GP213 Lesley P M James
GP215 Brian Jeffries
GP217 A Jesensek
GP219 Philip Johnson
GP221 Gary Bruce Johns
GP223 Warren Judkins
GP225 James Kara
GP227 Kathleen Keith
GP231 Warwick Keys
GP233 Nettie Kinmont
GP235 Judith Knights
GP239 Jock Laing
GP241 Frances Landreth
GP243 Francesca Lauria
GP245 Alan Lee
GP247 Noema Lemon
GP249 Rob G P Lewin
GP251 Sarah Lilburn
GP255 Anara'ga' A Jean Lovegrave
GP257 Stephen Macdonald Luke
GP259 Debra Lyttle
GP261 Helen Mackay
GP263 Craig Madoc
GP265 Jean Maliker
GP267 Raewyn Mapcrana
GP269 Elaine Jane Marshall
GP271 Raewyn Martin
GP273 Alan Mather
GP275 Donna Maxwell-Crawshaw
GP277 Vicki McCaffrey
GP279 Eileen E McConell
GP281 Eldridge J McDougall
GP283 A J & D A McHardy
GP285 Heather McKenzie
GP287 Megan McLean
GP289 Catharina McNamara
GP291 Michelle Meades
GP293 Sekita-ka Mennie
GP295 Roslyn Miles
GP297 Therese Minehan
GP299 Sean Moffat
GP301 Ben Moore
GP303 K I Morgan
GP305 Anthony Morrisey
GP307 Neil Mountier
GP309 L Murdoch
GP311 Janis Mysliwiec
GP313 Maryanne Neho
GP315 Ronald Allistair Newman
GP317 Fiona Nicholls
GP319 Tony Nirstic
GP321 Robert North
GP323 Ann O'Donnell
GP325 F Wyber-Ofsoske
GP327 Ruth Ordish-Benner
GP329 Tarja Pabbrume
GP331 Alan Panckhurst
GP333 M Parslow
GP335 A S Pattison
GP337 Eliane Pearson
GP341 Caroline Phillips
GP345 Clare Plunkett
GP347 Neil Poskitt
GP349 R S Pratley
GP351 Navin Protap
GP353 G T Quinn
GP355 Sharon Ranby
GP357 Susan Mary Rawson
GP359 R F & S Reed
GP361 Steve Reid
GP363 Patricia Reynolds
GP365 Alfredo Rico
GP367 E Roache

GP371 Anita M Roddis
GP375 Yann Rousselle
GP379 Dominic Salmon
GP383 Rita Scheltema
GP387 Larraine Seamark
GP391 Jennie Sheffield
GP395 Gary & Ann Sims
GP409 Beverly Staples
GP413 Terrene Stewart
GP417 F J Studd
GP421 Julie Talbot
GP427 Rebecca ter Borg
GP373 Ailsa Rose
GP377 Doborah Rundle
GP381 Robina Satchwell
GP385 Anne Scott
GP389 Mason Shand
GP393 Mark Sidebotham
GP407 Judi Spencer-Clark
GP411 Mark Stevens
GP415 Eve Storer-Blake
GP419 Anna Suttan
GP425 Robert Daniel Taylor
GP429 Nick Thomas

HUI SUBMISSION SAMPLE

Hui1 Te Whanau Poutirirangirora a Papa
Hui2 Maria T. Tini
Hui3 Orongomai Marae
Hui4 Joseph Selwyn TeRito
Hui5 Sir John Te Ahikaiata Turei
Hui6 Angela Harmer
Hui7 Janice Barbara Marsh-Skelten

INTERESTED PERSON SUBMISSION SAMPLE [58]

IP1 Agcarm Incorporated
IP2 Arable Food Industry
IP3 Auckland Central Branch Royal Forest & Bird Protection Society
IP4 Aventis CropScience Pty Ltd
IP5 Bio-gro New Zealand / New Zealand Biological Producers and Consumers Council
IP6 Canterbury Commercial Organic Group
IP7 Commonsense Organics Ltd
IP8 Council of Medical Colleges in New Zealand
IP9 Cystic Fibrosis Association of New Zealand
IP10 DuPont New Zealand
IP11 Environment and Conservation Organisations of New Zealand (Eco)
IP12 Eubios Ethics Institute
IP13 Federation of Maori Authorities Inc (FoMA)
IP14 Forest Research
IP15 Friends of the Earth
IP16 Genesis Research & Development Corp Ltd
IP17 Green Party of Aotearoa / New Zealand
IP18 Hemophilia Foundation of New Zealand Inc
IP19 Health Research Council of New Zealand
IP20 Human Genetics Society of Australasia, New Zealand Branch
IP21 Interchurch Commission
IP22 Landcare Research
IP23 Lysosomal Diseases New Zealand / New Zealand Organisation for Rare Diseases
IP24 Marlborough Branch Royal Forest & Bird Protection Society
IP25 Meat New Zealand
IP26 Monsanto New Zealand Ltd
IP27 National Nutritional Foods Association of New Zealand
IP28 Nelson GE Free Awareness Group
IP29 New Zealand Agritech Incorporated
IP31 New Zealand Catholic Bishops Conference
IP32 New Zealand Council of Trade Unions
IP34 New Zealand Forest Industries Council
IP35 New Zealand Game Industry Board
IP36 New Zealand Jewish Community
IP37 New Zealand Maori Council
IP38 New Zealand Plant Protection Society
IP40 New Zealand Vegetable Growers Federation and NZ BerryFruit Growers' Federation
IP41 New Zealand Vice Chancellors Committee
IP42 New Zealand Worm Federation Inc

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[58]Gaps in the coding sequence are as a result of joint submissions, and submissions which were not available publicly, i.e. New Zealand Dairy Workers Union, and New Zealand Trade Union Federation.

IP43 Organic Federation of New Zealand
IP44 Pacific Institute of Resource Management Inc
IP45 Pesticide Action Network
IP46 Poverty Bay Branch of the National Beekeepers Association
IP47 Quaker Spiritual Ecology Group (of the Religious Society of Friends)
IP49 Rural Women New Zealand
IP50 Soil & Health Association of New Zealand Inc
IP51 University of Auckland
IP52 University of Otago
IP53 Wai 262 Claimants
IP54 Zespri International Ltd.

GENERAL PUBLIC SUBMISSION QUOTES

These are excerpts from the GP and hui submissions which were not included in the main body of this thesis. The following quotes are presented in an order corresponding with the presentation of data in chapter four.

GM Technology: Key descriptive terms used[59]

Genetic modification / engineering as involving or being:

Unknown affects
(GP5, 19, 23, 41, 49, 55, 85, 87, 89, 107, 117, 151, 159, 161, 175, 191, 201, 221, 223, 287, 291, 299, 355, 359, 367, 377, 383, 409, 411, 415, 417, 421).

Too many Risks / Risk / Risky
(GP1, 5, 7, 9, 15, 21, 31, 33, 35, 41, 45, 47, 49, 51, 53, 59, 65, 67, 69, 73, 75, 77, 79, 81, 83, 85, 87, 89, 101, 109, 111, 117, 119, 125, 127, 129, 137, 143, 153, 155, 165, 171, 175, 179, 181, 183, 197, 199, 209, 213, 221, 223, 233, 235, 241, 257, 259, 261, 263, 269, 271, 277, 279, 281, 285, 287, 291, 295, 297, 299, 305, 311, 319, 317, 323, 325, 331, 341, 349, 359, 361, 363, 371, 383, 391, 393, 415, 419, 433, 429).

Irreversible
(GP1, 21, 33, 39, 51, 57, 63, 65, 77, 79, 111, 119, 129, 165, 197, 279, 297, 299, 311, 331, 355, 357, 377, 381, 427, 433).

The Science and the Ethics

Perceived risks associated with GM technology

Many scientists speak out about the enormous risks of genetic engineering (GP277).

[It is] ...foolish to jump in so quickly (GP37).

[It's] impossible to predict future consequences randomly inserting chunks [of] DNA into unrelated organisms (GP221).

...it is the potential magnitude of any GE disaster that makes even the most minuscule risk not worth it ... what need is so urgent, and certain to be met, that the risk must be taken immediately? Surely it is wiser to wait and see? ...we are placing living things into the environment where there is no evolutionary history on how to accommodate them (GP1).

Legalising field trials is a choice that can never be reversed and I don't believe enough research has been done into it's long term effects to justify making this decision now. After hearing scientists speak on genetic science and it's imprecise, random nature, I have a general distrust of the process and the actual control and knowledge genetic scientist have over GM (GP427)

An experiment of the size of GE is prone to accidents (GP337).

Genetically modified organisms once released into the environment as crops or into the food-chain are not recallable if found to be dangerous years later (GP341).

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[59]Only the instances where the submitter has used these terms themselves have they been included here.

We do not and cannot yet know the long term effects of genetically modifying organisms... (GP293).

There should be no decision of GM until the risks are known, if this is 20 or 30 years in the future then so be it (GP87).

The genetic engineering of life forms is the most dangerous experiment that science has ever dared to pursue (GP85).

...there are risks (GE is not to be mocked) Scary stuff - leave GE alone, we don't need it (GP179).

The risks for this activity is to high and there will never be a process in place to effectively and efficiently regulate activities that will have such significant adverse effects and should be if not otherwise be restricted.... The risks are too unpredictable and too high... ...it is impossible to guide the insertion of a new gene, and any change to the DNA at any point will effect it throughout its length in unpredictable ways' (Hui6).

...this is an unacceptable, if terrifying risk... (GP197).

We don't know the consequences of this practice which spells disaster (GP255).

Risks will be innumerable / we are no where near qualified to be aware of them all ! (GP243).

Once we have introduced it, there is no way back (GP235).

The mutation risks are to [sic] great (GP305).

Madness to let it happen (GP299).

...genetic change is not reversible, and cannot even be reliably predicted (GP279).

I believe it would be irresponsible to develop and implement GE technology, as it has such potentially harmful and irreversible effects (GP367).

...New Zealand should be aware of the speed with which the technology and products of genetic engineering have been driven... (GP11).

I do not believe enough time has passed in testing, to show G.E. crops will not pose an environmental hazard (GP105).

Ideally though, our natural environment, our countryside, and even our diet should not be subjected to GE technology until more research... has taken place .... Why is there such a rush to implement GE technology? (GP281).

After all medical trials are done on medicines that are to be released, so why not five year trials on such an important factor (GP379).

N.Z. should apply caution and delay any introduction (GP285).

The knowledge of the hereditary substance of DNA is very limited and its [sic] could be potentially fatal to human, plant & animal life as we know it to manipulate complicated systems that are not completely known (GP61).

We do not know enough about its effect on the general community, environment, wildlife and their health (GP171).

Our concerns are that genetic modification of any organisms is still a very unpredictable science. (GP183).

I don't believe that there is enough research into the overall consiquences [sic] of genetic engineering....I am afraid of what genetic engineering can produce to kill innocent people (GP191).

Effects of G.E. are not scientifically substantiated (GP231).

There can be no current proof that introducing GE into NZ's environment will be problem-free... (GP289).

There is no aspect of life on this planet it will not change ....We do not yet understand enough to instigate such great change (GP263).

New Zealand should not become the testing ground for the world (GP391).

...although beneficial possibilities seem likely, more research and stricter government controls are needed before we go any further.... here we go again, another Western quick techno-fix = GE.... GE technology is relatively new, little is known and really understood at the deeper level of wisdom, not just superficial scientific knowledge (GP361).

The virus vector is liable to mutate.... No current scientist is able to predict the nature of the possible mutation.... the introduced gene (s) is not introduced to the organism with precision.... Scientific testing to date has been varied and not well monitored... no long term testing (GP327).

...lack of knowledge (GP321).

We are entering unknown territory and the consequences could be devastating! There has been no minimal research or understanding of the long term effect this will have on the biosphere (GP139).

...we do not and cannot yet know the long term effects of genetically modifying organisms... (GP293).

In my opinion it is like installing a brand-new, untried, operating system on your computer without taking a back-up of the old one (GP331).

I think that there have already been some serious problems which have been hushed up or dismissed and also no-one knows the long-term effects of some of these experiments (GP357).

I propose intensive research be carried out on gm using the moon as a lab base. And the scientists that go there never come back. There is no other way of containing errors. And there will be errors (GP147).

...lack of testing on G.M. bodies & independent testing on G.M. food should be done with long term testing (GP17).

There has obviously been no long term testing carried out on the effects of G.E. as it is such a new occurrence (GP45).

...little long term research done on long term effects (GP157).

Don't know long term effects (GP193).

Conduct longitudinal studies into effects in controlled environment...a one way path with an unknown destination (GP223).

It is incontestable that we have no knowledge of the long-term effects of genetic engineering on human beings and on the environment ....no-one knows what consequences may emerge in the future.... potential harm that could come is clearly great ... (GP307).

Try it out and see if it overways [sic] the negative side of it. Make sure not to misuse and do look at the good side of it (GP351).

Challenging the justification of GM

We really don't need it or want it' (GP67).

There is no market for genetically modified food (GP59).

[GM as being embraced out of] self-interest (GP11).

Our temperate island offers northern hemisphere multinationals the chance to "test drive" experimental technology well removed from their home base in case of a costly mistake. Plus the advantage of an alternative growing season (GP63).

...it is the large companies producing GE products who are pushing this -their reasons for this are for profit -not public benefits (GP87).

Too many clashes of so-called "expert" opinions (GP89).

...the life-sciences-biotechnology industry argue it will deliver improvements to current farming practices, new products, increased yields, pest-resistance etc. However the use of GM is only one approach to these problems and in effect "rachet's up" the combative relationship with nature (GP65).

There is nothing to be gained ... and maybe a great deal to be lost (GP317).

...the negatives would far outweigh the positives (GP271).

Once implemented, GE technology does not provide choice for consumers, nor help to reduce world hunger... (GP367).

Genetic engineering cannot solve the world hunger problem because the problem is inequitable distribution of resources, not shortage (GP61).

Instead of helping third world countries be independent the result would have the opposite effect (GP151).

Also, GE food will not solve world hunger problem -it will destroy sustainable farming systems... (GP385).

It is a misconception that genetic modification is simply an accelerated form of interbreeding... or evolution (GP331).

Scientific and Corporate Interests and motives

Money for who? Not us or the 3rd world countries (GP9)

A lot of money will be made by companies such as Monsanto...they would have made their billions and screwed up the world forever (GP37)

Everything for profit isn't it (GP29).

Genes should not be allowed to be patented... (GP27).

It has the potential to lead to the control and ownership of food, which I consider morally unacceptable (GP279).

