

Short Communication

# Biotechnology: the language of multiple views in Māori communities

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In Aotearoa (New Zealand), the government funded studies on communicating biotechnology to different sectors in the community from 2003 to 2006. Subsequently, a researcher covering the Māori sector performed a content analysis of data gathered in the community. Qualitative analysis methods included examining text from participant interviews, focus groups, government documents, newspapers, Internet sites, and current literature. Content was coded by identifying common themes in the English and the Māori language. Words like genetic modification (GM), genetic engineering (GE), and biotechnology were explained to provide a basic understanding between the communities and researcher. The terminology applied in the research was essential to achieve communication between the researcher and the community. The resultant themes represented seven views to interpret the communities association with biotechnology: purist Māori, religious Māori, anti Māori, pro Māori, no Māori, uncertain Māori, and middle Māori views. The themes are taken from the analysis of data compiled after 3 years of completing different stages of a research project. The views indicate that a common understanding can be achieved in the diverse range of Māori tribal communities providing those communicating biotechnology can identify the view and interpretations communities associate with biotechnology. This knowledge is essential for government agencies, researchers, community practitioners, scientists, and businesses that desire to dialogue with Māori communities in the language of biotechnology.

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## 1 Introduction

In 2003, the Foundation of Research, Science and Technology (New Zealand) funded research to determine how biotechnology could be developed to be sustainable. Motion [1] led a team of academics through a program that aimed to build an understanding about biotechnology, a project starting in 2003 to be completed in 2008. The process involved “constructive engagement between people in the community and the biotechnology sector

and to grow New Zealand’s biotechnology sector to enhance economic and community benefits”. It concentrated on investigating the socio-economic and cultural impacts of biotechnology developments in New Zealand with year one focusing on ‘Life after the genetic modification (GM) moratorium’ followed by year two examining ‘Issues of sustainability’. Year three looked at the future of biotechnology as ‘identity and adaptation’. Engaging with Māori communities was part of objective two ‘Examine the social, cultural and religious/spiritual dimensions of biotechnology’ exploring ‘Circuits of communication biotechnology’ [2]. The specific outcome of the research was to produce evidence to “support policy advice on the research, development and deployment of biotechnology, and assist end-users in the development of sustainable biotechnology initiatives such as new products and methods of production” [3]. To achieve these outcomes three stages were applied: interviewing key peo-

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**Abbreviations:** GE, genetic engineering; GM, genetic modification

ple; interviewing focus groups; and interviewing mothers with young children.

At the end of 2004 the first stage for communicating biotechnology to Māori communities was completed. Key people had been interviewed who were knowledgeable in the social, political, and economic circumstances that involved biotechnology and the Māori [4]. As 2005 approached, stage two was initiated and focus groups were established in communities to take the dialogue further and engage a broader audience. In 2006, stage three began and the research took another path and interviewed mothers' of Māori ethnicity with children aged  $\leq 10$  years [5]. Gamble [6] and Gamble and Kassardjian [7] (under the leadership of Motion) conducted further interviews of mothers in general for stage three, not just of Māori ethnicity. The outcome of a 3-year study on social, cultural, and religious/spiritual dimensions of biotechnology produced a dialogue as a framework to interpret and understand the Māori response to biotechnology. This article reports the findings from stage four, and is an analysis of Māori dialogue compiled throughout the previous three stages.

## 2 Research method

The theories on Māori Centred Research [8] and Social Science Research [9] were adopted to reflect a cultural and qualitative research approach. The methods were qualitative because the participants constructed their own realities. These realities were drawn from their experiences of being Māori and followed a qualitative and *Kaupapa* (Māori term for strategy, theme, philosophy) Māori paradigm of assumptions created by *Te Momo* [10], because reality from an ontological assumption in this context is "subjective and dual as seen by Māori in a Western society". By merging these assumptions and processes, the perceptions of Māori participants' could be received, recorded, translated, and interpreted in communities. Davidson and Tolich [11] state "theory without research is mere speculation; research without theory is merely data collection". Therefore, an approach based on Māori theory and Social Science theory was essential to the research because it studied Māori perceptions and the relationship to biotechnology, GM, and genetic engineering (GE) in New Zealand.

The discussions of Cunningham and Durie [12] on research involving Māori, Māori centred research, and *Kaupapa* Māori research provided the frameworks for explaining the difference characteristics of research on Māori knowledge. Māori centred research in which "Māori are significant participants, and are typically senior members of research teams; research where a Māori analysis is undertaken and which produces Māori knowledge, albeit measured against mainstream standards for research" was adopted for this research.

