

The Korowai Framework

**Assessing GE through the values the ART Confederation associates
with ngārara.**

Mahina-a-rangi Baker

**A thesis submitted to the Victoria University of Wellington in
fulfillment of the requirements for the degree of Master's in
Environmental Science.**

Abstract

The aim of this thesis is to assess genetic engineering (GE) through the values that the Confederation of **Te Āti Awa, Ngāti Raukawa ki te tonga and Ngāti Toarangatira** (the ART Confederation) associates with **ngārara**. The **Korowai** Framework was developed to conduct this assessment.

Interviews were conducted with 14 participants from across the ART Confederation on the values they associate with **ngārara** and their interpretations of GE. The values associated with **ngārara** that were identified in the interviews, were used constitute the **kaupapa** of the **Korowai** Framework.

The key values identified are: **mauri, whakapapa, tohu, tapu, and kaitiakitanga**. It emerged from the interviews that **ngārara** appeal to us to be conscious of our intricately bound connection to and dependency on living systems.

The assessment through the **Korowai** Framework found that the outcomes of GE do not uphold the values associated with **ngārara**. Participants articulated significant concerns that GE confounds the ART Confederation's control over their relationship with the world around them. This thesis has demonstrated that the **Korowai** Framework can be used as a tool for the Confederation to get to the decision making table with a comprehensive evidence based understanding of the people's position on GE from which they can negotiate. It demonstrates that robust and legitimate assessment of GE can be conducted using theories, methodologies, **kaupapa, tikanga**, and frameworks that are specific to the ART Confederation.

He Mihi

Tuatahi, he mihi ki a Papatuānuku e takoto nei, ki a Ranginui e tū iho nei.

Ka huri tōku aro ki a rātou kua wheturangitia, ki a Tana Carkeek, ki a Ben Hippolite.

Korua ngā poutokomanawa o tō korua hapū, kua whakaruruhau i a mātou ngā reanga hou. Hoki atu rā ki te uma o tō tātou tūpuna whaea, kia moe, kia ea.

My whānau have been central to the journey of this thesis. Thank you to my mother and father, Michelle and André Baker for supporting, sheltering, feeding and loving me, always. You have both demonstrated to your children the strength and aroha that is required to confront the challenges that face our community day by day. To all those within the Confederation who have shared in this thesis, I hope this can do justice to the wisdom of your guidance and the integrity of your stories.

To Dr. Jessica Hutchings, my supervisor: I want to acknowledge you for encouraging and enhancing my development not only as an academic, but most importantly, as a Māori woman. Thank you for creating and continually defending the space within which kaupapa-a-iwi research can be safely and successfully conducted.

E mihi ana ki ngā tūpuna, nā rātou ngā taonga i tuku iho, ki a tātou hoki ngā morehu e whawhai tonu. Ki a koutou ngā mokopuna, anei he iti nā Mōtai, nā tātou ngā uri o Te Āti Awa, Ngāti Raukawa ki te tonga, rātou ko Ngāti Toarangatira.

He kororia ki te Atua, he maungarongo ki te whenua, he whakaaro pai ki ngā tāngata katoa.

Tihei mauri ora!

Contents

Abstract.....	2
He mihi.....	3
Chapter 1 He Kākano : The Potential.....	7
“I am a seed sown from Rangiātea.”	7
Genetic engineering	17
Aims and objectives	30
<u>Chapter 2 He Mahara: Reflections from the Literature</u>	<u>31</u>
Search process	33
Part One: Values of ngārara	34
Part Two: Effects of GE on values of ngārara.....	50
How this thesis will contribute to the literature.....	60
<u>Chapter 3 Ko te Hinengaro: Methodology.....</u>	<u>60</u>
Raukawa transformative methodologies.....	61
Kaupapa Māori research.....	68
Researching from the margins.....	72
Method.....	78
Reflections on the relationship between my identity and this research.....	88

Chapter 4 He whakaaro: Thoughts on the value of ngārara.....	90
Ngārara as a kaupapa	90
Ngārara as mauri	91
The whakapapa of ngārara.....	94
Ngārara as tohu.....	98
Ngārara as tapu	101
Ngārara as kaitiaki	102
Summary	107
Chapter 5 Ko te Whē: Clothing ourselves in words of wisdom.....	110
Mauri	111
Whakapapa.....	114
Tohu.....	120
Tapu.....	123
Kaitiakitanga	124
Assessments of GE through the values associated with ngārara.	128
Chapter 6 Ko te Wānanga: Concluding Discussion.....	131
Aim	131
Methodology	132
Summary of the results	133
Discussion of the results.....	138

Concluding statements 148

Appendices.....151

Bibliography 151

Information Sheet.....165

Consent Form.....166

Interview Schedule.....167

Chapter 1 **He Kākano**: The Potential

“E kore au e ngaro, he kākano i ruia mai i Rangīātea.”¹

*“I shall never be lost, I am a seed sown from **Rangīātea**.”*

This chapter will discuss my positioning and the socio-political background that has given impetus to the aims and objectives of this thesis.

“I am a seed sown from Rangīātea.”

The expression above is used by my people as a statement of heritage, identity and potential. Here I will use this expression to demonstrate my positioning as a researcher in terms of the personal origins, identity and educational path that have provided me with the potential to address the aims and objectives of this thesis.

Heritage

I was born in 1986, in Sydney, Australia to an Australian mother and a father of **Māori** descent. I grew up in Sydney until at the age of 7, when my family moved to **Aotearoa**,

¹ All **te reo Māori** words in this thesis will be written in bold to distinguish them from English words. It is my personal preference to embolden these words rather than use other conventions such as italics.

finally settling in **Ōtaki**. It was here that I was introduced to my **Māori** identity; an indigenous person of **Aotearoa**. I have been brought up by both my mother and father to have pride in this part of my background that makes me special and unique, despite the literal meaning of the word “**māori**” being “normal”. Such is the irony of living in a colonial society.

Māori attribute their origins to the Polynesian homeland **Hawaiki-nui, Hawaiki-roa, Hawaiki-pāmamao**. **Hawaiki** is a dialectally different version of the Polynesian name ‘*Rai’atea*’ or ‘*Rangiātea*’, which is an island homeland for many Polynesian peoples that is part of what is currently referred to as The Society Islands.² Thus, my heritage as a seed sown from **Rangiātea** denotes not only my connection to a **Māori** homeland but also the ancient connection that **Māori** have to other Polynesian peoples with whom we still share similar worldviews, aspirations and challenges.

Growing up in **Ōtaki** meant that I was located firmly within a **Māori** community that nurtured me to develop a normalised **Māori** view of the world, with **Māori** values, living within the guidance of **tikanga Māori**. However, I eventually left home and moved to Wellington where I learnt that throughout **Aotearoa**, the **Māori** identity is a marginalised one. There are countless times I have felt marginalised as a result of my identity, and I constantly feel myself forced into a position of having to respond to the hegemonies of the mainstream **Pākehā** culture. I operate as a researcher within a cultural context of the widespread marginalisation of **Māori, iwi, hapū** and **whānau** knowledge systems, worldviews, values and **tikanga**.

² See Emory, K. P. (1963). "Society islands archaeological discovery." *Current anthropology* 4: 357-8. for further explanation of the origins and migration of **Māori** [Map of Rai'atea](#)

My position as a researcher in the margins is important to me in providing the richness, wisdom, freedom and meaning that is inherent in marginal spaces. **Māori** research presents alternative ways of naming the world, which contribute to a depth and diversity in discourse. I am participating in a movement of resistance against Western scientific dominance of the discourse by privileging **iwi**, **hapū** and **whānau** perspectives and analyses in this thesis.

However, the community in which I was raised did not constitute only **Māori** and my development as a **Māori** woman has been strongly supported by my **Pākehā** mother and grandmother who have raised **Māori** children. I believe I am a product of positive relationships between **Māori** and **Pākehā** within my own **whānau** and community, and I hold the value of such partnerships highly.

An Āti Awa, Raukawa, Toa Confederation (ART) identity.

Ko Tararua ngā pae maunga.

Ko Ōtaki te awa.

Ko Kāpiti te motu tapu.

Ko Raukawa te moana.

Ko Ngāti Raukawa ki te tonga, rātou ko Te Āti Awa ki Whakarongotai, ko Ngāti

Toarangatira ngā iwi.

Ko Mahina-a-rangi Baker ahau.

This **pepehā** locates me within an ecological and political landscape by referring to the mountains, river, island, seas and **iwi** that I draw genealogical ties to.

Raukawa, the ancestor of **Ngāti Raukawa** and **Ngāti Toarangatira** was born of **Tūrongo**, from **Tainui** and **Mahina-a-rangi** from **Ngāti Kahungunu**.³ I inherited my name from this woman and carry this reminder of my connection to her and **Raukawa** everywhere. This name is widely recognised by people from within and external to my **iwi** as a signifier of my **whakapapa**. The home that **Tūrongo** made for **Mahina-a-rangi** and their child **Raukawa** was called '**Rangiātea**'. From this perspective, my identity as a seed sown from **Rangiātea** signifies my **whakapapa** as a descendent of **Tūrongo** and **Mahina-a-rangi**.

Many years later when the offspring of **Raukawa** had grown vastly in number, migratory groups from **Ngāti Toarangatira** left the **Waikato** region, joined by a migratory group from **Te Āti Awa**, their neighbours in the south at **Taranaki**, and eventually were followed by **Ngāti Raukawa**, to settle the area that is acknowledged in our **pepeha**:

“Mai i Waitapu ki Rangataua

Mai i Mīria-te-kakara ki Whitireia

Whakawhitia Te Moana o Raukawa ki Whakatū, ki Wairau.”

Figure 1.1 illustrates the area described in this **pepehā**.

³ To see the story of **Tūrongo** and **Mahina-a-rangi**, refer to Jones, P. T. H. (1945). Mahinarangi (the moon-glow of the heavens) : a Tainui saga. Hawera, Printed by J.C. Ekdahl.

After an initial period of fierce battle, the three migratory groups formed a political alliance through the Confederation of **iwi** and **hapū** known as **Te Āti Awa ki Whakarongotai, Ngāti Raukawa te au ki te tonga** and **Ngāti Toarangatira**, who are referred to as the ART Confederation. This Confederation still operates with strength and cohesion today.

The town of **Ōtaki** that I am from is seen as being a focal point for members of the Confederation. It is where the principal **marae** of **Ngāti Raukawa** is: **Raukawa**. It is the home of the first **Māori wānanga** in **Aotearoa: Te Wānanga o Raukawa**,⁵ which specialises in **te reo Māori**, the **Māori** language, and **iwi**, **hapū** and **marae** studies. The aim of the **wānanga** is to develop the members of the Confederation through tertiary education.

Te reo Māori me ōna tikanga is firmly located within this research. **Te reo Māori** is privileged throughout my research as a legitimate means of communicating information both in the process of the research itself and in the dissemination of results. I recognise and value the ability of **te reo Māori** to convey meanings and tell stories that simply are not accessible through the use of the English language. In order to understand the nature of **Māori** views of reality, the structure of the language spoken by those who share in that view must be referred to.⁶ There are many **te reo Māori** terms that are used within this thesis whose meanings are not explained in

⁵ **Māori** place of higher learning that was independently established in 1980.

⁶ This is explained in: Scott Littleton, C. (1985). Introduction. *How Natives Think*. L. Levy-Bruhl. Princeton New Jersey, Princeton University Press: xxix. As referred to in personal communication by **Te Ahukaramu Charles Royal** (2009) who provided me with advice as to how to deal with **te reo Māori** discourse, including his text '**Te Ngākau**', in this thesis.

depth. This is to avoid providing inadequate and ultimately misleading translations.

Through maintaining a **te reo Māori** based interpretation of certain concepts I am able to protect associated knowledges from being accessed by those who do not have the appropriate cultural lens through which to view them.

Ōtaki is also the home of one of the most revered **Māori** churches in **Aotearoa**, built by the renowned chief **Te Rauparaha**, which has the **onetapu** from **Hawaiki** buried beneath its altar: **Rangiātea**. Again this name reveals its legacy, in this case as a centre of spiritual devotion.⁷ I have a deep relationship with **Rangiātea** Church, as after it was destroyed by arson in 1995, my father managed its rebuilding and replication. Growing up in **Ōtaki**, surrounded by such a strong sense of the illustriousness of the history of my **iwi**, the accomplishments of my ancestors, and the pride of those around me, I have developed a very strong sense of my **Raukawa** identity. I consider my **Raukawa** identity to be more influential on my worldviews and values than my **Māori** identity. My position as the researcher and writer of this thesis is grounded in this **Raukawa** identity.

A **Raukawa** identity includes a feeling of intimate relationship with the lands of the Confederation and a robust political entitlement and responsibility to land and sea resource management and protection. This informs a political agenda to maintain this **mana whenua**. A **Raukawa** worldview includes a well-founded appreciation for the link between education and **tino rangatiratanga**.⁸ This informs a political agenda that

⁷ Not only important to Christianity, the altar of **Rangiātea** is particularly sacred to all **Māori** as buried beneath is the **onetapu**, or soil, that was brought from **Hawaiki**, the homeland.

⁸ A sense of what **tino rangatiratanga** means to **Raukawa** can be found by consulting 'Te Takenga mai o te Kaupapa' in **Te Wananga o Raukawa**'s discussion paper: Winiata, P. Guiding Principles/Kaupapa of Te

places particular value on understanding, creating and utilising ART specific knowledges. Finally, a **Raukawa** worldview is concerned with spirituality, especially in valuing its role in maintaining the **Mihinare**⁹ church model, which informs a political agenda to uphold particular spiritual values. This thesis works to fulfil these **Raukawa** political agenda.

My education

Māori tradition tells the story of **Tāne-nui-a-rangi**, the god who ascended the heavens in pursuit of knowledge. He arrived at a **marae** called "**Rangiātea**"¹⁰, where he received the three baskets of knowledge. 'A seed sown in **Rangiātea**' thus also alludes to the knowledge that we are provided with through a process of education. I will outline the process by which I have engaged with the different knowledges that have contributed to my process of education.

On moving from Sydney to **Ōtaki** I attended **Ōtaki** Primary, and then progressed to **Ōtaki** College. Whilst classes in **te reo Māori** were offered in secondary school and there was some reference to things **Māori** during my schooling, on the whole my learning about **tikanga** and **mātauranga Māori** was facilitated by my **whānau**. Much of

Wananga o Raukawa. Otaki, Te Wananga o Raukawa.
<http://www.wananga.com/docs/pdfs/Guiding%20Principles.pdf>

⁹ This is the **Māori** arm of the Anglican Church in **Aotearoa**.

¹⁰ For the full story of the ascension of **Tāne** to heavens, refer to Best, E. (1923). "Maori personifications. Anthropogeny, solar myths and phallic symbolism: as exemplified in the demiurgic concepts of Tane and Tiki." Journal of Polynesian Society **32**: 103-4.

this learning was imparted by my father, but my Aunty **Tungia** Baker also shared lessons of **mana wahine** with me from an impressionable age.

During my high school years I became enamoured of our native flora and fauna. I was lucky to spend considerable time on **Kāpiti** Island as a young woman, where I came to appreciate the living environment that our people have inherited. Being involved in conservation projects such as **kiwi** transfer at a young age opened my eyes to the importance of working to correct the resource management mistakes of the past, and to treat our native species with the respect they deserve. I thus entered into tertiary study with a desire to gain the skills I would need to put my passion to use; I completed a Bachelor of Science degree in Ecology and Biodiversity, and Environmental Studies and a Bachelor of Arts degree in **Māori** Resource Management, and **Māori** Studies.

Although proportionally, there are disparities between **Māori** and non-Māori achievement at the tertiary level,¹¹ I have always been encouraged and supported by my **whānau, iwi**, and community to achieve highly in my education, and to value the opportunities my education makes available to me. The ART Confederation offered many scholarships to me through my years of education, with endorsement coming particularly from **Whakarongotai Marae**. HortResearch, a Crown Research Institute has provided me substantial scholarships and employment opportunity throughout my tertiary education. It was whilst working there that I was first introduced to the science of genetic engineering (GE), seemingly separate from the politics of it.

Genetic engineering (GE) is defined as:

¹¹ Victoria University of Wellington (2009). Victoria University of Wellington Equity Strategy. **Appendix:** 20.

“the development and application of scientific methods, procedures, and technologies that permit direct manipulation of genetic material in order to alter the hereditary traits of a cell, organism, or population.”

Organisms that have been genetically engineered are referred to as ‘genetically modified organisms’ (GMOs) which are defined by the New Zealand Environmental Risk Management Authority as:

*“any organism in which the genes or other genetic material have been modified by using in vitro (recombinant DNA) techniques.”*¹²

During my time at HortResearch, staff extended generous support to me and encouraged me to pursue a Masters degree.

My education was also significantly broadened as a result of my experience studying in the nation of Hawai’i where I took papers in genetics, the politics of science, and *kalo* (taro cultivation). I came to better understand the social context within which GE is developed and used. Whilst learning to cultivate *kalo*, our class was made aware that the United States’ Government was making plans to genetically modify *kalo*. *Kānaka Māoli*¹³ looked to *kalo* as their *kua’ana* or elder sibling and thus saw the Government’s proposal, which would involve vesting ownership of genetic material of the *kalo* with

¹² See Dictionary.com. (2010). "Genetic engineering." 2009, from <http://dictionary.reference.com/browse/Genetic%20engineering>. for a definition of GE and: Environmental Risk Management Authority. (2010). "What is a genetically modified organism (GMO)?", 2009, from [www.erna.govt.nz/help/faq-no.html#What_is_a_genetically_modified_organism_\(GMO\)](http://www.erna.govt.nz/help/faq-no.html#What_is_a_genetically_modified_organism_(GMO)) <http://www.erna.govt.nz/help/faq-no.html>. for a definition of GM

¹³ This is a Hawai’ian term for local indigenous peoples.

the Government, as biocolonialism.¹⁴ I acknowledge the *kānaka Māoli* for sharing their experience with me, inspiring me in the way they responded to the issue with *aloha*, and ultimately for bringing my attention to the need for Indigenous responses to GE.

I view my heritage, identity and education as being seeds of potential: **he kākano i ruia mai i Rangiātea**. In writing this thesis, I made the decision to use this potential to provide a distinctly 'ART' analysis of genetic engineering.

Genetic engineering.

In this section I will discuss the current socio-political context of the use of genetic engineering (GE), globally and in **Aotearoa**. I will focus on some of the key concerns from international, national and **iwi Māori** perspectives.

Global concerns about GE.

Resistance to GE such as that I witnessed in Hawai'i is occurring globally. Whilst some nations such as the United States, Canada, Argentina, Brazil and Paraguay pursue production of GE crops, other nations such as those within the European Union (EU)

¹⁴ Kanehe, L. (2005). A Ke A'A: Strengthen the Root Indigenous Voices Speak Out in GMOs in Hawai'i, Indigenous Peoples Council on Biocolonialism. See http://www.ipcb.org/publications/other_art/kaneheps.html

have historically placed moratoriums on production and use and presently have strict GE labelling laws.¹⁵ Addressing the socio-political context in which risk analysis of GE is carried out highlights the power dynamics at play as decision-makers proceed to determine what constitutes 'acceptable' levels of risk in development and use of GE.

GE is a new facet of the Western scientific tradition that seeks to manipulate and 'improve' our flora and fauna. Harris and Mercier (2006) have defined the key characteristics of Western science as:

- 'Reductionist': seeks to understand things by breaking them down.
- 'Naturalistic': empirical, ignores metaphysical explanations.
- 'Isolationist': promoting no connection between people and other beings.¹⁶

They emphasise that values are not acknowledged within Western science as values systems do not see people or things in isolation.

Ho (2004) has discussed how the Judeo-Christian origin of Western science has informed a view of man in God's image, and thus a view of the rest of nature as merely an instrument for humans. This view condones the right of humans to extend their power and domination over the universe.¹⁷

¹⁵ Anderson, K. and L. A. Jackson (2005). "GM crop technology and trade restraints: economic implications for Australia and New Zealand." Australian Journal of Agricultural and Resource Economics **49**(3): 263-281.

¹⁶ Harris, P. and O. Mercier (2006). **Te Ara Puutaiao o ngaa tuupuna, moo ngaa mokopuna**: Science education and research. State of the Maori Nation: Twenty-first-century issues in Aotearoa. M. Mulholland. Auckland, Reed: 143-144.

¹⁷ Ho, M.-W. (2004). Foreword: Science, Ethics and Nature. Recoding Nature: Critical perspectives on genetic engineering. R. Hindmarsh and G. Lawrence. Sydney, UNSW Press: 18-20.

The explosion in the number of firms in the genomics industry in the early 1990's was incentivised not by the possibilities of serving public needs but by the commercial opportunities created.¹⁸ Ho attributes the exploitation of nature, such as that conducted through genetic engineering, for the sake of human gain to its Western science basis. She discusses how mechanistic science has led to a global market regime where the maximisation of corporate profits fails to serve the physical and spiritual needs of society, particularly the protection of nature.¹⁹

Those practices and policies which seek to extend this global market regime "into communities previously organised and governed in other ways" is described by Bargh (2007) as neoliberalism.

The development and function of the GE industry is reflected in the three key tenets of neoliberalism that Bargh goes on to describe:

- 'Free' trade, where trade functions as a mechanism of control.
- 'Free' mobility of capital which has detached financial markets from social concerns and consequences, and;
- A broad reduction in the ambit and role of the state through privatisation which had shifted emphasis from public to private purpose.²⁰

¹⁸ Martin, P., M. Hopkins, et al. (2009). On a critical path: genomics, the crisis of pharmaceutical productivity and the search for sustainability. Handbook of Genetics and Society: Mapping the new genomic era. Oxon, Routledge: 146-150.

¹⁹ Ho, M.-W. (2004). Foreword: Science, Ethics and Nature. Recoding Nature: Critical perspectives on genetic engineering. R. Hindmarsh and G. Lawrence. Sydney, UNSW Press: 18-20.

²⁰ Bargh, M. (2007). Introduction. Resistance: An Indigenous response to neoliberalism. M. Bargh. Wellington, Huia. pp 3-8.

There is scepticism from independent NGOs that GE is used as a mechanism for control by the wealthy and powerful few. They suggest there is no evidence that GM crops have increased food security for the world's poor. Instead, the introduction of GM crops in poor areas has resulted in increased multinational seed supply control and the use of patenting to ensure that Monsanto, DuPont-Pioneer, Syngenta, Bayer and several other multinationals own the intellectual property rights to most of the world's commercial seed.²¹

In many nations, and notably in the UK, technocratic rationality dominates the process by which risk analysis decisions on GE are made. The public have become disengaged and disempowered from democratic participation in the decision-making on the use of GE as their knowledges and responses to GE may not be deemed as legitimate to contribute in a technocracy.²² The pleas by the *kānaka Maoli* to deal with risk analysis decision making on GE at localised levels is echoed by indigenous and local peoples globally, with the vision that a decentralised democracy on GE will provide the most equitable decision-making.²³

²¹ Stocks, N., K. Chandrasekaran, et al. (2008). Who benefits from GM crops?: the rise in pesticide use - January 2008. London UK, Friends of the Earth. This article provides evidence that the GM crop industry has caused a reduction of small farms in favour of a few larger farms. This article also points out how research on the performance and claimed benefits of GM crops is conducted by the biotechnology industry and thus they largely control the distribution of this information.

²² Harvey, M. (2004). The Democratisation of a "Scientific Decision": The "GM Nation?" experiment in the UK. PCST International Conference. Barcelona, Rubes Editorial S.L.

²³ Shiva, V. (2005). Earth Democracy. Cambridge, South End Press.

Māori experiences of GE.

By 1990, GMOs were being developed in **Aotearoa** for possible use in agriculture and food production.²⁴ Today GMOs are predominately used either as bio-control agents, such as insecticides that use a bacterium as a vector for inserted genetic material, or developed in research to produce desirable phenotypes of economically valuable plants and animals.²⁵ Biotechnology, of which GE is a component, is seen as being “a technology that can contribute in numerous ways to achieving our economic, social and environmental aspirations”.²⁶ Little research has been done on the specific social and environmental aspirations that have been met through the use of biotechnology. Research to ascertain the economic benefits that biotechnology may attract has found that whilst adoption of the technology has created financial benefits, it has not played a dominant role in the growth of New Zealand’s primary sector.²⁷

Decisions on applications to import, develop or field test new organisms, including GMOs are made by the Environmental Risk Management Authority (ERMA), that was established under the Hazardous Substances and New Organisms (HSNO) Act 1996. With respect to **Māori**, all persons exercising functions, powers, and duties under the HSNO Act are required to ‘take into account’;

²⁴ McGuinness, W., M. White, et al. (2008). The History of Genetic Modification in New Zealand. Wellington, Sustainable Future. (p.6)

²⁵ Kaye-Blake, W. H., C. M. Saunders, et al. (2007). "Current Contribution of Four Biotechnologies to New Zealand's Primary Sector." AgBioForum **10**(2).

²⁶ New Zealand Government (2003). New Zealand Biotechnology Strategy.

²⁷ Kaye-Blake, W. H., C. M. Saunders, et al. (2007). "Current Contribution of Four Biotechnologies to New Zealand's Primary Sector." AgBioForum **10**(2).

- the relationship of **Māori** and their culture and traditions with their ancestral lands, water, sites, **wāhi tapu**, valued flora and fauna or other **taonga**, and;
- the principles of **Te Tiriti o Waitangi**.²⁸

Ngā Kaihautu Tikanga Taiao (NKTT) is the statutory committee which advises ERMA on such **Māori** issues. However, it doesn't represent specific **iwi** or **hapū**,²⁹ which is problematic as positions on risk vary amongst **iwi**, **hapū** and **whānau**.

When I began my work at HortResearch I was invited to be part of ERMA's **Māori** National Network whose Terms of Reference recognise the need to facilitate relationships and engagement between **Māori** and potential applicants.³⁰ GE is certainly being used within the **rohe** of the ART Confederation: at Massey University and Crown Research Institutes (CRIs) in Palmerston North and Porirua. However, there are no relationships between the ART Confederation and applicants, and ART are disengaged from the development of any research programmes that involve GMO applications.

Since then I have attended **hui** held for this network for two and a half years. I have observed that **Māori** representatives from all over **Aotearoa** have significant concerns about the use of GE, and the process by which risk analysis decisions on GE are made.

²⁸ See Environmental Risk Management Authority. (2009). "About ERMA New Zealand." from <http://www.ermanz.govt.nz/about/index.html> Accessed 18th of March 2009. The purpose of the Act "is to protect the environment, the health and safety of people and communities, by preventing or managing adverse effects of hazardous substances and new organisms."

²⁹ See Environmental Risk Management Authority. (2009). "Ngā Kaihautu Tikanga Taiao." from <http://www.erma.govt.nz/tehautu/ngakaihautu/index.html>. Accessed 18th of March 2009

³⁰ Environmental Risk Management Authority (2007). Terms of Reference, Māori National Network Reference Group.

The advent of GE in **Aotearoa** is part of a broader **Māori** experience of the Western scientific tradition. The prevailing Western scientific ideology has historically been devastating for the biodiversity of **Aotearoa**. The settling of Europeans in **Aotearoa**, brought rats, possums, goats and many more introduced species. The Western scientific tradition underlined the determination to slash and burn, and overexploit resources on arrival. Our unique native biodiversity is now in serious decline. Despite being one of the last places in the world to be settled by humans, it has one of the worst records of native biodiversity loss. 32% of endemic land and freshwater birds, 11 vascular plants and 3 reptile species are now extinct.³¹

The colonisation of **Aotearoa** introduced Western ideologies of science and nature that have since been systematically vested with more authority than **Māori** intellectual traditions. This rejection of multiple explanations of the world in favour of the dominance of Western science is consistent with the “fear of difference” that was established in the Enlightenment.³²

Māori perspectives on GE are likely to be informed by **tikanga Māori** and **mātauranga Māori**, but vary across different **iwi/hapū/whānau**. Yet at their foundation, key intellectual traditions used to interpret GE are shared. **Mātauranga Māori** provides clear interpretations of risk that enable assessment and management through prohibitive measures, explicitly within the traditions of **tapu** and **noa**. The dichotomy between **tapu** and **noa** creates a distinction between things that are **noa** or ordinary,

³¹ New Zealand Government (2000). The New Zealand Biodiversity Strategy: 4. <http://www.biodiversity.govt.nz/pdfs/picture/nzbs-whole.pdf>

³² McKinley, E. (2005). "Brown Bodies, White Coats: Postcolonialism, Maori women and science." Discourse: Studies in the Cultural Politics of Education **26**(4): 481 - 496.

where interaction can occur free of restriction or protocol, and things that are **tapu** or not ordinary where interaction is restricted and guided by protocol.³³ The law of **tapu** and **noa** thus sets boundaries as to how the environment is to be interacted with. Strong cultural norms have formed to ensure that these boundaries are not crossed through the recognition of **aituā** as retribution for those who do not conform,³⁴ and the bestowal of **mana** upon those who do.³⁵ It is widely accepted that whilst **Māori** generally share a view of GE as posing risks to **tikanga Māori, tino rangatiratanga, taonga, Māori health and Māori intellectual property rights**, positions held on the severity, implications and acceptability of risks can be variable amongst **iwi, hapū, and whanau**.³⁶ **Māori** draw connections to GMOs as they do to all things which possess **mauri**, through **whakapapa**. This **whakapapa** connection creates an obligation for **Māori** as **kaitiaki** to ensure the **mauri** of the organisms used to develop GMOs is enhanced and protected. Thus, **Māori** perspectives on GE are rooted in the cultural imperative of **kaitiakitanga**.³⁷

However, **tikanga and mātauranga Māori** have been refashioned and even revoked in a series of decisions made on GMO applications by the ERMA. The dominance of

³³ Marsden, M. (1981). Tapu. God, Man and Universe: A Maori View. M. King: 194-7.

³⁴ Te Rangikaheke (1849). Ngaa Aituaa - Waimarie. Grey New Zealand Maori Manuscript. **81**: 82-5.

³⁵ Cowan, J. (1930). Whakanoa. Legends of the Maaori. Wellington, H. Tombs. **1**: 262-271.

³⁶ Mead, A. (1998). "Sacred Balance." He Pukenga Korero **3**(22-27), Patenting of Life Forms Focus Group (1999). Maaori and the Patenting of Life Form Inventions. M. o. Commerce, Royal Commission on Genetic Modification (2001). Report of the Royal Commission on Genetic Modification: Report and recommendations. Wellington: 19, Hutchings, J. and P. Reynolds (2002). Obfuscation of Tikanga Maaori in the GM debate, Ripo - The Indigenous Genes and Genetics Institute: 36, Reynolds, P. (2004). Ngaa Puni Whakapiri: Indigenous Struggle and Genetic Engineering. School of Communication. Ottawa, Simon Fraser University. **PhD**.