...multinational corporations eager to increase profits by manipulating genes in food crops (GP53).

...genetic modification in N.Z. is unnecessary + exists not for the good of the public, but rather the corporations who benefit from the sales of these foods (GP45).

I believe we are in many ways simply being used as an experiment as a means by which shareholders will be made happy (GP37).

Their concern is for their profit not our wellbeing (GP63).

The benefits of money would go to big multi national companies like Monsanto (GP73).

Money tends to motivate & sway opinions (GP121).

This is just another money-making scam (GP169).

Companies cannot be trusted all they think about is money before humanity.... I would not put my trust in any-one (Hui7).

These companies are driven by commercial interests (GP107).

Commercial interests are deeply entwined with today's scientific activity and with this comes a kind of gold rush mentality that precludes caution or thorough consideration of consequences ... science will be able to redesign the whole world, molecule by molecule, and that's exactly what some intend (GP1).

It is controlled by profit motives and not social responsibility (GP151).

Please, folks, pretend you're planning for 50 generations time, not some commercial imperative designed to work up a bit of extra profit between now and christmas (GP147).

The only benefit of G.M. is to those who advocate it in order to line their pockets... (GP217).

It's gone too far -it's not required, it's a cause of laziness....The benefit is only gained by the manufacturers pockets (GP207).

Risk of all being greed + financially driven (GP223).

Society ie us humans have to bear the unknown risks to our health & environment as multinational companies rush to profit from marketing GM products (GP221).

All of the engineering that goes on at present seems to be money driven... (GP255).

...an important angle to look at this issue from, is motivation. Why do people want to promote genetically modified foods?.... I believe the people promoting the concept, draw their motivation largely from the prospect of financial gain. I also believe that many of the reasons presented in support of genetic engineering, are presented to cleverly disguise the above fact. The power of persuasive language is great (GP251).

-large profits for a few companies (GP285).

Neither do I want New Zealand to become a guinea-pig for the aspirations of completely profit-driven multinationals such as Monsanto (GP281).

...short term experimentation driven by power structures propped up by $'s (GP263).

Benefits are only to a small group of people who are not New Zealanders and have no interest in our future and who are entirely beyond our control.....their short-sighted and selfish activities (GP393).

Benefits = profits for business (GP377).

... a quick return on capital regardless of the cost to human health... (Hui6).

Man has moved too fast! (Hui7).

I believe that the GE companies are not honest with us when they tell us that there is no harm because they are motivated by financial gain and not interested in the truth (GP357).

The drive to introduce GE is purely economic, without regard for the potentially dire environmental consequences (GP367).

Please don't make the mistake of greed on the short term and loose the long term (GP365).

I question also the motives of those promoting genetically modified produce (such as Monsanto). I do not believe they have the good of man-kind at heart: -as they reap the rewards of selling (for example) seeds for plants that do not reproduce but have to be re-purchased each year –with their 'humanitarian' claims of being able to feed the 3rd world with their advances in food when it is common knowledge that problems are with distribution rather than actual production (GP427).

GE isn't about addressing the needs of hungry people. It's about profits now and control of future profits by the tiny minority that runs these big companies by using the ironically labelled "Terminator Gene".... I simply do not trust the integrity of the scientists whose research funds come from the above multi-national companies, even if they work for a university (GP361).

Exploitation + domination by large multinationals such as Monsanto (GP347).

I think large bio companies hope to make large profit out of some disaster.... A huge effort has been made to hide facts from the public (GP337).

It is nothing more than a monetary gain for people who create it (GP247).

...GE food production... lays the destination of the world population in the hands of commercial interests (GP383).

Some foreign investors will, maybe benefit... (GP165).

[Risks of GM:] Mucking around with nature for commercial interests (GP75).

...money is no reason to change our world further from it's natural state (GP255).

...scientist[s] use the same unscientific value judgements to eliminate or enhance certain traits in food and animals grown for consumption. These changes are often dictated by the values of the food economy which is not specifically interested in delivering nutrition or health to people but in selling product (GP1).

I believe that when action and motivation for action arise from short-sighted self-interest and when we do not sufficiently admit that we are not omnipotent and able to forsee [sic] the full consequences of what we do, humble action is called for (GP11).

I don't believe those who tell us it is safe -they ahve [sic] their own agenda (GP235).

While scientists predict benefits to G.E. they appear to fail to think beyond the short term, beyond their own financial rewards, and status, in scientific circles (GP271).

...and Im reluctant to be part of a multi-nationally inspired experiment (GP245).

This system of capitalism ensures that our trading and production of social necessities is in a competitive framework, that is future directed, and tends to ignore productive costs, or leave them for future generations to deal with, whenever possible (GP257).

...scientific novelties....We have to ask whether their introduction is benign or malign (GP173).

..I would err on the side of caution, because technology in the wrong hands and out of control can spell disaster.... Can we trust the geneticists, the physicists, or the technology? (Hui5).

New Zealand seems to have learnt nothing from these overseas experiences. Over and over I hear on the radio that NZ will get 'left behind' if we don't start GE research NOW! This obsession to keep up with 'progress' is being pushed along by market-driven forces (GP371).

Commercial interests have operated in a false-market: the need for caution, long-term advanced systems-testing in containment in order to obtain normal commercial insurance has been removed.... Scientific independence is clearly weakening as a result of commercial imperative and funding.... stop patenting of life forms, corporate biopiracy, unethical gene-control systems like Terminator, monopoly control of food systems, enforced use of GM technology, a reduction in non-GM seed availability, and the denial of basic rights to consumers (GP65).

New Zealand has no obligation, legal or otherwise, to serve as a guinea-pig for the world wide genetic ingeneering [sic] research (GP165).

Risks: Technology becoming available and accessable [sic] to operators without human integrity (GP137).

...I don't trust that scientist have our best interests at heart. They are often driven by their over inflated egos believing they know better than nature.... it has been undertaken with the wrong intentions, arrogance and greed (GP191).

A recent audit showed that biosecurity rules were regularly breached by New Zealand laboratories engaged in GM research (GP341).

Patents /Ownership and Control of GM

Genes should not be allowed to be patented... (GP27).

Biotechnology companies are only interested in profits & power (GP297).

Risks: Production of sterile hybrids so become financially dependent on seed vendors...Benefits: short-term profit financial gain by corporations that sell seed, herbicides etc (GP223).

...a gene-patenting gold-rush is absorbing rights over this transformative technology into private ownership (GP65).

...it seems certain that GE food production will put all the power over the world's food supply into the hands of a few large companies (GP107).

Patenting of seeds puts growers at the mercy of the 'so-called seed owner' & seed harvesting becomes legally difficult (GP255).

...multinationals monopolising food production (GP305).

Risks: Loss of control over our own food supply (GP393).

Multinational companies i.e. Monsanto owning monopoly (GP379).

Risks.... genes may be patented and sold to foreign multinationals (GP341).

Developing "terminator genes" which will produce sterile seeds in the crop, could lead to reliance on buying seeds from a few large companies (GP331).

...I believe that Monsanto have seed infertility planned that will mean that we will no longer be able to harvest our own seed + so the future productivity will be under their control + also our food (GP409).

Exploitation of the 3rd world through making farmers addicted to buying G.M. products (GP017).

...the dominance of corporations who will own the GE seeds... (GP47).

...genetically modified crops allow biotechnology multinationals greater control of our food industry (GP105).

Multinational companies and Biotech industries will literally hold animals lives in their legal hands living sentient beings are now being patented (GP85).

Cultural / Spiritual Considerations

...the international legal framework has allowed the rush to patent life forms for private commercial benefit, legitimating bio-piracy of plants such as the Neem Tree with weak protection of the indigenous public interest where the plant has been used for millennia (GP65).

To consider the implications of crossing species of plant and/or our genes being shared with animals is totally foreign to those values, which identify us as Maori (Hui3).

[GM interferes with] ...the affinity our ancestors had with the environment that there was a symbiotic relationship between all things (Hui5).

In trade negotiations and treaties we should protect...safety and cultural values of our people first of all (GP341).

As a Maori this is a sacrilege against our culture, most religious denominations... (GP123).

Against...non-consideration of indigenous / religious ideals... (GP249).

I am opposed to GE engineering on the grounds that it may cause profound offence to some religious & cultural groups (GP239).

The Biotech and "Life Sciences" industries admit by their own rhetoric that they are delving into the realms of God ....science has become the dominant religion of our time...the ultimate sin is to be unscientific (GP1).

Unatural [sic] against my culture and Christian belief... (GP315).

I have religious objections on the grounds that God... provides all our food requirements... (GP327).

I see ecology as something akin to the concept of 'God'.... I feel sickened by the idea of the introduction of 'non evolved' species' into our planet's realms (GP301).

Only by recognising a divinity in everything can we appreciate the sacredness of all life and the sanctity of the place and thus reject as desecration such activities as genetic engineering (GP173).

...I believe GE technology is like corporatizing [sic] Life, surely a contradiction (GP361).

I would like to posit that this particular moment is particularly and especially materialistic and blind to knowledge about the connectedness of all life (GP11).

Interfering with nature and 'playing god'

Where do you draw the line and determine what is really beneficial in this area (GP121).

...if you have a heart, deep down you know it's wrong, to encourage this godless action (GP9).

GE is unnatural so don't mess with nature (GP13).

Modern science of GE...draws humanity ever further from a meaningful and fulfilling life within the bounds of the natural world and threatens the very life support systems of the planet (GP1).

[GM science / scientists are] breaking the rules of nature (GP355).

I don't think we know enough or understand the extent of playing "God" with genes. (GP71).

I think we should leave genetic design to God (GP163).

...who gives them the right to play God! (GP209).

Playing god (humans have no right to play god) (GP193).

I reject the rights of any scientist trying to alter the quality of my whakapapa. "God" gave no-one individual any form of power to interfere with humanity.... God did not plan this! (Hui7).

...people playing God, trying to build the perfect person.... When do we make the distinction between what is technically possible and what is morally desirable .... exploiting and dominating nature solely for more yields.... don't tamper with that which is natural and old.... Is it right for mere mortals to play God? Will we all become identical? I can tell you now, it will not be the Maori race and feature that will be the dominant mould. It is not going to save the world and all mankind. In this country, our perspective, ideals and values must be considered (Hui6).

Transferring genes horizontally between species that do not naturally interbreed, between plant & animal kingdoms, is playing God. We don't have that right (GP361).

I am opposed to Xeno-transplantation, I believe this to be morally and ethically wrong (GP85).

Genetic engineering of animals is a science without ethics (GP085).

... [that] animals should be available for all sorts of ghastly experiements [sic], ostensibly for "our" benefit. There is an arrogance in this attitude which many find objectionable, and it extends into genetic manipulation.... Scientists assume for themselves an almost divine status in thus depriving living things of a destiny or, rather, imposing a destiny on them (GP173).

The balance of our eco-system is delicate. It is dangerous to presume that we know enough about it to introduce a factor that isn't a natural part of it. It is arrogant and not in the best interest of all people, animals and plants to think 'we

know best'. Nature has evolved over millions of years, we have existed for a mear [sic] blink of an eye in comparison (GP191).

...honour nature's inherent wisdom... (GP47).

I think it is naive and arrogant to believe that mans technology is better [than] the intricate and complex balance of mother nature (GP45).

Leave it as nature intended PLEASE (GP373).

Interfering with natures natural balance (GP335).

I have ethical concerns regarding the mixing of genes which do not normally associate in the normal procreation of nature's methods (GP327).

Risks - taking away the natural ways we have always lived... (GP319).

It does not occur in nature... (GP415).

It is totally unnatural... (GP409).

Tampering with natural process of evolution in such a way will result in deformities developing (GP125).

It interferes with the balance of nature (GP151).

Playing Mother Nature is not a game anyone should be playing, the effect could be extremely dangerous (GP139).

...it is cruel & wrong to meddle with nature (GP187).

Surely homo sapiens has destroyed nature enough already? (GP281).

You should think, feel + know you are messing with nature... (GP9)

Dabling [sic] in the genetics in the form of cross species genetics is unnatural (GP33).

Playing to much with nature (GP29).

Nature has its own delicate, self-regulating patterns, any interference has caused problems in the past (GP59).

To tamper with nature is dangerous (GP41).

The way we see and relate to reality, including nature, may determine what is acceptable and what is not acceptable in terms of genetic modification .... the case-by-case release of genetically modified organisms into open environments over time will create new interactions and ultimately change nature in a profound way that has never been possible before (GP65).

G.M. is manipulation of nature... (GP217).

...it isn't natural to alter nature with GE... (GP213).

It is not a natural process of life (GP247).

No benefits at all interfering with mother nature as far as genetic modification is concerned (GP305).

...the release of genetically engineered organisms into the environment is unnatural... (GP297).

...be pure and natural (GP289).

It is high time the promoters of this untried and over-lauded technology slow down and show respect for nature and common sense (GP281).

...it is common sense that you don't start interefering [sic] with what nature provided us (GP265).

We are possibly creating a threat to our health by fiddling with the rules of nature (GP259).

...it goes completely against nature (GP395).

It is certain the environment and natural processes will be changed in ways we cannot predict (GP367).

If you keep messing about with nature you upset the balance & everything get out of kilter (GP195).

GE precludes the holistic manner in which our planet has survived 'til now, therefore I do not believe it can be in anyway altruistic (GP129).

It is not right to partake of another human being. People may not know the consequences and give birth to a monkey (GP167).

The recognition that mankind has moved too far away from his natural environment (and diet) is very slowly gathering momentum.... Your responsibility now is to listen to the moral argument for the sake of ordinary New Zealanders (GP371).

Future Generations

I am totally against G.E. for our future, my grandchildren etc. (GP353).

...we must operate from the highest integrity in the interests of our land, and future generations (GP235).

Let's think about the next generation who we may be risking (GP277).

If the effects are not immediately life-threatening, but are dangerous to future generations, we will not be able to stop them at that point (GP341).

What will be consequences for our children 10 years on? (GP345)

[GM as] a risk for generations to come (GP59).

Our generation + future generations shouldn't have to experience the "risks"... (GP213).

The risks of ge are great, probably not so much to us but our children + there children. How could the government even think of allowing it in the country. Don't they have grandchildren or are the [sic] so greedy they would sell there grandchildrens health (GP209).

...risks...to future generations in NZ (GP197).

...think ahead NZ understand the choices we make today effect our children... (GP329).

I prefer the American Indian axiom - don't do anything without considering the next seven generations (GP327).

...bring hope to the future for our children (GP115).

I believe the importance of any issue can be measured against impact. What impact will it have on the world, and future generations? (GP251).