The participants represented three different groups: key people, focus groups, and mothers. The selection of key people was chosen randomly from a list of representatives in Māori communities [13], and the first ten to agree to participate were interviewed. The key people had either written about biotechnology, GM or GE, were involved in research on these issues, or had been part of groups protesting against biotechnology, or were representatives on government boards that approved this technology, as well as being part of Māori communities. They covered a wide section of New Zealand society with various roles such as academics, public officials, and community workers. The focus groups were located in three areas Auckland, Hamilton, and Gisborne. These groups were selected through a 'word of mouth' system whereby the researcher informed people who then relayed the message to organizations and those interested were contacted. The different locations were chosen based on the high Māori population and the range of views that meeting with these groups could generate. The largest Māori population resides in Auckland, whereas the Māori King is situated in the Hamilton area where the culture is strong. Gisborne has the highest percentage of Māori in a township, 46.2% [14], a powerful presence of culture and Māori language. Identifying groups in areas where the population of Māori is high and the culture is strong ensures that the participants are a fair representation of the culture. The researcher also had community connections within these regions that allowed negotiation to occur before interviews took place.

Interviews were limited to participants of Māori ethnicity. The key people and mothers were interviewed individually. Women accounted for 17 out of 20 participants interviewed. During interviews with focus group, non-Māori participants were included at the request of the group and were a minority (less than 3) from a total group number of over 50. All interviews were conducted with an informed consent, and participants were given an opportunity to receive the data collected about them and the opportunity to amend or delete information that was recorded. Table 1 identifies the Code participants were given, the gender/region, and status. K is the code for the key participants, W the focus groups, and M the mothers. With the M code under status, the numbers in parentheses represent the number of children under the age of five who taken care of by the participant.

Content analysis was applied to analyze data, and findings were highlighted as seven main views. Analyzing content in this fashion involved qualitative and cultural methods. List [15] suggested that content analysis is suitable for analyzing "comments from in-depth interviews or group discussions". Since the comments from participants at times were in the native Māori language and ranged from talking from an individual level, to *whanau* (family) level, *hapu* (sub tribe) level, *iwi* (tribe) level in a given sentence or paragraph, it was important that

Table 1. Māori participants

Code	Sex / region	Ethnicity	Status
K1	Female	Māori	Doctor, Scientist, Academic
K2	Female	Māori	Community Worker, Green Peace Protestor
K3	Female	Māori	Government Official, ERMA Consultant
K4	Male	Māori	Government Official, ERMA Consultant
K5	Female	Māori	Leader, International Consultant
K6	Female	Māori	International Representative, Academic
K7	Male	Māori	Professor, Psychologist, Academic
K8	Female	Māori	Leader and Waitangi Tribunal Claimant
K9	Female	Māori	Community Worker, Retired Nurse
K10	Male	Māori	Doctor, Historian, Theologian, Academic
F1	Auckland	Māori	Marae Organization (8 representatives for over a 100 members)
F2	Auckland	Māori	Women Group at University (6 Māori representatives for the campus)
F3	Gisborne	Māori	Whānau Organization (10 representatives for 8 different families)
F4	Waikato	Māori	Academic and Student Group (Upwards of 20 Māori students and staff at a tertiary institution)
M1	Female	Māori	Home Maker (1)
M2	Female	Māori	Solo Parent (2)
M3	Female	Māori	Manager (2)
M4	Female	Māori	Student (1)
M5	Female	Māori	Nurse (3)
M6	Female	Māori	Home Maker (1)
M7	Female	Māori	Laborer (1)
M8	Female	Māori	Tutor (2)
M9	Female	Māori	Accountant (3)
M10	Female	Māori	Courier (1)

during the analysis of content the analyzer was aware of the different levels.

Understanding the language used by Māori people to converse on a daily basis is significant to the research, because without this knowledge there is the potential to misinterpret information. The data analyzed for this article was done in stages. Stages one and two were at the completion of the field research for key participants and community groups. The data from stages one and two included material from examining the text of interviews with participants and focus groups, government documents, newspapers, Internet sites, and current literature. Stage three data came from participant interviews. For this article the data came from compiling the findings of the three stages in which main themes were highlighted to represent the seven views.

### 3 Research findings

The research produced main themes that were converted to seven views to understand the communication lines that exist in Māori communities. These are purists Māori, religious Māori, anti Māori, pro Māori, no Māori, uncertain Māori, and middle Māori views. Participant perceptions that represented an individual or a collective response can be found in one or more of these seven views.

#### 3.1 Purist Māori view

The purist Māori view saw biotechnology as being a part of Māori culture. GM and GE were perceived to be consistent with Māori legends. The relationship between humans and other forms of matter in this context derived from Māori gods like Tane Mahuta (God of the forests). This god mated with various forms of matter such as trees and rocks to produce offspring that grew in the forests. Hence the crossing of human genes and non-human genes was perceived by those who took this view to be a common practice instigated by the gods in the forming of the world that people inhabit. Those who supported this view were educated in traditional and contemporary perspectives of biotechnology and predominantly came from a science or educational background.

