The *Paepae*:
Spatial information technologies and
the geography of narratives.

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Abstract

Indigenous peoples around the world face similar challenges pertaining to their ancestral territories in planning, protection, policy, and advocacy. For Māori, of Aotearoa New Zealand, issues related to *mana whenua*, *mana moana,* demarcation and the protection of ancestral boundaries and associated cultural assets often require the creation of maps as proof of use and existence of tribal cultural footprints. Conceding this, GIS mapping technologies offers a unique suite of tools that can assist Indigenous peoples including Māori to demarcate their ancestral territories, tell their stories, map their biographies, protect their land and articulate their *mana whenua* and *mana moana*.

GIS technology has gained a world-wide reputation for its ability to manage and manipulate large amounts of geographical or spatially organised information. This technology has enormous implications and application for Indigenous peoples around the world looking at managing their own cultural information.

Indigenous cultures, including Māori, throughout the world are exploring the potential that GIS technology and techniques offers in managing and mapping their ancestral landscapes based on their unique view of their part of the world.

Indigenous peoples are traditionally oral based societies wherein their knowledge base was maintained and passed on using oral narratives such as songs, genealogies, chants, theatre and storytelling. Oral narratives such as *mōteatea*, *karakia*, *tauparapara,* and *whakapapa* and *kōrero pūrākau* unique to Māori were used to store their notions of the world and to pass that knowledge forward to each successive generation. Embedded in these oral narratives were their notions of place which informed their concept of a cultural landscape; a landscape informed by narratives; the geography of narratives.

The primary purpose of this thesis is to examine the potential for blending GIS technology with oral narratives without compromising the integrity or changing the nature of that landscape and culture that informs it or without those oral narratives losing any of their cultural integrity or *mana*.

Acknowledgements

'Rā te haeata i takina mai i te ripa, te tara ki Tauhara
Tū kau Tongariro i te tonga, tērā te puhi o Te Arawa!
Mai i Maketu ki Tongariro – Ko Te Arawa te waka!
Ko Tongariro te maunga
Ko Taupō-nui-a-Tia te moana
Ko te Heuheu tonu te tangata
Ko Ngāti Tūwharetoa te iwi

I had always assumed that once I had my Bachelors degree in surveying that would be the end of my formal education at University level at least as a surveyor; after all, why does a surveyor need a Masters let alone a PhD? After ten years of surveying, GIS, mapping and Waitangi Tribunal claims I graduated with a Masters and then decided to pursue a PhD.

When I first started, I was out to change the world, to make a difference. But George Benwell, my supervisor, sat me down and simply said to me: "you won't change the world with your thesis, but it will change you" – and so it has.

The first change occurred when I met Jim Riddell who was visiting the University from the States hosted by Surveying and Information Science departments. George Benwell introduced me to him and he literally shifted my world and challenged my thinking. My head hurt from being in their presence and participating in their discussions.

The second change was a barrage of personal tragedies, all of which changed my life and derailed me from my course. I fell off the wagon so far that my file was nearly archived.

I ran into Rachel Rakena, friend, who was writing up her Masters thesis – she shared with me an idea that gripped my thinking, despite my PhD having taken a back seat. She spoke about an article written by Robert Jahnke about the *paepae;* she expounded on her thoughts which when I came to the final write up, formed part of the solution to this thesis.

Then my mother passed away. The spiritual font, foundation and heart of our family left us all bereft. But it made me more determined because my mother never deserted me even when I was a *hianga* in my youth. It was at her graveside that I promised her that I would complete my PhD even though I did not know how I was going to resuscitate my PhD program.

A lifeline fell into my lap. Pip Pehi, another friend, tracked me down when I thought the journey had ended; talked me through the process and convinced me that I had something to say. More than that, she opened my eyes and helped me to see with a new set of lenses. She took me to see Charles Tustin, in charge of PhD study at the University of Otago, who resuscitated my file and sent me over to see George just prior to Christmas who told me what I needed to do. By the following semester I was back on board.