We have no way of knowing how it will effect future generations -their health and fertility (GP235).

The children that live now in our nation and in the future their children by law allowed the human right to be able to eat food that is not genetically engineered .... don't the children of New Zealand have rights? (GP43).

I emphatically demand a GE free 'life' for myself, my children, & their children... (GP129).

...Future generations are entitled to live in a safe & clean world (GP261).

The introduction of genetic modification... in New Zealand, and the resultant effect on Maori is a future liability.... The logical progression of then passing this genetic material onto future generations will irreparably contaminate future whakapapa (Hui3).

We have a grave concern that in participating in genetic modification this will allow an irreversible release of GE organisms and the future generations of Aotearoa will be disadvantaged (Hui6).

Personal health to environmental health

Human health

...unknown effects on the human body (GP415).

Stop it completely, it's no good for any of us (GP275).

...health risks to humanity (GP271).

(Risks:) health problems to humans (GP261).

Unknown health risks to ourselves and other species (GP393).

...the risk to health (GP349).

...it could harm humans... (GP425).

Risks:...weakening + degeneration of human gene pool (GP223).

It is believed that the promise of potential positive health gains to out people is used as a selective argument to obtain Maori consent for the use of genetic modification.... The cost for potential health gains that may be short-lived is too high for Maori as a people...(Hui3).

I oppose the intent of genetic modification because of the harmful risks to human life (Hui7).

Genetic modification not only effects individuals but society as a whole (Hui6).

Health / Medical Advantages

Medically this may be ok (GP83).

The overarching need is for responsible use and control of the technology, in which socially-unacceptable risk is avoided, and contained uses for societal benefit, (e.g medicine) are advanced under ethical, scientific and economic protocols (GP65).

Genetic modification of specific medical products could and do benefit some people ie insulin (GP299).

...GE technology may bring some potential benefits to people who suffer from hereditary disorders (GP281).

I do not object to certain controlled medical experiments specifically to fight disease, as long as such experiments are not used to develop changes in general food stuffs... (GP279).

Benefits.... Potential improvement in developing vaccines / medicines. Potential treatment for some human diseases (GP347).

Limit it to medical modifications.... Benefits - health research & cures. Could be of great need for potential killer diseases / cancers (GP319).

I stand today to share with you the experiences of on [sic] Maori whanau brave enough to walk down the pathway of scientific research, the research of our own genetic make-up, a pathway that we have all feared to tread, in our quest to find the answers to its problem and ultimately, hopefully the cure for the generations yet to be born (Hui2).

Food

I think that G.E. food should be kept out of New Zealand (GP345).

I do not want to eat GM food ... or any other additive that is not found naturally in the food (GP27).

Don't want to see genetically modified foods in New Zealand (GP23).

..stop the introduction of human organisms into the overall food chain (GP123).

...on no account do I want to eat any GE or GMO food (GP97).

No to GE food! (GP153).

Leave our food alone (GP313).

I see absolutely no benefits in consuming these foods (GP7).

Who really knows the outcome & problems G.M. food could cause (GP309).

...introducing unnatural substances to our bodies, substances that we are not aware that we are consuming and are unaware of the eventual effects of. The consumer may forget the true, sweet taste of fresh natural vege and fruit!! (GP407).

I am very concerned about possibilities of GE materials intended for other purposes getting into human food chain... (GP245).

I believe gm products ought not enter our food chain in any shape or form (GP147).

I definitely do not want to eat any GE or GMO food (GP177).

No genetic engineering with food crops (GP231).

I don't want to buy genetically modified food. I don't want to eat genetically modified food (GP315).

I think that they don't have very good food .... I think that you will have to buy organic stuff... (GP413).

...avoid all genetic modification of food or food products, ingredients or additives (GP287).

We should definitely say no to genetic modification of food (GP373).

Food should be GE-free (GP341).

...there is no way to prevent the harm that they will cause in the food chain (GP201).

(Oppose GM because:) introducing genetically modified (GM) ingredients into our food without our prior knowledge or choice & without long conclusive experimental research...(GP221).

...and until proofed safe not allowed for consumption (GP273).

Adverse effect on the food chain (GP379).

...maybe G.E. food can be sold at cheaper prices, but nobody knows what the real cost is (GP45).

It is not scientifically proven, that GE food harms us humans. But there is a true chance that it could be harmful (GP337).

I am against all the tampering with food, we do not know what we are eating, and what it will do long term to people (GP333).

....i want to live in a place where i know i eat real raw foods (GP329).

I have severe safety concerns about the nature of ge food (GP327).

...the present stage of tampering with our food will be only the beginning + surely lead to further changes (GP409).

Interfering with the food chain could end up with wiping out food production all together (GP151).

All food should be naturally created (GP15).

Oppose genetic engineering in food ....Keep food natural (GP421).

...food producers and food manufacturers will possibly gain through efficiencies and economics... (Hui3)

GM Food as a Health Risk

There will probably risks to health in the long term that might not show up for many years (GP7).

...I believe that genetically modified organisms are a threat to my good health (GP19).

We don't know what effects of general health could be unleashed by GE. foods (GP73).

The modification of the structure of any product cannot be healthy ingested by humans (GP109).

I don't want GE foods to come into New Zealand as you don't don't [sic] how its going to effect our health (GP205).

The thought of drinking the milk of a cow that has been genetically modified is too repugnant to even think about because for me it is tantamount to cannibalism and the violation of tapu. How can I be sure that I have not beef that has been tampered with human genes? (Hui5).

People should be free to choose what they want to eat .... I don't wish to consume foods that have been genetically altered -as I believe it is more than likely they won't enhance my personal health, or the health of the earth for future generations (GP251).

...messing with our food in such a way will no doubt create health problems in future generations (GP291).

We are already suffering from chemical poisoning and do not wish to eat overloaded with more chemicals to further endanger our health (GP41).

... we do not know the effect of GE food on humans health... (GP383).

Risks...long term health of our people eating genetically modified foods (GP363).

I totally oppose the genetic engineering of food ... one of the greatest threats to human health that has ever occured [sic] (GP279).

I don't think we should have any genetically modified food at all .... bad for you (GP267).

It will still take many years to come for genetically modified foods to become completely safe (Hui7).

...risks especially impact on people like me and my extended family who suffer from multiple allergies (GP41).

...genetically engineered organisms do adversely affect human health. Most genes being introduced into ge plants have previously never been part of the food supply so we cannot know if they are likely to produce allergic reactions.... soy beans with an introduced brazil nut gene gave rise to serious allergic reactions (Hui6).

Genetically engineered foods may contain allergens & toxins, and could result in serious unforeseen health problems (GP125).

In my lifetime, I have seen a huge increase in allergies ...and the genetic modification of any item that can make its way into the food chain will exacerbate that situation and could be a serious threat to the health of many people (GP201).

(Rejection of GM because:) The allergic problems exhibiting in my patients who were not previously allergic to their commonly consumed foods (GP227).

Evidence shows that gene changes in food can create unexpected allergies in humans (GP297).

Allergic reactions is one of the biggest risks of genetic modification (GP291).

Putting a gene from brazil nuts into other foods? Hello, massive allergic reaction! (GP391).

Gene changes in food creating unexpected allergies in humans (GP385).

GE could open up a Pandora's box of disastrous allergenic reactions (GP361).

There is a possibility of producing allergic reactions, reducing our natural immune system, creating adverse reactions with medicines and foods (GP331).

(Risks are:)... an increase in food allergies... (GP49).

New Zealand should stop all testing on genetic modification in the food chain ....as we have tampered with our food already, and especially with sprays etc we have now a case of 1 in 3 people developing cancer...(GP155).

...there is fear that his new manipulation of nature will result in other potentially fatal diseases generating in the future (Hui7).

Transferring animal organs to human there is such a risk of spreading diseases from animal to human, which may lead to epidemics in humans, the emergence of new and robust retroviruses ... many people will suffer unnecessarily caused by exposure to chemicals unknowingly...(Hui6).

Risk: creating more health problems not yet known (GP143).

That (GM) is why there is a lot of diseases through out the world (GP247).

The risk of incurable diseases (GP305).

Risks: Unforeseen consequences -disease... (GP347).

In the days of old they only ate naturally grown foods, because of that they did not get sick, but now people fall ill much quicker (GP167).

Environmental / Ecological Benefits

Benefits - maybe fewer chemicals used (GP285).

Production of food in cooler / warmer climate. Surplus crops produced cheaply (GP379).

Environmental / Ecological Risks

The greatest wealth and the paramount good is the maintenance of the integrity of the Earth's natural biosphere (GP1).

It will stuff the world (GP25)

Genetic modification places the environment at risk (GP259).

I am opposed to the release of GE organisms into our earth's environment (GP27).

...say no to GE because of damage to the environment (GP261).

Nobody yet knows what will happen when GE organisms are introduced into the natural environment and the inherent dangers this could herald (GP183).

...it will upset the balance of the environment and may cause irreversible damage to the ecology (GP357).

Once these GE organised micronisms [sic] are introduced into our environment, it is too late, there is nothing we can do about it .... If we do not ensure the protection of our natural resources, environment and wildlife, we as people will not survive (Hui6).

The risks are the future changes to the integrity of the wellbeing of the planet as a whole & to all the living creatures (GP325).

I consider it to be an intrusion into our natural environment with unknown consequences... (GP417).

I do not wish to see the natural environment and ecosystem of this country destroyed by an untested technology (GP281).

...our knowledge of the ecological effects of G.E. is very incomplete (GP061).

New Zealand's clean, green image and geographical isolation

Keep New Zealand clean and green (GP59, 73).

N.Z. needs to maintain a true 'green' image' (GP13).

This nation is clean green New Zealand (Hui7).

Lets keep Aotearoa natural and green (Hui6).

New Zealand has a wonderful clean, green image. Let's keep it! (GP79).

The clean-green positioning of New Zealand is a unique point of difference that will be increasingly important as corporate and technological convergence leads to homogenisation (GP65).

We have the isolation in a large pristine Ocean far from sources of pollution. That isolation becomes an asset that is already recognised around the world as a CLEAN GREEN NATION (GP91).

Keep it Green, clean fresh & healthy (GP189).

This country has every right to live up to its clean and green reputation (GP145).

We have a beautiful unspoiled country, lets keep it that way (GP175).

...whatever happened to 'Clean & Green N.Z.' (GP209).

As an island country we have a unique opportunity to prevent genetically modified organisms from reaching our country... we should keep our environment as "clean and green" as we possibly can... (GP201).

...New Zealand should retain its unique status as a GE-free country... (GP311).

...be clean and green for real (GP289).

We are kiwifruit growers with a strong desire for NZ to be clean, green & G.E. free (GP283).

New Zealand has much to gain financially an morally by being clean, green and aiming towards organic (GP259).

We have a unique marketable asset with our 'clean green' image. But it is not compatible with GE (GP371).

Risks.... our "clean, green" image will be destroyed (GP341).

We are known for our clean green environment so no GE in this country... (GP323).

...continue the NZ 'clean green' tradition... (GP407).

(Risks) losing New Zealand's reputation of "clean & green" (GP183).

N.Z.s clean, green image would lose its competitive foothold, in the international market once the world realises the disastrous effects of opening the PANDORAS BOX! (GP197).

New Zealand with it's geographic isolation could benefit from being completely genetic modification free (GP287).

Our geographical isolation makes NZ an ideal country to say 'NO' to G.E (GP377).

...say No to genetic modification -to maintain our unique situation & heritage... (GP359).

New Zealand could make a trading advantage from its geographic isolation by being GE free (GP349).

Contamination / Pollution

We have no idea of the long term consequences should genetically modified plants or animals cross into the ecosystems (GP259).

I am concerned for the survival of open pollinate varieties of seeds, that is, ones that are non hybrid. I believe that it may be possible for open pollinate seeds to cross with seeds from genetically modified plants (GP19).

I think that GM drift / contamination is one of the greatest threats (GP37).

GM pollen could spread easily and pollute ordinary crops nearby. Soon all crops would be GM not by choice, by chance (GP41).

[Risks of GM:] Cross-pollination of ungenetically modified food (GP75).

Through cross-pollination traits can be passed on to create "superweeds" (GP125).

...transfers of genes via cross pollination or by other means, ie food intake... (GP299).

The risks of increasing the natural survival rate of pests & weeds (GP305).

Genetic engineering decreases the natural variety and renders species more susceptable [sic] to disease' (GP391).

(Risks:) ...contamination of organic product by GE (GP157).

The risks of crops in neighbouring farms being effected, and seeds becoming mixed (GP155).

The introduction of GE must be banned to reduce the potential of opening doors to exotic species, toxic to non-target species, gene pool contamination, produce residues and new diseases which definately [sic] be detrimental to humans, animals and plants (GP145).

Risk: spreading of genetically modified crops, and hybridisation with other crops, thus not telling the difference (GP143).

...risk of contamination of other adjacent crops (GP317).

Can't control the technology from entering the wild environment (GP315).

If we sow / plant GM crops in New Zealand these crops will cross-polynate [sic]... (GP293).

...I oppose especially the suggestion of holding field trials in NZ because, due to cross-pollination, this would allow for no organic food production and take away the option for consumers (GP427).

Contamination of adjacent fields cannot be excluded and we are left with new unintended life-forms which means potentially huge disaster... (GP381).

Cross contamination with native flora & fauna (GP379).

Risks...cross pollination (GP377; GP363).

Research has already proved that genes inserted into one species can cross to another: Pollen is known to blow for kilometres (GP341).

All crops and organisms are vulnerable to contamination from cross-pollination or breeding .... Use of herbicides is likely to increase because farmers, knowing that their crops can tolerate herbicide, will use it more liberally (GP331).

Tough omnivorous "bacteria" could out-compete real bacteria: they could spread like blowing pollen, replicate swiftly, and reduce the biosphere to dust in a matter of days. Dangerous replicators could easily be too tough, small and rapidly spreading (GP1).

New and potentially dangerous viruses may emerge (GP61).

Risks are unexpected outcomes -eg viruses carrying material to other organisms... (GP285).

The pollen of GE maize is said to kill caterpillars such as the larvae of monarch butterflies (Hui4).

All it takes is for some super bug that's indestructible to do serious damage (GP147).

...the consequences of releasing GE organisms into the environment cannot be predicted, apart from the sure knowledge that, once released, they cannot be recalled or contained (GP53).

It is clear from scientific studies, including submissions already before the Commission, that containment of GM constructs in the open environment is impossible because of the complex interactions between the GMO and micro-flora,

microfauna soil bacteria, target and non-target insects, wind, water and complex ecological pathways (GP65).