³⁷ Hutchings, J. (2004). Tradition and Test Tubes; Maaori and GM. Recoding Nature: Critical perspectives on Genetic Engineering. R. Hindmarsh and G. Lawrence, University of New South Wales Press: 179-191.

mainstream Western science in the risk analysis process has seen ERMA re-frame **tikanga Māori** concepts to make GMO seem less objectionable to **Māori**. When asked to consider the impact of GMOs to **whakapapa** and **mauri** as **taonga**, ERMA fractionated the concept of **taonga** into physical and spiritual components in its assessment which enabled it to resolve that impacts to intangible spiritual **taonga** such as **whakapapa** and **mauri** could not be assessed, and the risk was ignored.³⁸ In a transgenic cattle case, **Māori** submitters opposed the application on the basis that **whakapapa** and **mauri** required active protection in accordance with the HSNO Act requirement that the principles of **Te Tiriti** be taken into account. The ERMA however in this case found that in fact, **Māori** 'beliefs' could not determine an application in this way.³⁹

The current risk analysis procedures employed by ERMA have been widely criticised for their failings to ensure the equal sharing of power between **Māori** and the Crown in decision-making.⁴⁰ The most recent and comprehensive critique of the formal consultation process used by the Crown in decision-making convincingly concluded that the current model is inadequate in that it managed the assimilation of resistant groups such as **Māori** into the powerful mainstream.⁴¹ Equal space has not been given to all

³⁸ Durie, M. (2004). *Mana Tangata: Culture, Custom and Transgenic Research. Reflections on the Use of Human Genes in Other Organisms: Ethical, Spiritual and Cultural Dimensions*, The Bioethics Council: 20-25.

³⁹ When, N. R. (2005). "Belief and Environmental Decision-making: Some Recent New Zealand Experience." *Journal of Environmental Law and Practice* **15**(3): 297.:305-306

⁴⁰ Goven, J. (2003). "Deploying the consensus conference in New Zealand: democracy and de-problematization." *Public Understanding of Science* **12**(4): 423-440, Jackson, M. (2003). *The Mysterious Ethics of Singing Sheep and Feet Pointing Backwards*, Toi te Taiao: the Bioethics Council: 71-75.

⁴¹ Sivak, L. (2006). "Culture and Science: A critical assessment of public consultation about biotechnology in New Zealand." *Journal of Communication Management* **10**(3): 287-303.

the positions on the potential effects of GE. Rather than utilising people as contributors of knowledge who are needed to assess the various and complex implications of GE, Western science and neoliberalism as a cultural value has been given dominance in risk analysis.⁴²

Upholding the values held by the ART Confederation in risk analysis decisions on GE.

For Western scientific and neoliberal values to be decentred as the exclusive locus of power in risk analysis of GE, the decision making procedures in **Aotearoa** must make space for all intellectual traditions. **Winiata's Raukawa** Trustees model of Partnership, advocates for the creation of discrete spaces or '**whare**' within which **Māori** and 'Crown' cultures can grow their own intellectual traditions and then establish the principles and conditions upon which they can interact.⁴³ Figure 1.2 illustrates the application of this model to risk analysis in **Aotearoa**, which would provide **Māori** with the space to develop their own assessments of GE that could then be upheld in risk analysis decisions in partnership with Crown assessments of GE.

⁴² Goven, J. (2006). "Processes of inclusion, cultures of calculation, structures of power - Scientific citizenship and the royal commission on genetic modification." Science Technology & Human Values **31**(5): 565-598. Goven, J. (2008). "Assessing genetic testing: Who are the "lay experts"?" Health Policy **85**(1): 1-18.

⁴³ Winiata, W. (1997). The Treaty of Waitangi; Maaori Political Representation. Maori Political Representation Conference. Wellington.

Because positions on risk vary between **iwi**, **hapū** and **whānau**, ‘**Māori**’ assessments of GE should be carried out by basis of **rohe**.⁴⁴ This ensures that **iwi**, **hapū** and **whānau** positions are not usurped by more generalised and potentially contentious positions framed as ‘**Māori**’. It also ensures that precedents are not set for decisions about the use of GE across the whole of **Aotearoa** as a result of the assertions of the position of one or a few **iwi**, **hapū** or **whānau**.

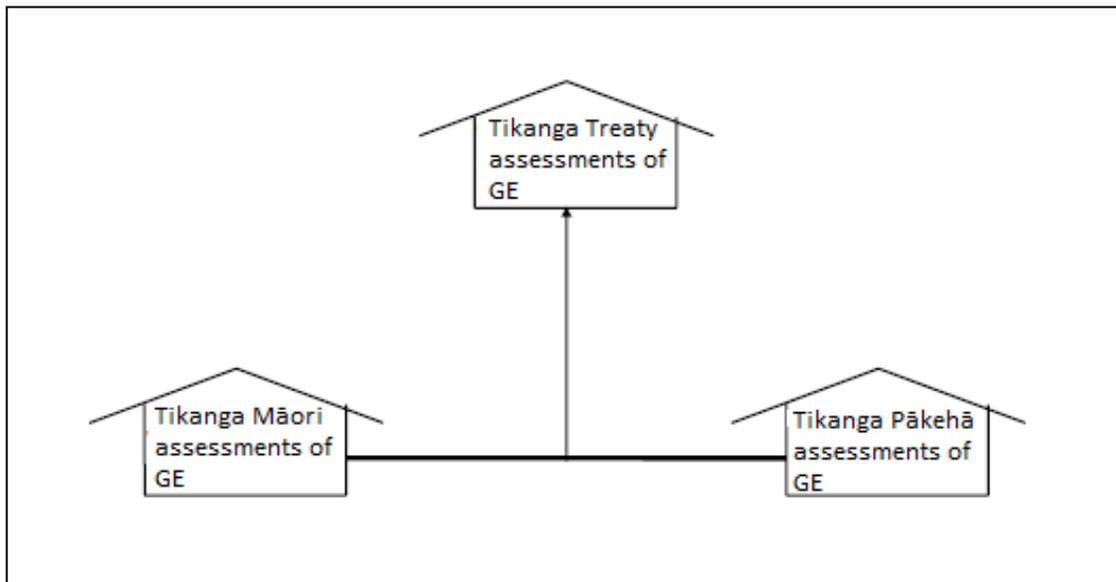


Figure 1.2 Raukawa Trustees Model of Partnership applied to assessment of GE. Adapted from (Royal 1998).

This thesis is concerned with the **Tikanga Māori** space or ‘**whare**’ of this model: it will develop an ART Confederation assessment of GE. The process by which ART Confederation and Crown assessments interact is beyond the scope of this thesis.

⁴⁴ When, N. R. (2005). "Belief and Environmental Decision-making: Some Recent New Zealand Experience." Journal of Environmental Law and Practice 15(3): 297.

Professor Sir Mason Durie of **Rangitane**, **Ngāti Kauwhata** and **Ngāti Raukawa**, has argued that the tools used to develop **Māori** assessments of GE, need to be more congruent with a **Māori** worldview:

*“In order to understand **Māori** cultural and spiritual values, one challenge is to shift the focus of the debate from a risk paradigm to a paradigm of potential.”⁴⁵*

He identified the need to assess GE in terms of its potential to uphold **Māori** values and consequently developed a framework that used specific **Māori** values to assess GE research.

This thesis will thus use values held by the ART Confederation to develop an assessment of GE. However, the comprehensive analysis that would be required to assess GE with regard to the full range of values held by the ART confederation is beyond what is possible in this thesis. Therefore, for the purpose of this thesis a specific suite of values will be used to assess GE.

I have selected the specific values that the people of the ART Confederation associates with **ngārara** to inform my assessment of GE in this thesis. **Ngārara** are considered a **manaia** to many in the ART Confederation, specifically those from **Te Āti Awa ki Whakarongotai** and **Ngāti Tukorehe**, and represent an ethic of caution and protection. It is thus appropriate that their value informs the consideration of a relatively new technology such as GE.

“He pātaka kupu” defines **ngārara** as:

⁴⁵ See Section titled “A **Māori** methodology.” Durie, M. (2004). *Mana Tangata: Culture, Custom and Transgenic Research. Reflections on the Use of Human Genes in Other Organisms: Ethical, Spiritual and Cultural Dimensions*, The Bioethics Council: 20 - 25.

1. *“He kararehe whai tuaiwi, he pūkahukahu ōna, he kiri unahi tiotio, he anga rānei tōna, ka whānau ngā uri i roto i tētahi hua kahu.”*
2. *“E ai ki ngā kōrero tuku iho, he kararehe, he tipua, ko tōna hanga he whakamataku.”* (It lists “taniwha” as a synonym of this meaning.)⁴⁶

The meaning of ‘ngārara’ is inferred through the context in which the term is used. A similar term; **ngāngara** was also identified as being closely related in meaning.

“He pātaka kupu” defines **ngāngara** as:

1. *“Ngā hanga ngaoki katoa ahakoa noho tonu ki te whenua, ki te rākau, ki hea atu, ahakoa rere rānei ina pakeke.”*

Whilst **ngāngara** is only used to refer to insects and worms, spiders, gastropods and other “creepie crawlies”, **ngārara** is used interchangeably to refer to both these, and reptiles. It is also given to refer to a creature or supernatural being whose form incites fear. The term “**ngārara**” will therefore be used throughout this thesis to also refer to “**ngāngara**”.

There are a variety of accounts of the origins and **whakapapa** of **ngārara**. **Tane**, **Tangaroa**, **Peketua**, **Haumia** and **Whiro-te-tipua** are credited as the ancestral influences of **ngārara** across different accounts.⁴⁷ Ancestors within several different **whakapapa** accounts are associated with evil, and in one account, **ngārara** form part of

⁴⁶ This is a monolingual **Māori** language dictionary. Te Taura Whiri i te Reo Maori (2008). He Paataka Kupu. Rosedale, Penguin Group.

⁴⁷ In one account **Tane** wedded **Hinetūparimaunga** of the mountains, who had a daughter **Pūtoto**. **Pūtoto** had **Tuarangaranga**, the parent of all **taniwha**, and **Tūteahura**, the parent of all reptiles and insects. see Reed, A. W. (2004). Reed Book of Maaori Mythology. Auckland, Reed Publishing. p.378. David Miller presents 5 different version of the **whakapapa** Miller (1952). "The Insect People of the Maaori." Journal of the Polynesian Society **61**. pp. 4-6

the army of the deity of evil.⁴⁸ Other accounts do not name ancestors; in one tradition **ngārara** are called “**Te Whānau o Torohuka**” and **Tane** is advised to honour them as friends,⁴⁹ some are good and some evil; in another, **ngārara** are brought to **Aotearoa** from **Hawaiki** on the **Māngārara** canoe.⁵⁰

Aims and objectives

I have shown how my heritage, ART Confederation identity and education are the seeds that gave rise to the following aims and objectives of this thesis:

Aim

To assess genetic engineering through the values that the ART Confederation associates with **ngārara**.

⁴⁸ **Tūtangatakino** is given as a common ancestor. Also, in the tradition of **Tane** in the pursuit of the knowledge of the **whare wananga**, he faces **Whiro-te-tipua** as the representation of evil. **Ngārara** form part of the army of **Whiro**, but on defeating them, **Tane** brought the **ngārara** with him back to earth to live in his realm. Reed, A. W. (2004). Reed Book of Maaori Mythology. Auckland, Reed Publishing. pp.47-49 Best, E. (1924). Cosmogony and Anthropogeny. The Maori. Wellington: 101-120.

⁴⁹ In this story **Tane** is told by **Rehua** and **Ruatau** that reptiles and insects are the lice of **Papatuānuku**. Reed, A. W. (2004). Reed Book of Maaori Mythology. Auckland, Reed Publishing. p.23

⁵⁰ The **ngārara** listed as being brought on the canoe include; **tuatara**, **teretere**, **kumukumu**, **moropārae**, **mokokākāriki**, **weri**, **whē**, **wētā** and **kekerengu**. Ibid. p. 379. Turei, R. M. (1871-1877). He Koorero Kauwhau Maaori. Te Waka Maaori o Niu Tirani. **12b(17)**.

Objective one

To conduct an analysis of the values that the ART Confederation associates with **ngārara**.

Objective two

To develop an ART conceptual framework to assess genetic engineering.

Objective three

To contribute to the development of ART research methodologies.

Thesis outline

The **whakapapa** of **wānanga** lends its form to the structure of this thesis. Each chapter will constitute a new layer of this **whakapapa**, and this thesis is hence presented in the following sequence:

1. **He Kākano**: The Potential.
2. **He Mahara**: Reflections from the literature.
3. **Ko te Hinengaro**: Methodology
4. **He Whakaaro**: Thoughts on the value of **ngārara**.
5. **Ko te Whē**: Clothing ourselves in words of wisdom.
6. **Ko te Wānanga**: Concluding Discussion.

Chapter 2 He Mahara: Reflections

from the literature.

This chapter will continue to present reflections of the written knowledge base upon which this thesis is built. This account of the literature is limited in its ability to present the depth of the relevant knowledge base, as this is predominantly held in an oral form, with dissemination of knowledge strictly regulated.⁵¹ However, this Chapter will review the literature which presents the theoretical and empirical studies and evidence of:

1. The nature of the values associated with **ngārara**, and;
2. **Māori** assessments of GE.

There is almost no literature on these topics written from an ART perspective.

Accordingly, the literature discussed conveys a variety of perspectives that have been attributed to a range of **hapū**, **iwi** and **Māori** worldviews.⁵²

⁵¹ The knowledge base referred is **mātauranga Māori** which is considered **tapu**, and is thus protected by taking care with how it is disseminated and to whom Mead, H. M. (2003). *Tikanga Maori*. Wellington, Huia.

⁵² I am making an assumption that the theories and research in the literature that relate to **hapū**, **iwi**, and **Māori** perspectives on these topics may potentially be similar to those of the ART confederation, particularly where those perspectives may arise from a **mātauranga Māori me ōna tikanga** basis.

Search process

This review was developed through systematically searching a range of databases and catalogues.⁵³ The sets of search terms used for each of the parts of this review were grouped as follows.

NGĀRARA		EFFECTS OF GMOs	
A	B	C	D
ngārara	iwi	GE	Raukawa
ngāngara	Māori	GM*	Ati Awa
insect		transgenic	Toa
reptile		genetic*	iwi
			Māori

Figure 2.1 Search terms used in the review of the literature.

Ngārara and **ngāngara** were used as search terms on their own, while the other search terms in column A were used in combination with each of those in column B.

(Preliminary searches had shown that there was no literature available on **ngārara** that related specifically to any of the tribes of the ART Confederation.) Using these 5 search

⁵³ The databases that were searched: Academic One File, Anthropology Plus, IBSS, Journal of the Polynesian Society, Masterfile, Newztext Plus, Niupepa: Māori Newspapers Digital Collection, NZ Electronic Text Centre, Tangata Māori database, Te Ao Hou, Web of Knowledge, WorldCat OCLC. The catalogues that were searched: Alexander Turnbull Manuscripts (Tapuhi), National Library of New Zealand (Te Puna), Wellington City Library, Victoria University of Wellington Library, Te Wānanga o Raukawa Library.

entries across 17 databases and catalogues produced a total of 58 items of interest for the purpose of Part One of this review. All of the search terms in column C were used in combination with each in column D. Using these 20 search entries across 17 databases and catalogues produced a total of 50 items of interest for the purpose of Part Two of this review. Searches were not restricted to any time periods and both items in both English and **te reo Māori** were included.

Part One: Values of ngārara

Languages that have many lexemes for specific flora and fauna indicate that there is a need within the society of that language to distinguish carefully between certain types of flora and fauna, and tends to be the case when societies have a direct dependence on the respective flora and fauna.⁵⁴ Miller (1952) identified 324 common **te reo Māori** words used for various insects, and in his opinion there are likely to be many more.⁵⁵ The question lies therein; in what way are **ngārara** so highly valued that there is such an intimate association with insects alone?

Part One will support Objective One of this thesis: the analysis of the values associated with **ngārara**.

⁵⁴ "Lexemes" are lexical units in a language, as a word or base; vocabulary items. Brock has shown that this may apply to the value of crickets to **Māori**, upon considering the large variety of lexemes within common **Māori** language for different types of crickets. See Brock, R. L. (2002). "Maori Names for Crickets." *Journal of the Polynesian Society* **111**(3): 239-248.

⁵⁵ Miller (1952). "The Insect People of the Maori." *Ibid.* **61**.

Ecological and resource value

The ecological role of insects as detritivores, particularly of human remains, is valued by **Māori**. The following comment was taken from an explanation of **Māori** processes of burial.

“Ka waiho tonu te kino me te pirau i te whenua, a ka heke atu pea ki roto ki nga wai ka haere ake ano ranei i roto i te hau whenua, ka hoki mai ki te patu i te hunga ora.”⁵⁶

This quote was taken from an article comparing **Māori** and **Pākehā** burial processes. It highlighted the fault of **Pākehā** burying bodies too deep and in thick wooden caskets, thus not allowing **ngārara** to carry out the important function of decomposition. It is important that the decay and disease created by death does not reside in the earth or seep into water, finding its way in the essence of the land, potentially resurfacing later to afflict the living.

Some insects are valued as **tohu** or ecological indicators. Certain behaviours of crickets and cicada align with significant times of the year. For example, the arrival of a wet season in the **Whanganui** River area was marked by the arrival of the **areinga**. The arrival of what is now known as December is marked in **Aotearoa** by the clinging of the **kihikihi** to the trees.

“He kihikihi tara ki te waru.”

“The cicada that stridulates in the eighth month (December).”⁵⁷

⁵⁶ Anonymous (1903-1913). Tahu Tuupaapaku. Pipiwharauoa. 115:9.

Ngārara are also valued in a more everyday context. A range of **ngārara** are used as food items: the larvae of the **awheto** and the **kuwharu**, the **noru**, the **kekerewai**, the **tutaeruru**, **koura**, **toke tipa**, **tuatara**, **kihikihi**, **manuka** beetle, **puriri** moth and **huhu**. Worms and **wētā** are also used as bait for catching food.⁵⁸ Products of **ngārara** such as **pia manuka** (see Figure 2.2), and honey are also consumed and are highly valued as **rongoā**.⁵⁹

Ngārara have had other resource value; the **āwheto hōtete** was dried, burnt and used for **moko** pigment.⁶⁰ Lizards have also been associated with **moko**; one account

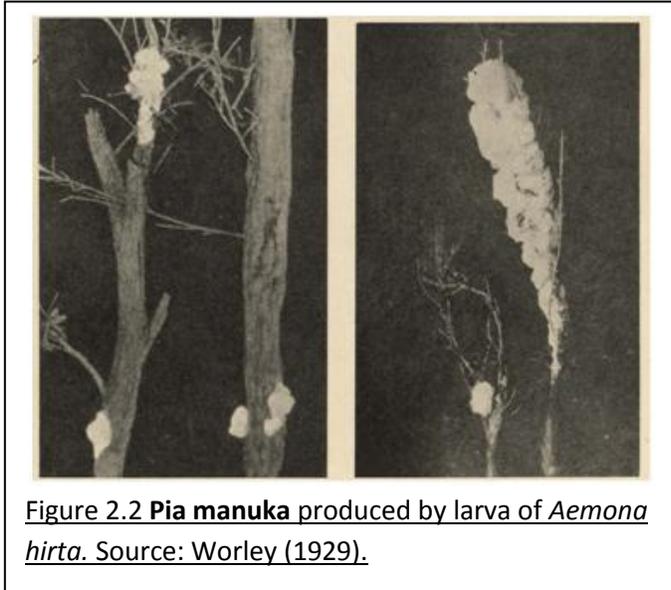
⁵⁷ Miller (1952). "The Insect People of the Maaori." *Journal of the Polynesian Society* **61**. p.7, 16

⁵⁸ Miller references a number of food related uses of **ngārara** in: Ibid. p.6, 10, 22, 32, 46, 50. Also see Downes, T.W., 1937. "Māori mentality regarding the lizard and taniwha in the Whanganui river." *Journal of the Polynesian Society*. 46(184). Meyer-Rochow has commented that **kihikihi**, **manuka** beetle and **puriri** moth may have been eaten in some parts of **Aotearoa**, but that apparently **huhu** are the only insects still eaten and are particularly favoured for their fat content. Meyer-Rochow, V. B. (2005). Traditional food insects and spiders in several ethnic groups of Northeast India, Papua New Guinea, Australia and New Zealand. *Ecological implications of minilivestock: potential of insects, rodents, frogs and snails*. M. G. Paoletti. Enfield, N.H., Science: 389-413. Ramstad, Nelson et al. also have found that **tuatara** used to be eaten. Ramstad, K. M., N. J. Nelson, et al. (2007). "Species and cultural conservation in New Zealand: Maaori traditional ecological knowledge of Tuatara." *Conservation Biology* **21**(2): 455-464. Illustrations of the use of **wētā** for snaring birds was found in Downes, T. W. (1928). "Bird-snaring, etc., in the Whanganui River district." *Journal of the Polynesian Society* **37**(145): 1-29.

⁵⁹ **Pia manuka**, is a white gum that is eaten, given to nursing babies, used to treat scalds and burns, used as a breath and blood purifier, and used to relieve a bad cough and constipation. Its production was associated with the boring grub *Aemona hirta*, and the hopper *Scolypopa australis*. Source: Worley, F. P. (1929). *Occurrance of Maanuka Manna II*. NZ Institute Science Conference, Royal Society of New Zealand 1868-1961. p.395 The value of honey is discussed in Cotton, W. C. (1849). *Ko ngaa pi: me ngaa tikanga moo te tiaki i a raatou, moo te mahinga i too raatou honi, i taa raatou whare*. Purewa, N.Z., St. John's College Press.

⁶⁰ The vegetable caterpillar is parasitized by a fungus which is nourished by the caterpillar's body, eventually killing it. The roots of the fungus fill the interior of the caterpillar, preserving its shape. The stem of the fungus grows like a bullrush and is dried and burnt to create the pigment. Robley, M.-G. (1896). *Moko Processes. Moko; or Moko Tattooing*, Chapman and Hall Ltd.: 57.

suggests the word “**moko**” came from the patterns on lizards whose **Māori** name is **moko**.⁶¹



The **Ngāti Wai** people would use **tuatara** to keep their bodies cool and enable them to withstand the heat when they were muttonbirding in summer. Interestingly, **tuatara** were also kept as pets.⁶²

Representation of ancestral influence

Various **ngārara** have been viewed as personifications of the soul. In keeping with one of the origin traditions referred to earlier, despite **ngārara** living within the realm of **Tane**, they are still referred to as the representatives of **Whiro** on earth. In another account they are referred to as representatives of **Tū**, the demon god.⁶³

⁶¹ Downes, T.W., 1937. “Māori mentality regarding the lizard and taniwha in the Whanganui river.” *Journal of the Polynesian Society*. 46(184).

⁶² They placed the cold blooded creatures next to their skin, and without them were unable to harvest effectively. As recorded in: Ramstad, K. M., N. J. Nelson, et al. (2007). "Species and cultural conservation in New Zealand: Maaori traditional ecological knowledge of Tuatara." *Conservation Biology* **21**(2): 455-464.

⁶³ “**Whiro**” as in **Whiro-te-tipua**, the demon god of darkness and evil. Reed, A. W. (2004). *Reed Book of Maaori Mythology*. Auckland, Reed Publishing. p. 386.

Lizards, are at different times regarded as incarnations of ancestral souls.⁶⁴ They have also been referred to as the embodiment of the ancestor **Rēhua**.⁶⁵ Butterflies are sometimes referred to as **wairua atua** or “personifications of the soul”. An account of the **tohunga Pahau** gliding in the form of a large lizard-shaped **ngārara** was also found.⁶⁶

As some **ngārara** were seen as representing evil or deathly ancestors or **atua**, the sight of them in some contexts were seen as an omen or message of a coming **aituā**, a death or illness;⁶⁷

“...ghosts of the dead, which had not been admitted to the underworld often became incarnate in lizards, and appeared before their relatives as omens of impending disaster or death.”⁶⁸

There is an obvious association of some **ngārara** with death; **ngaro** are often present on **tūpāpaku** and are seen as a sign of death nearing. Others are less obvious; the sight of **wētā** or earthworms in a water vessel or lying on a path was regarded as an ill omen.⁶⁹

⁶⁴ Clarke, A. (2007). The Great Sacred Forest of Tane; Te Wao Tapu Nui a Tane. A natural pre-history of Aotearoa New Zealand. Auckland, Reed Publishing. pp 276. Reed, A. W. (2004). Reed Book of Maaori Mythology. Auckland, Reed Publishing. p.81, describes a lizard form as the **āria** of an **atua**, **Te Rehuotainui**.

⁶⁵ Tuhaere, P. (1923). "An historical narrative concerning the conquest of Kaipara and Tamaki by Ngati Whatua." Journal of the Polynesian Society **32**(128): 232.

⁶⁶ Cowan, J. (1920). "Ngau-taringa." Ibid. **29**(116): 206.

⁶⁷ Weston, J. (1890). Ko Meri, or, a Cycle of Cathay: A Story of New Zealand Life. London, Eden Remington & Co.

⁶⁸ Clarke, A. (2007). The Great Sacred Forest of Tane; Te Wao Tapu Nui a Tane. A natural pre-history of Aotearoa New Zealand. Auckland, Reed Publishing. pp 276.

⁶⁹ Miller (1952). "The Insect People of the Maaori." Journal of the Polynesian Society **61**. p.42, 46, 49.

Nonetheless, the occurrence of these omens is a powerful and convincing message for **Māori**. Lizards in particular are noted as significant for their ability to foretell death or misfortune.⁷⁰ As omens they are sometimes perceived as the embodiments of **atua** who were described as 'evil'.⁷¹ A lizard found in one's house, bed or clothing is considered a sign of death, and such omens were regarded as being of particular importance in warfare when trying to predict the fate of a war party.⁷² Consequently, lizards were greatly feared, and despite some accounts of them being eaten, this was potentially done as a display of bravery.⁷³

Such views of **ngārara** as indicators of transgression or the embodiment of divine retribution is evidence which supports Clarke's (2007) theory; that **ngārara** are mechanisms of social control within the regulatory framework of **Māori** society.⁷⁴

There are other examples of **ngārara** being valued as omens or symbols but where information is sparse in the literature, the reasons for the association with coming

⁷⁰ Reed, A. W. (2004). Reed Book of Maaori Mythology. Auckland, Reed Publishing. Smith, S. P. (1921). "The Evils of Makutu, or witchcraft." Journal of the Polynesian Society **30**(119): 172-184.

⁷¹ Lizards as ill bearing omens, particularly if they are making a "laughing sound", are associated with their ancestors **Tū-tangatakinō** and **Mokohikaru** in Downes, T. W. (1937). "Maaori mentality regarding the lizard and taniwha in the Whanganui River." Journal of the Polynesian Society **46**(184).

⁷² Best, E. (1927). "Irihia. The homeland of the Polynesians. Some additional data thereon, culled from traditions preserved by the Takitimu tribes of New Zealand." *Ibid.* **36**(144): 330-362. In one account, a **tohunga** would call upon the war deity **Te Hūkitā** to appear in the form of a lizard. The lizard that appeared would then be passed around the war party and if it crawled onto a warrior's hand without being taken, he would be left behind. Best, E. (1902). "Notes on the art of war, as conducted by the Maaori of New Zealand, with various customs, rites and superstitions." Journal of the Polynesian Society **11**(1).

⁷³ Ramstad, K. M., N. J. Nelson, et al. (2007). "Species and cultural conservation in New Zealand: Maaori traditional ecological knowledge of Tuatara." Conservation Biology **21**(2): 455-464.

⁷⁴ Clarke, A. (2007). The Great Sacred Forest of Tane; Te Wao Tapu Nui a Tane. A natural pre-history of Aotearoa New Zealand. Auckland, Reed Publishing. p 140.

events are less obvious. **Whē** were used to predict pregnancies and the sex of the unborn child,⁷⁵ and **anuhe** or **āwheto** were used as a form of oracle.⁷⁶

Taniwha

Taniwha are a type of **ngārara** that are widely discussed in the literature, and often depicted as larger, uglier and more fearsome creatures than insects or reptiles. They are also associated with the threat of danger or death, and play an important socially normative role representing retribution for transgression, and setting boundaries and mechanisms of social control.

The **tapu** and **mana** of **taniwha** originated at the **whare kura** “**Te Tatau-o-te-pō**”, the home of all evils, the art of **makutu** and the **mana** that spread to areas and spaces to make them **tapu**. **Taniwha** habituate those spaces and harm any who transgress their **tapu**.⁷⁷ Much of the literature on **ngārara** consists of re-telling or translations by **Pākehā** of stories of **taniwha** who are well known for living in certain caves, lakes, harbours, swamps or mountain ranges, waiting to kill and devour those who trespass their home.⁷⁸ Of particular importance to the ART Confederation is the great lizard

⁷⁵ Miller (1952). "The Insect People of the Maaori." *Journal of the Polynesian Society* **61**. p.53. Best, E. (1941). Social Customs - Continued Customs Pertaining to Birth. *The Maori*. Wellington. **II**. Best, E. (1906). "The lore of the whare kohanga, Part II, Pregnancy." *Journal of the Polynesian Society* **15**(1): 2.

⁷⁶ Miller (1952). "The Insect People of the Maaori." *Journal of the Polynesian Society* **61**. p.29 Downes, T.W., 1937. "Māori mentality regarding the lizard and taniwha in the Whanganui river." *Journal of the Polynesian Society*. 46(184) These texts describe that by holding the caterpillar by the end with its end up, it would answer questions put to it by moving its head back and forward.

⁷⁷ Smith, S. P. (1921). "The Evils of Makutu, or witchcraft." *Ibid.* **30**(119): 172-184.