Just as the thesis was taking shape I lost a supervisor for an entire year; slippage, the thin edge of the wedge. Then my father suffered a heart attack followed by complications from his cardiac surgery which put him into a coma. All indications pointed to him passing away. So, my children and I flew to Hamilton expecting to take him home to Taupō to take his last breath. As the oldest son, the onus would fall to me to take care of my father's affairs including the land. The wedge was widening the gap and my thesis was being shelved once again. That's when Graham Green, of the *Te Huka Mātauraka*, the Māori Centre, stepped in and helped me think through the process. After six weeks my father recovered and I was able to return to University; my brother had moved home and was looking after my father along with my nephew and

sister. Pip also told me he will survive and live to see the day I finish. I picked up the ball once again.

The next change occurred when I ran into my next supervisor to replace the one I had lost. I ran into Lachlan Paterson, soon to become my second supervisor, on the main street of Dunedin and asked him on the spot if he would consider co-supervising my thesis. We spoke in his office and eventually agreed and the thesis picked up momentum.

The next change occurred when I ran out of money. I discussed my options with my supervisors and with Charles; reluctantly they agreed for me to take leave, take up a mapping contract and then return to the thesis. The contract put me in contact with Māori who are mapping their oral histories. I saw first-hand how our people relate to their ancestral territories and how they construct maps of their oral histories. However, it put me behind.

A crucial change occurred when I was invited to the Indigenous Mapping Network Conference in 2009 hosted by the Oneida Nation of Green Bay Wisconsin by Celene Elm and her GIS team. It was here that I met Rosemarie McKeon and Malcom Ridges from Australia and many Indigenous and non-Indigenous peoples engaged in mapping tribal lands. This is where I got to 'see' how other Indigenous peoples feel about their ancestral territories and their cultures.

Two other changes occurred as recently as January and February of 2010. The first was when Charles Tustin called me to his office and explained that I had run out of time. He wanted to get a feel for where I was at and whether the University could take a risk in granting me a stay of execution so to speak. He asked me to talk to my supervisors, work out a program for completion and then present that to him for consideration. I went to see George Benwell who again told me what I should do, and then I went to see Lachy who I realised was on leave for the semester. I put together a plan, posted it to my supervisors and Charles Tustin and waited for his reply. Charles gave me the

benefit of doubt; George Benwell set the timetable in place, and I set about to make sure no stone was unturned. The second was when I was invited by the Indigenous Mapping Network and Google to participate in a training session. It was here that I met Josie Thompson who shared her work in Guatemala – the *Lienzo* – it gave me the final solution to this thesis.

That has been my journey in a nutshell.

There was a period in my life when the thesis was a burden. There were however, certain key incidents that occurred in my life that changed the way I approached the final leg. All the experiences above contributed in some remarkable way to shaping me as a person, and gave me strength to pick up the baton and give it all that I had. For all those people I have mentioned above in all those seminal moments, I thank you and acknowledge you all in the creation of this piece of work.

There have been constants during this process: Cleveland Falanatule, Tipene Winiata and Morehu Solomon my three brothers in arms who have been constant in their encouragement and support throughout my ups and downs. My cousin Te Moengarau Hemopo a spiritual fountain, Carl Te Ahuru a constant voice of reality, Tuari Dawson a critical sounding board, Justin Hanning and Vicki Totoro always pushing me and reminding me of value, Pearl Matahiki the constant face at the University who is always concerned for her Māori students; my colleagues at the Dunedin College of Education especially Poua Huata and his open door policy who would always take the time to talk and share with me often; Pip Laufiso who always seemed to be there as a constant and consistent reminder of my obligations and whose counsel was always on the nail; Ange Ellison who always on my back urging me to get it done. Then there is Tash Hemara who has always believed in me. Aunty Tasi and Pip's mum Eti stalwarts of the Pacifica community always had that faith in me; the Māori community – kaumatua Aunty Bella, Barney, Karaka, and Aunty Maera – whenever I saw them I would see my old people from home and be reminded of my obligations. To my friend Ngārangi Marsh to whom I owe much to – *e te tamaiti nā Ranginui, tēnei tāku e mihi ake ki a koe e te tino hoa, ki te kore koe, kāore ētahi wāhanga o tēnei rangahau e puta mai – kei a koe ētahi o ēnei pitopito kōrero kei roto nei – te Manawa nui o te matua a Ranginui ki a koe!*