The uncontrolled transmitting of genes in any field crop or trial has unpredictable results (GP327).

Genetic pollution occurs... how can we safely monitor this (Hui6).

...as GE is not natural it will not be able to be contained by natural measures (GP383).

...it would be foolish to imagine that modified genes will not escape into the environment eventually. In fact, it already has happened (GP361).

Risks: Mistakes - potentially dangerous plants, organisms released with no natural control mechanisms (GP347).

GM as compromising Biodiversity: and Species Survival

...nor do I believe that animals should be cloned or human genes of 'wider' [unclear] species crossed with them (GP27)

Dangers of species jumping genes... (GP17).

Once released they can not effectively contain it and it will cross with natural population resulting in unpredictable outcomes (GP269).

...GE is breaking down these ecological barriers by transferring genes from entirely different species....animals very beings are on the brink of becoming lost forever (GP85).

Species could be jumped (GP41).

Risks of total breakdown of all immune systems everywhere (GP35).

There is nothing known of the long-term effects of transferring genes from one species to another, crossing unknown barriers (GP79).

...it is exploitive of plants and animals who have no choice as to whether they are modified or not (GP255).

N.Z strength is in its diverse genetic stock free of disease (GP315).

The risk of losing the gene pool that has taken millions of years to develope [sic].... the risk of losing natural selection & adaptation of species...(GP305).

Once these GE organisms are released & cultivated, it is inevitable that the stronger species / strains will take over the weaker species, this is normal evolution! (GP295).

Negative impact on environment eg bees, butterflies etc harmed by crops producing own insecticide (GP385).

...no crossing of animals with vegetables (GP333).

...I am concerned with the experimental use of live animals (GP417).

Risks... cross breeding of species in the environment (GP415).

Risks to our native flora & fauna (GP363).

Risks are reducing biodiversity further eg only using g.e. crops could lead to a lack of genetic diversity to resist new diseases and pests (GP285).

...risks...potential genetic chaos that could well occur in plant and animal life... (GP271).

Risk factors to animals & fauna & flora & waterways (GP261).

I am keen to see New Zealand protected from such radical risks that will affect our biodiversity negatively. I am opposed also to the idea of Scientists developing new types of animals to produce new types of food (GP85).

Risks...Irreversible damage to ecosystems and loss of biodiversity (GP393).

Risks...our native biodiversity will be under threat (GP341).

Genetically engineered organisms may change the food chain and damage local ecology (GP331).

Biosecurity would be put at risk (GP63).

Information formation and Liability
Public Information and Perception

I hope my opinion will be given the same consideration as all others (GP251). As a very recent student of contemporary biology, I feel that I have the ability to make an informed decision about the use of genetically modified organisms (GMOs) in New Zealand (GP281).

Stand up & listen to the people & what they want for a change! (GP67).

There is also a need to express to the community, the harmful effects and dangers of genetic intervention and the serious Repercussions, which will arise.... Before we can introduce any thing like this, we need to redress the gross imbalance by providing some independent data and scientific views as well as some of the experiences of members of the public.... There was also a concern that 'the experiences of the public are often written off as chemo phobia, and their opinions as uniformed... (Hui6)

Evidence for both sides needs to be readily available so that the public can make educated choices about buying or using anything containing genetically modified organisms (GP19).

Research & discussion on a pure scientific & social level before any plans of implementation -with no deadlines attached (GP263).

Strategic Options: massive education re this current scientific "madness' (GP243).

There has been little public education to explain methods used in gene transfer, and any biological features -publication is very important (GP303).

Teach people (GP301).

Educate NZ'ers... (GP321).

The govt and media advertising should help in the exposure and promotion of these products through T.V & radio and encourage the public to become a lot more aware of what they can and should buy (GP407).

...the opportunity for public submissions should be extended for two reasons. It is only with the publicity given to the submissions from the promoters of this form of biotechnology that public consciousness has been raised.... The same opportunity to hear the arguments presented before yourselves, of groups concerned about the risks of transgenic technologies, or advocating alternative ' organic' approaches to producing food and other crops, has not been given.... ...recommend to the government that a public education campaign is conducted to increase understanding... (GP349).

Claims in New Zealand that public concerns are media-driven hysteria are untrue and there has been little media coverage of the type seen in Britain. It is likely major food advertisers will have influenced some media in the coverage of GM as a public issue, including avoiding publicising the issue. In New Zealand the failure to allow consumer choice, and lack of public debate over GM use has been the subject for civil protest leading to the establishment of the Royal Commission. ...the vision for the future presented by the biotechnology needs to be the subject of wider public discussion, not least because in New Zealand it conflicts with the majority support (see research by Affco) to follow the GE-Free eco-nation strategy into the future (GP65).

Our eating habits seem determined by juicy hamburger temptations flashed across our TVs. The media fools society into believing coke means fun (GP207).

...most not too well educated people here in New Zealand have no idea, what concerns there are worldwide about GE. Very little gets broadcast about this subject, and a lot of it is pro GE, paid for by GE promoters (GP337).

The majority of the media attention I have seen has been given to these promoters of this technology. They appear to be able to use public relations companies and extensive resources to promote their view point that not only is all this safe, but we... cant do without it (GP349).

Formulating the law

...the inclusion of Maori cultural perspectives in all government policy (Hui5). Maori will certainly need to be consulted on all issues in the protection or our social, spiritual and physical environment from genetic despoliation.... (Hui5).

...introduce a written constitution for the protection of human life for all people... (Hui7).

...our government should act NOW to prevent new Zealand becoming a GE experimental catastrophy [sic] (GP3).

The issue of GE has to be thought about by every New Zealander there must be a referendum on such a huge decision (GP85).

We need policy and law put into place to stop this experiment in New Zealand (GP107).

NZ should be as people want it -GE free' (GP37).

Avoid at all costs! (GP429).

...there are innocent people out there who trust people like you to do whats right, not wrong so please, just stop for one minute and think about what your decision will mean!?! (GP139).

There is no confidence in the current process to consider Genetic Modification practices (Hui1).

Make it illegal (GP185).

...protest against it as strongly as possible to keep it under control here in N.Z. and for the rest of the world (GP217).

I think they should -plain and simply -abolish it.... I think it should be LAW that we only eat Organic ....GM should be illegal. Once this law is applied people will realise the seriousness of it all (GP207).

Outlaw it (GP199).

Definetely [sic] prohibit (GP241).

Ban it (GP233).

. ..want it to be outlawed in New Zealand (GP417).

Hold a referendum to decide the wrights [sic] or wrongs. Yes or no to introduction. If a majority want it introduced then set about geting [sic] down guidelines (GP321).

The precautionary principle should inform NZ's approach to genetic modification (GP341).

The 'Precautionary Principle' as it relates to such technology dictates that without knowing, within reasonable limits, the effects of the technology, it should not be used (GP367).

...we have a health and safety act in New Zealand which states that hazards must be identified, and then they should be either a. eliminated, on the grounds

that they are not essential, or b. minimised, on the grounds that they are essential (GP327).

Legislation / Regulatory Requirements

...pass a law in order to protect the country against the irreversible genetic pollution of living organisms (GP165).

Military usage of, and experimenting with, GE technology should not be permitted (GP367).

Legislate so no company that could stand to make financial gains thru GM can dictate speed or direction of gm laws (GP223).

[Concerned at the] slackness of regulatory bodies (GP17).

There is a need for strict legislation to be introduced requiring strict adherence to the HSNO Act 1996...(Hui3).

...follow the precautionary principle of HAZNO (GP303).

...provide a uniformity of standards for imports and exports (GP289).

...regulation must be strict, and administered by an independant [sic] body with powers to immediately confiscate experimental material before other legal processes (GP257).

Research, experimentation and production -permitted only if deemed appropriate by an independent body - should be under stringent supervision and in closed (i.e. secure) laboratories (GP171).

Consultation process prioritised, feedback at all times, information collected and processed, feedback, testing and ratifying decisions made, problem solving, co-ordination and liaison, conflict resolution to be implemented at all times. Policy development and strategies to be based on community, Iwi or the public concerns and not overruled by economic or industry ideals (Hui6).

Need for Stricter / More Adequate Legislation / Regulation

Keep a strict control on any experiments, not letting anything get free to grow naturally (GP117).

...breakdowns in regulation by interconnected authorities such as the US FDA and NZ's ANZFA, has lead to the introduction of GM products e.g in food and the environment, without adequate testing, informed consent from the consumer, international tracking, or systems in place to measure impacts on public health....(GP65).

The Australia New Zealand Food Standard Council must be responsible to the judiciary of this nation not to allow genetically modified foods to be marketed while there are doubts about food safety regulations (Hui7).

The Treaty of Waitangi

As a country with legal and moral processes that are informed by the treaty of Waitangi, we are obliged to consider the views of the Tangata Whenua. (GP367).

Orongomai Marae recommend that the founding document of New Zealand "Treaty of Waitangi" be the strategic Option used to address now and in the future, genetic modification, genetically modified organisms, and products (Hui3).

[The Treaty of Waitangi as] ...the best means by which we can protect our unique heritage, our culture, our people, flora and fauna, and future from the ravages of misguided technology. For me the solutions are clear, they are embodied in the covenant of the treaty (Hui5).

...the "Treaty of Waitangi" is the only set document that my Whanau of past and present! Generations will ever adhere to.... we have Treaty rights to secure the population of our race without interference from others (Hui7).

Introduction of legislation is required to monitor importation of all product that has been genetically modified... Legislation needs to be introduced effectively banning any genetic modification of food sources and Flora and Fauna as defined in Waitangi Tribunal 262.... The intellectual property of Maori will be destroyed by the introduction of genetic modification.... the Treaty of Waitangi specifically provides protection for intellectual property (Hui3).

...the Crown will be violating the Treaty of Waitangi in which it promised to safeguard Maori their forests and fisheries (GP341)

Consumer / Producer choice

World wide the warning red light is flickering, but we still have a choice! (GP3)

I think it is important for New Zealanders to have a choice on the matter of genetically modified foods (GP427).

...it is my right to know what is in the food I eat (GP19).

New Zealanders have a right to choose what food they eat, a right to know how it is composed. ...we should know what is going on, and have a choice (GP33).

I deserve the right to eat natural organic food; to have the freedom to choose... (GP047).

How can we know what is in our food anymore? (GP391).

I have the right to eat G.E. free food (GP345).

All human beings have a [sic] individual human right to know what ingredients [sic] are used to make the food that they chose [sic] to eat (GP43).

We should have the freedom to know what we are eating (GP69).

In New Zealand unlabelled GM products have arrived unannounced in supermarkets, and have been sold for over three years without allowing consumer choice...In the absence of commercial constraints such as insurance, or the freedom of unwilling consumers to choose what they eat, a false-market has developed.... The spread of GM technology in food, and probably other areas has been enforced to date without public discussion and against the public will .... The individual right to use genetic modified products, eg a diabetic on insulin, does not legitimate the imposition onto others of the use of GM products, e.g in food (GP65).

(Risk:) infringing our rights (GP157).

(Risks:) No choice by majority but effects for all (GP223).

In my ideal world, people have the freedom to choose, as far as the choices they make are made while respecting others' freedom to choose .... I stand against it [GM], because their choice would squash my choice (GP251).

...violation of our basic rights to choose for ourselves (GP293).

Pure, unadulterated food, is a basic human right (GP279).

Please recognise our civil rights to have a choice to be able to eat entirely natural food (GP395).

People should have the choice (GP375).

It essentially takes away the element of choice for the consumer... (GP367).

We have the choice of whether or not to introduce a technology such as this.... Therefore I suggest that, since we have the choice, this hazard be eliminated (GP327).

In any case the consumer must have the right to be informed about the food they eat and to be able to exercise personal choice (GP419).

Humanities thirst for knowledge has not been tempered by national choice in what we do with that knowledge, in the case of GE (GP129).

We have a right as consumers to know what is in our foods (GP415).

...we have a right to know what we are putting in our bodies (GP409).

Why are we even considering / discussing this issue when the majority of people DO NOT want to purchase G.E products? (GP81).

Labelling

I can only trust in the current labeling [sic] system and hope that this is continued in a thorough manner... (GP427).

Additional international agreements are required to ensure that all genetic modifications are clearly labelled of imported products (Hui3).

All food items should be labelled absolutely truthfully (GP345)

If we must have imported foods containing G.M. ingredients they should be clearly labelled so that we can choose whether to buy these products or not (GP7).

I would like to see compulsory labelling on all products containing any genetically modified organism or that have been genetically engineered in any way. ...this requires that comprehensive labelling is prominent on all food and medicine products containing genetically modified organisms (GP19).

All food containing GM products should be labeled [sic] (GP33).

...the public should be clearly warned before buying the products (GP103).

Insist all imports are fully documented and all overseas consumer products bear [sic] detailed labels of contents which may be GE sourced (GP53).

I want all GE products labelled (GP85).

There should be no GE food unlabelled in NZ (GP69).

...ensure no existing GM foods or derivatives are sold in NZ without labelling, extending laws requiring information on the use of GM products to include restaurants, cafes, fast food etc, which have currently been exempted under ANZFA plans (GP65).

...I therefore demand labelling on all food currently containing any GE components, as a human right... (GP129).

Labelling products must occur to ensure consumers right to know ....The refusal to label such foods restricts my free exercise of religion (GP125).

If things have to be genetically modified then packaging & labelling should indicate this so that the consumer is aware & has the informed choice... (GP121).

Any GM food or products brought to NZ must be clearly labelled, including food prepared at point of sale (GP171).

People should also remember to put labels on all foods letting the public know that they are tampered foods (GP167).

NZ should insist all imported food products have complete and accurate descriptions of the gm or not status of the contents (GP147).

...what is imported is fully labelled and that choice of products without genetic modification continues (GP143).

...label all GM products a such for both human + animal consumption, by law (GP223).

I propose that you bring genetically engineered processes [sic] food into the country for those that want it -with labels saying that it is (not maybe) genetically engineered (GP251).

...any food that contains genetically modified material should be clearly labelled... (GP317).

Clear labelling for any and all GM material coming into NZ... (GP303).

Label all derivatives (GP301).

Strict labeling [sic] of all products (GP387).

All G.E engineered food, should be labelled .... As long as people have informed honest reliable information as to the % of G.E matter in food.... We live in a democracy? Well let us eat what we want .... I believe it's alright as long as we can choose (GP375).

...the products are appropriately labelled (GP347).

Any imported goods that contain GM materials should be labelled clearly by law and restricted if appropriate (GP331).

Labelling of all products containing genetically modified / genetically engineered organisms (GP415).