⁷⁸ The first of these stories came from Captain James Cook on his arrival to **Aotearoa** where he recalls being told of enormous man-eating lizards, in: Best, S. (1988). "Here Be Dragons." *Ibid.* **97**(3): 239-241. Reed, A. W. (2004). *Reed Book of Maaori Mythology*. Auckland, Reed Publishing. p.261-263 tells of many

taniwha, **Awaruaoporirua**, who occupies the **Porirua** Harbour and **Te Kaiwhakaruaki**, man-eater in the **Takaka**, **Motueka** area who was involved with several **iwi** of **Te Tau-ihu-o-te-waka**, including **Te Āti Awa**.⁷⁹ Several accounts also involve **taniwha** carrying off women in order to make them their wives.⁸⁰ Some **taniwha** were called upon often

taniwha. Taylor, R. R. (1855). *Mythology. Te Ika a Maui, or New Zealand and its inhabitants*, Wertheim and Maintosh. p.52 tells of the infamous **Hotupuku** of the region between **Taupō** and **Rotorua** who killed and devoured any man who passed him. p.287-288. A **ngārara** described as a **taniwha**, **Kataore**, would make a chattering sound, as an omen to passing warriors if they were heading to their doom, in a similar way that regular lizards do. He was renowned for devouring many people and any **taonga** in their possession, including a famed beauty from **Tarawera**, **Tuhi-karaparapa**. As told in: Best, E. 1902. "Notes of the art of war, as conducted by the Māori of New Zealand, with various customs, rites and superstitions." *Journal of the Polynesian Society*. 11(1); Downes, T.W., 1937. "Māori mentality regarding the lizard and taniwha in the Whanganui river." *Journal of the Polynesian Society*. 46(184) Cowan, J. (1925). *The Dragon of the Sacred Lake. Fairy Folk Tales of the Maori*. W. a. Tombs: 132-143. The story of **Tūtae-poroporo** is in Downes, T. W. (1937). "Maori mentality regarding the lizard and taniwha in the Whanganui River." *Journal of the Polynesian Society* 46(184). In the story of the **Taupō ngārara**, **Te Ihi** carried off a man who was sleeping on the shore of the island **Haka-e-pari** in **Tarawera** lake, in: Taylor, R. R. (1855). *Mythology. Te Ika a Maui, or New Zealand and its inhabitants*, Wertheim and Maintosh. p.50 A number of stories are in: Fowler, L. (1959). "Of Taniwha, Ngaarara and How Paeroa Got its Name." *Te Ao Hou* 26. including that of the **ngārara Urea** of **Paeroa** who devoured women, the **ngārara** on **Mataau** called **Kopuwai** who captured a woman, and another who killed men who were out hunting **weka**. There are several stories on **Ngārara-huarau**; in some she is a half-woman, half lizard ogress, in others a wife stealing male **ngārara**, who killed parties travelling past the river **Koura-rau**. These stories are found in: Tu nui-a-rangi, M. H. P. (1905). "Te Korero mo Ngarara-huarau." *Journal of the Polynesian Society* 14(4): 203. Reed, A. W. (2004). *Reed Book of Maaori Mythology*. Auckland, Reed Publishing. p.240-241. Whetu, T. (1893). "Te Patunga o Ngaarara-Huarau." *Journal of the Polynesian Society* 2(4): 211-219. A story of a sacred **taniwha** infested swamp is told in: Saunders, T. V. (1972). "Tupurupuru; An Old Maungaraki Maori Love Story." *Te Ao Hou* 70. An interesting story is told in Downes, T. W. (1937). "Maori mentality regarding the lizard and taniwha in the Whanganui River." *Journal of the Polynesian Society* 46(184). The people of the **Retaruke** block were reconsidering approaching a small lake, **Kawau-tahi**, that was usually shunned due to the presence of a lizard-like **taniwha**, as a result of **Pākehā** surveyors offering a lot of money for it. Upon one surveyor and three **Māori** entering into the area of the **taniwha**, they came upon it, and were pursued, lucky to escape.

⁷⁹ In Orbell, M. (1966). "Three Old Stories." *Te Ao Hou* 56(September). p. 300, Te Whetu. 1894. "Ko te patunga o Te Kaiwhakaruaki." *Journal of the Polynesian Society*. 3(1), and Orbell, M. (1967). "The Killing of Te Kaiwhakaruaki." *Te Ao Hou* 61.

⁸⁰ The story of **Hotupuku** is given in detail in Gudgeon, L.-C. W. E. (1905). "Maori superstition." *Journal of the Polynesian Society* 14(4): 167-192. The story of **Orawaro**, who devours children and steals a woman for his wife is told in Taylor, R. R. (1855). *Mythology. Te Ika a Maui, or New Zealand and its inhabitants*, Wertheim and Maintosh. p.51 The story of a **kumi**, a particularly large **ngārara** - the size of a house – who takes a woman as his wife is told in Orbell, M. (1966). "Three Old Stories." *Te Ao Hou* 56(September).

through use of **makutu**, to enact revenge upon enemies⁸¹, by inflicting injury, illness, or even cause death.⁸²

The large body of literature recounting such stories is evidence of **taniwha** being accepted as part of the landscape of **Aotearoa**. Their presence is immediately recognisable to **Māori** as a sign of a transgression. In some cases where an **aituā** is recognised as typical of **taniwha**, they need not even be seen to know that a **taniwha** is responsible. In one story, a girl who had been sucking on the flowers of a sacred **rata** tree went missing at a waterhole at **Waipapa**. Her body was discovered on the shore days later with tell-tale injuries to her body and face, and the local people knew that her life had been taken by **Taminamina** who protected the tree.⁸³ Some **ngārara taniwha** are not distinctly lizards; a flying lizard **taniwha** comes and goes with the fog to eat **kūmara** runners at night if **karakia** are not done; the **taniwha Ruapirau** lies at the top of a ridge on the **Whanganui** River in the form of stone,⁸⁴ and **O-te-rongo** lives between Island Bay and Cape **Te Rāwhiti**, and extinguished any fires made by travellers in that region, accompanied by south-easterly winds.⁸⁵

⁸¹ Smith, P. (1918). "Mummification among the Maori." *Journal of the Polynesian Society* **27**(106): 95-96. Discusses the **whānau** of **Karaki** who called upon **ngārara** to come ashore from the sea to scare those who had betrayed them.

⁸² Smith, P. (1921). "The Evils of Makutu, or witchcraft." *Journal of the Polynesian Society* **30**(119): 172-184. gives an example of a **taniwha** being called upon in retaliation for a theft.

⁸³ Tangaroapeau (1871-1877). *Taniwha. Te Waka Maaori o Niu Tirani*. **13b(6)**: 77.

⁸⁴ Downes, T.W., 1937. "Māori mentality regarding the lizard and taniwha in the Whanganui river." *Journal of the Polynesian Society*. 46(184).

⁸⁵ Smith, P. (1909). "History and traditions of the Taranaki coast Ch. XV contd." *Journal of the Polynesian Society* **18**(4): 171-174.

The literature regarding **taniwha** tends to be from the late 19th century to mid-20th century and is dominated by **Pākehā** re-tellings or translations of **Māori** stories. The academic exercise undertaken in this literature is the observation of collections of so-called “mythology”. Whilst superficial and amateur in its interpretation of the evidence, this literature alludes to the widely observed concept of **taniwha**, which is valued as a mechanism of social control and a symbol of restriction. Its threat is omnipresent in all facets of life, and is enforced through the establishment of boundaries around space and behaviours. **Taniwha** lie in wait for us, and appear as **aituā** whenever we misstep in life. In recent times, Barry Barclay has reflected on the power of **taniwha** in his experience as a film maker, recalling an incident where a colleague died after offending indigenous people in Australia:

*“...maybe **taniwha** swim through the words poets write and the shapes carvers shape, and that perhaps we had all better hang on tight. Could **taniwha** be ‘lore’? Or ‘law’?”⁸⁶*

Protector

In addition to the literature which points to **taniwha** as markers of boundaries and restriction, a considerable number of sources refer to **ngārara** who also carry out this role. But in contrast to the **taniwha** literature, the focus is not as much on the fearsome supernatural characteristics of **ngārara** as their protective nature. Downes identified three roles of **ngārara**:

⁸⁶ Barclay, B. (2005). Nga Taniwha: The Significant Gap. Mana Tuturu: Maaori Treasures and Intellectual Property Rights. . Auckland, University of Auckland Press. p.139

“antagonistic to man; helpful to man and those that were sometimes guardians of people but more often of sacred objects or places.”⁸⁷

Ngārara are revered as protectors of the natural world, particularly in the realm of **Tāne**. The oral tradition of **Rata** tells of his carelessness in not consulting with the **atua** through appropriate **karakia** before felling a large **tōtara** to be used for a canoe. On leaving the felled **tōtara** overnight the guardians of the forest, **ngārara** amongst them, **Te Tiniotehākuturi**, (“who protected trees and punished those who offended against the **tapu** of **Tāne**”⁸⁸), restored and erected the **tōtara** repeatedly until **Rata** realised his fault in not propitiating the **atua** of the forest and recites a **karakia**.⁸⁹

This **mana** to protect the forest can be called upon by **tohunga** who may put **mauri** stones down and liberate a lizard above it, to stay and protect both the **mauri** of the stone and the forest.⁹⁰ When dividing cultivations lizards can be placed underneath boundary stones as guardians who would harm anyone who would disrupt the

⁸⁷ Downes, T.W., 1937. “Māori mentality regarding the lizard and taniwha in the Whanganui river.” *Journal of the Polynesian Society*. 46(184).

⁸⁸ Reed, A. W. (2004). *Reed Book of Maaori Mythology*. Auckland, Reed Publishing. p.220.

⁸⁹ White, J. (2001). Death of Wahie-roa and deeds of his son Rata. *The Ancient History of the Maaori, His Mythology and Traditions: Te Arawa*. Hamilton, University of Waikato Library. VII, Reed, A. W. (2004). *Reed Book of Maaori Mythology*. Auckland, Reed Publishing. p.179-180. The following is the chant of those creatures: **Rata ware, Rata ware noho noa koe, Ka tuatua i a Tāne, Koia i whekī, Koia i whekā, Rere mai te kongakonga, Koia i piri, Koia i mau, Rere mai te maramara, Koia i piri, Koia i mau, E tū Tāne torotika ki te rangi, Tihei mauri ora!** This **tauparapara** was given to me by **Tonga Karena** in personal communication, 2008.

⁹⁰ Clarke, A. (2007). *The Great Sacred Forest of Tane; Te Wao Tapu Nui a Tane. A natural pre-history of Aotearoa New Zealand*. Auckland, Reed Publishing. pp 143. **Ngārara** can be used to guard any stones that are buried in the ground, and in this role they are considered an **atua**. Anonymous (1920). "Notes and Queries." *Journal of the Polynesian Society* 29: 162. The ability of **tohunga** to control **ngārara** through **karakia** is also discussed in Guthrie-Smith, W. (1926). *Trails from the Coast to Tutira. Tutira*. Edinburgh, Blackwood and Sons Limited: 65-66.

boundaries.⁹¹ **Ropata Taylor of Te Ati Awa** explained the following to researchers in a recent ecology publication:

*“(Tuatara) were often used in our stories as boundaries. As perimeters that signify **tapu** and indicate...that if you cross that boundary, there is a **mana** there. There’s an authority, there’s a power, and there’s going to be repercussions.”*⁹²

Insects in particular are recognised as being the original occupants and protectors of the land. One account describes them being placated when a new house is being built, by making offerings of food to them.⁹³

Kahumatamomoe was said to have put **ngārara** on **Rangitoto** as a guardian of the parrots there, and to safeguard the passage between **Rangitoto** and **Motutapu**. On occasions where those **ngārara** hadn’t been placated with the necessary **karakia**, people have drowned trying to make the crossing.⁹⁴ **Ngārara** are therefore also valued in the role of protecting people. The **ngārara Huara** resided at **Ohu-o-whata**, where canoers also had to make an offering to ensure a safe journey. This particular **ngārara** was a servant of a man named **Tuhaepo**.⁹⁵

⁹¹ Smith, P. (1921). "The Evils of Makutu, or witchcraft." Journal of the Polynesian Society **30**(119): 172-184.

⁹² As quoted in Ramstad, K. M., N. J. Nelson, et al. (2007). "Species and cultural conservation in New Zealand: Maaori traditional ecological knowledge of Tuatara." Conservation Biology **21**(2): 455-464.

⁹³ White, J. (2001). The Ancient History of the Maori his mythology and traditions. Nga Puhī. Hamilton, N.Z., University of Waikato Library.

⁹⁴ Graham, G. (1921). "Te Tuhi-a-manawatere and other legends of Marae-tai." Journal of the Polynesian Society **30**(120): 252-253. The names of the two **ngārara** put on the island were **Moko-nui-o-Kahu** and **Moko-nui-o-Hei**.

⁹⁵ Stories of this **ngārara** are told in Downes, T.W., 1937. "Māori mentality regarding the lizard and taniwha in the Whanganui river." Journal of the Polynesian Society. 46(184). In one occasion where the proper rites were not performed , a man, his wife and two children died.

In fact, there are many items of the literature that refer to **ngārara** as pets or protectors of individuals or whole tribes. The **ngārara Takere-piripiri** acted as the guardian of a **Ngāti Raukawa** fortified **pā** in exchange for being fed regularly. However, when this arrangement was broken by **Ngāti Raukawa**, the **ngārara** retaliated violently, and left his post as a protector with the result that **Ngāti Raukawa** was defeated by another war party.⁹⁶ Otherwise, these pets were highly treasured, and the killing of a pet **ngārara** of one **iwi** by another was cause for the aggrieved **iwi** to declare war.⁹⁷ **Ngārara** were also kept by individuals as pets.⁹⁸ Other **ngārara** such as **Okuarei** would protect travellers sending storms to drive them away if they were likely to meet misfortune.⁹⁹ **Ngārara** were highly valued for the protection they could offer; women

⁹⁶ Cowan, J. (1925). A Basket of Eels. *Fairy Folk Tales of the Maori*. Wellington, Whitcomb and Tombs: 77-87. The arrangement was broken when the chief of the tribe sent his children to take freshly cooked eel to the **ngārara**, whom ate it themselves instead. When the children offered the **ngārara** nothing but eel heads, he simply devoured them instead as **utu** upon the chief.

⁹⁷ The slaying of a pet **taniwha** named **Kataure** or **Kataore** by **Ngāti Tama**, gave cause for the whole of **Arawa** to go to war against them, where they issued a stunning defeat against the **taniwha** slayers. In one account, **Kataure** was a pet of **Hine-mihi**, a descendent of **Tū-o-Rotorua** see Gudgeon, L.-C. W. E. (1905). "Maori superstition." *Journal of the Polynesian Society* 14(4): 167-192. In another account, **Kataore** was a pet of **Tangaroa-mihi**, a chief of the **Tikitapu** district, see Cowan, J. (1925). The Dragon of the Sacred Lake. *Fairy Folk Tales of the Maori*. W. a. Tombs: 132-143. **Kata-ore** is also mentioned as a **taniwha** that was placated with offerings for safe travel in: Mitira, H. (1972). Various Ancestors. *Takitimu*, Reed Publishing. Also see: Tarakawa, T. (1909). "Te korero mo kataore: he mokai na Tangaroa-mihi." *Journal of the Polynesian Society* 18(4): 205-215. Tarakawa tells that **Tama-ihu-tōroa** kept a pet **ngārara** and it's slaying by the notorious **ngārara** slayers, **Ngāti Tama**, caused his people to go to war against them. Also, see Downes, T.W., 1937. "Māori mentality regarding the lizard and taniwha in the Whanganui river." *Journal of the Polynesian Society*. 46(184) for the story of **Hurinui**, a **ngārara**, who assisted the **Parinui** people, although he was a prisoner. He was unleashed on the arrival of enemies of the **Parinui** to destroy them.

⁹⁸ See Downes, T.W., 1937. "Māori mentality regarding the lizard and taniwha in the Whanganui River." *Journal of the Polynesian Society*. 46(184) for the story of a flying lizard taniwha that protected a renown **tohunga Te Kere-ngatai-e-rua**, and swam him to safety when he had to abandon ship.

⁹⁹ Downes, T.W., 1937. "Māori mentality regarding the lizard and taniwha in the Whanganui river." *Journal of the Polynesian Society*. 46(184)

have even been recorded as tattooing **ngārara** near their genitals to protect this area of their body.¹⁰⁰

The role of protector also extends to areas where the dead were kept. It is not explicit in the literature if **ngārara** were protectors of the dead from disturbance, or protectors of the living from the dead. Lizards are used as guardians of burial caves,¹⁰¹ graves (particularly those where **taonga** are also buried),¹⁰² and are depicted on boxes that contain the bones of the dead.¹⁰³ They also have been noted as protectors of other sacred items or places.¹⁰⁴ Finally, one item discussed the value of **tuatara** as guardians

¹⁰⁰ Ramstad, K. M., N. J. Nelson, et al. (2007). "Species and cultural conservation in New Zealand: Maaori traditional ecological knowledge of Tuatara." *Conservation Biology* **21**(2): 455-464.

¹⁰¹ "There was a burial cave on the island of **Kāpiti** where **Tūnuiateika** was the guardian spirit of the cave, and his visible presence or symbol a lizard." Reed, A. W. (2004). *Reed Book of Maaori Mythology*. Auckland, Reed Publishing. p.79; The practice of placing a lizard as guardian is also described in Best, E. (1926). "Notes on customs, ritual and belief pertaining to sickness, death, burial and exhumation among the Maaori of New Zealand." *Journal of the Polynesian Society* **35**(137): 19.

¹⁰² **Taukai-turoa** is buried at a tributary of the **Whangaehu**, with a large block of greenstone, they are guarded by a great lizard. The grave of **Piki Kotuku** is guarded by a **ngārara** shaped like a **tuatara** where apparently 200 people have been killed by venturing too near. Downes, T.W., 1937. "Māori mentality regarding the lizard and taniwha in the Whanganui river." *Journal of the Polynesian Society*. 46(184)

¹⁰³ Ramstad, K. M., N. J. Nelson, et al. (2007). "Species and cultural conservation in New Zealand: Maaori traditional ecological knowledge of Tuatara." *Conservation Biology* **21**(2): 455-464.

¹⁰⁴ A large green lizard was found guarding the adze **Te Haha-paepae**, signalling to those who came across it that it was not ordinary and needed to be hidden from common eyes. Two lizards that represent the **atua Moko-hikuwaru** and **Tūtangata-kino** guard a **tuahu** at **Arimatia**. Another **tuahu**, **Karatia** was also guarded by lizards. See: Downes, T.W., 1937. "Māori mentality regarding the lizard and taniwha in the Whanganui river." *Journal of the Polynesian Society*. 46(184). Also, the "**Awanui** Lintel" is referred to as representing a **moko miro** or wooden lizard, similar to those which were used to open houses of importance. Waite, F. (1921). "The Awanui (Kaitaia Carving) Lintel." *Journal of the Polynesian Society* **30**(120): 246-247. The role of lizards as feared guardians of **taonga** such as greenstone **mere**, who were capable of harming those who tried to retrieve them, is discussed in White, J. (2001). *The Ancient History of the Maori, his Mythology and Traditions*. Awarea, Taranaki, Ngati Hau, Ngati Ruanui. Hamilton, N.Z., University of Waikato.

of knowledge, accumulating it since long ago when they first came to **Aotearoa**. This wisdom is also attributed to their long life span, and their third eye.¹⁰⁵

The literature has produced a lot of evidence that depicts the value of **ngārara** as protectors of the living landscape, of humans, the dead, of **taonga**, and of knowledge. All these things have **mauri**, and some texts make specific reference to **ngārara** being employed as protectors of **mauri**, or to indicate when humans have not appropriately engaged with the **mauri** of an area, such as by failing to make offerings, say **karakia**, or simply stay away.

Māori voices in the literature on ngārara?

The most recent theory presented on the cultural significance of types of **ngārara** are underdeveloped and constrained in their perspective, because they are presented in the western scientific worldview.

*“The cultural link between **tuatara** and **taniwha** does not mean that scientists must believe in sasquatch or **taniwha** to appreciate TEK (traditional ecological knowledge). Although it is sometimes wrong (just like science), it may be one of the last sources of information on rare and extinct species...”¹⁰⁶*

This statement raises many questions about the appropriateness of the authors of this paper having the privilege to present an academic argument on this topic. A position of

¹⁰⁵ Ramstad, K. M., N. J. Nelson, et al. (2007). "Species and cultural conservation in New Zealand: Māori traditional ecological knowledge of Tuatara." *Conservation Biology* **21**(2): 455-464.

¹⁰⁶ See Ibid. p.462

superiority is claimed in this statement when it suggests that scientists should feel free to take from **mātauranga Māori** what they need (as a last resort), and interpret it out of context, and with disregard for its validity. The concept of **taniwha** is “wrong” in the eyes of Western science; claiming it is a matter of “belief”, and not “fact”. With its context removed and revoked, the value and function of **tuatara**, or **ngārara** in any other **Pākehā** presentation, cannot be understood.

Pākehā academics speak for **Māori** and for **ngārara** in this body of literature. As mentioned earlier, the literature is dominated by colonial **Pākehā** re-telling and re-interpreting **Māori** stories of **ngārara**, which has provided superficial and amateur analyses in the literature. The expert **Māori** narratives of the relationship between **Māori** and **ngārara** have been polluted and silenced by the translations of these early **Pākehā** academics. This demonstrates the impact that colonisation has had on **mātauranga Māori**. Some of the more insightful literature came from **Māori** language texts such as the **Māori** newspaper articles. Literature that associated information with specific **iwi** and **hapū** was also important in highlighting the heterogeneity of the values held between these groups. However, this context was not always provided. By presenting ART Confederation values associated with **ngārara**, this thesis is a means of recovering and relocating **mātauranga Māori** specific to **ngārara** with the traditional knowledge holders; **iwi**, **hapū** and **whānau**.

Summary

The literature has provided evidence of a wide range of values associated with **ngārara**. **Ngārara** have a basic material value as a resource or performer of an important ecological function. But they also have significant value representing important ancestral influences, providing restrictions and social control, and being the protector of **mauri**, or the principle of life. The value of **ngārara** cannot be completely understood by considering just one aspect of their value, or by applying **Pākehā** colonial worldviews that have dominated the literature on this topic. Only **Māori** narratives can convey the full range of integrated values associated with **ngārara**.

Part Two: Effects of GE on values of ngārara

Part Two will support Objective Two of this thesis and will present the **Māori, iwi, hapū** and **whānau** assessments of GE that will provide the context of my analysis of ART Confederation assessments of GE.

How “Māori” do Māori interpretations have to be?

*“...don’t just pigeon hole **Māori**..., because we also want to talk about antibiotic resistance, horizontal gene transfer, about crossing with valued flora and fauna, not just indigenous.”¹⁰⁷*

Māori have a variety of dynamic assessments of GE, and some **Māori** also may not have access to ‘**Māori**’ interpretations of GE. There is little evidence in the literature of an attempt to capture **Māori** interpretations that is not distinctly ‘**Māori**’.¹⁰⁸ In this review, I have sought assessments of GE as held by **Māori** people, **whānau**, **hapū** and **iwi**.

Assessments in terms of values

Most of the assessments of GE found in the literature are articulated in terms of four key values; **mauri**, **tapu**, **whakapapa** and **kaitiakitanga**.¹⁰⁹ Evidence of this from the literature will be briefly outlined here.

¹⁰⁷ Bevan **Tipene Matua** as quoted in Cram, F., L. Pihama, et al. (2000). Maaori and Genetic Engineering: Research Report. Rangahau Maori. Auckland, International Research Institute for Maori and Indigenous Education. p.70.

¹⁰⁸ This may reflect a situation where **Māori** views are only researched and addressed from a desire of non-**Māori** to understand **Māori** views. When **Māori** interpretations of GE are presented to satisfy this desire, this directly influences the way in which these interpretations are treated, delivered, sourced or even conceived. By allowing non-**Māori** to dictate the process by which **Māori** interpretations are articulated, non-**Māori** are able to control the space and position **Māori** are given in the discourse on GE. Western scientific interpretations are able to maintain centrality whilst **Māori** interpretations are marginalised. I believe there is a need of **iwi**, **hapū** and **whānau** to compile all interpretations that are of importance to them, not those which non-**Māori** deem useful or interesting. Dr **Huirangi Waikerepuru** has commented that until the Crown ensures that interpretations of **tikanga Māori** will be considered in a way that reflects a Treaty partnership, **Māori** should not continue to provide the Crown with information regarding **tikanga Māori**. See: Ibid.p.79.

¹⁰⁹ Ibid, Hutchings, J. (2004). Tradition and Test Tubes; Maaori and GM. Recoding Nature: Critical perspectives on Genetic Engineering. R. Hindmarsh and G. Lawrence, University of New South Wales Press: 179-191.

Mauri

Many **Māori** feel that GE interferes with the integrity and **mauri** of living things.

Angeline Greensill explains that the modification of one living thing through the use of genetic engineering affects the whole **mauri** of living systems:

“Because everything is inter-related and inter-connected, any mutilation, modification or unnatural desecration of any part affects the whole.”¹¹⁰

Tapu

GE involves tampering with things that should not be tampered with; **mauri, wairua**, cultural memory, knowledge, intelligence, **ira tangata**, emotions and intuition.¹¹¹

Whakapapa

*“The transfer of genetic material.....will adversely affect our principles of **whanaungatanga** with our **atua** and **tupuna**.”¹¹²*

GE compromises **whakapapa** by interfering with the framework by which people relate to the environment, along and with **whanaungatanga** relationships.

“The genetic engineering at the moment for the protection of what? It’s because we have buggered up the natural family patterns. That’s why we’re in trouble and having to now modify family members to protect against other family members....It’s because we’ve buggered up corn that we’re having trouble with insects. The Westerns’ industrial agricultural systems...completely chaos and

¹¹⁰ As quoted in Cram, F., L. Pihama, et al. (2000). Maaori and Genetic Engineering: Research Report. Rangahau Maori. Auckland, International Research Institute for Maori and Indigenous Education. p.13.

¹¹¹ Ibid. p.73.

¹¹² **Tikitu Tutua**-Nathan as quoted in Ibid. p.18.

*we're for the opposite of chaos, we're for order and that's what gene must be...It must mean order. It's **whakapapa**.*"¹¹³

The genomic industry has promoted GE as a tool to address issues of insect pest management and endangerment or extinction of species such as **ngārara**.¹¹⁴ However, these issues are viewed by many **Māori** as reflecting a larger problem that modern society has created by engaging in a western approach to land management. Thus, turning to GE to solve such problems precludes addressing the fundamental issues, and further manipulates the ecological relationship of people and their environment¹¹⁵. The earlier literature demonstrated that **ngārara** indicate disruption of the **mauri** of a space or an ecosystem or even of people. The use of GE for management of pests such as **ngārara** are an attack on the very mechanisms that have traditionally protected the children of **Papatūānuku** and **Ranginui** from such degradation.

¹¹³ As quoted in Ibid. p.78.

¹¹⁴ GE may provide a tempting option for the recovery of endangered and even extinct species, however there is a feeling from many **Māori** that the endangerment of a species is likely to be brought about by larger remaining issues that are not resolved by GE, e.g., habitat loss, unhealthy environment, and that GM would be used to treat the symptoms and not the cause. Ibid. Extensive genetic screening and chromosomal cloning (not genetic modification) has been used in research to improve the current status of **tuatara**. See: Wang, Z. S., T. Miyake, et al. (2006). "Tuatara (Sphenodon) genomics: BAC library construction, sequence survey, and application to the DMRT gene family." *Journal of Heredity* **97**(6): 541-548, MacAvoy, E. S., L. M. McGibbon, et al. (2007). "Genetic variation in island populations of tuatara (Sphenodon spp) inferred from microsatellite markers." *Conservation Genetics* **8**(2): 305-318, Hay, J. M. and D. M. Lambert (2008). "Microsatellite DNA loci identify individuals and provide no evidence for multiple paternity in wild tuatara (Sphenodon : Reptilia)." *Conservation Genetics* **9**(4): 1039-1043, Miller, H. C., K. A. Miller, et al. (2008). "Reduced MHC variation in a threatened tuatara species." *Animal Conservation* **11**(3): 206-214, Moore, J. A., N. J. Nelson, et al. (2008). "Implications of social dominance and multiple paternity for the genetic diversity of a captive-bred reptile population (tuatara)." *Conservation Genetics* **9**(5): 1243-1251.

¹¹⁵ In the context of discussing issues to be considered in any debate regarding genetic engineering, a research participant referred to importance of **tohu** that indicate certain factors need to be addressed, including "**ngangara**" who offer certain messages. This function was seen to be threatened by GE. See: Cram, F., L. Pihama, et al. (2000). *Māori and Genetic Engineering: Research Report. Rangahau Māori*. Auckland, International Research Institute for Māori and Indigenous Education. p.90.

GE is an act of excessive human dominance and control over living things and is particularly disruptive to the **tuakana/teina** relationship between humans and other fauna and flora who have the right to be respected and treated as the older, wiser children of **Ranginui** and **Papatūānuku**.¹¹⁶

“Humans are one of the youngest species on this Earth – we do not have the right to dominate our elders.”¹¹⁷

An important **whakapapa** relationship that is adversely disrupted is the **kaitiaki** relationship humans have as **teina** with their **tuakana**, the children of **Tāne Mahuta**, who are considered **taonga**.¹¹⁸

Kaitiakitanga

Not only is the **whakapapa** based relationship of **kaitiakitanga** disrupted by GE, but GE also disrupts a **Māori** relationship with the environment, because accepting the technology requires one to locate themselves outside of nature.¹¹⁹

“It’s putting a proprietary right to everything...it’s getting something that we’ve always thought to be a part of us, distancing ourselves from and then putting

¹¹⁶ Cram, F. (2005). Backgrounding Maaori Views on Genetic Engineering. Sovereignty Matters: Locations of Contestation and Possibility in Indigenous Struggles for Self-Determination. J. Barker. Lincoln, University of Nebraska: 51-65.

¹¹⁷ Angeline Greensill as quoted in Cram, F., L. Pihama, et al. (2000). Maaori and Genetic Engineering: Research Report. Rangahau Maori. Auckland, International Research Institute for Maori and Indigenous Education. p.25-26.

¹¹⁸ Ibid, Hutchings, J. (2004). Tradition and Test Tubes; Maaori and GM. Recoding Nature: Critical perspectives on Genetic Engineering. R. Hindmarsh and G. Lawrence, University of New South Wales Press: 179-191.

¹¹⁹ Cram, F., L. Pihama, et al. (2000). Maaori and Genetic Engineering: Research Report. Rangahau Maori. Auckland, International Research Institute for Maori and Indigenous Education. p.101

*(error) around it. The more we do that to everything around us, the more distanced we will become from what it is to be **Māori**.*¹²⁰

Considering the transgression of **tapu** and offense caused by GE to **mauri** and **whakapapa**, allowing GE to take place would represent a failure of **kaitiaki** to carry out their role in protecting the living environment.

The literature highlights significant concerns of **Māori** regarding the effects of GE that are grounded in important cultural values.

The unforeseen and irreversible

*“E kore e kitea he toki huna.”*¹²¹

Māori interpret the effects of engineering a system as complex as the genome, akin to those created by engineering complex social systems,¹²² where a situation of ignorance prevails rather than one of risk or even uncertainty. This is particularly threatening considering the irreversibility of GE effects.¹²³ The process of GE technology development in **Aotearoa** is not transparent. **Māori** opponents find themselves uninformed and thus unable to mitigate the potential effects of GE.

¹²⁰ As quoted in Ibid. p.114. The commoditization of genetic material in particular was seen as a means of detaching ourselves from a relationship with living things, including **ngārara**, this act of distancing will culminate in the distancing of **Māori** from our very own identity.