Lastly to Hinewai whose contribution is immeasurable in terms of sacrifice, energy, support and belief. These people have been a constant reminder of my obligations to my people. Thank you for making the burden easier to bear.

The single most important constant in the thesis process has been my primary supervisor, Professor George Benwell. *E te upoko mārō, tēnei anō tāku e mihi atu rā ki a koe, he maunga kōrero koe, he tītapu maroro hoki!*

In a nutshell, this thesis is the convergence of three fundamental themes from three diverse sources: The first is the concept of the *paepae* as expressed by Robert Jahnke and a seminal discussion I had with Rachel Rakena regarding the *paepae* that opened my mind to a possible solution to a thesis that had no shape. Then I literally bumped into the next idea: the map biography method pioneered in Canada in the early 1970s; Milton Freeman followed by the two volumes of Terry Tobias detailing the map biography method. A 'thesis' began to take shape. However, it wasn't until I came across the *Lienzo*, this year in February when Jose posted an article about her work in Guatemala regarding the 500 year old Indigenous Narrative of Guatemala that all the pieces fell into place; it was then that the thesis was no longer a burden, but it became a work of art.

The final word though goes to my family: my father whose sage advice once haunted me is now a source of wisdom as I engage with my own children and remind them of their eminent *whakapapa*. My three brothers and my three sisters; my Uncle Heemi and all my mother's sisters and brothers; Whakapumautanga who has passed away as well as my father's siblings; they have shaped me as a person a Tūwharetoa person.

My children are the future – I thank them for who they are, who they have become and who they will become in shaping the next generation of my people – it is an honour and privilege to be their father. And to their Mother Toni whose quite unassuming support and unshakeable faith has been a pool of contentment in my life.

Me mihi atu ki taku whānau, tamariki hoki, ko rātou te mauri kei te heke! Tāhuri nei ki a rātou mā, e aku nui e aku rahi! Ki taku kuia, ki taku whaea hoki – rāua tahi e noho pūmau kei tērā taha o Tawhirirangi, me kii ra, ki Rangiātea!

I dedicate this work to the memory and love of my mother: *Tereinamu Te Kuru Hakopa – moe mai rā e kui, moe mai rā!* May all her *mokopuna* walk in her *tapuwae*.

Preface

Conventions

The use of italics for Māori words in academic writing is an interesting debate. Whilst I do not want my language (*te reo*) treated as 'another language' within my own country, I do not wish for it to be confused with some English words. I have therefore chosen to italicise Māori words for the sake of clarity and as a conscious decision to illustrate that Māori is an integral part of this thesis. There are two exceptions: the word Māori and Māori placenames. When referring to Māori as a people, the word has not been italicised, however if used in a phrase such as *kaupapa Māori* or *kaupapa Māori rangahau* or *kaupapa Māori* research the word Māori has been italicised. The other exception is when the word Māori has been used in a subheading which requires italicisation. The use of macrons (a horizontal bar over a vowel such as Māori) has been employed throughout the entire thesis in line with the University of Otago policy and common practice. The only exception will be in direct quotations where the original text has not used any macrons. If the double vowel convention is used in material that is quoted, they will be retained.