...foods containing G.M. ingredients they should be clearly labelled so that we can choose whether to buy these products or not (GP7)

International Pressure / Considerations and GM

...refuse permission for overseas companies to test their experiments here (GP35).

Let us not be puppets of the super powers, eg USA (GP47).

Why follow the rest of the world like a sheep (GP67).

Why dose [sic] our country have to follow the rest... (GP305).

N.Z. does not need to follow European and American examples by jumping feet first into something that is not fully understood (GP379).

Please don't give in to pressures from overseas... (GP337).

I also see an opportunity for NZ in resisting pressure from other countries and large corporations and remaining GE free (GP427).

Issues of Liability / responsibility

If any doubt exists ensure a suitable 'brand' (difficult to read) is in place so the environmental restitution is possible in the event of polution [sic] (GP063).

The "bio-technology corporates" that manufacture them are held responsible for any harm (GP125).

The people that who work with, use and promote this technology must be made fully responsible and accountable for all the accidents that will inevitably occur in the future (GP361).

What are the social responsibilities of those who make the decisions to modify the genes? .... accountability and responsibility by those causing adverse effects to human life accept just disciplinary measures (Hui6).

Who pays the price for human destruction and who pays the cost? (Hui7).

The onus should be on those wanting to introduce it to prove it is safe (GP341).

...huge fines should be applied for going outside strict guidelines such as $100 million for each breach (GP381).

Solutions? GM-Free Versus GM Embracement

Justifying a GM-Free Future

GM crop growing in NZ threatens our overseas markets in Europe of conventional & organic products / produce (GP221).

Mad cow disease resulted from simply feeding the unnatural food to animals and is still not understood (GP5)

We're already 'Nuclear free' and proud of it. New Zealand should also be 'GE free'.... Compare it to 'Mad-Cow Disease' -only discovered 30 years or so after the damage was started (GP79).

...carefully examine the experience of those overseas who have rushed into growing genetically engineered crops and learn from their experience (GP11).

[Organics]...that is where the greatest market / demand is (GP37).

...progress in learning from past mistakes (like DDT or the spread of BSE in cattle), progress in understanding the complexity of natural systems.... The boundary between the spiritual world and the physical world is under pressure in a way that exceeds that of nuclear power, and genetic engineering may warrant a similar level of containment as nuclear power has done (GP65).

Have we learnt nothing from BSE -we can't hold our hands up in ignorance in 20 years time and say "we didn't know". Cigarettes are a prime example - legalised harm and potential to kill... we have made a difference before with our anti-nuclear stance (GP115).

B.S.E -will you ever learn!! (GP189).

...A bug that's indestructable [sic]? Impossible right? Exactly how destructable [sic] are the prions as found in BSE -Mad Cow Disease? ...The risk is simple - scientists have been wrong before (GP147).

New Zealand has shown that any introduced species into N.Z has grown out of control (GP141).

Although not necessarily science-driven, the BSE saga in Europe is another example of what can happen when novel, "unnatural" programmes are introduced (GP173).

Are you to allow the same conclusion as did those many New Zealanders who suffered from the 245 D pesticide, and it is not till years later that the adverse effects of this pesticide was realised, where upon it is too late for some....Are we to allow the same to happen again here? (Hui6).

New Zealand already has cause to regret the introduction of opossums, for instance, into this country and find their eradication virtually impossible. There are many other examples of unforeseen outcomes that are surfacing many years afterwards, for example in radiation effects from nuclear explosions (GP307).

We should have learnt from the introduction of species that it is impossible to get rid of many pests -and that it can take a while to realise what things are undesirable (GP285).

Risks - Just think about rabbits, opposums [sic] & ferrets etc... we can have no idea what introduced species will do (GP373).

Containment of biological entities has, historically, proven to be difficult (GP367).

It threatens our individual identity and sovereignty and the control of our own destiny (GP173).

New Zealand and GM-Free Embracement: Praxiology

Thinking with intelligence is our future (GP263).

Embracing a policy framework to encourage & support organics would benefit N. Zealand & the world! (GP179).

With our resources and isolation from the rest of the world we could be unique in production of organic goods and supplying what is sure to soon be a great

demand (taking Britain and it's recent interest in organic food as an example). This can only be beneficial for the economy, and general good health of our nation (GP427).

More research and funding into organically grown (not gme) methods (GP143).

Advanta Company has moved here to grow seeds organically. More companies will come if we stay GE free (GP79).

I believe the commission should be promoting the following: - ...the use of sustainable / organic farming (plant & animal) methods (GP27).

...promote our organic producers, creating a niche market for world export of organic produce (GP019).

Recreate the natural heirloom organic native environment (GP429).

...focus the nation of organic food production, for which it is ideally suited, and for which there is a rapidly growing world market (GP049).

...those in power in New Zealand should support the growing organic movement within the country with funds and resources (GP011).

New Zealand's organic produce market is booming. It should be encouraged (GP079).

Develop primary production and knowledge-based industry technologies around the eco-nation brand strategy, integrated with a regional development, employment and biosecurity strategy.... support the development of clean-green sustainable and innovative technologies for external use in NZ and overseas (GP065).

NZ must market organic produce! (GP119).

We should be concentrating on organic agriculture (GP111).

Its better to be safe than sorry by sticking with Organic foods (GP103).

...maximise the opportunity of the rapidly growing, highly profitable, international organic market (GP097).

We have expertise and initiative in Primary Production and a research base that given the will could quickly put us to the fore front as an ORGANIC AND ENVIRONMENTAL Nation with a spin off into Tourism of immense value (GP091).

Pursue organic direction for increased profit + better health (GP157).

...we should be growing completely natural food, especially organics (GP155).

We should promote NZ organic industry! Clean & green (GP183).

...support fully organic growing.... GE-free growing makes our produce very attractive to European buyers who now long have that guarantee in their countries (GP181).

We should encourage + make NZ totally Organic (GP213).

NZ has a great opportunity here to establish itself as a grower and provider of organic food (GP201).

New Zealand should spend its resources in research and development in Organic production and be ready to take advantage of the huge potential that will arrise [sic] for exporting organic produce (GP315).

...support organically and substantibal forms of farming (GP299).

...go purely organic (GP291).

I think that New Zealand has a chance to make a statement to the rest of the world that we are a country that is taking the lead in ensuring the long term welfare and health of humanity, by rejecting GE... (GP271).

Promotion of organic agriculture as the only sustainable food production paradigm.... Campaign, lobby and pressure other countries to follow our example (GP393).

The solution is already available -ie ORGANIC AGRICULTURE (GP385).

NZ should embrace and become a centre of excellence in organic food production (GP383).

We should embrace organic and sustainable farming (GP377).

...the direction New Zealand should be heading is:...to produce high quality organic and non-GM produce. To market our outdoors for adventure and eco-tourism. To protect and enrich our natural biodiversity and become a world-renown in this area (GP331).

Go organic on international scale this will attract many diverse visitors immigrants and export customers; which can only be positive... (GP329).

...get behind our organic and G.E free producers (GP407).

I want New Zealand to become organic; to work to enhance nature's work as it is now, or has been (GP47).

New Zealand and indeed the whole world needs to look at more long-term sustainable ways of feeding, housing, clothing and sustaining people ... A more whole approach would see us working "with the grain of nature", not against it...A regionally specific, nature base, hands on, high human input, low machine and chemical input, diverse, sustainable intensive farming method as defined by organic agriculture is the only means towards a genuinely viable, grounded, long term way of nourishing ourselves and the world (GP1).

NZ should committ [sic] to being 100% GM free and become a world leader in Organic farming, products and technology -consultants to the world (GP137).

Organic's is the way to go & will be safest in the long run (GP175).

Go natural (GP195).

The alternative to GE is clear -organic is the only way to go (GP235).

There is evidence from overseas that demand for organic produce is increasing rapidly each year which indicates surely that the consumer is interested in the quality & safety of the food they eat. If NZ remains GE free, we could supply that organic market (GP363).

We should give full government support in research and education to developing organic farming, which is incompatible with genetic modification.... we can use our isolation from other countries to promote ourselves as an organic nation. We can take advantage of the premium for organic produce. Protection of our native bush and heirloom vegetables and fruits. Keeping control of our food-supply and environment in the hands of ordinary New Zealand citizens not international agribusiness (GP341).

New Zealand is an almost unique position as a small island separated by water to market itself as a GE free nation... (GP87).

... unique opportunity to band and market itself as a truely [sic] clean & green producer, when the rest of the world is racked with bureaucratic distrust & dishonesty & questionable agricultural practices (GP63).

New Zealand and GM-Free Embracement: Futurology

A sustainable system will increase organic matter in soils, diversify crops, integrate trees with crops and animals and conserve biodiversity.... NZ organic exports are doubling each year... The community together with government work to implement a genetic free Aotearoa (Hui6).

Increased demand over the last year has been confirmed by friends who work in a shop specialising on organic products. This is an observable trend not only in New Zealand, but also overseas, in particularly Europe .... The future of New Zealand lies in modern organic agriculture...(GP59).

It seems the rest of the world is pro-G.E, so therefore there will be a HUGE overseas market for Organics -Aotearoa can provide that... (GP55).

NZ has a modern organic farming industry which has a huge future in a world opposed to GE products... (GP53).

...-the marketing potential [for organics] in the future would be enormous (GP87).

New Zealand should aim to develop into a totally sustainable organic country (GP3).

...sell a unique tourism opportunity (GP289).

Over 70% of all NZers believe that NZ's future in agriculture lies in organics (GP297).

The solution to GE is already available -modern organic agriculture -this is the future that NZ should embrace (GP77).

Our future will be as a healthy organic garden for the rest of the world (GP73).

Organic 2020! We must for health not disease! (GP135).

We have better prospects keeping NZ produce GE Free and Spray free (GP131).

New Zealand, be indeed the first to see the light, as you have done afore, think of the future... (GP165).

When the rest of the world has no organic products due to genetic modification, New Zealand could supply the world with fresh GE FREE produce. New Zealand has the knowledge and the perfect growing conditions to be GE FREE now (GP141).

...the benefits to mankind from G.E are far outweighed by the benefits this country could reap by embracing organic agriculture (GP179).

We're sitting on a goldmine ... with making New Zealand GE-free. The organics industry is booming, the rest of the world (who are aware) are crying out to get rid of the genetically engineered food, and a few rich Americans are sitting in their offices pouring out propaganda, hoping they'll get even richer (GP251).

Organic is the way of the future (GP309).

The future is with organics, and NZ is perfectly, & uniquely set up to take advantage of this, as we have no borders with GE producing countries. We should seize this opportunity! (GP295).

Our future needs to be 100% organic for the good health of our people, our land our standing in the world (GP277).

Keep N.Z. natural and we can be the FOOD BOWL of the WORLD as well as raising healthy children (GP395).

I believe the future of NZ is in organic farming which is much more conducive to our clean green image (GP357).

NZ has a unique opportunity by selling organic GE free products worldwide. This is a great financial nitche [sic] that not many countries worldwide could meet as good as we can (GP365).

...we could have our own gold mine for food production for the ones who can afford to buy real food (GP337).

...this (no GM) could benefit our economy considerable by creating a unique position for the country as an environmentally safe haven (GP433).

What if the GM -free / Organic Utopia is not realised?

If we are to go ahead with genetic engineering we could be jeopardising our future existence on this planet (GP191).

An untimely death for all the inhabitants of this planet. Biological disaster (GP429).

...resistance against it is getting so strong in many countries that we could find one day that our exports are banned from Europe (GP39).

...once introduced, it (GM) then becomes irreversible, and New Zealand loses its privileged place to be able to provide to all those around the world... (GP311).

Compromises organic Production (GP355).

...organcis [sic] farming becoming obsolete (GP17).

Genetic Modification will ruin our organic trade (GP79).

The introduction of genetically engineered crops into New Zealand, would threaten, or ruin, the organic crops... (GP251).

Our future in organic produce would be ruined if we adopted genetic modification principles (GP305).

There is no guarantee that many years down the track after genetic modification has been introduced that some disaster / disease will not affect in the population. The organic industry....will be at risk (GP269).

...it (GE) will endanger the organic crops... (GP329).

Risk of mutant regeneration (GP233).

Scientific creations with genes thought impossible mutating... (GP379).

Once GE modified entities are created, it is likely we will essentially lose control over them (GP367).

...lots of people could die and animals could die to and plants could get sick (GP425).

INTERESTED PERSON SUBMISSION QUOTES

These are the submissions excerpts that were not included in the IP data presentation in chapter five.

Science and Ethics

GM Technology

GM is a tool. The utility of it must be measured against it's use in support of an economically, socially and environmentally sustainable society. GM is a powerful tool with enormous potential (IP49).

GM represents the latest tool in the continuum of techniques that plant breeders have developed and adopted for more than 100 years. ....Zero risk cannot be promised by any technology, and it can not be ensured by preventing the use of any technology (IP2).

As with many technologies there are uncertainties, potential risks and potential benefits (IP40).

A Risky Technology

It is our position that knowledge of the risks of genetic modification (GM) is at present extremely limited, uncertain and often based on assumptions that do not reflect the public interest (IP15).

... the outcome of GM research and filed trials is uncertain, that scientists do not 'know it all' and that there should be more research into possible long-term effects of GM products and technologies (IP21).

The primary reason the organic movement is opposed to genetic engineering in the open is that the risks are quite unacceptable. What is worse is that if an unwanted result occurs in the wild, it is likely to be irreversible (IP7).

GM:... is relatively untested (IP5).

Little research has been undertaken in New Zealand on the potential adverse effects, or risks of such effects, on indigenous biota from GM. The Commission should recommend that the government urgently correct the serious under-investment in such research (IP22).

...this is an unproven technology with unknown long term side-effects (IP3).

...unexpected and undesirable effects have occurred in GM organisms and these have generally been picked up only by accident, after approval for release, or by others than the researchers involved (IP17).

The lack of clear an informed understanding of the issues, coupled with potentially high risks New Zealand is not in a position to fully comprehend, leads the Federation to question the safety of future biotechnological practices (IP13).

...no sound safety protocol exists to test the long term safety of genetically produced food and medicine for human and animal health (IP50).

Accidents and illegal activity have happened and will no doubt continue to happen... (IP45).

There are no boundaries inherent in this technology (IP49).

Justifying GM technology

...we like most in the scientific community believe given adequate controls the genetic modification of organisms can be controlled for the benefit of man. ....concerns should not stop the progress of science and the significant benefits that this will be [sic] give to man kind and this country (IP29).