¹²¹ “A hidden adze cannot be seen.” Mead, H. M. and N. Grove (2007). Ngaa Pepeha a ngaa Tiipuna. Wellington, Victoria University Press. p.31.

¹²² Cram, F., L. Pihama, et al. (2000). Maori and Genetic Engineering: Research Report. Rangahau Maori. Auckland, International Research Institute for Maori and Indigenous Education. p.76, 88, 89.

¹²³ Ibid. p.78, 85

Ngārara as a commodity

*“We once had **taonga**. We once had guardians. We once had keepers. We once had **tohunga** and **karakia**. We once had **rangatira**. We once had **kuia** and **kaumatua**. What we have now – if we are to believe what we hear – are owners. What we have now, are properties.”¹²⁴*

A literature on the effects of GE and accompanying so-called intellectual property rights of genetic material arose out of the WAI 262 claim. WAI 262 raised concerns around how GE would affect **Māori tino rangatiratanga** and relationships with **taonga**.¹²⁵

The naming and trading of genetic material as intellectual property “leads to a myriad of dilemmas for **Māori**”¹²⁶: particularly the societal change of how we value genetic material (from **taonga** to property), and how we relate to the environment (from **kaitiaki** and **teina** to owners). This undermines **Māori** sovereign rights to value **taonga** such as **ngārara** in a way that they deem fit, and to the relationship we have to them.

Barclay has gone on to refer to the concept of “intellectual property rights” as an insulting term to use, for what he instead refers to as “intellectual **taonga**”, as the term is unusable to represent the value of their **taonga**.¹²⁷ The prevailing neoliberal free

¹²⁴ Barry Barclay quoted in: Barclay, B. (2005). The Black Penny: From Free to Owned. Mana Tuturu: Maaori Treasures and Intellectual Property Rights. Auckland, Auckland University Press. p.65.

¹²⁵ Cram, F., L. Pihama, et al. (2000). Maaori and Genetic Engineering: Research Report. Rangahau Maori. Auckland, International Research Institute for Maori and Indigenous Education. p.140.

¹²⁶ Reynolds, P. (2004). Ngaa Puni Whakapiri: Indigenous Struggle and Genetic Engineering. School of Communication. Ottawa, Simon Fraser University. **PhD**. p.219.

¹²⁷ Barclay, B. (2005). The Black Penny: Patents on Life Forms. Mana Tuturu: Maaori Treasures and Intellectual Property Rights. Auckland, Auckland University Press. p.85-88 Barclay draws the analogy that the treatment of living things and aspects of their social and cultural value as intellectual property is as “vulgar” as **Pākehā** may find the treatment of cemeteries and war memorials as tradable intellectual property. Also see: Garrity as referred to in Reynolds, P. (2004). Ngaa Puni Whakapiri: Indigenous

market regime is incapable of valuing **taonga** such as **ngārara** that evoke emotion and divine inspiration and provide social control and spiritual and physical protection. The relationship of **Māori** with **ngārara** as a resource is also threatened by intellectual property rights, as it is not the information itself that is being sold, but the right to use it.¹²⁸

Additionally, the use of intellectual property rights to protect **ngārara** is a paradox. The patent system does not reward conservation. **Ngārara in situ** could not be protected by patents, but only when “genes are identified, extracted, characterized and exploited through gene technology.”¹²⁹ The individualisation of intellectual property rights in the Western system of law also limits the ability for **Māori** collectives such as **whānau**, **hapū** and **iwi** to even have the option of ownership, unless they organise themselves as a corporate body. The intellectual property system also disrupts the intergenerational nature of the relationship of **Māori** to their **taonga**.¹³⁰ Intellectual property rights have been developed and appropriated to provide multi-national companies with the tools to increase their ownership rights, and control, over **taonga**.¹³¹ Hutchings has referred

Struggle and Genetic Engineering. School of Communication. Ottawa, Simon Fraser University. **PhD**. p.136.

¹²⁸ Reynolds, P. (2004). Ngaa Puni Whakapiri: Indigenous Struggle and Genetic Engineering. School of Communication. Ottawa, Simon Fraser University. **PhD**. p.132.

¹²⁹ McNally & Wheale as quoted in Ibid. p.218.

¹³⁰ Cram, F., L. Pihama, et al. (2000). Maaori and Genetic Engineering: Research Report. Rangahau Maori. Auckland, International Research Institute for Maori and Indigenous Education. p. 107-108, p. 87, 140-142
Barclay, B. (2005). The Black Penny: Patents on Life Forms. Mana Tuturu: Maaori Treasures and Intellectual Property Rights. Auckland, Auckland University Press. p.82 The easiest mechanism for protection as required by **Māori** is ensuring that the dispossession of **Māori** knowledge and value of **taonga** is never acceptable or possible, by not having intellectual property rights to **taonga** at all.

¹³¹ Tipene-Matua, B. (2000). A Maori response to the biogenetic age. Designer Genes. R. Prebble. Wellington, Dark Horse Publishing: 97-109. Hutchings, J. (2004). Tradition and Test Tubes; Maaori and

to the implementation of intellectual property rights as the theft of cultural property.¹³²

“Global domination of local interests”

The global context of GE technology is also considered important to some **Māori** academics in supporting their interpretations of the effects of GE. When defining corporate biotechnology as part of a new “global order”, Dr Jessica Hutchings draws upon Vandana Shiva’s definition of “global” as:

“...the global domination of local and particular interests, by means of subsuming the multiple diversities of economies, cultures, and of nature under the control of a few multinational corporations.”¹³³

Similarly, when providing the literature to support his analysis of **Māori** struggles with GE, Dr Paul Reynolds provides Mae Wan Ho’s interpretation of intellectual property rights as

“...the latest attempt to formalize the continuing piracy of Third World genetic resources by Northern biotech companies, effectively sanctioned by the science of genetic engineering.”¹³⁴

GM. Recoding Nature: Critical perspectives on Genetic Engineering. R. Hindmarsh and G. Lawrence, University of New South Wales Press: 179-191.

¹³² Hutchings, J. (2002). **Te whakaruruhau, te ukaipo: mana wahine and genetic modification**. Environmental Studies. Wellington, Victoria University of Wellington. **Ph.D.**

¹³³ As quoted in Hutchings, J. (2004). Tradition and Test Tubes; Maaori and GM. Recoding Nature: Critical perspectives on Genetic Engineering. R. Hindmarsh and G. Lawrence, University of New South Wales Press: 179-191.

Hutchings' views the development of GE technology as a manifestation of the Western scientific paradigm, which has established linearity and monocausality as explanations of reality.¹³⁵ The philosophies and knowledge that forms the platform from which GE has been developed, promoted and assessed, directly conflicts with the legitimacy of the local **tikanga** and **mātauranga** base of **iwi**, **hapū** and **whānau**.

Summary

The evidence presented in the literature demonstrates a variety of assessments of GE that should not be limited to having a distinctly **Māori** basis. A situation of ignorance frames all assessments, due to unforeseen potential effects and their irreversible nature. Local assessments are related to a larger global context where **taonga** are undermined in their value as mere commodities, and are subject to the hegemonies of global neoliberalist and Western scientific powers. Despite the general nature of the assessments of GE presented here, ultimately, the Western scientific paradigm within which GE has been developed and promoted, fundamentally conflicts with the value system that forms the basis of the relationship between **Māori** and **ngārara**.

¹³⁴ Mae Wan Ho as quoted in Reynolds, P. (2004). Ngaa Puni Whakapiri: Indigenous Struggle and Genetic Engineering. School of Communication. Ottawa, Simon Fraser University. **PhD**. p.216.

¹³⁵ Hutchings, J. (2004). Tradition and Test Tubes; Maaori and GM. Recoding Nature: Critical perspectives on Genetic Engineering. R. Hindmarsh and G. Lawrence, University of New South Wales Press: 179-191.

How this thesis will contribute to the literature

This thesis provides the opportunity for the **iwi hapū** and **whānau** of the ART confederation to articulate how they value **ngārara**, and what their assessments of GE are. These assessments will not be presented in an effort to satisfy any non-**Māori** needs for information, but rather will re-center **iwi, hapū** and **whānau** views as being a legitimate component of the discourse.

Chapter 3 Ko te Hinengaro,

Methodology

My agenda in establishing the objectives and aim of this thesis has been to re-focus and re-centre **mātauranga Māori me ōna tikanga** as a valid platform from which **Āti Awa, Raukawa,** and **Toa** (the ART Confederation) legitimately assesses GE with the values we associate with **ngārara**. Through this re-focusing and re-centring, my research aims to remove the domination of the Western scientific traditions and associated neoliberal value systems in risk assessment.

Raukawa transformative methodologies

“Ko te whāinga nui o ngā ‘kaupapa Māori’ kātoa, kei tēnei kupu e whakaatangia ana, arā: E kore e ngaro he kākano i ruia mai i Rangīātea.”¹³⁶

The quote above makes reference to the fundamental **kaupapa** to be maintained through **Raukawa** methodologies: the development of people. My research approach

¹³⁶ In discussing the theories of **Whatarangi Winiata**, another noted **Raukawa** academic, on **mātauranga Māori** Royal makes this statement to explain the role of the maintenance of **kaupapa Māori** in maintaining our identity and survival. Royal, T. C. (2008). Te Ngaakau. Te Whanganui-a-Tara, Mauriora ki te Ao. p. 126

has evolved in a way that is interrelated with the cultural context from which it arises. I shall refer to this context as the “**Raukawa**” context.¹³⁷ Later in this Chapter I will discuss in detail my reflections of my experience as a **Raukawa** researcher but I feel it is important to acknowledge the established researchers of the ART Confederation whose research provides me with methodological guidance in their contribution to the research **kawa** of **Raukawa**.

In 1981 the ART Confederation established the following guiding principles for higher learning which I follow as a **Raukawa** researcher:

1. Our people are our wealth: develop and retain.
2. The **marae** is our principal home: maintain and support
3. **Te reo** is a **taonga**: halt the decline and revive
4. Self-determination¹³⁸

The ART Confederation places an emphasis on transformative outcomes of education and research initiatives and has a history of being a leader in this area. The **Raukawa** approach to research has functioned as an agent for change by actively challenging the dominance of Western world view in research and enhancing the self-determination of the Confederation. **Raukawa** research can thus be thought of as a formative transformative praxis. This context influenced and guided my approach to this research

¹³⁷ This encompasses the full ART confederation cultural context. The label “**Raukawa**’ is commonly used to refer to the entire ART context.

¹³⁸ Winiata, W. (1979). Generation 2000: An experiment in tribal development. He Matapuna: Some Maaori perspectives. Wellington, New Zealand Planning Council.

through the establishment of the principles above as criteria for the success of my research. I have needed to demonstrate how my research would be consistent with these principles and aid the Confederation in pursuing the goals inherent in the principles in order to gain support from **iwi**, **hapū** and **whānau** for this thesis. I have ensured that research outcomes of this thesis are consistent with these criteria.

Transformative praxis

The seeking out of a transformative praxis by **Raukawa** researchers and in the methodology for this research is given impetus by an assertion that where power relations come into play, in the context of the ART Confederation through colonisation, there must be some degree of freedom on both sides; there must be the alternative to submission in the form of resistance.¹³⁹ The fulfilment of liberation and emancipation from colonisation made possible by resistance requires the action and reflection of people upon their world. This combination of action and reflection in order to fulfil a transformative agenda has been named “praxis” by Paulo Freire. Freire goes on to explain the role of uncovering and interpreting truths in the use of a transformative praxis: *“There is no true word that is not at the same time a praxis. Thus, to speak a true word is to transform the world.”*¹⁴⁰

¹³⁹ See Michael Foucault discuss notions of resistance against power and the inseparable relationship of power and freedom in the following interview: Foucault, M. (1984). *The Ethics of the Concern of the Self as a Practice of Freedom*. Foucault: Ethics. P. Rabinow. New York, The New Press. pp 291-293

¹⁴⁰ A sacrifice of action for the sake of mere reflection is “verbalism”. A sacrifice of reflection for the sake of mere action is “activism”. See an explanation of the need for a praxis that consists of both action and reflection in Freire, P. (1996). Pedagogy of the Oppressed. London, Penguin Books. Chapter 2&3

In Smith (2007), Graham Smith's research on how **Māori** research can inform and expand the transformative potential of **Māori** is discussed. He concludes his analyses of **kaupapa Māori** theory and practice by encouraging researchers "to move beyond merely "conscientisation", decolonisation, and political literacy initiatives to focus on transformative action and outcomes."¹⁴¹ In the context of **Raukawa**, examples of this movement to transformative action and outcomes, and the uncovering and interpreting of truths as seen by the ART Confederation are demonstrated below.

A Raukawa legacy of transformative praxis

One of the most prominent **Raukawa** academics, in terms of transforming the ART Confederation through education and research, is Professor **Whatarangi Winiata**. He established the first modern **Māori** tertiary education institute in **Aotearoa, Te Wānanga o Raukawa**, that provides education by **Māori** for **Māori**, with an emphasis on the study of **iwi, hapū and marae, te reo Māori**, and **Māori** development. The impact on the Confederation in terms of the up-skilling of its people, and the development of new knowledges specific to the Confederation have been significant, yet little is published to reflect this. This demonstrates that for **iwi**, success is not necessarily perceived in terms of publications, wealth generation, or participation in mainstream discourses but rather in visible transformation at **iwi, hapū, whānau** and **tangata** levels.

¹⁴¹ Smith, L.T. (2005). "Building a Research Agenda for Indigenous Epistemologies and Education." *Anthropology and Education Quarterly* **36**(1): 93-95

Te Ahukaramū Charles Royal is a strong contributor to the **Raukawa** discourse on the topic of research methodologies and the topic of **mātauranga Māori** itself. A stunning and treasured recent addition to this discourse “**Te Ngākau**”, discusses a **Raukawa** view of a **mātauranga** that brings forth **aroha** and enlightenment. Completely written in **te reo Māori**, the book encourages the transformation of **Raukawa** researchers to use **te reo Māori** in the interpreting, developing and dissemination of **Māori** discourse and is a statement of the **mana** of **Raukawa** methodologies. Royal also researched and wrote “**Te Haurapa: An Introduction to researching tribal histories and traditions**” where research is framed as a spiritual journey and thus strongly reinforces the importance of seeking supervision relationships within the **whānau** in addition to external supervision.¹⁴² Research can be seen as a transformative praxis in its promotion of the building of relationships within the Confederation. This relationship building has not only been conducted informally through a research relationship with my **whānau** but also was formally arranged by my **iwi** in a structured manner where I have regularly reported back to a mentor and to my **marae** about my research progress.

Raukawa researchers have contributed to discourses around community-based research. This style of research has been encouraged by the ART Confederation, particularly through **Te Wānanga o Raukawa** as a means of building research capacity and research relationships within the ART Confederation. There is an emphasis on creating lifelong research relationships that do not just exist for the period of a project, where **utu** in reciprocation for exchange and attribution of information develops

¹⁴² Royal, T. C. (1992). Te Haurapa: an introduction to researching tribal histories and traditions. Wellington, Bridget Williams Books.

throughout lifetimes.¹⁴³ **Raukawa** women such as Rachael Selby and **Wheturangi** Walsh-**Tapiata** are particularly active in contributing social work case studies to the community-based research discourse, always with a strong emphasis on community development through research.¹⁴⁴

Another area where **Raukawa** are highly active is the development of methodologies for the compilation of **iwi** oral histories. There is in many cases a desire to use research as a means of collecting stories and **mātauranga** of high interest and value to the Confederation. In keeping with this desire **Raukawa** researchers have set about creating their own methodologies within which to do so.¹⁴⁵ Important themes of this discourse include a focus of representation of the **hapū** level, special attention to the conditions under which initial entry into oral history is negotiated, an emphasis on a clearly defined research partnership with participants in terms of equality, power-sharing and inclusion in decision-making, and the long-term traumatic effects of corporal punishment of our **kaumātua** when they were children for speaking **te reo**

¹⁴³ An example of such as act of **utu** is described where in exchange for information about eeling from a **kaumātua**, a researcher regularly provided eel to the **kaumātua** with this extending for the remainder of the life of that **kaumātua**. Selby, R. and P. Moore (2007). "Maori Research in Maaori Communities: No Longer a New Phenomenon." AlterNative Special Supplement: 96-107.

¹⁴⁴ See Selby, R. (2004). *Tararua is my Mountain. A Will to Survive*. S. Greymorning. New York, McGraw Hill: 171-180, Munford, R. and W. Walsh-Tapiata (2005). *Community Development: Principles into Practice. Social Work Theories in Action*. M. Nash, R. Munford and K. O'Donogue. London, Jessica Kingsley Publishers: 97-112, Selby, R. (2005). *Dreams are free: Ngaa Moemoea a te Hapuu. Social Work Theories in Action*. M. Nash, R. Munford and K. O'Donogue. London, Jessica Kingsley Publishers: 113-124.

¹⁴⁵ See Royal, T. C. (2005). *Oral History and Hapu Development. Maori and Oral History: A Collection*. R. Selby. Wellington, National Oral History Association of New Zealand: 16-18, Selby, R. (2005). *Partnership and Protection of Participants: collecting and using Maaori oral histories. Maori and Oral History: A Collection*. R. Selby. Wellington, National Oral History Association of New Zealand: 70-73, Selby, R. (2005). *Still Being Punished: corporal punishment's lifelong effects. Maaori and Oral History: A Collection*. R. Selby. Wellington, National Oral History Association of New Zealand: 74-77, Walsh-Tapiata, W. (2005). *Rangahau moo te iwi: ngaa pikinga me ngaa hekenga. Maaori and Oral History: A Collection*. R. Selby. Wellington, National Oral History Association of New Zealand: 33-37.

Māori in schools, including the impact this has had on their ability to communicate in **te reo Māori**. It was made clear to me at the beginning of the research process that should interviewees consent; there was a preference for the interviews conducted for my research to become part of the **Ōtaki** Museum Oral History Collection. I therefore structured my consent process around the conditions of the Collection and partook in several training days with the **Ōtaki** Oral History Group, accompanied by my father, in order to ensure that I was engaging in the local oral history pedagogy.

Reflexivity

Reflexivity in research has been described as a tool to generate new knowledges and understandings of the self, both on the part of the researcher and the participant. The subsequent action as a result of these new knowledges brings about emancipation¹⁴⁶ by moving **iwi**, **hapū** and **whānau** into new, positive ways of being. The idea that ‘technologies of the self’ can bring about emancipatory change has been discussed by Foucault.¹⁴⁷ Reflexivity in this thesis has required me to alter my research agenda to reflect the ideas and concerns that are important to the ART Confederation.¹⁴⁸ The use of reflexivity also challenges Western models of research where the researcher is viewed as a neutral vessel.

¹⁴⁶ McCabe, J. L. and D. Holmes (2009). "Reflexivity, critical qualitative research and emancipation: a Foucauldian perspective." *Journal of Advanced Nursing* **65**(7): 1518-1526.

¹⁴⁷ Foucault, M. (1984). *Technologies of the Self*. *Foucault: Ethics*. P. Rabinow. New York, The New Press.

¹⁴⁸ McCabe, J. L. and D. Holmes (2009). "Reflexivity, critical qualitative research and emancipation: a Foucauldian perspective." *Journal of Advanced Nursing* **65**(7): 1518-1526.

I have established an iterative process of action and reflection¹⁴⁹ in my research. I continually reflect upon the thought process behind the actions I take in my research, and develop further action on the basis of my reflections.

Kaupapa Māori research

Transformative praxis principles that I have also engaged with to guide my research have been taken from '**kaupapa Māori**' discourse.

A **kaupapa Māori** approach to research can simply be described as research conducted by **Māori**, which lends itself to a **Māori** way of thinking, researching and knowing that is encapsulated in a **Māori** worldview.¹⁵⁰ This approach is particularly appropriate in terms of the use of this thesis to question and critique aspects of the Western tradition as it has developed as part of a larger **Māori** movement of resistance against Western hegemony.¹⁵¹ The approach also provides a legitimate position from which to use my

¹⁴⁹ "Reflection" being very closely associated with the concept of "reflexivity" which "refers to the idea of a continual monitoring of behaviour and its contexts as an integral part of what they do" Fitzsimons, P. and G. Smith (2000). "Philosophy and Indigenous Cultural Transformation." Educational Philosophy and Theory **32**(1): 25-41. in fact both terms are potentially interchangeable.

¹⁵⁰ For further explanation of the meaning of kaupapa Māori research see: Henry, E. and H. Pene (2001). "Kaupapa Māori: Locating Indigenous Ontology, Epistemology and Methodology in the Academy." Organization **8**: 234-242. see also Chapter 10 "Towards Developing Indigenous Methodologies: Kaupapa Māori Research." In Smith, L. T. (1999). Decolonizing Methodologies: Research and Indigenous Peoples. London, Zed Books. Some debate exists about whether research merely conducted by Māori warrants it being labelled "kaupapa Māori". I view my being Māori providing the fundamental obligation to use a kaupapa Māori approach to research.

¹⁵¹ Walker, S., A. Eketone, et al. (2006). "An exploration of kaupapa Māori research, its principles, processes and applications." International Journal of Social Research Methodology **9**(4): 331-44.

inherent power as a researcher to reaffirm the philosophies and research practices of my own people. This reaffirmation addresses the power imbalances that exist both commonly between the researcher and the researched and generally between the colonisers and the colonised.

Te Reo Māori and kaupapa Māori

A key element of a **kaupapa Māori** approach is the location of **te reo Māori me ōna tikanga** firmly within research.¹⁵² Interviewees had the opportunity to conduct the entirety or portions of their interviews in **te reo Māori** if this was the preferable means by which they communicate certain knowledges. **Te reo Māori** texts have also been freely engaged with at all stages of the research. It would be preferable for this thesis to be written completely in **te reo Māori** to convey the benefits of depth and protection discussed above. Practically, I am restricted in my ability to write at an acceptable level of **te reo Māori**, and this is a limiting condition of many **Māori** academics.

Kaupapa Māori transformative praxis

The assumption of **kaupapa Māori** that solutions to power imbalances, inequity, colonisation and marginalisation do not lie in the culture that marginalises, establishes

¹⁵² Pihama, L., F. Cram, et al. (2002). "Creating Methodological Space: A Literature Review of Kaupapa Maori Research." Canadian Journal of Native Education 26(1): 30-43.

kaupapa Māori approach as an agent of change.¹⁵³ A condition of **kaupapa Māori** research is that the end outcome of a research endeavour is of benefit to **Māori**. I interpret this condition to extend as a responsibility to ensure the development of beneficial outcomes to my **iwi, hapū** and **whānau** specifically, as described by the four **Raukawa** principles for higher learning

To return to the work of Smith, he has described the following principles as “crucial change factors in **kaupapa Māori** praxis”¹⁵⁴. I will briefly describe how these principles relate to my research.

Tino rangatiratanga

Through producing this thesis I contribute to my own personal **tino rangatiratanga** and that of my **whānau, hapū** and **iwi**. Greater autonomy over the assessment of GE is afforded through this research.

Taonga tuku iho

As discussed earlier, **Te Reo Māori me ōna tikanga** is taken for granted as providing a valid and legitimate platform from which analyses can be conducted in this thesis.

Ako Māori

The learning setting in which I have located myself during this research is connected to my cultural background. This is both in terms of the learning setting provided by my

¹⁵³ Bishop, R. (2005). Changing Power Relations in Education: Kaupapa Māori Messages for "Mainstream" Education in Aotearoa/New Zealand. What Difference Does Research Make and for Whom? F. Bodone. New York, Peter Lang: 253-270.

¹⁵⁴ Fitzsimons, P. and G. Smith (2000). "Philosophy and Indigenous Cultural Transformation." Educational Philosophy and Theory 32(1): 25-41, Smith, G. (2005). Beyond Political Literacy: From Conscientization to Transformative Praxis. What Difference Does Research Make and for Whom? F. Bodone. New York, Peter Lang: 29-42.

supervisor in the university environment and the learning setting provided by my presence at my **marae** for discussion with **iwi** and **hapū** and **Whānau**.

Kia piki ake ngā raruraru o te kāinga

Mediation of my somewhat debilitating socioeconomic background has been provided for through scholarship provided by my **iwi** and associated trusts, and through emotional and spiritual support from again my supervisor and **whānau, hapū** and **iwi**.

Whānau

Emphasis on the participation of collectives to which I identify, namely my **whānau, hapū** and **iwi**, has been important in the conception, conducting, analysis and dissemination of my research. The transformative praxis of this thesis is the emancipation of both myself as a researching **Māori** woman, and of the **whānau, hapū** and **iwi** of the ART Confederation.

Kaupapa

The vision and philosophy that provides the foundation for this thesis is shared by my **whānau, hapū** and **iwi** in order to fulfil the principle above

The use of these principles to guide my method ensures the transformation of the research landscape where power is centred with a **kaupapa Māori** approach. However within mainstream research discourse in **Aotearoa, kaupapa Māori** research and researchers are marginalised.

Researching from the margins

Kaupapa Māori research emerged from a discontent with Western traditional research and its impact on **Māori**, and the domination of majority interests in research produced: in short the perpetuation of colonisation.¹⁵⁵ However while using a **kaupapa Māori** approach for this research, within the confines of a Western tertiary education system, I continually have to redress and overcome the institutionalised barriers to producing emancipatory, indigenous research. In the historical experience of my people, everything was taken by ‘the pen’. Writing this thesis has required me to ensure I claim ‘the pen’ as a tool for emancipation, rather than perpetuate its use as a tool for oppression. I must also accept the assumption I am making in writing this thesis: that there are in fact benefits for my people and for me as a **Māori** woman in participating in the Western education system.¹⁵⁶

My position in the margins

By producing **kaupapa Māori** research, as a female, within a Western cultural setting of a tertiary science faculty I am locating myself and my research in the margins. In more

¹⁵⁵ A tradition of research has been developed that looks into **Māori** peoples’ lives and “addresses the concerns and interests of predominantly non-**Māori** researchers’ own making, as defined and made accountable in terms of the researchers’ own cultural worldview(s).” For more see: Bishop, R. (2008). Freeing ourselves from neocolonial domination in research: A Kaupapa Maori Approach to Creating Knowledge. *The Landscape of Qualitative Research*. N. K. Denzin and Y. S. Lincoln. Los Angeles, Sage.

¹⁵⁶ Linda Tuhiwai Smith discusses this assumption in greater detail in Smith, L. T. (2005). "Building a Research Agenda for Indigenous Epistemologies and Education." *Anthropology and Education Quarterly* **36**(1): 93-95. She suggests that there is a tendency for research to generally ask questions about how to make the current system fit or work better for all, rather than asking questions about the relationship between education and self-determination.

ways than one my research is located on the margins, particularly in view of being a **Māori** women pursuing a degree within the Faculty of Science. **Māori** constitute 8% of students at Victoria University of Wellington, but the Faculty of Science has only 6% **Māori** students. Similarly, women constitute 57% of students at Victoria University of Wellington, but the Faculty of Science has only 45% female students.¹⁵⁷ I share in the multi-layered, multi-dimensional experience of marginalisation of **Māori**, “where patriarchy, colonisation, sexism and racism intersect”.¹⁵⁸

Those in the margins need not see the strength in their research in relation to the wider discourse, rather, a marginal space provides the opportunity for me as a researcher to discuss and develop ART resolutions for ART issues.¹⁵⁹ This freedom is important in that it removes any obligation to provide an analysis that can be fit into or compare with Western analyses. I will not be producing an analysis of ART risk assessment of GE to fit into or be compared with Western frameworks of risk assessment such as those implemented by the Environmental Risk Management Authority (ERMA). I believe it is important to draw boundaries between marginal

¹⁵⁷ University Teaching and Development Centre (2009). Small Group Teaching. Victoria University of Wellington: 76-79. http://www.utdc.vuw.ac.nz/tutors/Small_Group.pdf It is suggested that under the present conditions, it is not possible to do science as feminists. Longino, H. E. (2001). Can there be a Feminist Science? *Women, Science, and Technology*. M. Wyer, M. Barbercheck, D. Giesman, H. Orun Ozturk and M. Wayne. London, Routledge: 216-222. Additionally, it is suggested that a “fear of difference” that is institutionalised in the colonial scientific discourse “provides a rationale for the exclusion of ‘inferior peoples’ as incapable of doing science”, namely women and **Māori**. McKinley, E. (2005). “Brown Bodies, White Coats: Postcolonialism, Maori women and science.” *Discourse: Studies in the Cultural Politics of Education* **26**(4): 481 - 496. Education policies and practices that have been developed in this context perpetuate existing power imbalances (*Ibid.* 4) and thus the marginalisation of research conducted by **Māori** women.

¹⁵⁸ Smith, L. T. (2006). “Researching in the Margins: Issues for Maori Researchers - A Discussion Paper.” *Alternative Special Supplement*: 4-27.

¹⁵⁹ Boler, M. (1999). Slamming into the Future: Bringing strategies of hope into education. *Taking kids talk seriously - Youth First Seminar*. Auckland, Auckland University. This speech discussed the margins as a space of “radical possibility”.

hegemonic spaces to ensure the integrity of these spaces and the wisdom they provide is maintained. Smith (2006) discusses the benefits of the “wisdom of the survival of the margins”¹⁶⁰: Alternative views of the world that are generated from groups who have survived imperialism, such as those presented by **Raukawa**, plays an important role of re-interpreting institutions that are promoted in hegemonic spaces (such as globalisation, neo-liberalisation, the enlightenment, the sustainability movement) as “new versions of old colonialism”. This is an exercise that can only be conducted in the margins.

The process of marginalisation in the context of this thesis

Neoliberal market-driven economic reforms have served to further colonise **Māori** in **Aotearoa**. Neoliberal attitudes that view **Māori** and their culture as obstacles of economic development who require “a greater level of civilisation through the right kind of training”¹⁶¹, have been enabled and developed through the value base of the mainstream education and schooling system. The implications of such reforms have been an emphasis on commoditisation, privatisation and “freedom of the individual” where **Māori** values are constructed as “oppositional”, particularly due to their emphasis on the collective.¹⁶² This rejection of a **Māori** worldview in the construction of economic values in **Aotearoa** coincides with the exclusion of **Māori** ways of knowing

¹⁶⁰ Smith, L. T. (2006). "Researching in the Margins: Issues for Maaori Researchers - A Discussion Paper." Alternative Special Supplement: 4-27.

¹⁶¹ Bargh, M., 2007. "Introduction." Resistance: An indigenous response to neoliberalism. Wellington, **Huia**. p.13.