#### 3.2 Religious Māori view

The religious Māori view was supported by many Māori. This view merged together traditional Māori values of religious practice and Western influences of Christianity. Biotechnology that involved the crossing of human and non-human genes was seen to conflict with the teachings of God (the God represented by Christianity) and to be immoral and a sin. Any form of GM or GE formed unnaturally was deemed in this view to be 'playing with God'

meaning interfering with the natural course that nature has placed before mankind. This group included participants from a range of ages and diverse backgrounds.

### 3.3 Anti Māori view

The anti Māori view was a stance taken by Māori who were critical of government and business. Those who shared this view were opposed to any form of GM or GE because they believed that companies promoted these types of experiments to make money, and that economic development superseded social development and education on the current politics of biotechnology in New Zealand. Governments were seen to represent a political body that placed the demands of economic development before the needs of the communities, and Māori, who represent a large population in the lower socio-economic facets of society, were considered to suffer at the hands of these experiments.

### 3.4 Pro Māori view

The pro Māori view perceived GM and GE to be positive and valuable for the health of people and the environment. The ability for biotechnology to 'Feed the World', 'Eradicate Diseases', and enable people to 'Live Longer' were common perceptions. Although this type of technology involves risk, the belief was if the benefits outweighed possible harm then science should proceed with these types of experiments. Those who supported this view mainly came from families that were recipients of the benefits from biotechnology.

### 3.5 No Māori view

The no Māori view was held by a younger and uninformed Māori audience. The knowledge surrounding biotechnology, GM, and GE was introduced to them through the research. Since their knowledge on the topic was limited and they were not recipients of this form of technology they shared a 'don't really care' attitude. Learning about this technology was perceived to be the responsibility of governments, politicians, community leaders, and others to debate and discuss, as it was not a priority in their lives. Subsequently, the response was that they had no view on the discussions.

### 3.6 Uncertain Māori view

The uncertain Māori view was a cautious approach taken by Māori with some knowledge about biotechnology that required more information. Those taking this view were unsure about the issues surrounding GM and GE, because the topics were couched in a scientific language. The perception of this group was that to provide a view required grounded knowledge in the relevant field and

without this information they were unsure whether they could present a view. Also, this group was not overly negative or positive about the impacts of these experiments on mankind. They were less skeptical of businesses and government and believed that these bodies would not support experiments that were unhealthy for people or if they were not convinced that biotechnology was completely safe or beneficial.

### 3.7 Middle Māori view

The middle Māori view was that of many Māori people from different ages and backgrounds. They could position themselves in one or more of the previous six views. Their view depended on the issues and circumstances that were presented before them when taking a stance. When it came to discussions surrounding biotechnology, GM or GE they were comfortable to move in and out of different views. This group was flexible and saw having the tendency to sway from one view to another as being normal behavior of Māori.

## 4 Discussion – Talking biotechnology

The views represent Māori perspectives on biotechnology. The significance of these views is it enables people to identify where Māori perspectives are located. An additional factor to take into account is the requirements for Māori to move from one view to another. The research found that certain factors are able to change the perception in the communities.

Factors that altered Māori perception hinged on the values Māori placed on biotechnology. If the technology showed that the benefits outweighed the risks and the survival of mokopuna (grandchildren) was not compromised, then moving from, for example, the uncertain to a pro Māori view was accomplished with little resistance. Also, the religious Māori view was seen to be a catalyst for ensuring ethical conduct, with wairua (spirituality), and tikanga (customs) being the guidelines for people to follow, and breach of these values meant that biotechnology should not proceed. Again, another example of moving from a religious to a pro Māori View could be achieved if the ethical conduct, wairua, and tikanga were not conceded.

Although the participants' responses were varied, common perspective on biotechnology, GM and GE were repeated. The perspectives indicated ways the research could achieve the overall aim to (i) identify ways to sustain biotechnology; (ii) communicate biotechnology, GE and GM to the community; and (iii) record Māori social/cultural and spiritual dimensions of biotechnology, GM, and GE. A common perspective was that sustainability required the support of the people and without clear communication lines, respect for the social/cultural

and spiritual dimensions, GM, and GE developments would not be supported. Gaining support from Māori communities could evolve if basic steps like ensuring the Treaty of Waitangi was part of discussion in the development of biotechnology, GM, and GE.

## 5 Concluding remarks

Talking biotechnology with Māori communities requires a flexible approach and an understanding of Māori dialogue. Without this knowledge those desiring to converse with the Māori such as government officials, business representatives, scientists, and researcher(s), would be unable to gain approval to allow biotechnology in their communities. The major conclusions from this research are that the seven views – purists, religious, anti, pro, no, uncertain, and middle Māori views – represent a way forward to understanding Māori dialogue. The research showed that the views are diverse and Māori culture has the capacity to weave in and out of different perspectives.