Our submission is to underscore the importance of GM, GMOs and products in the application of Human Genetics for the benefit of scientific progress and, equally importantly to the HGSA, the health care of patients and their families (IP20).

Globally, the market uncertainty surrounding the acceptability of GM will change over time as perceptions of safety and the benefits of specific GM crops / products are better understood (IP40).

Scientific data from field trials are essential to supply evidence on environmental effects and human safety (IP16).

New Zealand has many opportunities to further develop its knowledge-based biological industries so that they are market, not producer driven, competitive, profitable, and environmentally sustainable. This requires that leading edge technology such as that provided by genetic technologies, is available and can be applied. ....The science of plant breeding has always involved the modification of genes, and a wide range of techniques other than genetic engineering have been used to produce the cultivars used in New Zealand. ...allow New Zealand to continue to compete successfully with GM and non-GM products in international markets (IP2).

To stay in business and expand, the New Zealand forest industry must stay internationally competitive. Companies must have the option of using genetics-based biotechnology applications to improve competitiveness and keep up with or ahead of competitors (IP34).

The ability of the University to attract and retain research and teaching staff of international standing in several relevant disciplines is dependent on access to GM technology (IP52).

Use and/ or understanding of genetic technologies is an important part of the training for many of these individuals [health researchers]. In the current year [2000] 30% (84) of HRC contracts valued at $16.1M (40%) involve the use of genetic technologies (IP19).

Access to and the use of genetic technologies presently form an integral part of and are fundamental to the academic, research, postgraduate training and teaching functions of significant components of the University (IP3).

The newer rDNA techniques of agricultural biotechnology are an extension of traditional breeding practices. Researchers are working with crop varieties about which we already have a large amount of knowledge. Modified plants are not fundamentally different from their traditional counterparts: new traits are transferred exactly as any other gene in the plants genome (IP26).

In some cases, contained field trial experiments are necessary to evaluate the performance of genetically engineered trees outside the laboratory, and to provide data on the biosafety of such material... (IP14).

Organic growers welcome the development of many aspects of biotechnology (IP6).

Challenging justifications of GM

It is incorrect to state that organics could benefit from GM technologies as organic production is based on sound principles of natural ecological sustainable systems. We do not believe that GM technology is addressing or has the ability to address the real needs of global sustainable agricultural systems and food supplies (IP5).

This is the most transparently greedy and ecologically dangerous technology of all (IP44).

Despite the current commercial release of GM benefiting producers in reducing costs and /or increasing yields, how far this has translated through into actual increased producer returns is questionable (IP32).

Current funding for research would seem to be directly only at outcomes which satisfy economic goals. Unlike traditional breeding, GM mixes genes across species and kingdoms in ways that do not occur naturally. Claims of some GM producers to solve world hunger are unethical. Real solutions lie with the eradication of poverty and with fair distribution (IP47).

The proponents of introducing GE technologies into the open environment appear to have very little argument for so doing other than keeping up with the Jones's. ...enough food can be produced to feed the world's expected 8 billion people given that the current level of agricultural technology does not change. A number of trials that have been conducted with respect to claims of higher yields for some GE crops have not shown any significant increases (IP7).

A Question of Ethics

GM has profound cultural and ethical implications (IP49).

We need to look at genetic engineering in the widest possible contexts and see if it will maximise benefit for all life forms or for only a few (IP11).

Ethical concerns include the need for autonomy and the rights of all to give or withhold informed consent regarding GM. The church has a strong sense of responsibility for others and there is a commitment to ensuring that research and applications of GM technology should be made with real consideration for the needs of all people, especially the poorer countries and the disadvantaged throughout the world (IP21).

Patents and Control of GM Technology

New Zealand reject the patenting of life forms and genes. ...ensure public ownership of all GM information. We reject the validity of property rights over life-forms and genes. No GM crops should be planted in New Zealand. Public interests and biosphere security must take absolute priority over vested interests (IP47).

...companies are involved in the construction and development of laws of ownership, domination of world markets and spread of this technology. The patenting of life forms is based on the assumption that nature can be controlled and life owned because it has been constructed (IP28).

Patenting life, whether organisms or genes, has led to an unhealthy relationship between science and commerce and a scramble to secure intellectual property rights which is inimical to the proper and cautious use of science for human benefit. ...only genetic processes and technologies should be patented, not life itself (IP17).

We do not support the patenting of human genes and are particularly concerned about the possibility of exploitation of Maori or other groups in New Zealand who may be the subject of research (IP21).

...economic impacts of GM are the benefits to the developers of technology and the marketers of this. These benefits are dependent upon the ability to patent these technologies in the main markets in the world (IP32).

Economic power or vested economic interests should not be allowed to become the prime driving-forces in decisions regarding the use of, and access to, genetic modification (IP31).

Participation in, rather than control of, the natural world is encouraged. We therefore advocate a science of participation rather than a science of control (IP36).

The Intellectual Property regime of the free trade agreement is bringing about patenting of staple food crops. This is a human rights issue particularly in the third world where most of the world's people live. Over 30 patents have already been issued for Terminator and Traitor technology, which is designed to make farmers chemically dependent and prevent them from saving their own seeds. Ninety percent of the world's biological wealth is in the developing countries in the South -yet industraised [sic] countries hold 97% of all patents worldwide and are driving the rush to patent genetic resources (IP44).

GM of crop varieties is not good objective science. GM: ... will concentrate control of food production and supplies in the hands of a few multi-national companies (IP5).

Cultural / Spiritual Considerations

DuPont recognises the advances in biotechnology raise ethical and religious questions and concerns and therefore, seeks to understand and address those concerns. DuPont believes restricting biotechnology also raises important ethical and moral questions (IP10).

...the Crown has an obligation to give at least equal weight to Maori spiritual and cultural views as to the scientific perspective and that this involves recognising kaitiakitanga and the reciprocal relationships between Maori and their whakapapa (IP17).

The protection of native flora and fauna, where traditional knowledge has its basis for art, design, medicine, religion and language, is of particular importance. ....A central component of the claimants' case is the lack of recognition given to Maori values and practices in relation to genetic modification. ...as native flora and fauna are taonga, and each have their own whakapapa related to the whakapapa of all other living organism, the process of tampering with whakapapa is inherently contrary to tikanga Maori and the Maori world view. ...maintain, respect and preserve traditional knowledge and cultural practices in relation to biological diversity (IP53).

While there is an obligation on Maori to understand the science of GM, there is an obligation on proponents of GM to understand the spirituality and traditions of Maori (IP31).

Interfering with Nature and 'Playing God'

We base our concerns about genetic modification (GM) on the spiritual and ecological understanding that all life is sacred, and that all life forms are interdependent and interconnected. The coherence of the biosphere is complex and precious (IP47).

It involves gene manipulation that would not normally occur in nature resulting in organisms of doubtful genetic stability (IP6).

...all about the balance that must be maintained between the land, flora, fauna and mankind (IP37).

GM is an unnatural technology (IP5).

Spiritual concerns raised include a sense of humility. Do we have the 'right' to manipulate 'God's world' in this way? (IP21).

There is a theological or 'natural law' objection to GE ... The purpose of these commandments is to preserve the essential nature of God's creation. It is a prohibition against 'playing God' by means of the creation of new life forms. This is a technology that could exert some far-reaching and disastrous effects upon the world in which we live, and Jewish tradition demands that we take care to avoid unnecessary risks to our health and safety (IP36).

Personal Health to Environmental Health

GM Health / Medical Advantages

...protect and improve human health... (IP40).

As the only hope of a cure for these conditions [cystic fibrosis], research using genetic modification must be allowed to continue (IP 9).

The practice of modern medicine often involves the use of GM based therapies. This is likely to increase over time as more GM based medicine becomes available (IP8).

It's [GM] use and benefit in medicine are relatively well documented (IP49).

What has been missing till now is the technology to complete the technical work to produce treatments and in some cases cures. Genetic modification technology offers that possibility. ....The benefits of GM for LSD's are noted along with the absence of any disadvantage to others from its use for this group (IP23).

HRC-funded research involving genetic technologies has made significant contributions to our understanding of health and disease. ...the importance and value that research involving genetic technologies has played in furthering our understanding of diseases and as a result contribute to the health of New Zealand society (IP19).

Potential benefits... include human health opportunities (new vaccines, medicines etc)... (IP25).

The use of genetic modification techniques for the treatment of haemophilia and research for future treatment options, is an excellent practical example of the use and benefits available from this technology (IP18).

Assuming that safety issues are resolved within acceptable limits of risk, the use of GM in somatic cell therapy is ethical and in accord with the healing tradition of both medicine and the Church (IP31).

GM Health / Medical Disadvantages

There is an essentially unknown risk to human health... (IP45).

Claims made about prospective medical benefits of GM technology need to be viewed with great caution (IP47).

GM:... poses unnecessary risks to health... (IP5).

...the possibility of catastrophic and irreversible damage to human and other genomes, genomes which have developed over millions of years, from the application of GM technology. ...an immediate review of all GM medicines....and an immediate halt to the further development of GM medicines without proper research and controls... (IP15).

GM Food

Organically grown products are no more inherently safe than GM products. ...it is the properties of foods which should be the target of risk assessment, not the process by which foods are produced (IP2).

ANZFA's comments: "In assessing the safety of a genetically modified food, a key factor is the need to establish that the food is nutritionally adequate and will support typical growth and well-being" (IP27).

GM Food as Positive

Fears about the safety of foods from GM plants are unfounded. There are no known credible ... adverse health effects of consuming GM foods either in New Zealand or worldwide. GM technologies have the potential to: increase food quality and nutritive value from both New Zealand's organic and conventional production systems (IP2).

All proteins or genes introduced into genetically enhanced foods are assessed for allergenic potential early in the development process in order to prevent any occurrence (IP26).

GM Food as Negative

There are concerns therefore about the extent to which those on low incomes will have a higher risk of exposure to GM food - given the relatively high price of GM-free alternatives (IP32).

It is often stated that GE derived foods are the most extensively tested food in the history of humanity, and that there is no evidence of their doing harm. Such a belief is based on a false paradigm that ignores the tryptophan disaster of the late 1980's early 1990's where a faulty batch of GE produced tryptophan affected thousands of consumers, permanently maiming more than 5,000 and killing perhaps as many as a hundred. The company that manufactured the tryptophan destroyed all traces of the GE bacteria used to produce the tryptophan before it could be tested (IP27).

For us as Jews, GE food is not only potentially hazardous, but also unacceptable on religious grounds. The Torah's concern here is with upholding species integrity. Therefore transgenic foods in general are halachically (i.e. In Jewish Law) unacceptable (IP36).

Environmental / Ecological Issues

There is belief that we have a duty of care to the environment in which we live, and which we will leave for future generations... Environmental issues also include the requirement that GM crops should only be used if their dissemination and physiology is substantially understood and controlled, and that the rights of others e.g. organic farmers, are respected (IP21).

Environmental / Ecological Benefits

Biotechnology has potential applications within plantation forestry which would improve that sustainability. It could also deliver productivity and environmental performance benefits for the processing sector as well. Improvements through biotechnology are expected to enable forest managers to meet the growing demand for paper and wood products while strengthening their ability to manage forests in a sustainable manner for the benefit of future generations (IP34).

...improvements could also lead to strengthening their ability to manage their farmers, plantations, orchards, crops and/or vineyards in a sustainable and ecologically efficient manner (IP13).

The broader benefits include reduced risk of soil erosion, reduced pesticide exposure, ...switch to crop protection products with a better environmental profile (ie. toxicity, residues) and compatibility with integrated crop management systems (IP4).

...the community benefits from reduced pesticide usage, reduced fuel usage and therefore reduced CO2 emissions. Allow the use of more environmentally friendly herbicides in crop production (IP10).

Potential benefits ... include ... environmental outcomes (...land sustainability, reduced fertiliser and chemical inputs etc). ...possibilities for new diagnostic tools, animal health products and Marker Assisted Selection (MAS) programmes to improve productivity, meat quality and plant benefits. ...biological control of pests... (IP25).

Landcare Research New Zealand believes that some aspects of GM... are required to help achieve the organisation's statutory obligations and strategic intent... ... cleaning up contaminated sites. GM offers more precise and better targeted ways of addressing these intractable pest problems, which could reduce or avoid the risks of current control methods, and reduce New Zealand's reliance on large scale use of broad-spectrum poisons (IP22).

GM technologies have the potential to: assist New Zealand in achieving its environmental goals (IP2).

GMOs may sometimes offer solutions to otherwise intractable problems and may have less environmental impact than alternatives, even though the alternatives may be preferred by organic producers (IP38).

The use of GMO's has shown no negative impact and can be of significant benefit to the environment. Safety assessments are rigorously applied to the use of antibiotic resistance markers in plant biotechnology. Monsanto considers that use of genetic modification in agriculture, particularly horticultural development would be to New Zealand's advantage (IP26).

Environmental / Ecological Risks

..it threatens the natural environment (IP6).

GM:...poses unnecessary risks to ...the environment (IP5).

The social and environmental ramifications are huge (IP28).

It is our contention... that GE technology in today's circumstances, does endanger the environment and what is worse, has the potential to damage the environment in ways which are irreversible. ...logistics of attempting to eradicate the millions of organisms in a disastrous trial... (IP7).

We should not participate in uses of GM or trade practices which infringe upon the rights of other peoples, reduce biodiversity, or threaten sustainable agriculture (IP31).

Unknown effects on soil ecology (IP42).

There are specific health and environment dangers of increasing the amount used of glyphosate, the active ingredient of Roundup. ...the rush to use this new technology could result in irreparable damage to our environment (IP45).

The risks occur ... [in] the natural environment particularly to soil ecology from GM crops or trees (IP17).

Retaining a "Clean, Green New Zealand"

Regulatory processes need to assess all risks and benefits including those related to organic production and New Zealand's "Clean, green image" (IP40).

...the perception of GM status of New Zealand food production will influence the buying behaviour of consumers for all New Zealand products. Adverse consumer opinion caused by the perception of New Zealand as an exporter of GM foods could jeopardise a significant proportion of the kiwifruit industry's contribution to the national economy (IP54).

Contamination / Pollution

Gene transfer through pollen shed or seed dispersal from genetically engineered trees can be eliminated in a contained trial situation. Contained field trials are designed to minimise the risk of horizontal gene transfer in to the environment... (IP14).

While there is some potential liability from an escape or an unintentional spread of an organism, MNZ views this possibility as less likely and therefore less damaging as compared to the risks and consequential damage associated with the loss of key strategic genetic assets and the depletion of our scientific resource base (IP25).

The out-crossing and seed contamination from G.M. allows organic growers no possible isolation (IP6).