¹⁶² Smith, G. (2005). Beyond Political Literacy: From Conscientization to Transformative Praxis. What Difference Does Research Make and for Whom? F. Bodone. New York, Peter Lang: 29-42.

from dominant educational philosophy.¹⁶³ An example of the exclusion of a **Māori** worldview from the mainstream higher education environment comes from interpreting notions of 'success' in this context. Predominately 'success' is attributed to a gain in financial status as a result of participating in education.¹⁶⁴ This may be problematic for indigenous students who instead may equate 'success' with the maintenance or enhancement of their cultural integrity.¹⁶⁵ It is well established that **Māori** are not 'succeeding' in mainstream education systems, with this statement being qualified through the use of statistical statements often referring to (lack of) qualifications attained.¹⁶⁶ By avoiding cultural indicators to measure success, **Māori** are submitting to the Western educational institution's definition of 'success'. There are also few institutional mechanisms to provide for or ensure the maintenance of students' cultural integrity. Thus the quality of research and researchers produced in such higher education institutions are, by an indigenous standard, limited in terms of their ability to serve indigenous interests, and the monitoring of quality is left to individual staff.

¹⁶³ Fitzsimons, P. and G. Smith (2000). "Philosophy and Indigenous Cultural Transformation." Educational Philosophy and Theory **32**(1): 25-41.

¹⁶⁴ The definition of education as an economic device is a symptom of the overly eager pursuit by the government of **Aotearoa** of a neo-liberal regime.

¹⁶⁵ Pidgeon, M. (2008-2009). "Pushing Against the Margins: Indigenous Theorizing of "Success" and Retention in Higher Education." Journal of College Student Retention **10**(3): 339-360.

¹⁶⁶ Smith, L. T. (2005). "Building a Research Agenda for Indigenous Epistemologies and Education." Anthropology and Education Quarterly **36**(1): 93-95. **Māori** themselves frame "success" in this way but we must be reminded that the Government and education administration directs this framing. This framing also implicates where educational institutions must focus their attention. I do not wish to imply that completion of qualifications and other socio-economic milestones are not important to **Māori**, but rather that I endorse the broadening of educational definitions of "success" to accommodate the educational aspirations of the indigenous peoples of **Aotearoa**.

The maintenance of my cultural integrity as a **Māori** researcher at Victoria University of Wellington, a mainstream higher education institution is limited. There is little to suggest that there are mechanisms that exist at my university which offer me cultural safety. In applying for ethics approval to conduct interviews for this thesis the process has not been transparent.¹⁶⁷ On responding to my application, suggestions were made regarding changes required on the information sheet I distribute to interviewees. A suggestion was to provide details of my **whakapapa** and a short **mihi** “given this is undertaken under the principles of **kaupapa Māori** research.” In fact, the **kawa** of my **whānau** is that we are not to distribute details of my **whakapapa** freely on paper. It is preferable that I can communicate who I am to interviewees orally. This is both a protective mechanism for the information itself which is **tapu** in nature, but also as a means of protecting my integrity by ensuring that I really know who I am. Any general **whakapapa** such as that stated at the beginning of this thesis will be known by interviewees, as a shared **whakapapa** is the basis of our contact. The continual incorrect reinterpreting and retelling of **tikanga Māori** from **Pākehā** back to **Māori** in an attempt to pay lip service to **kaupapa Māori** has been a common experience in my six years of study at Victoria University of Wellington. I find this not only offensive, re-colonising and indicative of the paternalistic need of **Pākehā** institutions to falsely claim familiarity with **tikanga Māori**, but demonstrates that the Human Ethics Committee of Victoria University of Wellington should not be offering guidance on **kaupapa Māori**

¹⁶⁷ I am not aware who sits on the committee to grant approval and this information is not readily available.

research approaches.¹⁶⁸ For guidance I have relied on my supervisor who is experienced in conducting **kaupapa Māori** research and my **whānau, hapū** and **iwi** who under the principles of **kaupapa Māori** are the only institutions which can give this methodology true legitimacy. As a means of protecting my cultural integrity I turn to them, and every word of this thesis is passed under the eye of my **whānau** in order to ensure this protection.

Resistance and struggle in the margins

It is empowering to choose the margins as a site of resistance and struggle.¹⁶⁹ The literature provides emancipatory research mechanisms that can be used within this space. Defining my position within my **iwi, hapū** and **whānau** as a means of power-sharing in the research process has been important in resisting the “status quo” power relationship between researcher and the researched.¹⁷⁰ A “community-up” definition of ethical behaviours has been recommended as a means of securing power with those who are researched,¹⁷¹ the **kawa** of **Raukawa** research has provided me with this definition for this research. I have also created space for voices from the margins to be heard through the use of interviews, and have paid particular attention to the potential

¹⁶⁸ Analyses of loci of power in issues of initiation, legitimacy and accountability of newly defined knowledge in **Aotearoa** have found that they are situated within Western cultural framework, ensuring that the procedures of **Māori** cultural initiation, legitimacy and accountability are left up to the researcher.

¹⁶⁹ See hooks, b. (1984). Feminist Theory: From margin to center., South End Press.

¹⁷⁰ Bishop, R. and T. Glyn (1992). "He Kanohi Kitea: Conducting and Evaluating Educational Research." New Zealand Journal of Educational Studies **27**(2).

¹⁷¹ Smith, L. T. (2006). "Researching in the Margins: Issues for Māori Researchers - A Discussion Paper." Alternative Special Supplement: 4-27.

for ART members to be themselves marginalised from the rest of the Confederation by being excluded from this research.¹⁷²

The legacy of **Raukawa** transformative praxis, **kaupapa Māori** research approach principles and my choosing of a position in the margins have informed the following method.

Method

As a developing researcher you are often advised when constructing your method that a “good” method should be described in such a way that another researcher should be able to use it to replicate your research. I reject this advice in that I think it encourages the upholding of the Western scientific value of false objectivity when conducting research, and there is an assumption in this advice that any outsider can come in and replicate my research. This approach to research is exactly what I am trying to avoid, and in fact the method explained here is a strategy that provides for the fulfilment of my personal agenda, and those of my **whānau, hapū** and **iwi**: to re-focus and re-centre **mātauranga Māori me ōna tikanga** as a valid platform from which the ART Confederation can legitimately assess GE with the values of **ngārara**. The following section discusses the process of this strategy.

¹⁷² Ormond, A., F. Cram, et al. Ibid. "Researching our Relations: Reflections on Ethics and Marginalisation." 180-198.

Framing the aims and objectives

“One of the reasons why so many of the social problems which beset indigenous communities are never solved is that the issues have been framed in a particular way.”¹⁷³

One of the ways in which **Māori** are continually oppressed is through being kept busy with the pressure to “respond to”, “engage with”, “account for” and “explain to” the coloniser, and to be reactive to colonisation. This returns the coloniser and colonial history to the centre.¹⁷⁴ I have seen this thesis as an important space in which my **whānau, hapū** and **iwi** can envisage their future and establish their own ideals without having to continually refer back to the colonial situation. I have claimed this space for the ART Confederation to provide insight and inform my analysis.

The framing of the aims and objectives of this thesis has been an open process where I have been provided direction from **kaumātua** to ensure the framing is appropriate. As discussed in Chapter Two, **ngārara** can take a number of forms, however when I initially began my research, my understanding of **ngārara** was that they are insects. It was upon discussion with some of my **kaumātua** that it became apparent that a broader interpretation was appropriate. This resulted in the altering of the whole emphasis of the thesis, and its enrichment with a transformative truth.

¹⁷³ Smith, L. T. (1999). Decolonizing Methodologies: Research and Indigenous Peoples. London, Zed Books. p.153

¹⁷⁴ Smith, G. (2003). Kaupapa Maaori Theory: Theorizing Indigneous Transformation of Education and Schooling. 'Kaupapa Maaori Symposium': NZARE/AARE Joint Conference. Hyatt Hotel, Auckland.

The emergence of **ngārara**, a **manaia** of our people, as the focus of the research has also provided me with a feeling of safety in writing this thesis. The presence of **ngārara** in my research has appealed to my sense of caution and reflection and I have learnt from **ngārara** about the importance of recognising and being sensitive to boundaries and **tapu** when conducting research.

Literature Review

I conducted a literature review that focused on three key areas of interest, as specified through my first two research objectives; **Māori**, **iwi**, **hapū** and **whānau** values associated with **ngārara** and assessments of GE. Manuscripts, newspapers, audiovisual media and publications were consulted for this.

Methodology

I have sought research imperatives from the discourses of transformative praxis, **kaupapa Māori**, and **Raukawa** methodologies. This gives my research method legitimacy in fulfilling my research agenda in terms of being couched in the research protocols of emancipation, **tikanga Māori**, and the research **kawa** of **Raukawa**.

Interviews

14 interviews were conducted with descendents of the ART Confederation. In keeping with the research **kawa** of **Raukawa**, there was a strong emphasis in ensuring the representation of all **hapū** amongst interviewees. I would have preferred to ensure that

I interviewed participants from every single **hapū** of the Confederation but this simply was not feasible. I was limited by constraints on the time allowed for the research and length of thesis permitted.

Interviewees were selected through the guidance of **hapū** and **marae**. In other instances certain **kaumatua** were easily recognisable as distinguished within their **hapū** and identified for interviewing. Often a 'snowball' approach was taken where an interviewee would recommend another person who would be suitable to participate.

An attempt was made to ensure that there was significant participation of males and females and different age groups, to ensure the representation of male and female distinct perspectives, and the intergenerational dynamics of **mātauranga me ōna tikanga** within the ART Confederation.

The process in securing an interview was often lengthy and required continual interaction with the interviewee, in some cases as many as two initial meetings would take place before the participant would confirm they were ready to be interviewed, and indeed the process of **utu** that was initiated as a result of the sharing of information will continue to develop across my lifetime. **Koha** was given as part of the development of this **utu** and this was in the form of **kai** or other **taonga**.

Interviews were conducted one-on-one. I decided against conducting focus groups with several participants at once, as although the knowledge that would be negotiated in such a space would reflect collective views, I felt that at this stage of my development as a researcher that these one-on-one interviews were a means of me initiating and enhancing my personal relationship with the participants. Some **kaumātua** also felt it

necessary to disclose knowledge that was important in building my contextual understanding of their views but that was not to be shared with anyone else.

The ethics procedure dictated by the Victoria University of Wellington Human Ethics Committee (HEC) did not provide participants with a sense of security. In the preliminary meetings with participants, some explained their reluctance at sharing some knowledge as they had previously had negative experiences as participants in research where certain knowledge was taken from them or associated to them inappropriately. In some of these cases, participants added their own clauses to consent forms that made them feel more comfortable, others chose to remain anonymous, or in the case of one participant, I was not allowed to record the interview but instead had to take notes of our conversation and confirm the information I wished to attribute to him after the interview had taken place. Another participant felt that signing a consent form disrupted the appropriate process of engagement with him and thus changed our **whānau** relationship to researcher/researched relationship:

*“We’ve had our chat, my story ain’t gunna change... if you misinterpret what I’ve said, that’s your problem eh... We’re **whānau**, we don’t need to treat each other like distant strangers.”¹⁷⁵*

The participant did sign a consent form because he recognized that the information he discussed in his interview could otherwise not be included on the research, but I felt that he was undermining his sense of what was right by submitting to the HEC process.

¹⁷⁵ This participant wished to remain anonymous.

Where consent was given for recordings to be held by the **Ōtaki** Museum, digital copies were put into the care of the **Ōtaki** Oral History Group on behalf of the Museum.

Where this consent wasn't given, the electronic files of the interviews were destroyed.

Interviews were semi-structured in that they allowed for open discussion and direction by the interviewee. It was important to participants that the process of the interview made space for the presence of **whānau** such as spouses, friends, children or **mokopuna** so that **whānau** could be included in the experience and the sharing of knowledge. However, some participants made it explicit that certain information was to be kept only between us and in some interviews a few minutes of information may have been deemed acceptable for inclusion in the research whilst hours of dialogue was to be kept in confidence.

I attempted to split the interview into two sections: first a discussion on the value of **ngārara** and secondly the participant's interpretations of GE were discussed. However ultimately the participant was in control of what was discussed in the interview.

Appendix A includes the information sheet distributed to all participants and the question sheet which shaped the interviews.

Full transcripts were completed of all interviews and were returned to participants for them to review so that they had the opportunity to make any changes they deemed necessary. Participants had the opportunity to also receive a summary of the results, view the context within which their interviews were used, and again make any necessary changes.

Analysis of the Results

The analysis of the results was conducted in two parts. The first part addressed

Objective One: To analyse the values that the ART Confederation associates with

ngārara, and; Objective Two: To develop an ART conceptual framework to assess GE.

Whilst the second part satisfied the over-arching Aim of the thesis: it produced the

assessment of genetic engineering with the values that the ART Confederation

associates with **ngārara**. A grounded theory approach was used to conduct the analysis.

The key components of grounded theory as summarised by Hood (2007) are:

- A spiral of cycles of data collection, coding, analysis, writing, design, theoretical categorisation, and data collection.
- The constant comparative analysis of cases with each other and to theoretical categories throughout each cycle.
- A theoretical sampling process based upon categories developed from ongoing data analysis.
- The resulting theory is developed inductively from the data rather than tested by the data, although the developing theory is continuously refined and checked by data.
- Codes 'emerge' from data and are not imposed a priori on it.
- The theory outlined in the final report takes into account all the variations in the data and conditions associated with these variations. The report is an analytical product rather than a purely descriptive account.¹⁷⁶

¹⁷⁶ Hood, J. C. (2007). Orthodoxy versus Power: The Defining Traits of Grounded Theory. The SAGE Handbook of Grounded Theory. A. Bryant and K. Charmaz. London, SAGE: 154.

Theories were developed inductively from the data produced in interviews by using research software NVivo 8 to code relevant concepts that emerged.¹⁷⁷

Some of the information that I dealt with in the analysis was of a **tapu** nature and at some points I felt it necessary to not handle **kai** while I was working with it.

Part One: Development of the framework using thoughts on ngārara

Professor Sir Mason Durie’s ‘Research Potential Framework’¹⁷⁸ has been adapted to develop the ART conceptual framework to assess GE.

Durie developed this framework as an alternative to the Western scientific risk management methodologies within which **Māori** values had been used to consider genetic engineering research.

Durie’s framework is based on **Māori** values that are relevant to a range of domains. Desired research outcomes that are consistent with each value are then identified and used to measure if the potential outcomes of the proposed research upholds those values. See Figure 3.1 for an example.

Māori Value/Concept	Desired Research Outcome
Mauri Integrity	Research that contributes to the integrity of ecological systems

Figure 3.1: An example of a **Māori** Value and its subsequent “Desired Research Outcome” that was extracted from Durie’s 2004 Research Potential Framework.

¹⁷⁷ The use of NVivo 8 for the analysis in this thesis was guided by Beazley, P. (2007). Qualitative Data Analysis with NVivo. London, SAGE.

¹⁷⁸ See Section titled “A **Māori** methodology.” Durie, M. (2004). Mana Tangata: Culture, Custom and Transgenic Research. Reflections on the Use of Human Genes in Other Organisms: Ethical, Spiritual and Cultural Dimensions, The Bioethics Council: 20 - 25.

Adapting this framework to address the aim of this thesis required the identification of the specific values the ART Confederation associates with **ngārara**, and the **tikanga** that arise from them. Those **tikanga** could then be used to assess GE in the same way that the ‘Desired Research Outcomes’ are used in Durie’s model.

Figure 3.2 conceptualises the nature of the information that was required for the development of the framework.¹⁷⁹

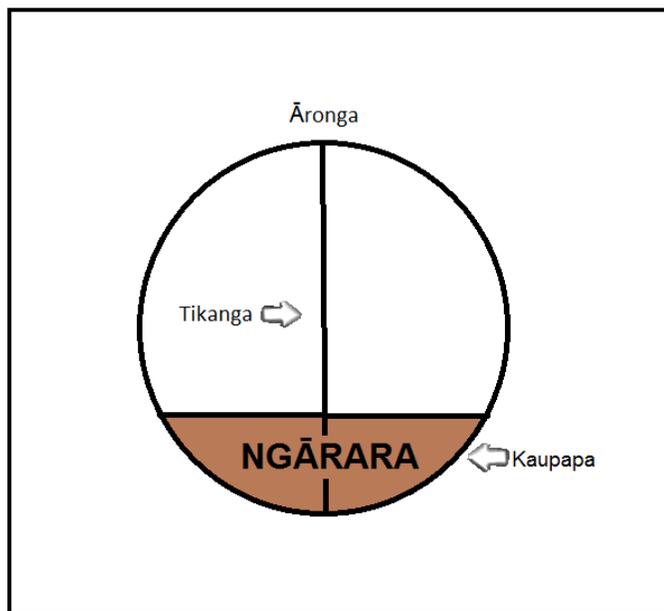


Fig 3.2 **Ngārara** as a **kaupapa** in the context of **tikanga** and **āronga**. Adapted from Royal (2008:64)

The values of **ngārara** are conceptualised as **kaupapa**, which are grounded within the **āronga** associated with **ngārara**, and which give rise to **tikanga**.

Royal (2008:64) defines the relationship between the three key concepts of **āronga**, **kaupapa** and **tikanga** as the following:

“...(K)ei te puta atu ngā kawenga, ngā tikanga, ngā kawa, ngā whakahaere a te iwi i runga i tā rātou āronga mō te Ao e noho ai rātou. Ko ngā kaupapa, koinei ngā mea e ngākau nuitia ana e te iwi, e puta ia hoki ngā whakahau a te iwi. Ko ngā tikanga,

¹⁷⁹ This framework is adapted from Royal, T. C. (2008). Te Ngaakau. Te Whanganui-a-Tara, Mauriora ki te Ao. p.64

koinei ngā mahi a te tangata, a te iwi, ngā whakatinanatanga e tutuki ai he kaupapa...Ka tupu hoki ngā tikanga i ā tātou kaupapa.”¹⁸⁰

Thus, the development of the framework to assess GE required using NVivo 8 to;

- Systematically code the data to engage in the **āronga** - world views, understandings and ideas - within which the values associated with **ngārara** are grounded;
- Conceptualise **ngārara** as a **kaupapa**, by identifying codes that represented the key values associated with **ngārara**.
- Identify the **tikanga** apparent in the data- cultural imperatives, practices and customs - that manifest those values.

Part Two: Using the framework to assess GE

A framework was developed using the **kaupapa** and **tikanga** identified in Part One. This framework was then used to assess GE.

NVivo was used to identify where codes of the key values existed simultaneously with codes that identified interviewee interpretations of GE. Thus the resulting dataset of Part Two of the analysis only contained interpretations of GE that interviewees had articulated in terms of the key values identified in Part One.

The interpretations were then analysed to identify how consistent the interviewee felt the outcomes of GE are with the **tikanga** that is associated with the relevant key value.

¹⁸⁰ Ibid.

This resulted in a framework that was populated with the values associated with **ngārara**, the **tikanga** that arose from those values, and the assessments of the consistency of GE with those **tikanga**.

Reflections on the relationship between my identity and this research.

Conducting **iwi** research is an exercise in researching your self. I am represented by my **whānau, hapū, and iwi**, in the issues that are addressed, the views that are presented and the conclusions that are made in this thesis. Conversely the process of this research has been influential to my identity formation and to my development as both a descendent of the ART Confederation and as a researcher.

Demonstrating my positionality and values was important in the interview process where participants often wanted me to reciprocate in sharing my views and ideas. It was important that I was prepared to have a dialogue with participants, to be questioned by participants and to demonstrate that I understood my bias, rather than simply harvest participants for their information. The data I received in conducting the interviews is thus irrevocably connected to me and my view of the world. Having a safe, open and reciprocal dialogue was also crucial to developing the new or established relationships I have with participants. It was important to me that the experience of participating in my research enhanced our deeper relationship as **whanaunga**.

My thesis brought me home. It provided me with the opportunity to spend more time in my **rohe** and with my people. As a result I have become much more heavily involved with the day to day functions of our **iwi**. For example during my time conducting this research I have been co-opted onto a **Rūnanga**, conducted lectures for our **Wānanga** and most importantly developed new relationships with people within the Confederation. Whilst this may not have contributed to my research directly, I view the work that this required as the **utu** for the privilege to conduct research within the ART Confederation. I also felt it was important that this research was not conducted in isolation from the dynamics and priorities of **iwi** life.

Since conducting this research I will always wear the issue of GE and the values of **ngārara** as part of my **korowai**. Some participants felt my **Māori** and **tauiwi** heritage positioned me appropriately to conduct research specifically on genetic engineering; there was a sense that being a product of a 'mixed' background gave me valuable insight into the issue. Members of the Confederation will forever associate the topics of GE and **ngārara** with me, to the extent that I have been given the nickname '**ngārara**' by some of my **kaumātua**.

The complementary way in which my identity has shaped the research and the research has shaped me has meant that the findings I have produced, and the experience I have had producing them are absolutely unique.

Chapter 4 He whakaaro,

Thoughts on the value of ngārara

This Chapter will present an analysis of the values that the people of the ART Confederation associate with **ngārara**, and the **tikanga** that when upheld manifest those values. First a summary of the analysis will be presented by conceptualising the key values of **ngārara** identified as a **kaupapa**. Then each key value will be discussed in detail with supporting evidence from the data.

Ngārara as a kaupapa

A grounded theory analysis of the data was used to explore the worldviews, understandings and ideas associated with **ngārara**. Five key values emerged as themes within the data. Figure 4.1 shows how the views, ideas and theories that participants associated with **ngārara** constitute the five key normative values: **mauri, whakapapa, tohu, tapu, kaitiakitanga**. These five key values are layered to constitute a **kaupapa**. Each layer that arises from a more materially based, specific value, is increasingly more broad and abstract.

I will now discuss each layer of the kaupapa in turn.

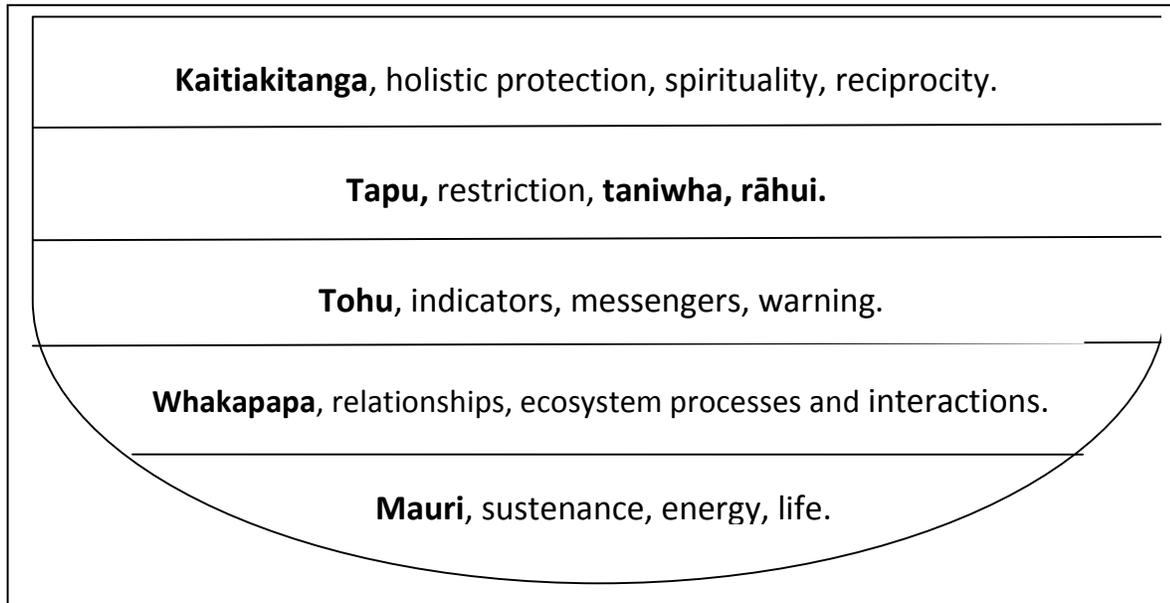


Figure 4.1 Ngārara as a kaupapa.

Ngārara as mauri

Ngārara are valued fundamentally as a source of energy, life and **mauri** that has sustained the people and the land of the ART Confederation. Participants used the term “**ngārara**” to identify a variety of different organisms: lizards, insects, spiders and other invertebrates, and microbes. Participants identified several ecological roles played by **ngārara** that were associated with the provision of sustenance of the people and the land. The valuing of such ecological roles thus gives rise to the imperative to “*sustain those creatures and thereby sustain the land*”.¹⁸¹

¹⁸¹ This participant wished to remain unidentified, and is of **Ngāti Huia**, **Ngāti Rāhiri**, **Ngāti Tama**, **Kaitangata**, **Ngāti Whakaue** and **Ngāti Te Rā Kua** descent.

Ngārara perform predatory roles and their use as a method of biological control was identified by Caleb Royal as an effective approach to pest management:

*“Once they’re established, they’ll continue to work for you and be your ally in managing your **whenua**...it makes more sense to employ living creatures that respond to environmental pressures.”¹⁸²*

Pollination was also identified as a critical role played by **ngārara** in terms of the proliferation of flora that are important to people.

Caleb Royal explained how worms, hoppers, other insects and microbes are important in contributing to the **mauri** of living soils.

*“When we go to places we are looking after...the life is much better, and it’s alive, it’s full of little critters...you could see that energy and that life, the communities that are actually alive in that soil, because that’s part of that **kai** in the soil”.*¹⁸³

Ngārara were identified by many participants as important resources, particularly as food or being associated with food. Some insects were delicacies such as **hūhū** and **wētā**, whereas maggots were used in preparation of other delicacies such as rotten shark. **Kaumātua Wehi-o-te-rangi** Royal and **Waikuharu** Cooke recalled with affection how catching ‘crawlies’ or **koura** was an important part of growing up as children of

Raukawa:

¹⁸² Caleb Royal of **Ngāti Pare** and **Ngāti Koroki** descent, and teaching staff for the **Pūtaiao** course at **Te Wananga o Raukawa** discussing his preference in land management technique.

¹⁸³ Caleb Royal of **Ngāti Pare** and **Ngāti Koroki**, and teaching staff for the **Pūtaiao** course at **Te Wananga o Raukawa** discussing his analysis of soil quality.

*“Oh used to be plentiful one time...used to take the kids over to the **Waitohu**, we’d go swimming there and I’d show them little holes in the ground there, and you know, pull them out and they’d get...bitten sometimes, but show them how to grab ‘em, pull them out, and how to cook ‘em.”¹⁸⁴*

“You’d get a straw with a long fluffy end on them and when they would grab the straw you just flip them out. That’s how we fished for them, or my brothers would just go in and pick them up.”¹⁸⁵

Insects and worms were also identified as an important part of the food chain of **tuna**, one of the most esteemed traditional foods of the ART Confederation. Caleb Royal commented on the significance of **ngārara** in the freshwater system.

*“They’re also food...for the next layer of life in that area you know. You have your bullies, your **kōkōpu**, your **tuna** and then of course us.”¹⁸⁶*

The important use of worms as bait was also noted by **Matau** Baker.

“...worms were made into a bob by threading a flax strip through the worm. And you’d collect something like 8 or a dozen or more worms together and just tie them together...They would form the shape of a fist...and by tying them to a stick and using them for a bob, which was the name they used for eeling, is

¹⁸⁴ **Kaumatua Wehi-o-te-rangi** Royal of **Ngāti Pare**, who lives at **Raukawa** marae, recalling how he taught his children to fish for crawlies.

¹⁸⁵ **Kaumatua Waikuharu Cook** of **Ngāti Raukawa**, **Ngāti Toarangatira** and **Te Ati Awa ki Whakarongotai** describing how she would fish for crawlies as a girl

¹⁸⁶ Caleb Royal of **Ngāti Pare** and **Ngāti Koroki**, and teaching staff for the **Pūtaiao** course at **Te Wananga o Raukawa**.

*bobbin'...they would choke on the worms...grab hold of the worm and all you'd have to do is throw 'em up."*¹⁸⁷

In addition to food, participants also discussed how **ngārara** were used as a resource for **rongoā**: **awheto** were used as an antiseptic, cobwebs used as a bandage to stop bleeding, and a broth made from snails can be used to aid asthmatics.

From the values of **mauri**, sustenance, energy and life that are associated with **ngārara**, the **tikanga** to 'sustain **mauri**' emerges as a cultural imperative.

The whakapapa of ngārara

Whilst **ngārara** are recognised as providing sustenance, their value was also articulated by participants with emphasis on the broader genealogical and ecological relationships they have with the ART Confederation and the environment. **Te Ati Awa kaumatua Paora Ropata** commented that it wasn't until **ngārara** were viewed in terms of the **whakapapa** of these relationships, that the true sense of their value could be gained.

The **whakapapa** of the relationship between the people of the ART Confederation and **ngārara** identified **ngārara** as **tuakana**. **Kaumatua Waikuharu** Cooke placed importance on their ancient origins and the consequent enduring relationships they have with the environment.

¹⁸⁷ **Kaumatua Matau Matenga** Baker of **Ngāti Huia, Ngāti Raukawa, Ngāti Toarangatira** and **Te Ati Awa**, describing how he would go 'bobbing' as a young boy using worms.

“They were here at the time of the dinosaur. And that’s something to respect in itself.”¹⁸⁸

For this reason, and the longevity of their individual lives, they are also recognised as the **kaitiaki** of knowledge. **Ngāti Toarangatira kaumatua** Ben Hippolite draws the analogy of **ngārara** in the following:

“To us, the tuatara is the kaitiaki of the stream of knowledge...When a person has longevity they gain a lot of information and a lot of knowledge.”¹⁸⁹

The **whakapapa** of **ngārara**, in terms of their relational position within larger environmental systems, was referred to widely. **Ngārara** provide for ecosystem balance and important interactions between distinct natural systems: such as, the different roles played by insects that live in the aquatic and terrestrial systems at different stages of their life cycle; or as described by Caleb Royal, the conduit that conveys energy between the earth and the forest provided by **ngārara** in the soil.

*“[Ngārara] might be almost seen as an umbilical that continues to allow **Papa** to feed **Tāne**, they are in there living with him, with her, and they nurture each other.”¹⁹⁰*

Ngārara are critical components of several ecosystem processes identified as being of importance to the ART Confederation. Worms provide food for important marine

¹⁸⁸ **Kaumatua Waikuharu Cook** of **Ngāti Raukawa**, **Ngāti Toarangatira** and **Te Ati Awa ki Whakarongotai**.

¹⁸⁹ **Kaumatua Ben Hippolite** of **Ngāti Toarangtira** discussing the symbolism of the **ngārara** as the kaitiaki of knowledge.

¹⁹⁰ Caleb Royal of **Ngāti Pare** and **Ngāti Koroki**, discussing the imporant relationship between **Papa**, the soil, and **Tāne**.

indicators such as **tāmure. Mokokoko** are an important food source for native birds. Caleb Royal went on to explain how insects shred and feed on waste to provide clean water that is crucial for many aquatic species, and for the people of the Confederation.