Sustainable biotechnology for the Māori and non-Māori was perceived to be achieved through education and continuing to talk biotechnology in communities. Māori in the communities looked to future generations to take this dialogue forward and highlighted the importance of educating youth about this technology because they were considered the people of tomorrow and most likely to be affected in the long term. Education about biotechnology, GM, and GE had to be relevant to the Māori people and delivered to them using lay-person language that was simple and easy to understand. In conclusion, technical scientific or academic language involving biotechnology, GM, and GE was viewed to be exclusive rather than inclusive to Māori community, and without dialogue the communication is silenced. Thus, knowing the limitations of dialogue is a useful tool for the future.

## 6 References

- [1] Motion, J., *Socially and culturally sustainable biotechnology*. 2007. <http://wms-soros.mngt.waikato.ac.nz/NR/exeres/D4172EE7-AEA2-4EBB-BAD3-2B18808F23EC.htm>; accessed: 19 June 2007.
- [2] Motion, J., Weaver, K., *Circuits of communication*. 2003. <http://wms-soros.mngt.waikato.ac.nz/NR/exeres/610412FD-2C65-4DDD-B441-3F11930A7BF6.htm>; accessed: 19 June 2007.
- [3] Motion, J., *Socially and culturally sustainable biotechnology*. 2007. <http://wms-soros.mngt.waikato.ac.nz/NR/exeres/D4172EE7-AEA2-4EBB-BAD3-2B18808F23EC.htm>; accessed: 19 June 2007.
- [4] Te Momo, F., *Socially and culturally sustainable biotechnology in Aotearoa/New Zealand. A report on the social, cultural, religious, and spiritual dimensions of biotechnology for Māori*. 2005. Massey University Albany Campus. <http://wms-soros.mngt.waikato.ac.nz/NR/exeres/F33B66EB-5062-41BB-8633-2340461A53C6.htm>; accessed: 20 June 2007.
- [5] Te Momo, F., *Socially and culturally sustainable biotechnology in New Zealand: talking biotechnology to Māori mothers using scenarios. Report to Department of Communication*. 2006. Hamilton, NZ: The University of Waikato. Unpublished report. Massey University. Auckland, NZ.
- [6] Gamble, J., *Sustainable biotechnology and mothers of young children. Report to Department of Communication*. 2005. The University of Waikato, Hamilton, NZ.
- [7] Gamble, J., Kassardjian, E., *Mothers and biotechnology: Guardians of our future. Talking Biotechnology: reflecting on science in society. Paper presented at the talking biotechnology conference*. 2005. Talking Biotechnology Research Group, Wellington, NZ.
- [8] Cunningham, C. W., Durie, M. H., *A taxonomy, and a framework for outcomes and strategic research goals, for Māori research and development. A summary paper prepared for Foresight Participants. A discussion paper*. 1998. Massey University, University School of Māori Studies, Te Pumanawa Hauora, Palmerston North, NZ.
- [9] Babbie, E., *The basics of social research*. Wadsworth, London 2001.
- [10] Te Momo, O. H. F., *Demystifying a relationship between voluntary work and Māori. Unpublished Doctoral Thesis*. The University of Waikato, Hamilton, NZ, 2003.
- [11] Davidson, C., Tolich, M., *Social Science Research in New Zealand: Many Paths to Understanding*. Pearson Education New Zealand, Auckland 1999.
- [12] Cunningham, C. W., Durie, M. H., *A taxonomy, and a framework for outcomes and strategic research goals, for Māori research and development. A summary paper prepared for Foresight Participants. A discussion paper*. Massey University, University School of Māori Studies, Te Pumanawa Hauora, Palmerston North 1998.
- [13] Te Momo, O. H. F., *Socially and culturally sustainable biotechnology in Aotearoa/New Zealand. A report on the social, cultural, religious, and spiritual dimensions of biotechnology for Māori. A report prepared for Professor Judy Motion on behalf of the Foundation for the Research of Science and Technology*. The School of Management in the University of Waikato, Hamilton 2005, p. 22.
- [14] Te Nupepa o te Tairawhiti, *Te Ao Māori mai i te Tairawhiti. Te wiki o te Reo Māori*. 2004. [http://www.gisborneherald.co.nz/features/te\\_ao\\_māori\\_jul04a.pdf](http://www.gisborneherald.co.nz/features/te_ao_māori_jul04a.pdf); accessed: 26 June 2007.
- [15] List, D., *What is content analysis? Know Your Audience: chapter 16, Content analysis*. 2005. <http://www.audience dialogue.org/ky16a.html>; accessed: 19 June 2007.