Earlier this year 30,000 acres in Europe was contaminated by GE canola, horizontal gene transfer was found to have occurred between micro-organisms in the bee stomach and canola pollen, threatening our pollinators and thus our ecosystem (IP28).

If GE crops are permitted to be grown in the open on a commercial scale, it has been demonstrated... that cross-pollination is likely to occur (IP7).

Pollen drift resulting in cross-pollination with other plants which will have adverse effects on organic growers, unwittingly affect consumers, and interfere with our capacity to meet stringent pure food standards, being driven by concerned consumers... (IP50).

Cross boundary contamination would pose an unacceptable threat to certified organic farmers and farmers considering conversion to organics, and would reduce the ability of farmers to choose organics as an option for their operation (IP5).

GM as Compromising Biodiversity and Species Survival

...particularly harmful effects on indigenous species of plants and animals by increasing competition for suitable habitat and food resources. We are concerned that genetically engineered DNA might persist in soil ecosystems after the death of GMOs, and be taken up by bacteria which could act as carriers to higher organisms (IP24).

Before New Zealand embraces a new and powerful technology we need to ensure that it will not cause further loss to our biodiversity (IP11).

Maintaining bio-diversity and the integrity of ecosystems is vital to keep the whole in balance. GM threatens...[this]. The results of GM crop production cannot be adequately controlled or predicted thus compromising bio-diversity (IP47).

Random creation of mobile genetic vectors in the environment which can debase the stability and viability of genetic structures which underpin all life forms (IP50).

The NBA is concerned at the impact of GM-organism research and experimentation within New Zealand, on the NZ beekeeping industry (IP46).

Unknown effects on worms feeding on GE modified residues (IP42).

Science is now showing that GE crops have unanticipated ecological impacts: research at Cornell and Iowa State Universities has confirmed that Bt corn pollen kills Monarch butterflies and other lepidoptera. Research in Europe shows that GE crops damage beneficial insects, including lacewings and ladybugs. Beneficial insects that prey on aphids which have consumed Bt toxins have lower survival and reproduction rates than those which feed on healthy aphids. This impact was not researched or anticipated prior to release (IP44).

...mixing up the species causes a deep disruption in the subtle fabric of nature (IP36).

Future Generations

Because the resources of the earth are not owned by any one generation, we have serious responsibilities to future generations in our stewardship of the earth (IP31).

Information formation, Liability and Regulation

Public information and Perception

There is a public concern regarding the use of GM technologies and GM products in New Zealand. ...a fear of the unknown and a concern that there is insufficient information and understanding for people to make good decisions (IP21).

...proposed enhancements: transparency and easy flow of information on the application process and applications to the general public. ....The gap between what science and the public understand of the issues is large and requires time to allow for substantive discussion, full and informed consultation and the addressing of ethical, spiritual and cultural issues (IP13).

Ongoing discussion of all issues and continued public education need to be encouraged between scientists and the general public (IP16).

..a programme is instituted to educate the public about genetically modified organisms and products (IP3).

Community fear reactions and other beliefs... recommending public information and education efforts (IP23).

...foster professional and lay education in Human Genetics. ...promote public awareness and understanding of Human Genetics (IP20).

There is a need to educate the public, make known the facts and present both sides of the argument for and against Genetic Modification (IP9).

There is a need for education on what genetic engineering really is so that people can assess it in a more natural way without being influenced by the proponents or opponents of the debate. When appropriate it should be used, and it cannot be put into one category. There is no intrinsic ethical objection to GM by most people (IP12).

DuPont accepts that there are concerns amongst the public about aspects of gene technology. While much of these concerns arise from misinformation or alarmist exaggeration, we nevertheless believe that we should proceed with caution. ...as much information as possible should be made available publicly (IP10).

The trading of endless expert opinions which has been occurring can overwhelm those people who do not have specialist knowledge, leading to the rejection of some new technologies that may be potentially good (IP31).

Vigorous, wide ranging and informed debate is needed on the merits of different alternative control tactics (IP38).

The Green party approach to genetic modification is founded on our first principle of ecological wisdom. ....This is contrasted with the reductionist view of science which sees nature as purely for human use and the whole as equal to the sum of the parts. These two conflicting paradigms underlie the public debate on uses of genetic technology (IP17).

Public consultation during policy formation and during evaluations is an integral part of many of our Government Systems for dealing with GMOs. Public acceptance of the products of modern biotechnology is a key challenge for Aventis globally. The government role includes encouraging investment in innovation, knowledge and people, gathering information from all global resources and communicating it to inspire confidence and create new opportunities for all New Zealanders (IP4).

Monsanto supports the right of the general public to be consulted on important issues. It is essential that the public is well informed and that an appropriate organisation is resourced to present issues (IP26).

Formulating the law

There should be clear justification that the work cannot be done any other way without us [sic] of GMO technology (IP3).

The use of GM crops and foods is contrary to sound science and the laws of our country. It relies on systematic deception of the public and their political representatives. Only through a complete and permanent ban of GM foods (not just a moratorium) will the hazards be adequately curtailed... ...economic, political, environmental, and health imperatives support the opinion of the overwhelming majority of New Zealanders that there is no need to take unnecessary risks with genetic technology (IP50).

...GM should be embraced with enthusiasm (IP23).

...represent the views of society and its members in other public, professional and governmental forums (IP20).

New Zealand needs to fully assess the world situation. Look at what is actually happening overseas and see the impact of genetic technology before making any hasty decisions (IP11).

Society has not been consulted on the patenting of life. What chance does the ordinary member of public have to review the manipulation of laws, national, international and global and regulations that govern both food and environmental standards in regard to the use of GE (IP28).

...the current voluntary moratorium on GM trials should not be continued... (IP40).

DuPont submits that there is no case for a moratorium on the development of biotechnology. Decisions to be based on public benefit and the national interest (IP10).

Genesis submits that the voluntary moratorium on field trials and release of genetically modified organisms be lifted. (IP16).

A moratorium would create a climate of uncertainty that would discourage monetary and scientific investment in New Zealand (IP26).

A moratorium should be put in place for all outdoor GE, failing the adoption of a GE-free stance for New Zealand (IP45).

...establishment of a Moratorium and a permanent Commission to regularly review the relationship between ethical integrity and commercial opportunities or needs, and from those determine the suitability of using the scientific resource. The NBA believes that the issues (the threats and opportunities of the research and the applications of gm science), must be evaluated against, firstly, the ethical concerns of human and animal health... (IP46).

A continued moratorium on releases pending development of ... [a] charter. Most NZ based research is, at this stage, still a decade or more away from commercialisation (IP49).

...the moratorium on genetic modification continue until after the Waitangi Tribunal has issued any interim recommendations on this issue, and until after those recommendations have been the subject of negotiation and resolution with claimants (IP53).

...much more research before proceeding with further commercialisation, in fact a moratorium on commercialisation of GM in agriculture. The scientific evidence regarding the risks of genetic modification, the lack of research into impacts, and consideration of the impacts, locally and globally, of its commercial application warrant a very precautionary approach (IP44).

It is important for NZ, as a small player even in agricultural terms on world markets, to target high value markets, which through policy and or market preference, are concerned with the quality of food and how it is produced. ...it seems the preferred option would be to delay commercial release of GM food until the extent of the negative consumer attitude can be seen and the producer benefits become more apparent. The NZCTU supports a high level of transparency about GM products (IP32).

The organic sector is not asking that all research into genetics be curtailed. It is asking that it not be permitted outside strictly controlled and secure laboratories until it is clear that the science has developed to a stage where outcomes can be accurately predicted. ...the commission prohibit any field trials of any GE crops until the science is a great deal more certain... ...the commission allow research in GE techniques to proceed only in the strictest of secure containment so that in the event of unforeseen and unwanted results the experiment cannot only be terminated but the resulting genetic material destroyed (IP7).

...the immediate and total ban by legislation of all GM food... (IP15).

New Zealand Forest Industries Council supports: the clarification of current regulations with respect to the interpretation of the precautionary principle (IP34).

Legislation / Regulatory Requirements

....and because genetic modification can have unpredictable results, the Precautionary Principle must rule (IP47).

New Zealand should follow the precautionary principle, which is recommended when there is uncertainty and the level of harm may be high. Section 44(b) of the Hazardous Substances and New Organisms Act 1996, and consequent monitoring and compliance sections of the Act should be amended (IP45).

...the Hazardous Substances and New Organisms Act 1996 and ERMA frameworks should be retained but recognition must be given to the fact that GM risks range from very high to very low (IP41).

...rigorous testing and regulatory safeguards that carefully consider both human and environmental protection (IP10).

...changes are required to the HSNO Act as it applies to genetically modified organisms (GMOs) imported into or developed and held in laboratory-based containment. These changes are required in order to introduce processes that are commensurate to the level of risk involved and are in line with international practice. (IP52).

...the HSNO Act provide[s] more than adequate protection to the New Zealand environment and the health and safety of New Zealanders. ...an industry code of Practice for GM crops be established, the AFIC also recommends that the Code of Practice be developed by cross-industry agreement so that legislation is not required. The AFIC recommends that the Crown approve and encourage the responsible research, development and application of GM in New Zealand for the benefit of New Zealand and all its citizens. ..the role of ERMA in the management of GM organisms in New Zealand be endorsed...(IP2).

...field trials be continued as implemented by the Environmental Risk Management Authority New Zealand (ERMA) in a controlled manner (IP16).

...ERMA should listen to Maori concerns and thesei [sic] concerns must not be overlooked in their final decision-making. ...an independent NZ Genetic Modification Ethics Council be set up specifically to address the ethical and spiritual concerns being raised by many New Zealanders, in relation to all GM research and applications. That moneys be allocated from the current public good science funding to carry out research into the ethical and spiritual implications of GM technology in New Zealand (IP21).

Specific case consent should be determined by an independent non-Governmental organisation akin to the Environmental Risk Management Authority (ERMA), with provision for public discourse and input. FoMA supports case-by-case consent for the exploration into and practice of biotechnology research and development... (IP13).

...independence of the ERMA from other branches of Government, as a means of maintaining both its objectivity and independence. We believe the risk to New Zealand from forest industry applications of biotechnology can be effectively managed through a regulatory system that relies on comprehensive risk assessment of specific applications (IP34).

New Zealand needs a regulatory mechanism that removes uncertainty, protects us from risks but still allows us access to the benefits of GM technology. In particular there must be provision for post approval controls and monitoring (IP40).

...legislative provision being made for robust, independent monitoring and control of any releases into the New Zealand environment (IP49).

The Worm Federation wants verification that research testing will be done fairly and accurately by a non-biased [sic] institution using a methodology that is appropriate to address long term soil microbial health and worm health (IP42).

...a high level of delegation, and external monitoring using a standards-based approach (IP23).

Our experience around the world has shown that public confidence results from sound regulatory policy. It is important to Aventis that regulatory systems for genetically modified products are transparent, expedient and where possible, internationally harmonised. The government role is to establish workable

legislation and transparent efficient systems for assessment of the risks and benefits associated with the novel products resulting from gene technology (IP4).

Monsanto supports the existence of robust and well-conceived legislation governing the introduction of new organisms to any country's environment (IP26).

...tracability from farm to fork, needs to be enshrined in law to prevent deliberate mixing of GE and non-GE products and ingredients as would seem to the case now (IP27).

Landcare research believes that the current knowledge of the potential benefits and risks warrants a cautious and transparent continuation o the use of GM in research... ..routine GM research tools should continue to be permitted, subject to an appropriate regulatory and approval regime (IP22).

...must be supported by sound ecological underpinning science, both before and after field trial and commercial stages. This will give maximum confidence and minimise ecological risk (IP38).

In order to prevent unethical or unique use of GM, oversight of its use by appropriate bodies, established by regulation, is a moral imperative. As well as being ethically sound, regulation should act to facilitate and not inhibit appropriate ethically acceptable research, technological advancement, and industry (IP31).

...promote the establishment and maintenance of high ethical standards among persons working in Human Genetics. ...promote the establishment of high standards of professional practice among persons working with Human Genetics. ...facilitate communication between persons working in Human Genetics. (IP20).

A high standard of ethical behaviour and disclosure is also expected. Advisory groups to government must be developed and include people with clinical problems likely to be impacted by genetic technologies (IP18).

Legislation / Regulation as too strict / difficult

[Current processes are] ...hampering innovation (IP29).

...restrictive regulation on the use of GM therapies may result in a loss of medical practitioners from New Zealand (IP8).

We propose a relaxation of the excessive ERMA / HASNO regime back to a more sensible level (IP23).

We consider the current legislative framework to be basically sound, but in order to progress the profitable use of this technology, a number of changes have been proposed (IP25).

Genesis submits that amendments are made to the regulation of development of low-risk genetically modified organisms (GMOs) in containment to shift emphasis from detailed applications for every GMO experiment to monitoring appropriate levels of containment (IP16).

...streamlining of the approval processes for low risk lab research and containment trials (IP49).

Currently all GM related activities are treated as very high risk, with the consequence that those involved in low risk, routine GM work experience unreasonable delays in approval and excessive compliance costs. This...is out of step internationally and is seriously affecting university research and teaching activities (IP41).

The university contends that the current approval process is overly rigorous and generates unnecessary information that does not assure quality risk assessment. Because the regulatory regime for GM research differs substantially from equivalent regimes in Australia, the UK and the US, there is a negative impact on

the University's ability to recruit high calibre staff, attract international students, teach programmes which are at the forefront of knowledge, and produce graduates and researchers who are able to function internationally and whose degrees and qualifications are accepted internationally (IP51).

Some of the provisions of the HSNO Act (1996) have had significant negative impact on the University's ability to carry out such research and have significantly and unnecessarily increased the compliance costs associated with GM research (IP52).

Some aspects of current regulations in New Zealand are inordinately onerous and present a financial barrier to research and development (IP26).

Need for Stricter / more Adequate Legislation / Regulation

...a regulatory regime must be established and robustly administered. All licensed "dealings" to have a risk management plans which will be monitored (IP10).

The Treaty of Waitangi

The claimants seek recognition of their tino rangatiratanga over those taonga. ...access to those [taonga] resources to further scientific research and development must require consultation, negotiation and benefit sharing with those whanau and hapu. ...the intellectual property rights system which is at odds with indigenous knowledge systems in these [sic] country, and the regime established under the Hazardous Substances and New Organisms Act, ... completely fails to provide for rangatiratanga of tangata whenua in relation to decision-making on issues of genetic modification (IP53).

PIRM questions the legality of approving GMOs while the WAI 262 Claim is proceeding. The Crown must respect the vital aspects of Maori culture, such as mauri and whakapapa (IP44).