“They play an absolutely fundamental role in maintaining water quality, maintaining the appearance of the water, you know without them it would just be a clogged up mess of debris.”¹⁹¹

The ecological relationships of **ngārara** are relied upon by the Confederation. Therefore an understanding of the function and significance of these relationships is important to the livelihood of the people. Dr. **Huhana** Smith discusses how traditional narratives are important mechanisms employed by the people to maintain **mātauranga Māori** that is generated about these relationships.

“I think ultimately it’s about having a relationship with your resources, the special knowledge that you generate, you know metaphoric stories or ways of behaviours.”¹⁹²

One such narrative addresses the importance of **ngārara** as part of larger natural systems. The widely known narrative of **Rata** describes how a man felled a tree without saying the appropriate **karakia**, and the following night, **ngārara** came and put the tree back together. Upon finding the restored tree in the morning the man would fell it again, and again, it would be restored overnight. This continued until the appropriate

¹⁹¹ Caleb Royal of **Ngāti Pare** and **Ngāti Koroki**, discussing the function of insects in the aquatic system.

¹⁹² Dr **Huhana** Smith of **Ngāti Tukorehe** discussing the importance of having knowledge about resources such as those provided by **ngārara**.

karakia was said.¹⁹³ Participant Caleb Royal interpreted the narrative to convey the following understanding about **ngārara**:

*“In that story of the **tōtara** and the **ngārara** being involved, they are part of that system, and that’s part of that **pūrākau** there, you know the system is complex, it is full of all those little things, and if you do not have respect for those things, don’t expect it to be reciprocated, you have no right to be coming in and having a take mentality.”¹⁹⁴*

The narrative suggests that people should respect the complexity of the relationships **ngārara** have within the living environment. This establishes a reciprocal relationship whereby in exchange for respect and protection, **ngārara** continue to provide for the important relationships between and within ecosystems that produce important benefits for the people.

From the values of **whakapapa**, relationships, ecosystem process and interactions that are associated with **ngārara**, three key **tikanga** arise. These values inform the responsibilities of the people to:

- ‘Maintain relationships, maintain **whakapapa**.’
- ‘Respect the complexity of **whakapapa**.’
- ‘Maintain the **mātauranga Māori** about **whakapapa**.’

¹⁹³ For further explanation of this narrative refer to page 38 of this thesis.

¹⁹⁴ Caleb Royal is of **Ngāti Pare** and **Ngāti Koroki** descent.

Ngārara as tohu

As a result of the ecological relationships that **ngārara** hold within natural systems, and their tendency to respond to changes to those systems, **ngārara** are recognised as **tohu** in certain contexts. For example: the presence of **ngata** in river systems indicates clean water quality as they are known to control algal levels; the presence of moths on the river banks indicates the abundance of **tuna** as they are a key food source for tuna; and if a wetland system has been degraded, the presence of certain insects is an indication that the system is revitalising. Dr **Huhana** Smith described how **ngārara** are thus valued for their ability to indicate the well-being of natural systems and to inform the appropriate responses to impacts to this well-being.

“(Ngārara) become natural indicators for people to make movements if there is something natural happening that put them at risk.”¹⁹⁵

One participant described how his Aunt Connie **Te Wiata** taught him as a child that the observance of **ngārara** carried deeper meaning and informed a broader environmental consciousness:

“When they appeared they caused you to pause, and to think...to think about why they’ve appeared... And that you can think about anything you like

¹⁹⁵ Dr **Huhana** Smith from **Ngāti Tukorehe** describing the role of **ngārara** as indicators.

thereafter, but...it must be to do with the environment, it must be to do with all things being in equilibrium.”¹⁹⁶

The participant quoted above continued to explain how their sensitivity to **ngārara** as a **tohu** also applied to the land of **Te Āti Awa ki Whakarongotai** referred to as the “**Ngārara** Block”. The representation of **ngārara** in the land appealed to their sense of environmental responsibility.

*“So even today I don’t think of that land in the way that others might, I think of the plea, to do with the message, to do with what we described as the **Ngārara** blocks of land. So the connection for me is a warning, and how might we develop a strategy, how might we proceed into the future.”*

Te Āti Awa kaumatua Paora Ropata explained how the ability of **ngārara** to convey messages, particularly warnings, about disturbances within spiritual as well as physical systems was utilised to maintain well-being on the **marae**. **Ngārara** would be taken in the hand and **karakia** would be said so that they could be released onto the **marae** as **kaitiaki**. If the spiritual integrity of the **marae** was compromised, these **ngārara** could appear as a **tohu**, causing the people to take heed and address the matter. **Kaumatua** Darcia Solomon recalled that the **ngārara** could also be **tohu** of spiritual consequences as serious as death.

*“When we were young, the **tuatara**...it’s a scary thing to our family, like if you saw a **tuatara** it was a sign of death.”¹⁹⁷*

¹⁹⁶ This participant wished to remain unidentified. They are of **Ngāti Huia, Ngāti Rahiri, Ngāti Tama, Kaitangata, Ngāti Whakaue and Ngāti Te Ra Kua** descent. Here they are discussing how they were taught to think of **ngārara** as a young child.

Participant **Te Waari** Carkeek cautioned against essentialising the meanings conveyed by **ngārara** as negative:

“It’s not evil or benevolent....I think people get fixated on one interpretation...So if you see things on the certain side of darkness, then of course you are going to have an interpretation along those lines. But if you... have a brighter outlook on life you could see that as being a side of “don’t go this way; go that way”, like a protection.”¹⁹⁸

The ART Confederation need to protect **ngārara**: as **tohu** of the well-being of physical and spiritual systems, they provide information that is crucial to the maintenance of the wider environment.

*“We have that responsibility to [**ngārara**], and the earth. And if we’re not taking that on board, if we’re not causing ourselves to reflect in that way, we’ll suffer the degradation we’re currently enduring.”¹⁹⁹*

The valuing of **ngārara** as **tohu**, indicators, messengers and warnings gives rise to a moral imperative to ‘Conscientiously respond to the well-being of physical and spiritual systems’ as **tikanga**.

¹⁹⁷ **Kaumtua** Darcia Solomon of **Ngāti Toarangatira Ngāti Raukawa** and **Kurahaupo**, discusses the significance of **tuatara**.

¹⁹⁸ Participant **Te Waari** Carkeek of **Ngāti Raukawa, Ngāti Toa, Ngāti Pare, Ngāti Koroki, Ngāti Huia** discusses the symbolism of **ngārara**.

¹⁹⁹ This participant wished to remain unidentified. They are of **Ngāti Huia, Ngāti Rahiri, Ngāti Tama, Kaitangata** and **Ngāti Te Ra** descent.

Ngārara as tapu

The ability for **ngārara** to indicate the need for caution, or convey messages of warning is associated with their **tapu** and used as a social mechanism of restriction.

Some participants were aware of **ngārara** as a type of **taniwha**. Participants referred to **taniwha**, and the **tapu** associated with them, as mechanisms of restriction to areas that were of certain significance, or restrictions of certain behaviour. **Rangatahi, Areti Metuamate** referred to a **taniwha** he was familiar with at his **marae, Kauwhata**:

*“Well I was thinking at my **marae**, that was where either people had been buried, or that’s where the **whenua** was buried...And perhaps what that was, they didn’t want kids around there. So they said there’s a **taniwha** there...I have always associated **taniwha** with some sort of restrictions.”²⁰⁰*

Participant Dr. **Huhana** Smith referred to the role of **taniwha** in informing behaviour:

*“And they were just those indicators of what was actually the protocols of how to behave properly, ‘cause if you didn’t, those **taniwha** would take you out.”²⁰¹*

She went on to explain how the symbol of **ngārara** also provided a message of restriction when used on **pou rāhui** for resources:

²⁰⁰ **Rangatahi, Areti Metuamate** of **Ngāti Raukawa ki te tonga, Ngāti Kauwhata** and **Ngāti Haua ki Waikato** recalling his knowledge of a particular **taniwha** that he was told about as a child.

²⁰¹ Participant Dr. **Huhana** Smith of **Ngāti Tukorehe** discussing the role of **taniwha** in **Kuku**.

“Well, you know creating that sense of restriction...to say hey maybe hold up resource use for awhile, maybe we need to put this up for protection of well-being.”²⁰²

Ngārara, through their **tapu**, provide the people of the ART Confederation with an important mechanism of restriction that enables them to protect their lands and resources from degradation or exploitation; and in doing so the people of the confederation protect their own well-being.

The values associated with **ngārara** in terms of **tapu**, restriction, **taniwha** and **rāhui** give rise to a **tikanga** to: ‘Respect and abide by the **tapu** that established restriction.’

Ngārara as kaitiaki

Many participants are familiar with **ngārara**, lizards in particular, as spiritual **kaitiaki**. For the people of **Te Ati Awa ki Whakarongotai**, the lizard is the special **kaitiaki** of the people and the land. Both **kāumatua Paora Ropata** and **Waikuharu Cook** from **Whakarongotai** used a narrative of a fight between **tuatara** and **Māori** to explain that despite **tuatara** being the **tuakana** of the people, he lost the fight, and thus had to become spiritual protector of the people. This spiritual protector is **Kopaeara** who is carved on the **pou “Te Puna o te Aroha”**.

²⁰² Participant Dr. **Huhana** Smith of **Ngāti Tukorehe** discussing the function of **ngārara** with regards to **pou rāhui**.

Whilst the various relationships of **ngārara** that have been discussed so far are easily observed and understood as part of the material world, the relationships also function at a metaphysical level, as commented on by Dr **Huhana** Smith whilst discussing the function of **taniwha**:

“They have... real practical basis. But also a way of honouring that there’s a spiritual context.”²⁰³

The ability for **ngārara** to function in both the material and metaphysical worlds was emphasised by **kaumatua Waikuharu** Cook by referring to the position of the lizard **Kopaeara** that is carved on the **pou “Te Puna o te Aroha”** which stands on the **marae** of **Whakarongotai**.

“...we have one on our pole here. And that’s to show the connection between, not the underworld so much, but it’s the different worlds that we have.”²⁰⁴

The third biological eye of the **tuatara** was referred to as evidence of **ngārara** being engaged in the metaphysical world and their ability to see the unseen. **Kaumatua** Ben Hippolite used a narrative of a conversation between a **koro** and his **mokopuna** to demonstrate how this third eye works.

*“...And his **koro** says: “Close your eyes and think about something you want to tell me. Now can you think of something?”*

“Yes”

²⁰³ Dr **Huhana** Smith is of **Ngāti Tukorehe** descent.

²⁰⁴ **Kaumatua Waikuharu** Cook is of **Ngāti Raukawa**, **Ngāti Toarangatira** and **Te Ati Awa ki Whakarongotai** descent.

“What are you thinking?”

“My mother.”

“What can you see?”

*“My mother cooking **Māori** bread in an open fire.”*

“Now concentrate on that and tell me what she’s doing.”

“She’s got a long handled shovel and she’s taking live embers and putting them on the lid.”

“Why is she doing that.”

“Because the bread will cook on the top at the same time it cooks on the bottom.”

“Now take a deep breath and what can you smell.”

*And he says: “Freshly cooked **Māori** bread.”*

The tuatara because of that third eye, reminds us that sometimes we have to close our natural eyes, to see things spiritually.”²⁰⁵

This narrative conveys an important philosophy that is conceptualised through **ngārara**: Just because some things are not able to be observed physically doesn’t mean they can’t be experienced spiritually.

Further narratives were offered by participants to explain how **ngārara** can instantiate certain abstract interactions and processes such as: social norms, desires and emotions of people.

²⁰⁵ **Kaumatua** Ben Hippolite is of **Ngāti Toarangatira** descent.

Moana Sinclair offered this narrative which explains how **ngārara** manifested the pain of a person:

*“There’s a story about a son that was born and not acknowledged, as he got older...he became a really talented carver and he carved a certain **taonga**. That **taonga** was taken by the family that rejected him, unbeknown to them...Anyway the house caught on fire. That **taonga** that he had, it was the one thing that didn’t burn. When they looked at it they saw a whole tribe of **ngārara** come out of it, and when they had somebody analyse it, tracked it back to the carver. So I guess in that story, you can see that was a spiritual as well as a physical kind of connection... I think there’s a message in there about the power of humans to imbue something, or to pass on their **mamae** in some way and that manifests like with the story I just told you. So it’s not, life isn’t concrete; the things you can see aren’t the only things you can believe in.”²⁰⁶*

Dr **Huhana** Smith used a narrative to explain why the **ngārara** held in the mouth of the **koruru** on the **whare** at **Tūkorehe marae** is a **tohu** of the ethic of **manaakitanga**. The narrative tells of a **mōkai** that lives in the thatching of the house. It is always fed by the house, but one day the **koro** feeds the **mokopuna** before feeding the **mōkai**. The **mōkai** is annoyed by this and as retribution the **mokopuna** drowns. Dr Smith gave the following interpretation:

*“And it’s that kind of notion of not paying attention through the **manaakitanga** or the care that you always afford to visitors to your home, even if it is the local*

²⁰⁶ **Moana** Sinclair of **Ngāti Rangatahi, Ngāti Raukawa, Ngāti Toarangatira, Ngāti Tahu, Maniapoto** and **Rangitane** told this story as an example of where **ngārara** could be seen as a **kaitiaki**.

ngāngara that lives in ceiling, is that you're disrespecting the visitors. That lizard in the mouth is a metaphor for manaakitanga."²⁰⁷

Te Waari Carkeek told a story of how **Matene Te Whiwhi** communed with a **ngārara** to relieve himself of his sorrow at losing his wife, **Pipi**. Whilst in the story the **ngārara** represents grief and death, the **ngārara** is viewed as a **tohu** of **aroha** that played an important role in rehabilitating **Te Whiwhi**.

*"I rongo au i tētehi kōrero, e pā ana ki tētehi o mātou mātua tupuna, Matene Te Whiwhi. I mate tāna hoa rangatira a Pipi...i roto i tō rāua whare. Muri mai i te nehunga o te wahine, ka tū te whare, ka tapu rawe te whare. Nā te mea he mate hirahira. Ki taku rongo, kei te tino pōuri rawa atu a Matene, i te hinga o tāna hoa wahine...Ka haere ia rā ki te noho i te whare. Kāore e roa, ka uru katoa ngā ngāngara ki roto i taua whare. Ka puta mai ia iraira, ia rā ka haere ia ki te whāngai i tētehi ngāngara e noho ana roto i te whare, mōkaikai mōna. Hei whāngai ia i tāna mamae. Hei pupuri i te āhuatanga o tāna hoa rangatira. He āhua o tērā ngāngara, he spider. Ia rā ka haere ia ki te tangi, ki te kōrero atu ki tērā ngāngara...Mō te aha, kāore au i te mōhio, but koira ngā kōrero e heke mai i ō mātou mātua. Tae atu ki te wā ka hiki i te mamae, i te pōuri, i runga i a ia, ka haere ia ki te whiwhi wahine hou. Ka mutu tērā ka wera te whare nei i te ahi...Well I believe his actions were to feed his sorrow. And the ngāngara was the representation of that. He tohu o te aroha."*²⁰⁸

²⁰⁷ Participant Dr. **Huhana** Smith is of **Ngāti Tukorehe** descent.

²⁰⁸ Participant **Te Waari** Carkeek of **Ngāti Raukawa, Ngāti Toa, Ngāti Pare, Ngāti Koroki, Ngāti Huia** shared this story that his **whānau** held about **ngārara**.

Themes of protection, care and **kaitiaki** are pervasive throughout the narratives about **ngārara** and across the broader **kaupapa** of **ngārara**. The protection offered by **ngārara** to the people is both indirect: as a source of energy or food, as **kaitiaki** of knowledge and **marae**, as providers of ecosystem balance, as contributors to diversity; and direct: as **tohu**, **taniwha**, **mōkai** and **kaitiaki**. Across the different ways that the people of the ART Confederation value **ngārara**, is an implicit imperative to reciprocate the care that is received, as explained by Caleb Royal.

*“I think it’s we look after them and they look after us. That’s how I sort of understand **taniwha** to be. You don’t look after them they’ll get angry and they’ll take people...if we are **kaitiaki** of **taniwha**, **taniwha** will be **kaitiaki** of us.”²⁰⁹*

Valuing the **kaitiakitanga**, holistic protection, spirituality and reciprocity that **ngārara** are associated with gives rise to the **tikanga** to: ‘Reciprocate the holistic protection offered by **ngārara** and act as **kaitiaki**.’

Summary

The key values associated with **ngārara** are layered to constitute a **kaupapa**. The base is formed by the fundamental values associated with **ngārara**; sustenance, energy, life

²⁰⁹ Caleb Royal of **Ngāti Pare** and **Ngāti Koroki** defines the people’s relationship with **taniwha**, and thus alludes to the wider moral imperative to reciprocate care for **ngārara**.

and **mauri**. The values associated with the broader **whakapapa**, ecosystem relationships, processes and interactions of **ngārara** have then arisen from these fundamental values. Knowledge of these relationships has then informed theories of **ngārara** as **tohu**; they are valued as indicators and messengers. Which in turn has informed broader values associated with **ngārara**; **tapu**, restriction, **taniwha** and **rāhui**. Finally, all values associated with **ngārara** can be encompassed within the broad value of **kaitiakitanga**; which functions in both material and metaphysical realms, ultimately for the betterment of the people of ART Confederation. The following **tikanga** that arise from the **kaupapa** are the conventional aims and responsibilities of the people of the ART Confederation:

- Sustain mauri.
- Maintain relationships, maintain whakapapa.
- Respect the complexity of whakapapa.
- Maintain the mātauranga Māori about whakapapa.
- Conscientiously responds to the well-being of physical and spiritual systems.
- Respect and abide by the tapu that establishes restrictions.
- Reciprocate the holistic protection offered by ngārara: Act as kaitiaki.

The **kaupapa** and **tikanga** will be used in the framework in Part Two of the analysis to assess GE.

Chapter 5 **Ko te Whē**: Clothing

ourselves with words of wisdom.

“Whakarongo ki ngā kupu a ngā kaumātua, kākahutia i runga i a koe hei hoatu ki te ao hou.”

“Listen to the words of your elders, clothe yourself in them to offer in the contemporary world.”²¹⁰

‘**Te Whē**’ is the sound in the form of words that is used to clothe and thus articulate our thoughts.²¹¹ This Chapter will present the ‘**Korowai** Framework’ for ART assessments of GE. The ‘**Korowai** Framework’ was developed by using the words of **Āti Awa, Raukawa, Toa** (the ART Confederation) about **ngārara** as a **kaupapa**, and the **tikanga** that arises from that **kaupapa**. The **Korowai** conceptualises the integrity and inherent wisdom in our **kaupapa** and **tikanga**, that when woven together, are a tool that can be worn to address and make assessments of contemporary issues such as GE.

²¹⁰ This is a **whakatauaki** from my great great great Grandfather; **Wiremu Te Kākākura Parata**, chief of **Te Āti Awa ki Whakarongotai**.

²¹¹ Royal, T. A. C. (2008). **Te Ngaakau**. Te Whanganui-a-Tara, Mauriora ki te Ao. p.91. Royal discusses the meaning of **whē** and it’s relationship to **wānanga** with references to **Māori** Marsden’s explanations of **whē** as “the seed word” that allowed thoughts to be “conceptualised and expressed in word.”

TIKANGA	Sustain mauri.	Maintain relationships, maintain whakapapa. Respect the complexity of whakapapa. Maintain the mātauranga Māori about whakapapa.	Conscientiously responds to the well-being of physical and spiritual systems.	Respect and abide by the tapu that establishes restrictions.	Reciprocate the holistic protection offered by ngārara : Act as kaitiaki.
KAUPAPA	Mauri	Whakapapa	Tohu	Tapu	Kaitiakitanga

Figure 5.1 The Korowai Framework for assessing GE.

The participants' interpretations of GE will be presented in terms of each of the key values that constitute the **kaupapa** of the **Korowai** Framework. Their interpretations will be analysed to assess if GE is consistent with the relevant **tikanga** in the Framework.

Mauri

This section will assess if genetic engineering upholds the value of **mauri** by addressing the participants' view of how the use of genetic engineering sustains **mauri**. '**Mauri**' broadly encompasses the living things, energy and life that are valued by the ART confederation.

“Sustain mauri”

One such energy source that is valued is food. Many participants discussed the diminishing of **mauri** as an outcome of the use of GE to produce food. Dr. **Huhana** Smith discussed her impression of the quality of GE food:

“I’m not a big fan of GE...when it comes to food, I’m like nah...I’m a little dubious, if it’s hybridisation of the seed, the code. You’re actually ending up with not...the whole...you’re actually missing out on the derivatives of the food. I’m not really keen on having the genetically modified food. I like the whole food.”²¹²

Other participants discussed the potential implications of the use of GE on the diversity of life; such as **Moana** Sinclair who commented on the potential use of GE for selective breeding to eliminate genetic disorders:

“You have those people that would say, well we have children born like that then

²¹² Dr **Huhana** Smith of **Ngāti Tukorehe** discussing her impression of the quality of genetically engineered food.

*that's kind of important too. It's something from the ancestors being passed down. Why snuff it out? Are we getting into eugenics here? And there's that school of thought. Like the club foot... I read some study where **Māori** thought the club foot was a **taonga**. It just depends really at how you look at it. Are we trying to do what we do to perfect apples and oranges at the supermarket where they don't have one blemish? Are we making Barbie doll kind of images out of humanity when humanity is flawed?"²¹³*

Control over things which have mauri was an issue for most participants. In discussing the use of GE to manipulate the quality of living things and food sources, **Moana Sinclair** went on to broach the issue of control:

"I think one of the key things...was the whole thing of losing control of your food. And of course the big example is India where they've got the many different varieties of rice and how they've been absolutely monopolised by companies and taken out of the hands of every day communities...We absolutely must never lose things like our kumara seed and our specific seeds. My mother used to grow her own Māori potatoes. It's interesting I see it at the shops now...My mother was known to have those seeds and everyone respected her for that. And yeah I think it's really important to understand genetic engineering and what it means in terms of control and land and resources and quality of the

²¹³ **Moana Sinclair** of **Ngāti Rangatahi, Ngāti Raukawa, Ngāti Toarangatira, Ngāti Tahu, Ngāti Maniapoto** and **Rangitane** reflects on her research around pre-birth testing and selective breeding.

*food we eat or decide to plant”*²¹⁴

The example of India illustrates that where GE food is commercially grown, power and control of food is transferred from local communities to companies. **Moana** is clearly concerned about the potential for our people to lose control of foods that are of significance to us and associates GE foods with the broader experience of the commercialisation of food. She uses her experience with the **Māori** potatoes as an analogy for this, the control of them has been transferred from her mother, to a commercial vendor. She also alludes to a relationship between our control of foods and their quality. **Moana’s** concerns are supported by other participants who questioned the right for companies to have such control. One participant analogised the commercialisation of **rongoā** as theft.

In the case of commercially grown GE food, the ability of the ART Confederation to sustain **mauri** as a **tikanga** is compromised as a result of the transfer of control from the local community to larger companies. The diminishing of food quality and reduction in natural genetic diversity as potential outcomes of GE, are not consistent with a **tikanga** of sustaining **mauri**.

²¹⁴ **Moana** Sinclair of **Ngāti Rangatahi, Ngāti Raukawa, Ngāti Toarangatira, Ngāti Tahu, Maniapoto** and **Rangitane** discusses issues of control of food and her research in the area of biotechnology.

Whakapapa

This section will assess if genetic engineering upholds the value of **whakapapa** by addressing the participants' view on how genetic engineering:

- Maintains relationships and thus **whakapapa**
- Gives respect to the complexity of the **whakapapa** within the environment
- Maintains the **mātauranga Māori** about **whakapapa**

“**Whakapapa** and relationships” encompasses the broad genealogical and ecological relationships valued by the ART Confederation.

“Maintain relationships, maintain whakapapa.”

Several participants such as Caleb Royal, felt that the GE undermined **whakapapa**:

*“It undermines the **whakapapa** of those organisms that we have and it’s a practice that puts **whakapapa** at risk...From what I understand of the genetic code; you are messing with that **whakapapa**...what I have read is that a tree is 98% the same as a human. Well that’s not surprising if you look at **Māori** cosmology saying that we are the children of **Tāne**...Then if you say we are pretty much 99% the same genetically as a rat and 99.9% the same as a chimp. It’s a pretty slippery slope...one little slip and you’re messing with that*

***whakapapa**....and those **mauri**, energy, life forces right at that level.”²¹⁵*

Although not all participants felt this way, as demonstrated by **rangatahi Areti**

Metuamate:

*“Surely for me that doesn’t interfere with our **whakapapa**. The creation of human beings still happens in the same way, and that **whakapapa** will always be based on whose sperm and whose egg it is.”²¹⁶*

Whereas **kaumatua** Darcia Solomon felt that despite her feelings that GE might threaten **whakapapa**, she would support GE if it had positive outcomes for future generations:

*“But sometimes I think that if it’s meant that by **whakapapa** that I have to look after the next generation too, and if it’s meant that I have to do that through supporting GE, then I would do.”²¹⁷*

Several participants felt that a key problem is that currently, GE is not managed with any understanding of the relationship between the ART Confederation as **tangata whenua** and the environment.

*“It’s better managed by coming back to **tangata whenua**...Go and talk to the local people, spend some time at their **marae**, get some understanding from them to do with their spirituality and their connection to the earth and the*

²¹⁵ Caleb Royal of **Ngāti Pare** and **Ngāti Koroki** discussing his view on the effects of GE to **whakapapa**.

²¹⁶ **Rangatahi, Areti Metuamate** of **Ngāti Raukawa ki te tonga, Ngāti Kauwhata** and **Ngāti Haua ki Waikato** discussing his view on the effects of GE to **whakapapa**.

²¹⁷ **Kaumatua** Darcia Solomon of **Ngāti Toarangatira** and **Ngāti Raukawa** contemplates the implications of GE in terms of **whakapapa**. At the time of this interview she sat on **Ngā Kaihautū Tikanga Taiao**.

elements. That will help them to develop a better policy.”²¹⁸

Another participant felt that when we allowed that relationship to be disregarded then we as a people became disengaged from the issue.

The issue of commercial control of food was also raised by **Moana** Sinclair as a cause of the disconnection of people from their relationships with their food sources.

“You know I’m more leaning towards the whole idea of people being self-sufficient...that family has to make the decision, but what you have now is huge companies making the decision, taking the seeds, so that we... have no other choice to go to the supermarket and too bad if you’ve got no job, go without.”²¹⁹

“Respect the complexity of the whakapapa.”

Some participants felt that society and scientists didn’t understand the complexity of **whakapapa** and thus the implications of genetic engineering on **whakapapa**. This led to a sense for Caleb Royal that those who used GE did so with ignorance of the potential outcomes.

*“Where is that **mauri**, that **hihiri** created? Do you get two Nitrogens, two Carbons?...That **mauri** that life energy, that **ira**, that **ihi** and that, where does it start? And with technology we don’t know that...but we persist in challenging*

²¹⁸ This participant wished to remain unidentified. They are of **Ngāti Huia, Ngāti Rahiri, Ngāti Tama, Kaitangata and Ngāti Te Ra Kua** descent. Here he is discussing what the Environmental Risk Management Authority need to do to improve their management of GE

²¹⁹ **Moana** Sinclair of **Ngāti Rangatahi, Ngāti Raukawa, Ngāti Toarangatira, Ngāti Tahu, Maniapoto and Rangitane** discussing the relationships of people to their food sources.

those things...I know that even once genetic engineering has occurred...how those sequences display themselves, can be quite random...You're messing with evolution eh".²²⁰

"GE is a huge, huge area, and it's populated by experts or so called experts that don't seem to know a lot. They're in GE, they know parts of the sum, but they don't know the whole sum."²²¹

"Maintain the mātauranga Māori about whakapapa"

The use of intellectual property law and patents by companies to secure intellectual property pertaining to genetic sequences raised concerns for many participants. The potential outcomes of this for **iwi** are again a transfer of power from local communities to companies, however this time over **mātauranga Māori** associated with **whakapapa**. **Te Waari** Carkeek gave an example of this happening overseas; the outcomes for a local farmer of this transfer of power were prosecution and loss of livelihood.

"Also there is the potential for patents...where they are actually claiming them and saying that's their intellectual property. And Monsanto is an example of that with linseed or canola...that genetic code is owned by Monsanto, and it then cross pollinates with other canola, and farmers haven't purchased that seed from Monsanto, and they are apparently growing their products without

²²⁰ Caleb Royal of **Ngāti Pare** and **Ngāti Koroki** discussing the complexity of genetics.

²²¹ Participant **Te Waari** Carkeek of **Ngāti Raukawa, Ngāti Toa, Ngāti Pare, Ngāti Koroki, Ngāti Huia** discussing the knowledge of GE 'experts'.

*purchasing it and they're being prosecuted and losing farms over this. So there is that whole monopoly that can be created and ownership of life...There's bio-prospecting companies that have been over to **Aotearoa** collecting seed, collecting **rongoā** and looking to patent. If you discover that genetic code, you can patent that genetic code, and then you own it.”²²²*

Several participants also felt that the commercial control of intellectual property attached to GE products means that any potential benefits of the technology were only accessible to Western society and the wealthy. **Te Waari** Carkeek continued to explain:

“What I believe... with the big pharmaceutical companies, they are billion dollar businesses and I know there is going to be a big fight over genetic engineering, it's going to go to the highest bidder. It's going to be such an important source, compared to the pharmaceutical companies today that there will be gate keeping. There will be control over resources...the top quality things will be restricted to those who can afford it. 'Cause that's what human nature is like, they are essentially greedy. I would say the system has already been set in place for that to happen. There is no doubt in my mind that it is going to be commercialised activity... And then you'll have the western society maybe getting the benefits of this and the poorer parts of society not being able to access it.”²²³

²²² Caleb Royal of **Ngāti Pare** and **Ngāti Koroki** discussing on the potential outcomes of the patenting of genetic sequences.

²²³ Participant **Te Waari** Carkeek of **Ngāti Raukawa, Ngāti Toa, Ngāti Pare, Ngāti Koroki, Ngāti Huia** discusses his view on the potential outcomes of the production of GE products.

The loss of power and control of genetic code and **whakapapa** was viewed by several participants as part of broader experiences of loss of control over other **taonga** as a result of Western intellectual property laws, and in the case of human gene sequencing, the exploitation of indigenous people. One participant reflected on the **Māori** experience of intellectual property law:

*“...We’ve been talking about intellectual property for such a long time (laughs). I just laugh that you know the **haka**, that’s gone, you know **moko**, that’s gone, **tā moko**, that’s gone.”²²⁴*

To conclude the assessment of GE through the value of **whakapapa**:

- Although one participant didn’t think that GE interfered with **whakapapa**, many participants felt that **whakapapa** is undermined by the use of GE, that GE was not managed with an understanding of the relationship that the people of the ART confederation held with the environment, and that the commercial growing of GE food contributed to the disconnection of people from their relationships with food sources and the environment generally. The use of GE does not ensure the maintenance of relationships and **whakapapa** and according to some participants puts **whakapapa** at risk.
- Many participants felt that GE was conducted with an ignorance of the complexity of **whakapapa** and thus an ignorance of the potential implications of GE to **whakapapa**. Such use of GE does not give respect to the complexity of **whakapapa**.

²²⁴ This participant wished to remain unidentified but is of **Raukawa ki te tonga, Ngāti Koroki, Ngāti Maiotaki** and **Ngāti Toarangatira** descent.

- Finally, the use of GE does not ensure the maintenance of **mātauranga Māori** about **whakapapa**, in fact, participants viewed the potential outcomes of GE to be loss of power and control of **mātauranga Māori** about **whakapapa** and a contribution to broader exploitation of indigenous peoples.

Tohu

This section will assess if genetic engineering upholds the value of **tohu** by addressing the participants' view on how GE is used to conscientiously respond to the well-being of physical and spiritual systems. **Tohu** are the indications by natural phenomena (including **ngārara**) of a change in natural or spiritual systems. Their recognition and correct interpretation are crucial to the well-being of the people of the ART confederation and the larger environment.

“Conscientiously respond to the well-being of physical and spiritual systems.”

Almost all participants were familiar with GE research that was promoted as having potential benefits for well-being, predominantly in terms of human health. Many participants felt that despite any other opposition they had to the use of GE, they could support the use of GE that would help those who had serious medical problems:

“If it can help with a whole bunch of medical conditions...well I thought that

seems to me to be acceptable.”²²⁵

“There are some benefits that can come out...I understand that it can shift some genetic abnormalities.”²²⁶

“Oh I think that’s great. It’s there to aid any sickness or disability, I support all that.”²²⁷

For some participants, the use of GE in medicine was deemed a preferable alternative to the use of synthetic drugs as it was viewed as being “natural”. Participant **Te Waari** Carkeek explains his views on the use of GE in medicine:

“I probably think they’re safer than things...synthetic. Synthetic elements or entities. I think natural entities and their cells are probably a whole lot safer, and you’ve just gotta look at medications and all that stuff...So I think there’s an opportunity for things that can be better integrated with human cells.”²²⁸

Some participants felt that GE products were not beneficial for human health; **kaumatua Paora Ropata** felt strongly opposed to their use, comparing GE products to Thalidimide or the pollution of fresh water with sewage; whilst another felt that GE products were just short-term solutions to the symptoms of long-term health problems associated with lifestyle.

²²⁵ **Rangatahi Areti Metuamate** is of **Ngāti Raukawa ki te tonga**, **Ngāti Kauwhata** and **Ngāti Haua ki Waikato** descent.

²²⁶ Dr **Huhana** Smith is of **Ngāti Tukorehe** descent.

²²⁷ **Kaumatua** Rev. **Matau Matenga** Baker is of **Ngāti Huia**, **Ngāti Raukawa**, **Ngāti Toarangatira** and **Te Ati Awa** descent

²²⁸ Participant **Te Waari** Carkeek is of **Ngāti Raukawa**, **Ngāti Toa**, **Ngāti Pare**, **Ngāti Koroki**, **Ngāti Huia** descent.

However, whilst many participants recognised the potential benefits for human health that GE could provide, almost all participants were wary that the commercialisation of those benefits put limitations on who could access them. **Te Waari** Carkeek was one such participant:

*“If we can find ways of curing our ills: hey, that’s really great...What then comes is the commercialisation of it. That’s the scary bit. It might cost you thousands of dollars to get your shot of pig cells... And it may only be a temporary measure; you might be on this programme for the rest of your life”.*²²⁹

As explained by **rangatahi Areti Metuamate**, this was because the primary interest of the companies that owned the potential benefits of GE was making profit and not the protection of human well-being.

*“Generally I think naturally the business, their objective is to make money, and that might not necessarily be to the advantage of society.”*²³⁰

Some participants, such as Dr. **Huhana** Smith, felt that the prioritisation of profit over human well-being by industry was also demonstrated in the failure of GE food production to end starvation:

“I mean I know that’s part of the ‘green revolution’ and how you grow food for the world...people failed. It’s all about economics, it’s all about money. I could

²²⁹ Participant **Te Waari** Carkeek is of **Ngāti Raukawa, Ngāti Toa, Ngāti Pare, Ngāti Koroki, Ngāti Huia** descent.

²³⁰ **Rangatahi Areti Metuamate** is of **Ngāti Raukawa ki te tonga, Ngāti Kauwhata** and **Ngāti Haua ki Waikato** descent.

never understand as a child why people were starving – it's all about money, global money.”²³¹

Although some participants pointed out that if people were engaged in the production of GE crops, they could also derive economic benefits such as an increase in the scale of production and profit.

Many participants felt that GE could be used to respond to the medicinal and health needs of people with serious health problems and improve their physical well-being. However the ability of the people of the ART Confederation to use GE products to respond to these needs is ultimately limited by the commercial prioritisation of making profit over improving well-being, which has been demonstrated in other GE industries such as food production.

Tapu

“Respect and abide by the tapu that establishes restrictions.”

Not many participants commented directly on the accordance of GE with regard to the value of **tapu**. The few who did were succinct in their view that the use of GE disrespects and breaches the **tapu** of living things. There is thus no evidence presented by the participants to suggest that the use of GE gives respect to or abides by the **tapu** that establishes restrictions.

²³¹ Dr **Huhana** Smith is of **Ngāti Tukorehe** descent.

Kaitiakitanga

This section will assess if GE upholds the value of **kaitiakitanga** by addressing how the use of GE can enable people of the ART Confederation to reciprocate the holistic protection offered to them by **ngārara** and thus act as **kaitiaki**. **Kaitiakitanga** is the practice of caring for and protecting the living environment.

“Act as kaitiaki”

Most participants raised concerns that we currently were not able to adequately protect people and the environment from the risks posed by GE. **Kaumatua Paora Ropata** compared this inadequacy and its potential implications to that he had witnessed in the exposure of young people to harmful radiation on Christmas Island. Another participant was particularly concerned that it was too difficult to adequately contain experimental GE crops. Many participants were concerned that despite **Māori** having vested interest in the management of GE as **kaitiaki** and Treaty partners, they were excluded from decision-making processes by the scientific community and the Crown. Participant Caleb Royal commented on the current structure used to capture **Māori** input and its ineffectiveness to uphold **Māori** recommendations in decision-making:

“There was a committee with Ngā Kaihautū, that was like an advisory committee, and that committee’s recommendations have never been upheld. So I see it as tokenism really...That’s where I’ve really left it...it seems if we are powerless to act on that stuff...or our strongest committee to advise the ERMA

(Environmental Risk Management Authority) are toothless, what's the point of being involved?...That is in my understanding a clear Treaty Issue.”²³²

Another participant felt that a decision-making process that excluded our people would produce poor outcomes for us:

I don't agree with it (GE), 'cause we're not factored in...We'll suffer the degradation of their short sightedness and their lack of empathy.”²³³

Caleb Royal also pointed out that the ART Confederation had rights as **iwi** and **hapū** to have input into decisions on applications that were restricted to other tribal areas as no **iwi** had **mana** over living things that succeeded over that of other **iwi**. However this had not been upheld in past decisions.

*“If an **iwi** authority in **Tāmaki-Makau-rau**, do a project on **kauri**, on **mānuka**, on enzyme X, and they lay ownership...Does that mean the **mana** of that **iwi** blankets the **mana** of our **iwi**, of our **hapū**? That doesn't sit with **kaupapa Māori**.”²³⁴*

Many participants commented on how **Māori** are in a vulnerable position because they are currently not actively engaged or informed by the Crown. John Barrett explained:

“I'm not sure the Māori population per se would be highly engaged...Because I know that some of the cereals I eat or some of the foods I consume will be

²³² Caleb Royal is of **Ngāti Pare** and **Ngāti Koroki** descent.

²³³ This participant wished to remain unidentified. They are of **Ngāti Huia**, **Ngāti Rahiri**, **Ngāti Tama**, **Kaitangata** and **Ngāti Te Ra** descent. Here he discusses the implications of traditional means of diversifying **whakapapa**.

²³⁴ Caleb Royal is of **Ngāti Pare** and **Ngāti Koroki** descent.

modified in some way that if I knew all the details I may not be happy with it...I think that we've come to tolerate a level of modification simply because we don't know about it. I'd be disturbed if someone was to present me with a scenario that said look, there are some major things that you don't know about that the food producers or medical supply producers or any building manufacture producers have been putting in front of us for the last ten years, that...we discovered aren't as helpful to us as we thought they were...I suspect it is happening more widely than I know, and more widely than most people know. I suspect we might take a lot for granted that might surprise us. And I suspect we will sail merrily on until someone brings something to our attention and says: 'Is this a good thing?'"²³⁵

Participant **Te Waari** Carkeek felt that those who had responsibility to inform **Māori** on GE were not doing so:

*"There should be authorities that should have that responsibility...And there are ethical issues which need to be publicised...informing people...There's the pure science when you're doing the study and then there's the communication which doesn't get a lot of energy or effort. The funding is going to the science, not to the publications and the communications."*²³⁶

He went on to discuss how **Māori** were excluded from the management of GE because it functioned within the framework of Western science:

²³⁵ John Barrett is of **Ngāti Raukawa, Te Ati Awa, Ngāti Toarangatira, Maiotaki** and **Kaitangata** descent.

²³⁶ **Te Waari** Carkeek is of **Ngāti Raukawa, Ngāti Toa, Ngāti Pare, Ngāti Koroki, Ngāti Huia** descent.

“...Because it’s in the ivory tower of science, and science tends to have the have and the have nots. And because it’s up there in the ivory tower of science, the messages aren’t filtered through very well. And in fact, the messages use lots of jargon, lots of internal language and almost purposely put out there to say, you know this is where it is up here, and the hoi polloi looking up and going “and?” ...I think Māori are passive observers, I think because the GE subject or area itself has been encapsulated in a Western framework and Māori are on the outside of that framework, because we have a different framework we use and it’s probably more inclusive.”

The people of the ART Confederation are not able to adequately protect people and the environment from the risks of GE and thus act as **kaitiaki** for the following reasons:

- The committee in which **Māori** can currently exercise their rights as **kaitiaki** and have input into decision-making are toothless and ineffective in upholding their advice at the decision-making level;
- **Māori** are not actively engaged and informed by the Crown about GE, and;
- The Western scientific framework within which the decisions on GE are made excludes **Māori**.

The inability for the ART confederation to act as **kaitiaki** in the process by which decisions on the use of GE are made, undermines the ability for **Māori** to reciprocate the protection they are offered by **ngārara**. Thus the use of GE does not uphold the value of **kaitiakitanga**.

Assessments of GE through the values associated with ngārara.

A range of **tikanga** have been used to assess if the potential outcomes of the use of GE uphold the values associated with **ngārara**. Figure 5.2 outlines the values, collectively as a **kaupapa**, the **tikanga** that arise from these values and the potential outcomes that are relevant to each of those **tikanga**. The analysis of the information presented in Figure 5.2: 'The summary of the assessments of GE' has shown that the potential outcomes of GE:

- Are not consistent with the **tikanga** of sustaining **mauri**;
- Do not ensure the maintenance of relationships and **whakapapa**;
- Do not give respect to the complexity of **whakapapa**;
- Do not ensure the maintenance of **mātauranga Māori** about **whakapapa**;
- Are limited in how it can be used to respond to the physical well-being of humans;
- Do not give respect to the **tapu** that establishes restrictions, and;
- Do not enable the ART confederation to act as **kaitiaki**.

Therefore, the potential of GE is significantly limited in its ability to fulfil the **tikanga** of the ART confederation. Where it may be possible for those **tikanga** to be fulfilled by the use of GE, i.e. the response to the physical well-being of humans, the commercial constructs within which GE is developed and used limits access to any benefits that may be derived. To conclude, the outcomes of GE are not wholly accordant with the values associated with **ngārara**.

Chapter 6 **Ko te Wānanga,**

Concluding Discussion

My people live in the age of unprecedented human inflicted harm to **Papatūānuku** and **Ranginui**. Contemporary Western society operates in ignorance and defiance of human dependency on the environment. The legacy of Western colonisation of indigenous peoples has not only been the physical removal of indigenous people from the landscape, but the degradation of the living systems on which indigenous peoples survive. The physical and spiritual welfare of the **rohe** of the Confederation of **hapū** and **iwi** of **Te Āti Awa ki Whakarongotai, Ngāti Raukawa te au ki te tonga** and **Ngāti Toarangatira** (the ART Confederation) has been and will continue to be seriously degraded by human induced processes such as sea level rise, habitat loss, mass extinction and clean water scarcity. Despite the Confederation implementing the 25 year **iwi** development strategy '**Whakatupuranga rua mano**', to prepare this generation for the 21st century, the **rangatahi** of today have inherited environmental problems so fundamentally challenging to our survival, that perhaps only our **tūpuna** who made the great migration to **Aotearoa** could empathise with the desperation of our situation.

The degradation we suffer today is the outcome of decision-making frameworks that prioritise the fulfilment of neo-liberal values of economic growth and 'progress' above the value of the health of living systems. My generation requires decision-making

frameworks that will not allow any further degradation, and will produce outcomes that truly reflect **iwi**, **hapū** and **whānau** values and the aspirations we have for our people and the world we live in. Conducting such decision-making requires us to understand what it is that we value and wish to protect from degradation. It requires us to be able to apply the ART values system, bodies of knowledge and methods of analysis to decision-making. This thesis is concerned with developing a framework for making decisions that is informed by ART values, specifically for decisions on the use of genetic engineering (GE). In the case of thesis, the values associated with **ngārara** have been used.

Aim

The aim of this thesis has been to assess genetic engineering through the values that the ART Confederation associates with **ngārara**.

This has required the fulfilment of three objectives:

- To analyse the values that the ART Confederation associates with **ngārara**.
- To develop an ART conceptual framework to assess genetic engineering.
- To contribute to the development of ART research methodologies.

This Chapter will summarise the results of this thesis , discuss their implications and make key recommendations.

Methodology

My approach to the research conducted for this thesis has been to privilege ART academics' literature and methodology wherever possible. Through this approach I have contributed to the development of ART research methodologies in several critical ways.

Firstly, the application of a specific suite of values, i.e. those associated with **ngārara**, is an authentic approach to developing an assessment tool to inform environmental decision-making. Whilst Durie's Research Potential Framework advocated for the assessment of GE research in terms of its accordance with values, the values he used in his model were broad and general. A suite of values were not just selected because of the limited scope of this thesis but because it provided a focal point in discussions with participants that allowed them to articulate meaningful evidence and examples of how our people experience these values, and conversely how those specific experiences may be enhanced or disrupted by GE. I also believe that it was appropriate to focus on the suite of values attached to a **manaia** such as **ngārara** as it framed the discussion about values and environmental assessment within the ethics of protection and respect that **manaia** embody. Therefore I think this research builds on an approach that encourages ART researchers to use their **taonga** to focus and frame environmental management research.

Secondly, I think it is important that ART take a Confederation wide scope in addressing environmental management issues such as GE. I believe that this research may be the first contemporary attempt to canvas the values associated with a specific **taonga**, and

the interpretations of a new technology, across the whole of the Confederation by conducting interviews. Whilst projects on **taonga** such as fresh water bodies and **tuna** have been conducted across individual **iwi** and **hapū** within the Confederation, there has been no research conducted on integrated values across the landscape of the Confederation. Although I would only consider this research as a pilot study considering there was only the space for 14 participants, this research provides an initial example of how such research could be conducted.

Royal's framework for **āronga**, **kaupapa** and **tikanga** was used to conceptualise the information I dealt with in this research. This conceptualisation then informed the method of analysis of the data. This demonstrated the theoretical capability within the Confederation that can be used to conduct robust and legitimate analysis of information.

Finally, the methodological process by which I constructed the **Korowai** Framework for assessing GE with **ngārara** values can also be conducted for environmental assessments across a range of different issues.

Summary of the results

Chapter Four analysed the values that the ART Confederation associates with **ngārara** to identify five key types of values that are displayed as **kaupapa** in Figure 6.1

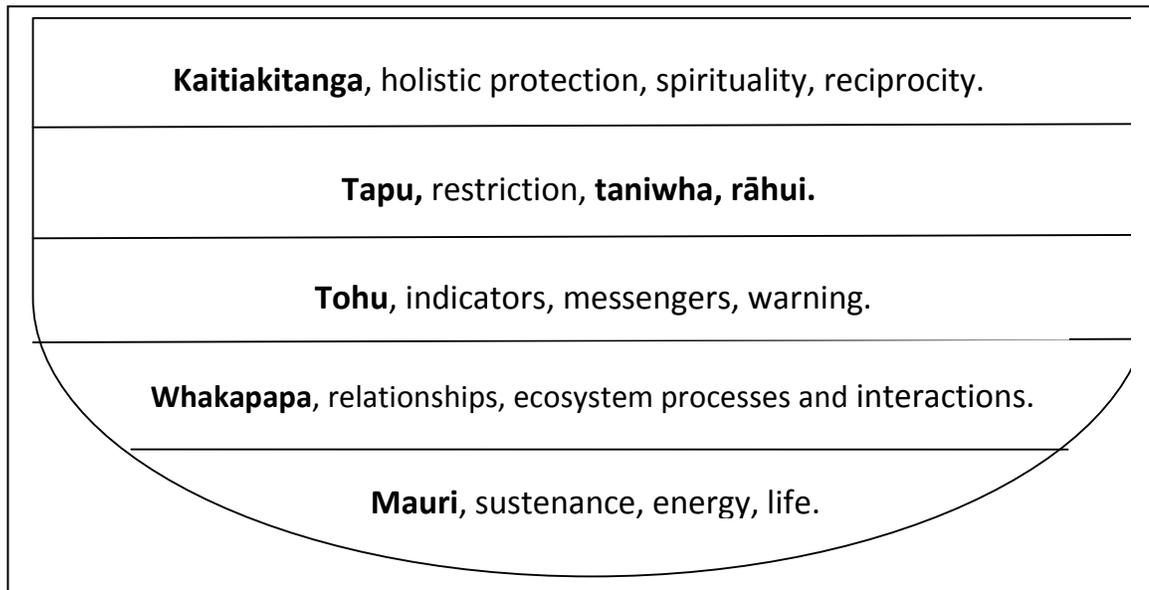


Figure 6.1 Ngārara as a kaupapa.

The key values associated with **ngārara** are layered to constitute a **kaupapa**. The base is formed by the fundamental values associated with **ngārara**; sustenance, energy, life and **mauri**. The values associated with the broader **whakapapa**, ecosystem relationships, processes and interactions of **ngārara** have then arisen from these fundamental values. Knowledge of these relationships has then informed theories of **ngārara** as **tohu**; they are valued as indicators and messengers. Which in turn has informed broader values associated with **ngārara**; **tapu**, restriction, **taniwha** and **rāhui**. Finally, all values associated with **ngārara** can be encompassed within the broad value of **kaitiakitanga**; which functions in both material and metaphysical realms, ultimately for the betterment of the people of ART Confederation.

The following **tikanga** that arise from that **kaupapa** were then identified:

- Sustain mauri.
- Maintain relationships, maintain whakapapa.
- Respect the complexity of whakapapa.

- Maintain the mātauranga Māori about whakapapa.
- Conscientiously responds to the well-being of physical and spiritual systems.
- Respect and abide by the tapu that establishes restrictions.
- Reciprocate the holistic protection offered by ngārara: Act as kaitiaki.

TIKANGA	Sustain mauri .	Maintain relationships, maintain whakapapa .	Conscientiously responds to the well-being of physical and spiritual systems.	Respect and abide by the tapu that establishes restrictions.	Reciprocate the holistic protection offered by ngārara : Act as kaitiaki .
KAUPAPA	Mauri	Whakapapa	Tohu	Tapu	Kaitiakitanga

Figure 6.2 The Korowai Framework for assessing GE.

The **kaupapa** and **tikanga** identified in Part One of the analysis were then used to develop the **Korowai** Framework for assessment of GE. As Figure 6.2 demonstrates, the

five key types of values associated with **ngārara** constitute the **kaupapa** of the framework and from each of those values arises one or several **tikanga** that when upheld manifest those values.

Assessments of GE could be then by conducted by analysing participants' interpretations of how accordant GE was with the **tikanga** in the framework. As summarised in Figure 6.3, the assessment determined by the use of the Framework was that GE is significantly limited in its ability to fulfil the **tikanga** of the ART Confederation. Where it may be possible for those **tikanga** to be fulfilled by the use of GE, i.e. the response to the physical well-being of humans, the commercial constructs within which GE is developed and used limits access to any benefits that may be derived.

The assessment determined that the potential outcomes of GE:

- Are not consistent with the **tikanga** of sustaining **mauri**
- Do not ensure the maintenance of relationships and **whakapapa**
- Do not give respect to the complexity of **whakapapa**
- Do not ensure the maintenance of **mātauranga Māori** about **whakapapa**
- Are limited in how it can be used to respond to the physical well-being of humans
- Do not give respect to the **tapu** that establishes restrictions

The assessment thus found that the outcomes of GE do not uphold the values associated with **ngārara**.

Discussion of the results

Here I will discuss my interpretation of the meaning of the results, the implications of this theoretically and practically, suggest further research that could be conducted and make some key recommendations.

Interpretation of the results

The first significant finding to have emerged from the results was the development of a theory of the value of **ngārara**. It became evident that the series of diverse and complex values of **ngārara**, could be encompassed within an overarching **kaupapa** of **kaitiaki**. Regardless of whether **ngārara** were viewed as providers of life, important components of ecological processes, indicators of disruptions to systems, social mechanisms of control or vessels for human emotions, they were always viewed as something that ultimately protected people from adverse effects or situations. Because of the dynamic way in which they are valued, a holistic and integrated view of the world is required to truly grasp how the layers of values constitute the **kaupapa** of **kaitiaki**. The way in which **ngārara** are viewed within the current Western scientific literature that was presented in the literature review²³⁷ is in contrast to this: only the information associated with **ngārara** that fits the Western scientific perception of reality is accepted as ‘fact’, whilst the full ranges of values that are associated with **ngārara** are revoked and dismissed as a matter of ‘belief’.

²³⁷ See page 47-48 ‘Māori voices in the literature on **ngārara**.’

The view that I have developed of **ngārara** through this research is that they are the immune system of our living landscape. Their ability to function across a range of metaphysical and material systems means they experience degradation and modification of systems extensively and deeply. I have become sensitised to not only their importance as protectors of people but to how they are affected by the actions of our people.

The second key finding to have emerged from the results was the development of an assessment framework that was based on collective values of **whānau**, **hapū** and **iwi**. The **Korowai** Framework has the capacity to convey the integrated range of holistic values that are held within the Confederation through an assessment. Environmental assessments such as those conducted on the use of GE are challenging because the potential outcomes of GE in terms of values are multiple and dynamic. However, the **Korowai** Framework is able to represent the multiple positions that might be collectively held within the Confederation and simultaneously assess the range of potential outcomes. The Framework also ensures that just one component of the assessment cannot be isolated and used to inform decision making. The structure of the **Korowai** Framework is such that just as one thread being pulled out of a **korowai** damages its integrity; the application of one component of the assessment that is removed from the whole assessment would undermine the integrity of a decision making process.

I believe all environmental assessments should be based on values. The power imbalance that currently exists in environmental decision making processes where some positions are privileged as 'expert' whilst others, including those of **Māori**, are

dismissed as 'lay', would be disrupted if all positions represented were articulated in terms of values. The public would be empowered as legitimate contributors to decision making and their position would be treated equitably.

Assessing GE in term of its ability to be accordant with **tikanga**, and thus uphold our values also places the onus of proof more heavily on those applying to use GE. Rather than burdening **Māori** with the onus to prove, within Western scientific assessment frameworks, the risks and negative effects of GE, engaging in Durie's 'paradigm of potential' conveys the responsibility to applicants to prove, within a value-based assessment framework, how GE will uphold and even enhance our values.

The final key finding was the production of the ART Confederation values-based assessment of GE. The most significant concern about the use of GE held by participants related to issues of control. Every single participant felt that they were ultimately uninformed on the issue of GE, including participants who have sat on **Ngā Kaihautū Tikanga Taiao**, and the New Zealand Bioethics Council. Considering the overwhelming sense of being uninformed, the ability for the Confederation to adequately assess and manage the potential outcomes of GE is severely limited. Participants also articulated significant concerns that GE confounds the ART Confederation's control over their relationship with the world around them:

- GE undermines our ability to act as **kaitiaki** and sustain the quality, complexity, diversity, function and health of living systems;
- The control of large multi-nationals or corporations over the production of GE crops is seen as a continuation of the neo-liberal agenda to have the free-

market mediate and hence disconnect our collective relationship with our resources, and;

- Ownership of the intellectual property attached to engineered genetic material is viewed as theft of **mātauranga Māori**.

Finally, participants raised concerns about the ability for the Confederation to have control of the distribution of any potential benefits of GE. Even the participants that felt that the specific use of GE to address health problems was accordant with the **tikanga** to respond to the well-being of people, acknowledged that corporate ownership of the benefits of GE limited the ability of those who are not wealthy to access them.

Participants demonstrated that regardless of any potential benefits that may be identified at an individual level, e.g. health benefits, when assessed at the global scale, the potential benefits of GE appeared more inaccessible and weakened. It wasn't uncommon for participants to contextualise their position by referring to the outcomes of GE for the oppressed in other countries. The Confederation's position on GE reflects a holistic view where an impact to one part, compromises the whole system. The collectivist view of the ART Confederation supports their people's ability to understand and assess the full systemic outcomes of GE across all levels of organisation of the global community. I therefore think the collective nature of our values and **tikanga** are important in providing a comprehensive and holistic assessment of global issues such as GE.

Implications of the results

This thesis has demonstrated that robust and legitimate assessment of GE can be conducted using theories, methodologies, **kaupapa**, **tikanga** and frameworks that are specific to the ART Confederation. The use of the values-based **Korowai** Framework to assess GE disconfirms the theory of the existing 'risk paradigm' that environmental assessment should be an objective and value-free exercise. Instead, the Framework contributes to the development of the theory that the values and ethics we wish to uphold should be at the centre of environmental assessments.

If the ART Confederation wish to use value-based assessment tools, such as the **Korowai** Framework, our people require a strong theoretical understanding of their **kaupapa** and **tikanga**. It is crucial that we actually understand the things we value for our survival and development, and the reasons why. Currently in environmental and risk management, **Māori** are consulted on the risk of a proposal or application without having the capacity to articulate exactly what it is they wish to protect or enhance as a result of decisions. We must acknowledge that our theoretical understanding of our **kaupapa** has been significantly damaged through colonisation and as a result, we need to invest in regaining this understanding so that we can adequately carry out our rights and responsibilities as **kaitiaki**. In my experiences conducting this research, I have been astounded at the depth and applicability of the knowledge that exists merely around **ngārara**, but also at how many of those who held knowledge of this nature did not themselves realise its rarity and significance. The death of a participant during the process of writing this thesis has given me an appreciation that in the shadows of the colonisation and oppression our people have experienced, the knowledge our elders

hold is a spark of light that illuminates a world of values and practices that are almost completely lost to us.

This thesis reinforces the need to listen and return to the **kaupapa** and **tikanga** of our ancestors that hold the integrity and the wisdom that will ensure our survival and development. The literature reviewed and the interviews conducted demonstrated the important role that narratives play in conveying the values that have been identified as important to pass on, and whose 'moral of the story' messages provide us with normative guidelines for how to be in the world. Such narratives need to be given more prominence in the theory that is used to develop environmental assessments. The theory of **ngārara** developed in this thesis by engaging in traditional narratives is significantly different to the colonial view of **ngārara** that was articulated in the literature. This thesis has provided a clearer and more correct explanation of why **ngārara** are so valuable to us.

The final theoretical implication of the findings of this thesis is the confirmation of the predominant theory of **Māori** assessments of GE; that local assessments are related to a larger global context where the Western scientific and neoliberal paradigms within which GE has been developed and promoted, conflicts with **Māori** values, and; that a situation of ignorance due to being uninformed of the potential outcomes frames all assessments. However, this thesis contributes to the theorising of **Māori** assessments of GE by demonstrating how assessments can and should be articulated in terms of specific values associated with **taonga** such as **ngārara**.

There are also several practical implications of the findings of this thesis. The **Korowai** Framework does not necessarily deliver a final 'yes' or 'no' assessment of GE. Rather, it

can be used as a tool for the Confederation to investigate, conceptualise and articulate our values and the relevant moral imperatives they establish. This then enables the Confederation to get to the decision making table with a comprehensive evidence based understanding of our people's position on a complex issue from which they can negotiate a decision. The collectives engaged in the decision making process will have the final authority over the decisions that are made; the Framework is merely a tool to support this process.

Whilst **kaupapa** and **tikanga** vary across the **iwi**, **hapū** and **whānau**, the **Korowai** Framework can be applied across a range of different environmental assessments using whatever values may be relevant to form the **kaupapa** of the Framework. I believe it's crucial that all **iwi**, **hapū** and **whānau**, carry out the exercise of investigating the nature of their specific values and **tikanga** in order to enhance their capacity to conduct environmental assessments. Part of my learning in writing this thesis has been to move from a space where I was seeking permission to articulate my positionality, to a space where I can legitimately conduct and uphold my own values-based assessment. This lesson applies to the way in which **Māori** need to participate in environmental decision making. We do not need to conform or submit to processes and paradigms that do not suit us. We have the right and the ability to totally step out of the current system and use our own methods to deliver us to the right decisions for our environment. The current proposal to move the regulatory responsibilities from the ERMA to a new Environmental Protection Agency, demonstrates that Government policy and regulatory frameworks will come and go, and whilst all methods of environmental assessment are fluid and need to respond to the change and development of people's

values, what needs to remain intact is our ability as the ART Confederation, and as **Māori**, to autonomously conduct our own environmental assessments.

Suggestions for further research

Additional research is needed to continue the development of theories and practical tools to support ART Confederation assessments of issues such as GE. There is much more extensive research that needs to be done on our values base within the Confederation. Current research initiatives are being developed through **Taiao Raukawa**, the **Ngāti Raukawa ki te tonga** Environmental Trusts, to map ecosystems that are recognised by **hapū** as being of significance, and through the **Kāpiti** Coast District Council to identify **waahi tapu**. I think that such projects should involve research into the nature of the specific values attached to those ecosystems or spaces. Uncovering the values of **ngārara** has demonstrated that there is a wealth of knowledge and value attached to even the smallest components of our living system. Hence whilst understanding values at an ecosystem and landscape scale, it is also important that the values of their parts are not overlooked. I think the ART Confederation should also revitalise their taxonomy for living things as there are many species and sub-species whose difference can be visually but not verbally distinguished. This would also contribute to the development of our language. I also think that the values associated with **ngārara** could still be researched more extensively across every single **hapū** to provide a more complete understanding of their value. **Iwi** and **hapū** management plans could include maps of the values attached to the land and seascape, which would entrench their significance in local discourse.