The other world view which must be seriously taken into account under the Treaty of Waitangi is the Maori view, which is compatible with and embraces ecological wisdom (IP17).

MNZ is of the view that the Treaty of Waitangi requires the Crown to promote the well being of all people and in particular seek enhanced economic prosperity at all levels. This should not be at the expense of the economy, the environment or any interest group (IP25).

The Churches support a bi-cultural stance and recognise the importance of the Treaty partnership. This is reflected in recognition of the Crown's responsibilities under the Treaty of Waitangi... (IP21).

Consumer / Producer choice

We believe that consumers have the right to know what they are purchasing. ...informed consumer choice through meaningful information and product assurances (IP10).

Democratic and consumer rights are being violated by GM industries (IP47).

...individuals are entitled to be concerned at these developments and have the choice to avoid them if they wish (IP29).

Freedom of choice is important when making decisions in life or death situations -Cystic Fibrosis sufferers must be allowed to have access to genetically modified products if that is what they choose (IP9).

...the deer industry needs to be very aware of consumer preference and act accordingly (IP35).

Where products are acceptable to a significant section of New Zealanders, wherever possible products alternative to GM products be available to safeguard the right of all consumers to choose (IP21).

The key strategy is to have choice in therapeutic products in association with education and information and informed consent (IP18).

GM:... will reduce farmers choices. Many consumers currently oppose GM for a variety of reasons, either "emotively" or "scientifically" or through a combination of both. Introduction of GM based agriculture is contrary to public (both rural and urban) opinion (IP5).

Agricultural businesses, farmers and consumers should be given the option to choose the best products for their sustainable prosperity and benefit to the environment and broader society (IP4).

Companies should have the option of enhancing what is already a sustainable industry through access to biotechnology (IP34).

...what do we find? Labelling denied, people have been forced against their better judgement to eat these genetically engineered products since many foodstuffs are imported from the US where millions of acres of contaminated crops are grown. Having no choice of refusal the growing of GE crops has been proliferating (IP28).

NNFA members strongly believe that consumers should be able to make informed choices about what they eat. Many consumers choose not to eat GE foods and have a fundamental right to know whether food or food ingredients are derived from GE products (IP27).

MNZ considers the technology and its application in terms of food safety and environmental impact to be sound and safe... However, MNZ will not sanction the use of GM products (transgenics) in the food chain, unless consumer views change significantly. Our strategy recognises consumer concerns relating to GMO's and the importance of maintaining the strong natural positioning held by New Zealand Meat and as a consequence is deliberately conservative in the use of gene technologies (IP25).

Labelling

...there should be mandatory labelling of all products containing GM-organisms... (IP46).

...there should be freedom, supported by labelling and information, for consumers, marketers, and producers to exercise their tight to or not to consume, market or grow GM products or crops (IP40).

That GMO material brought into the country must be appropriately labelled (IP3).

The implementation of food labelling laws will generate improved understanding and choice for consumers (IP54).

...it is essential that there be comprehensive labelling (IP17).

...GE food... would need at the very least to be comprehensively labelled as such (IP36).

GE crops have been rushed to market without proper testing, and with no labelling (IP44).

Monsanto supports food labelling programmes that provide safety or nutritional information to consumers. The individual must have sufficient information for freedom of choice (IP26).

International Pressure / Considerations

There should be an awareness and concern of the impact of our controls on genetic modification on our position as a free trading nation and also of increasing consumer and political concerns internationally (IP29).

...the NBA accepts that such an opportunity [GM-free NZ] depends on the international consumer perception of the value or danger of products produced from, or containing, GM organisms (IP46).

New Zealand has a strong reputation of being at the forefront of scientific discovery particularly in terms of horticultural crops. Any decision to isolate our selves from technological advances will impact negatively on our future market position (IP40).

...the University of Otago has a major involvement in the application of the techniques of genetic modification (GM) and this involvement is crucial to the maintenance of the international standing of the University. GM technology is critical to a large amount of internationally competitive research that is carried out by the University in order to advance knowledge... (IP52).

The impracticality of isolating NZ from world use of GM, including possible legal impediments... and other global considerations, in particular NZ's medical research links... (IP23).

The protection of New Zealand's biodiversity is a national imperative and an international obligation which can be most readily achieved by having available to conservation managers a full management toolbox that includes GM technology (IP22).

Restrictions or significant differences in the regulatory environment from that of our international counterparts will place the University at a disadvantage (IP51).

There are significant risks to the deer industry and New Zealand of not meeting our international trade obligations agreed through our membership of the WTO... (IP35).

Genetic technologies are recognised world wide as important scientific techniques and the international peer review used by the HRC to assess research proposals will expect our scientists to be using them if our investment is going to contribute to knowledge and to improve health outcomes and to reduce the disparities in the health of our society (IP19).

We also need to bear in mind New Zealand's international obligations, and that New Zealand relies on international pharmaceutical companies to meet our needs for recombinant in establishing therapeutic products. Our supply framework must therefore be compatible with other countries also seeking to secure stocks (IP18).

New Zealand must continue to meet its trade obligations. ...the crown... should actively oppose international protocols and agreements that violate scientific principles. New Zealand must be in a position to respond to international market preferences and must have protection for its intellectual property. ...New Zealand's approach be compatible with international practice in the treatment of intellectual property (IP2).

Any measures adopted in New Zealand with respect to the regulation of biotechnology must consider the approaches adopted in those countries with which we compete in international markets. It is also important that domestic regulation

of the import and export of biotechnology products is consistent with our obligations under the World Trade Organisation as well as any relevant multilateral environment agreements (IP34).

Internationally, the race is on to develop and patent economically important applications (IP49).

...from the perspective of a global company, DuPont can say that the New Zealand economy has much to lose by turning away from the technology, including gene technology (IP10).

Issues of Liability / responsibility

Liability for situations whereby the project fails to operate within the parameters by which the application was given consent to proceed, shall remain squarely on the primary parties involved. Primary parties are considered to be ... namely, the company undertaking the research and where applicable the landowner on whose land the project is undertaken (IP13).

Liability should be assessed on a case to case basis and be dependent among other things on whether the assessor failed in his/her duty of care, the applicant failed to follow agreed procedures, or someone with criminal intent sought to compromise a legally approved activity (IP34).

If there is to be continued research using GM ... then there must be adequate safeguards for workers in all circumstances and at all stages (IP32).

Solutions? GM- free Versus GM Embracement
The Co-existence of Organic and GM Technology

Genetic Engineering is no use to Organic agriculture and the environment that surrounds it (IP43).

Reconsideration of GM cropping in NZ as it is felt the allowance of GM agriculture in NZ could pose a serious threat to the entire organic agricultural industry of which the NZ Worm Federation organic input market is a part (IP42).

...because cross pollination can and has occurred, it is clear that agriculture using GMOs is not possible side by side with organic agriculture without a very wide buffer zone in the order of kilometres, rather than metres. Should GE crops be permitted in the open, even with the added safeguard of wide buffer zones, it is unlikely that a valid claim of being GE free could be made (IP7).

Justifying a GM Future

GM Technologies have the potential to: deliver economic benefits to New Zealanders (IP2).

The NBA believes that the issues...must be evaluated... secondly, against the overall commercial values to the NZ economy from the applications (or avoidance) of GM science (IP46).

Current state of scientific knowledge is weighted in favour of GM presenting minimal risk... (IP35).

The peoples of New Zealand are being offered a technology that promises undreamt of solutions to the problems that beset the peoples of this planet in the 21st C (IP28).

New Zealand cannot afford to turn its back on these promising developments. Reliably and safely increase the productivity of each acre of land... (IP10).

New Zealand's research and development programmes, must in the future use new biotechnology tools, to accelerate the rate of gain in our local industries and to

stay successful in an increasingly competitive and global market. The direct economic gains in the meat sector (before any risk discount is applied) calculated as Net Present Value, are extremely positive. ...we can be market led, prudently adopting this new technology in order to retain and improve our position in the global trading environment. ...New Zealand should take a strategic option consistent with the need to enhance sustainable competitiveness in the international economy (IP25).

The value added to products through the use of GM far outweighs the added value of the organic option. New Zealand's primary producers would be the main beneficiaries of the technology, and access to the technological research is a major concern for producers if methods of production are to improve (IP26).

Without capturing the benefits, experience and knowledge of the first wave of products which focus on addressing key agronomic problems, the second and third wave of products, which start to address more obvious consumer benefits, likely to be available in the medium to long term will be much harder to attract and understand (IP4).

There are significant opportunities and potential benefits of the technology, to the deer industry and public / consumers... (IP35).

New Zealand and the GM embracement: Praxiology

Greater investment in carefully targeted ecological research would deliver greater security against adverse impacts from GMOs, or other technologies (IP38).

...promote health research in Human Genetics (IP20).

New Zealand and GM Embracement: Futurology

The NBA accepts that there may well be, in the future, GM concepts that are appropriate for New Zealand: in that they meet the most rigorous Ethical criteria, and are an advantage to the New Zealand economy (IP46).

...we believe that as a country we have a unique position to advance this science with significant national benefits and little risk.. ...this is based... on our freedom from exotic disease and reliance on non crops (IP29).

...in the future research involving genetic technologies is likely to become of increasing importance with elucidation of the human genome and the development and application of knowledge that will follow. There will be many new diagnostic, preventative and treatment strategies developed that will have the potential to improve the health of our society (IP19).

...biotechnology offers the potential for the forest industry to more quickly implement custom products selected for particular consumer markets. Forest industry based biotechnology developments could also generate a new economic sector and expand foreign exchange earnings for the New Zealand forest industry if the associated intellectual properties developed and controlled by New Zealand based interests (IP34).

What if the GM Future is not realised?

A decision to make New Zealand GM free would incur the same effects as a moratorium, and it would eventually lead to New Zealand becoming an agricultural back water with a consequent lowering in the standard of living (IP26).

Failure to enact the proposed changes [making compliance costs less, less stringent regulation in areas...] to the legislation and regulations will over time seriously erode the international competitiveness of New Zealand science, its

ability to deliver outcomes of benefit to human health and the environment, and its ability to deliver the innovation required to establish new biotechnology-based industries (IP52).

...it [NZVCC] wishes draw attention to significant and harmful consequences for the economy and for quality of life if GM is not fostered and encouraged in New Zealand (IP41).

...that New Zealand is not left exposed to substantial health, environmental and trade risks from its heavy dependence on large scale use of 1080 and other broad-scale pesticides, because research, development and use of GM products for control of environmental pests is prevented (IP22).

In the medium to long term, inhibition of the understanding and application of gene technologies through over regulation and moratoria threatens the economic viability, world competitiveness of New Zealand. New Zealand's farmers will be disadvantaged compared to the highly competitive and sustainable farming systems available to all other countries, enabling farmers to choose the best from the tool kit which includes genetically modified options... ...the advantages to the environment of more sustainable, environmentally sound farming practices which enable greater yields form less land and better management of pests and diseases will also be unavailable (IP4).

...if the availability of GM techniques or the use of GMOs and GM products were restricted, clinical practice throughout New Zealand would be seriously curtailed. That would have extremely negative, and in some cases potentially fatal, consequences for patients (IP51).

Justifying a GM-free Future

At this point in time (October 2000) there is clearly growing concern about GM organisms in foods and beverages. And as a result GM -free products may have a unique marketing value (IP46).

Organic foods are in increasing demand world-wide and commanding premium prices whereas GM crops are facing falling demand. In (IP47).

...market and economic signals coming from overseas ...concludes that our economic interests demand adding value to our main exports, which GM will not do. ...we predict a loss of market access and lower prices from following the GM path. This is borne out by poll findings of strong preference for organic production over GM... (IP17).

Organic standards expressly prohibit the use of GMOs... Organics will benefit most from further fine tuning of current organic production methods using holistic systems based research not from using unnatural technologies such as GM. Why NZ should exclude GM... Potential economic loss to NZ (IP5).

We can look overseas where countries like the USA have embraced this technology and see that farm yields are lower and pesticide and herbicide use is up (IP11).

A great opportunity lies in New Zealand seeing the strategic option lies in developing ecological methods of agricultural production. Not only would this would [sic] be to the advantage of protecting the environment from potentially irreversible damage, it would also take advantage of the heightened awareness of consumers worldwide about food safety issues, and the desire of consumers everywhere for organic food, uncontaminated by either pesticide residues or genetically modified ingredients (IP44).

...increasingly allergy sufferers and people with a wide range of medical conditions turn to organic food for the benefits of naturally gown, safe food. The geographical isolation of New Zealand gives us an opportunity to remain G.M.free (IP6).

So far none of those GE promises have become reality, rather the reverse, they threaten our existence in ways previously unthinkable since the crossing of the species barrier (IP28).

Once GE crops are permitted in New Zealand we may well lose the opportunity to provide an alternative to GE technology for which the world may be grateful in the future... If we are unable to eradicate possums which we can see and count, what possible chance do we have of eradicating organisms which we may not be able to see and for which we have not yet discovered a sufficiently sophisticated method of counting (IP7).

There has been a definite shift in consumer preference away from GM food... (IP32).

New Zealand and GM-free Embracement: Praxiology

The New Zealand government to spend as much money on organic agricultural research as that on agricultural genetic modification research. ...support for worm products as an organic agricultural input (IP42).

...develop the certified organic industry to take advantage of the expanding export opportunity (IP6).

New Zealand should maintain its current GM free status for commercial food production until the uncertainties about the technology and its acceptance are better resolved (IP54).

New Zealand and The GM-Free Embracement: Futurology

Friends of the Earth would like to see an organic, GM-free New Zealand... (IP15).

The Pesticide Action Network believe that New Zealand should become genetically engineered (GE)-free... and that we should channel our energies instead towards becoming an organic nation (IP45).

The NBA believes that New Zealand may have a unique opportunity to develop its industries (and job creation and capital investment opportunities) through the positioning of New Zealand as a 'GM-free' society; and that this opportunity should be rigorously explored. (IP46).

In placing an emphasis on organic production, particularly as an island nation, New Zealand would stand to capitalise on this trend (IP47).

We believe NZ can have a prosperous future based on developing science, research and education that support sustainable agriculture, forestry, and tourism with particular opportunities in certified organic food production and certified sustainable forestry systems with fetch higher prices (IP17).

There is a huge and growing market globally for organically certified foodstuffs and even if New Zealand converted the whole of its production to organic methods as advocated by some groups, it would still not fill the demand (IP7).

What if the GM -free future is not realised?

We support organic production which could face annihilation if GM crops were grown in New Zealand (IP47).