Within the space of just one interview, participants could be flexible, develop or even change their interpretations of GE. This demonstrated the need to, at the very least, encourage more dialogue within the ART Confederation on various environmental issues, but ideally to use the **Korowai** Framework to research ART assessments on specific and existing environmental proposals or applications.

More research within the ART Confederation to develop oral history methodologies could be conducted, particularly to support interviews with **rangatahi** and interviews around ethical issues. Whilst I was provided with strong methodological guidance by the **Ōtaki** Oral History Group and ART literature, the emphasis of oral history is generally directed towards interviewing **kaumātua**. However, in the case of this thesis, **rangatahi** were important to interview, not only to ensure that the diverse range of values were canvassed by my research but because **rangatahi** have an important ability to understand traditional concepts and values and apply them to very modern issues, such as the assessment of a novel technology such as genetic engineering. Whilst some ART research has been conducted with teenagers, I think we need to further diversify our approach to interviewing in a way that responds to the generation of the interviewee. Another emphasis of current ART interviewing methodologies is historical accounts. However methodologies for discussing current ethical dilemmas such as the use of GE could be further developed.

Further Government funds are needed to support research initiatives that investigate existing and create new understandings of the values of living things and living systems, from a collective **iwi**, **hapū** and **whānau** perspective. **Iwi**, **hapū** and **whānau** do not have the same capacity and resources as applicants for new GMOs when they are

participating in Government decision making processes. This contributes to the current power imbalance where **Māori** struggle to contribute to, or appeal decisions, whilst companies, universities or Crown Research Institutes are well funded to continue to pursue GE research. Supporting **iwi, hapū** and **whānau** research is crucial to ensure that they can develop their own assessments to contribute to GE decision making processes.

Finally, many participants identified that they would prefer food production options that didn't involve the use of GE and that instead enhanced their connection to the environment and their control over their relationship with living systems. Further research is needed to support the ART Confederation to make landuse choices that satisfy these preferences and better uphold their values. This would involve identifying how members of the Confederation could maintain or improve their access to traditional food sources or establish organic, biodynamic or more sustainable agricultural and horticultural initiatives.

Recommendations

This thesis supports the following recommendations for all **iwi, hapū** and **whānau**, including the ART Confederation:

- All **Rūnanga iwi**, and **hapū** seek frameworks similar to the **Korowai** Framework to conduct their own environmental assessments of GE independently of Crown assessment procedures;
- That **Korowai** Framework should be adopted for all environmental assessments, and;

- To support comprehensive research of the values associated with our landscape and ecosystems.

The following recommendations are for the ART Confederation specifically:

- To compile a 'Handbook of ART Methodologies' to support other ART researchers in conducting **iwi**, **hapū** and **whānau** research;
- To continue to develop ART methods for interviewing;
- To develop ART Confederation-wide relationships for addressing environmental issues within our rohe;
- To declare the **rohe** of the ART Confederation as 'GE-Free';
- For the environmental trusts and units within the Confederation to better inform our people about the issue of GE;
- To revitalize an ART taxonomy of **ngārara**;
- To conduct research that supports members of the ART Confederation to make land use choices that upholds their values, and;
- To protect and uphold the value **ngārara**.

Concluding statements

This research began as a seed of potential: **he kākano**. The potential of my **Āti Awa**, **Raukawa**, **Toa** identity, my education in **te ao Māori**, in the natural environment and in the Western education system, and my exposure to other indigenous Polynesians confronting the issue of GE. The reflections, intellectual procedures, thoughts and

words that grew from this potential have culminated in this **wānanga**: In order for the ART Confederation to make decisions that will not continue the degradation of the living systems in our **rohe** we must restore and utilise the Confederation's intellectual traditions. We must make decisions that uphold our values.

The value of **ngārara** is that they appeal to us to be conscious of our intricately bound connection to and dependency on living systems. They instantiate the importance of the health and sanctity of the natural landscape, and urge us, for our own sake, to protect it. By clothing ourselves in this wisdom we are able to adequately address any contemporary issue that we may be faced with. Upholding these values through environmental decision making is part of the process required for our decolonization; it is a means of returning ourselves to our relationship with our land.

The **Korowai** Framework ensures that we don't compromise those values for the sake of fulfilling inequitable and false notions of 'progress', and that we instead pursue decisions that will fulfill the collective aspirations we have for our people and the environment.

It is my hope for the ART Confederation that we continue to seek better understandings and new knowledge about what is important to value and protect for the sake of our survival and development, and I hope this thesis supports that journey back to our relationship with the land.

Appendices

Bibliography

- Anderson, K. and L. A. Jackson (2005). "GM crop technology and trade restraints: economic implications for Australia and New Zealand." Australian Journal of Agricultural and Resource Economics **49**(3): 263-281.
- Anonymous (1903-1913). Tahu Tuupaapaku. Pipiwaharuroa. **115:9**.
- Anonymous (1920). "Notes and Queries." Journal of the Polynesian Society **29**: 162.
- Barclay, B. (2005). The Black Penny: From Free to Owned. Mana Tuturu: Maaori Treasures and Intellectual Property Rights. Auckland, Auckland University Press.
- Barclay, B. (2005). The Black Penny: Patents on Life Forms. Mana Tuturu: Maaori Treasures and Intellectual Property Rights. Auckland, Auckland University Press.
- Barclay, B. (2005). Nga Taniwha: The Significant Gap. Mana Tuturu: Maaori Treasures and Intellectual Property Rights. . Auckland, University of Auckland Press.
- Bargh, M. (2007). Introduction. Resistance: An Indigenous response to neoliberalism. M. Bargh. Wellington, Huia.
- Beazley, P. (2007). Qualitative Data Analysis with NVivo. London, SAGE.
- Best, E. (1902). "Notes on the art of war, as conducted by the Maaori of New Zealand, with various customs, rites and superstitions." Journal of the Polynesian Society **11**(1).
- Best, E. (1906). "The lore of the whare kohanga, Part II, Pregnancy." Journal of the Polynesian Society **15**(1): 2.
- Best, E. (1923). "Maori personifications. Anthropogeny, solar myths and phallic symbolism: as exemplified in the demiurgic concepts of Tane and Tiki." Journal of Polynesian Society **32**: 103-4.

- Best, E. (1924). Cosmogony and Anthropogeny. The Maori. Wellington: 101-120.
- Best, E. (1926). "Notes on customs, ritual and belief pertaining to sickness, death, burial and exhumation among the Maaori of New Zealand." Journal of the Polynesian Society **35**(137): 19.
- Best, E. (1927). "Irihia. The homeland of the Polynesians. Some additional data thereon, culled from traditions preserved by the Takitimu tribes of New Zealand." Journal of the Polynesian Society **36**(144): 330-362.
- Best, E. (1941). Social Customs - Continued Customs Pertaining to Birth. The Maori. Wellington. II.
- Best, S. (1988). "Here Be Dragons." Journal of the Polynesian Society **97**(3): 239-241.
- Bishop, R. (2005). Changing Power Relations in Education: Kaupapa Maaori Messages for "Mainstream" Education in Aotearoa/New Zealand. What Difference Does Research Make and for Whom? F. Bodone. New York, Peter Lang: 253-270.
- Bishop, R. (2008). Freeing ourselves from neocolonial domination in research: A Kaupapa Maori Approach to Creating Knowledge. The Landscape of Qualitative Research. N. K. Denzin and Y. S. Lincoln. Los Angeles, Sage.
- Bishop, R. and T. Glyn (1992). "He Kanohi Kitea: Conducting and Evaluating Educational Research." New Zealand Journal of Educational Studies **27**(2).
- Boler, M. (1999). Slamming into the Future: Bringing strategies of hope into education. Taking kids talk seriously - Youth First Seminar. Auckland, Auckland University.
- Brock, R. L. (2002). "Maori Names for Crickets." Journal of the Polynesian Society **111**(3): 239-248.
- Clarke, A. (2007). The Great Sacred Forest of Tane; Te Wao Tapu Nui a Tane. A natural pre-history of Aotearoa New Zealand. Auckland, Reed Publishing.

- Cotton, W. C. (1849). Ko ngaa pi: me ngaa tikanga moo te tiaki i a raatou, moo te mahinga i too raatou honi, i taa raatou whare. Purewa, N.Z., St. John's College Press.
- Cowan, J. (1920). "Ngau-taringa." Journal of the Polynesian Society **29**(116): 206.
- Cowan, J. (1925). A Basket of Eels. Fairy Folk Tales of the Maori. Wellington, Whitcomb and Tombs: 77-87.
- Cowan, J. (1925). The Dragon of the Sacred Lake. Fairy Folk Tales of the Maori. W. a. Tombs: 132-143.
- Cowan, J. (1930). Whakanoa. Legends of the Maaori. Wellington, H. Tombs. **1**: 262-271.
- Cram, F. (2005). Backgrounding Maaori Views on Genetic Engineering. Sovereignty Matters: Locations of Contestation and Possibility in Indigenous Struggles for Self-Determination. J. Barker. Lincoln, University of Nebraska: 51-65.
- Cram, F., L. Pihama, et al. (2000). Maaori and Genetic Engineering: Research Report. Rangahau Maori. Auckland, International Research Institute for Maori and Indigenous Education.
- Dictionary.com. (2010). "Genetic engineering." 2009, from <http://dictionary.reference.com/browse/Genetic%20engineering>.
- Downes, T. W. (1928). "Bird-snaring, etc., in the Whanganui River district." Journal of the Polynesian Society **37**(145): 1-29.
- Downes, T. W. (1937). "Maaori mentality regarding the lizard and taniwha in the Whanganui River." Journal of the Polynesian Society **46**(184).
- Durie, M. (2004). Mana Tangata: Culture, Custom and Transgenic Research. Reflections on the Use of Human Genes in Other Organisms: Ethical, Spiritual and Cultural Dimensions, The Bioethics Council: 20 - 25.

- Emory, K. P. (1963). "Society islands archaeological discovery." Current anthropology **4**: 357-8.
- Environmental Risk Management Authority (2007). Terms of Reference, Maaori National Network Reference Group.
- Environmental Risk Management Authority. (2009). "About ERMA New Zealand." from <http://www.ermanz.govt.nz/about/index.html>
- Environmental Risk Management Authority. (2009). "Ngaa Kaihautuu Tikanga Taiao." from <http://www.erma.govt.nz/tehautu/ngakaihautu/index.html>.
- Environmental Risk Management Authority. (2010). "What is a genetically modified organism (GMO)?", 2009, from [www.erma.govt.nz/help/faq-no.html#What is a genetically modified organism \(GMO\)](http://www.erma.govt.nz/help/faq-no.html#What is a genetically modified organism (GMO)) <http://www.erma.govt.nz/help/faq-no.html>.
- Fitzsimons, P. and G. Smith (2000). "Philosophy and Indigenous Cultural Transformation." Educational Philosophy and Theory **32**(1): 25-41.
- Foucault, M. (1984). *The Ethics of the Concern of the Self as a Practice of Freedom*. Foucault: Ethics. P. Rabinow. New York, The New Press.
- Fowler, L. (1959). "Of Taniwha, Ngaarara and How Paeroa Got its Name." Te Ao Hou **26**.
- Freire, P. (1996). Pedagogy of the Oppressed. London, Penguin Books.
- Goven, J. (2003). "Deploying the consensus conference in New Zealand: democracy and de-problematization." Public Understanding of Science **12**(4): 423-440.
- Goven, J. (2006). "Processes of inclusion, cultures of calculation, structures of power - Scientific citizenship and the royal commission on genetic modification." Science Technology & Human Values **31**(5): 565-598.

- Goven, J. (2008). "Assessing genetic testing: Who are the "lay experts"?" Health Policy **85**(1): 1-18.
- Graham, G. (1921). "Te Tuhi-a-manawatere and other legends of Marae-tai." Journal of the Polynesian Society **30**(120): 252-253.
- Gudgeon, L.-C. W. E. (1905). "Maori superstition." Journal of the Polynesian Society **14**(4): 167-192.
- Guthrie-Smith, W. (1926). Trails from the Coast to Tutira. Tutira. Edinburgh, Blackwood and Sons Limited: 65-66.
- Harris, P. and O. Mercier (2006). Te Ara Puutaiao o ngaa tuupuna, moo ngaa mokopuna: Science education and research. State of the Maaori Nation: Twenty-first-century issues in Aotearoa. M. Mulholland. Auckland, Reed: 143-144.
- Harvey, M. (2004). The Democratisation of a "Scientific Decision": The "GM Nation?" experiment in the UK. PCST International Conference. Barcelona, Rubes Editorial S.L.
- Hay, J. M. and D. M. Lambert (2008). "Microsatellite DNA loci identify individuals and provide no evidence for multiple paternity in wild tuatara (Sphenodon : Reptilia)." Conservation Genetics **9**(4): 1039-1043.
- Henry, E. and H. Pene (2001). "Kaupapa Maaori: Locating Indigenous Ontology, Epistemology and Methodology in the Academy." Organization **8**: 234-242.
- Ho, M.-W. (2004). Foreword: Science, Ethics and Nature. Recoding Nature: Critical perspectives on genetic engineering. R. Hindmarsh and G. Lawrence. Sydney, UNSW Press: 18-20.

- Hood, J. C. (2007). Orthodoxy versus Power: The Defining Traits of Grounded Theory. The SAGE Handbook of Grounded Theory. A. Bryant and K. Charmaz. London, SAGE: 154.
- hooks, b. (1984). Feminist Theory: From margin to center., South End Press.
- Hutchings, J. (2002). Te whakaruruhau, te ukaipo: mana wahine and genetic modification. Environmental Studies. Wellington, Victoria University of Wellington. **Ph.D.**
- Hutchings, J. (2004). Tradition and Test Tubes; Maaori and GM. Recoding Nature: Critical perspectives on Genetic Engineering. R. Hindmarsh and G. Lawrence, University of New South Wales Press: 179-191.
- Hutchings, J. and P. Reynolds (2002). Obfuscation of Tikanga Maaori in the GM debate, Ripo - The Indigenous Genes and Genetics Institute: 36.
- Jackson, M. (2003). The Mysterious Ethics of Singing Sheep and Feet Pointing Backwards, Toi te Taiao: the Bioethics Council: 71-75.
- Jones, P. T. H. (1945). Mahinarangi (the moon-glow of the heavens) : a Tainui saga. Hawera, Printed by J.C. Ekdahl.
- Kanehe, L. (2005). A Ke A'A: Strengthen the Root Indigenous Voices Speak Out in GMOs in Hawai'i, Indigenous Peoples Council on Biocolonialism.
- Kaye-Blake, W. H., C. M. Saunders, et al. (2007). "Current Contribution of Four Biotechnologies to New Zealand's Primary Sector." AgBioForum **10**(2).
- Longino, H. E. (2001). Can there be a Feminist Science? Women, Science, and Technology. M. Wyer, M. Barbercheck, D. Giesman, H. Orun Ozturk and M. Wayne. London, Routledge: 216-222.

- MacAvoy, E. S., L. M. McGibbon, et al. (2007). "Genetic variation in island populations of tuatara (*Sphenodon* spp) inferred from microsatellite markers." Conservation Genetics **8**(2): 305-318.
- Marsden, M. (1981). Tapu. God, Man and Universe: A Maori View. M. King: 194-7.
- Martin, P., M. Hopkins, et al. (2009). On a critical path: genomics, the crisis of pharmaceutical productivity and the search for sustainability. Handbook of Genetics and Society: Mapping the new genomic era. Oxon, Routledge: 146-150.
- McCabe, J. L. and D. Holmes (2009). "Reflexivity, critical qualitative research and emancipation: a Foucauldian perspective." Journal of Advanced Nursing **65**(7): 1518-1526.
- McGuinness, W., M. White, et al. (2008). The History of Genetic Modification in New Zealand. Wellington, Sustainable Future.
- McKinley, E. (2005). "Brown Bodies, White Coats: Postcolonialism, Maori women and science." Discourse: Studies in the Cultural Politics of Education **26**(4): 481 - 496.
- Mead, A. (1998). "Sacred Balance." He Pukenga Korero **3**(22-27).
- Mead, H. M. (2003). Tikanga Maori. Wellington, Huia.
- Mead, H. M. and N. Grove (2007). Ngaa Pepeha a ngaa Tiipuna. Wellington, Victoria University Press.
- Meyer-Rochow, V. B. (2005). Traditional food insects and spiders in several ethnic groups of Northeast India, Papua New Guinea, Australia and New Zealand. Ecological implications of minilivestock: potential of insects, rodents, frogs and snails. M. G. Paoletti. Enfield, N.H., Science: 389-413.
- Miller (1952). "The Insect People of the Maaori." Journal of the Polynesian Society **61**.

- Miller, H. C., K. A. Miller, et al. (2008). "Reduced MHC variation in a threatened tuatara species." Animal Conservation **11**(3): 206-214.
- Mitira, H. (1972). Various Ancestors. Takitimu, Reed Publishing.
- Moore, J. A., N. J. Nelson, et al. (2008). "Implications of social dominance and multiple paternity for the genetic diversity of a captive-bred reptile population (tuatara)." Conservation Genetics **9**(5): 1243-1251.
- Munford, R. and W. Walsh-Tapiata (2005). Community Development: Principles into Practice. Social Work Theories in Action. M. Nash, R. Munford and K. O'Donogue. London, Jessica Kingsley Publishers: 97-112.
- New Zealand Government (2000). The New Zealand Biodiversity Strategy: 4.
- New Zealand Government (2003). New Zealand Biotechnology Strategy.
- Orbell, M. (1966). "Three Old Stories." Te Ao Hou **56**(September).
- Orbell, M. (1967). "The Killing of Te Kaiwhakaruaki." Te Ao Hou **61**.
- Ormond, A., F. Cram, et al. (2006). "Researching our Relations: Reflections on Ethics and Marginalisation." Alternative Special Supplement: 180-198.
- Patenting of Life Forms Focus Group (1999). Maaori and the Patenting of Life Form Inventions. M. o. Commerce.
- Pidgeon, M. (2008-2009). "Pushing Against the Margins: Indigenous Theorizing of "Success" and Retention in Higher Education." Journal of College Student Retention **10**(3): 339-360.
- Pihama, L., F. Cram, et al. (2002). "Creating Methodological Space: A Literature Review of Kaupapa Maori Research." Canadian Journal of Native Education **26**(1): 30-43.

- Ramstad, K. M., N. J. Nelson, et al. (2007). "Species and cultural conservation in New Zealand: Maaori traditional ecological knowledge of Tuatara." Conservation Biology **21**(2): 455-464.
- Reed, A. W. (2004). Reed Book of Maaori Mythology. Auckland, Reed Publishing.
- Reynolds, P. (2004). Ngaa Puni Whakapiri: Indigenous Struggle and Genetic Engineering. School of Communication. Ottawa, Simon Fraser University. **PhD**.
- Robley, M.-G. (1896). Moko Processes. Moko; or Moko Tattooing, Chapman and Hall Ltd.: 57.
- Royal Commission on Genetic Modification (2001). Report of the Royal Commission on Genetic Modification: Report and recommendations. Wellington: 19.
- Royal, T. C. (1992). Te Haurapa: an introduction to researching tribal histories and traditions. Wellington, Bridget Williams Books.
- Royal, T. C. (1998). Maatauranga Maaori; Paradigms and Politics, Ministry of Research, Science and Technology: 11.
- Royal, T. C. (2005). Oral History and Hapu Development. Maori and Oral History: A Collection. R. Selby. Wellington, National Oral History Association of New Zealand: 16-18.
- Royal, T. C. (2008). Te Ngaakau. Te Whanganui-a-Tara, Mauriora ki te Ao.
- Saunders, T. V. (1972). "Tupurupuru; An Old Maungaraki Maori Love Story." Te Ao Hou **70**.
- Scott Littleton, C. (1985). Introduction. How Natives Think. L. Levy-Bruhl. Princeton New Jersey, Princeton University Press: xxix.
- Selby, R. (2004). Tararua is my Mountain. A Will to Survive. S. Greymorning. New York, McGraw Hill: 171-180.

- Selby, R. (2005). Dreams are free: Ngaa Moemoea a te Hapuu. Social Work Theories in Action. M. Nash, R. Munford and K. O'Donogue. London, Jessica Kingsley Publishers: 113-124.
- Selby, R. (2005). Partnership and Protection of Participants: collecting and using Maaori oral histories. Maori and Oral History: A Collection. R. Selby. Wellington, National Oral History Association of New Zealand: 70-73.
- Selby, R. (2005). Still Being Punished: corporal punishment's lifelong effects. Maaori and Oral History: A Collection. R. Selby. Wellington, National Oral History Association of New Zealand: 74-77.
- Selby, R. and P. Moore (2007). "Maaori Research in Maaori Communities: No Longer a New Phenomenon." AlterNative Special Supplement: 96-107.
- Shiva, V. (2005). Earth Democracy. Cambridge, South End Press.
- Sivak, L. (2006). "Culture and Science: A critical assessment of public consultation about biotechnology in New Zealand." Journal of Communication Management **10**(3): 287-303.
- Smith, G. (2003). Kaupapa Maaori Theory: Theorizing Indigeneous Transformation of Education and Schooling. 'Kaupapa Maaori Symposium': NZARE/AARE Joint Conference. Hyatt Hotel, Auckland.
- Smith, G. (2005). Beyond Political Literacy: From Conscientization to Transformative Praxis. What Difference Does Research Make and for Whom? F. Bodone. New York, Peter Lang: 29-42.
- Smith, L. T. (1999). Decolonizing Methodologies: Research and Indigenous Peoples. London, Zed Books.

- Smith, L. T. (2005). "Building a Research Agenda for Indigenous Epistemologies and Education." Anthropology and Education Quarterly **36**(1): 93-95.
- Smith, L. T. (2006). "Researching in the Margins: Issues for Maaori Researchers - A Discussion Paper." Alternative Special Supplement: 4-27.
- Smith, L. T. (2006). "Researching in the Margins: Issues for Maori Researchers - A Discussion Paper." Alternative Special Supplement: 4-27.
- Smith, P. (1909). "History and traditions of the Taranaki coast Ch. XV contd." Journal of the Polynesian Society **18**(4): 171-174.
- Smith, P. (1918). "Mummification among the Maori." Journal of the Polynesian Society **27**(106): 95-96.
- Smith, P. (1921). "The Evils of Makutu, or witchcraft." Journal of the Polynesian Society **30**(119): 172-184.
- Smith, S. P. (1921). "The Evils of Makutu, or witchcraft." Journal of the Polynesian Society **30**(119): 172-184.
- Stocks, N., K. Chandrasekaran, et al. (2008). Who benefits from GM crops?: the rise in pesticide use - January 2008. London UK, Friends of the Earth.
- Tangaroapeau (1871-1877). Taniwha. Te Waka Maaori o Niu Tirani. **13b(6)**: 77.
- Tarakawa, T. (1909). "Te korero mo kataore: he mokai na Tangaroa-mihi." Journal of the Polynesian Society **18**(4): 205-215.
- Taylor, R. R. (1855). Mythology. Te Ika a Maui, or New Zealand and its inhabitants, Wertheim and Maintosh.
- Te Rangikaheke (1849). Ngaa Aituaa - Waimarie. Grey New Zealand Maori Manuscript. **81**: 82-5.
- Te Taura Whiri i te Reo Maori (2008). He Paataka Kupu. Rosedale, Penguin Group.

- Te Waananga o Raukawa. (2010). "Nga Marae o te Kotahitanga o Te Aati Awa, o Ngaati Raukawa, o Ngaati Toarangatira.", 2010, from <http://www.wananga.com/?q=node/17>.
- Tipene-Matua, B. (2000). A Maori response to the biogenetic age. Designer Genes. R. Prebble. Wellington, Dark Horse Publishing: 97-109.
- Tu nui-a-rangi, M. H. P. (1905). "Te Korero mo Ngarara-huarau." Journal of the Polynesian Society **14**(4): 203.
- Tuhaere, P. (1923). "An historical narrative concerning the conquest of Kaipara and Tamaki by Ngati Whatua." Journal of the Polynesian Society **32**(128): 232.
- Turei, R. M. (1871-1877). He Koorero Kauwhau Maaori. Te Waka Maaori o Niu Tirani. **12b(17)**.
- University Teaching and Development Centre (2009). Small Group Teaching. Victoria University of Wellington: 76-79.
- Victoria University of Wellington (2009). Victoria University of Wellington Equity Strategy. **Appendix: 20**.
- Waite, F. (1921). "The Awanui (Kaitaia Carving) Lintel." Journal of the Polynesian Society **30**(120): 246-247.
- Walker, S., A. Eketone, et al. (2006). "An exploration of kaupapa Maaori research, its principles, processes and applications." International Journal of Social Research Methodology **9**(4): 331-44.
- Walsh-Tapiata, W. (2005). Rangahau moo te iwi: nga pikinga me nga hekenga. Maaori and Oral History: A Collection. R. Selby. Wellington, National Oral History Association of New Zealand: 33-37.

- Wang, Z. S., T. Miyake, et al. (2006). "Tuatara (Sphenodon) genomics: BAC library construction, sequence survey, and application to the DMRT gene family." Journal of Heredity **97**(6): 541-548.
- Weston, J. (1890). Ko Meri, or, a Cycle of Cathay: A Story of New Zealand Life. London, Eden Remington & Co.
- Wheen, N. R. (2005). "Belief and Environmental Decision-making: Some Recent New Zealand Experience." Journal of Environmental Law and Practice **15**(3): 297.
- Whetu, T. (1893). "Te Patunga o Ngaarara-Huarau." Journal of the Polynesian Society **2**(4): 211-219.
- White, J. (2001). The Ancient History of the Maori his mythology and traditions. Nga Puhi. Hamilton, N.Z., University of Waikato Library.
- White, J. (2001). The Ancient History of the Maori, his Mythology and Traditions. Awearea, Taranaki, Ngati Hau, Ngati Ruanui. Hamilton, N.Z., University of Waikato.
- White, J. (2001). Death of Wahie-roa and deeds of his son Rata. The Ancient History of the Maaori, His Mythology and Traditions: Te Arawa. Hamilton, University of Waikato Library. **VII**.
- Winiata, P. Guiding Principles/Kaupapa of Te Wananga o Raukawa. Otaki, Te Wananga o Raukawa.
- Winiata, W. (1979). Generation 2000: An experiment in tribal development. He Matapuna: Some Maaori perspectives. Wellington, New Zealand Planning Council.
- Winiata, W. (1997). The Treaty of Waitangi; Maaori Political Representation. Maori Political Representation Conference. Wellington.

Worley, F. P. (1929). Occurrence of Maanuka Manna II. NZ Institute Science
Conference, Royal Society of New Zealand 1868-1961.

Participant Information Sheet for Masters Thesis Research Project

“Iwi values of ngārara and GE risk analysis.”

Researcher: Mahina-a-rangi Baker of School of Geography, Environment and Earth Sciences, Victoria University of Wellington

I am a Masters student in Environmental Studies at Victoria University of Wellington. As part of this degree I am undertaking a research project leading to a thesis. The project I am undertaking will investigate mātauranga held by Ngāti Raukawa ki te tonga, Te Ati Awa ki Whakarongotai and Ngāti Toarangatira descendents around ngārara, and insects, and how this mātauranga may be included in risk assessment of genetically modified organisms (GMOs). The University has provided ethics approval for this research.

I am inviting descendents of Ngāti Raukawa ki te tonga, Te Ati Awa ki Whakarongotai and Ngāti Toarangatira to participate in this research project. Participants will be asked to be interviewed in English or te reo Māori by me about ngārara, insects, decision-making, and GMOs.

Should any participants feel the need to withdraw from the project, they may do so without question at any time before results are published. I will transcribe the interviews and participants will have the opportunity to check transcripts of the interview before publication, to receive a summary of the results, and to listen to their interview prior to giving consent to it being made publically available.

Interviews conducted will form the basis of my research project and quotes may be selected to appear in my thesis. You will have the option of having the information and opinions which you give in the interview being attributed to you, or you may wish to maintain confidentiality. You will also have the option of having the recording of your interview and accompanying material being held and made available at one of or all of the following; National Library Oral History Centre, Ōtaki Library, Ōtaki Museum. Or you may chose to have your interview electronically wiped at the conclusion of the research. The thesis will be submitted for marking to the School of Geography, Environmental and Earth Sciences and deposited at the University Library. One or more articles may be submitted for publication in scholarly journals.

If you have any questions or would like to receive further information about the project, please contact me at 04 970 2332 or my supervisor Dr Jessica Hutchings at the School of Geography, Environmental and Earth Sciences at Victoria University, PO Box 600, Wellington. Jessica.Hutchings@vuw.ac.nz 021406226

Consent to Participation in Research

“Iwi values of ngārara and GE risk analysis.”

FULL NAME OF PERSON INTERVIEWED:

NAME OF INTERVIEWER:

DATE OF INTERVIEW:

PLACE OF INTERVIEW:

I have been given and have understood an explanation of this research project. I have had an opportunity to ask questions and have them answered to my satisfaction. I understand that I may withdraw myself (or any information I have provided) from this project without having to give reasons at any time prior to the estimated date of publication: April 2010

Y: N: I consent to information or opinions which I have given being attributed to me in any reports on this research.

Y: N: I agree that the recording of my interview and accompanying material may be quoted in published works in full or in part.

Y: N: I would like an audio file of the interview.

Y: N: I understand that I will have an opportunity to check the transcripts of the interview before publication.

Y: N: I would like to receive a summary of the results of this research when it is completed.

Y: N: I agree to take part in this research

Additional consent to have the recording of your interview and accompanying material held by the National Library Oral History Centre, Ōtaki Library, Ōtaki Museum will be sought after I send you a completed transcribe of the interview.

Interviewee

Interviewer

Date

Date

Interview Schedule

“Iwi values of ngārara and GE risk analysis.”

Participant’s profile

Name:

DOB:

Gender:

Iwi, hapū, and marae affiliation:

Ngārara

Tell me what you know about ngārara?

How are ngārara valued?

Are these values specific to your iwi/hapū/whānau/marae?

Genetically Modified Organisms

What is your understanding and awareness of GE?

How do you feel about GE?

What do you feel are the potential effects of GE on ngārara?

Is there any tikanga that guides your/your marae/your hapū/your iwi views on GE?

Please explain.

Is there anything else about ngārara, GE, or risk management that you would like to contribute?