Not all the Māori material cited in this thesis will be translated completely such as some of the *karakia*; although if appropriate, an explanation will be given in keeping with the objectives of their use. *Mōteatea* have been used widely in some chapters; in some cases English translations have been given to clarify their intent. The *karakia* and *mōteatea* employed in this thesis have been used solely to illustrate a point and not to teach either; for this to occur you must learn them via the proper channels by those who are familiar with cultural conventions that are part of the Māori world.

In this thesis, Indigenous has been given an initial capital consistent with the convention adopted by many original peoples. It is a statement of identification in the same way that names of races, nationalities, tribes, and religious groups generally take an initial capital.

In the context of this thesis, Indigenous peoples are taken to mean those peoples who share a common connection to their ancestral landscapes, consistent with Royal's comments in his document 'Indigenous Worldviews: A Comparative Study':

> . . . those cultures whose worldviews place special significance or weight
> behind the idea of the unification of the human community with the natural
> world. . . There seems to be a general agreement among 'indigenous'
> peoples the world over, whether Māori, Hawaiian, African, Native American
> and so on, that unification with the world is the primary concern of the
> worldviews contained within their traditional knowledge. (Royal 2002:2)

A Māori world view will be evident throughout this thesis which requires the observance of Māori protocol to ensure the *mana* of the oral information used herein remains intact.

Limitations

The main limitation imposed on this thesis was in locating some of the place names extant in *mōteatea* in the creation of maps. This cannot be done without extensive *wānanga* to decipher the *mōteatea* and in some cases ground truthing to locate the exact position of landmarks and place names for mapping purposes. However, this did not present a problem for the outcome of the thesis.

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Definitions and Abbreviations

API
An application programming interface (API) is an interface implemented by a software program which enables it to interact with other software.

Cartography
The representation of objects in a spatial context through symbology. The art and science of the creating and producing maps

CFRT
Crown Forestry Rental Trust
http://www.cfrt.org.nz/

GIS
Geographic Information Systems

GPS
Global Positioning Systems

GT
Geospatial Technology

IMN
Indigenous Mapping Network: The IMN is a network that connects native communities with the tools they need to protect, preserve, and enhance their way of life within their aboriginal territories and accomplish their sovereignty goals
http://indigenousmapping.net/

JavaScript
Javascript is a programming language that is used to make web pages interactive. It runs on your visitor's computer and so does not require constant downloads from your web site.

KML
Keyhole Markup Language: KML is a file format used to display geographic data in an earth browser, such as Google Earth, Google Maps, and Google Maps for mobile

ODK
Open Data Kit:
http://code.google.com/p/opendatakit/

PRM
Participatory Research Mapping

PUCM
Planning Under Cooperative Mandates
http://www.waikato.ac.nz/igci/pucm/

PGIS
Participatory creation of maps using GIS

SASI	The South African San Institute
Spatial Information Technology:	Spatial Information Technology Tools include: Aerial and satellite remote sensing imagery, Global Positioning Systems (GPS), and Geographic Information Systems (GIS)
TPK	Te Puni Kokiri: The Ministry of Māori Development http://www.tpk.govt.nz/en/
UNESCO	United Nations Educational Scientific Cultural Organisation

Glossary

Māori is recognised as an official language of Aotearoa New Zealand hence this glossary has been provided for any international reader of this thesis. Dialectal differences within *te reo* Māori are not distinguished within this thesis.

Ahi kā roa	Occupation (keeping the home fires burning)
Aotearoa	Common name for New Zealand
Ariki	Prominent Chief
Aroha	Love or feelings of sympathy
Awa	River
Haka	Form of vigorous and fierce traditional dance
Hapū	Sub-tribe
Hiwi	Ridge of a hill
Hui	To gather, assemble, a meeting
Iwi	Tribe
Kai	Food
Kaimoana	Sea-food (often associated with specific locations)
Kaitiaki	Care-giver, guardian
Kaitiakitanga	The action of guarding, nourishing, protecting
Karakia	Ancient incantations
Kaumātua	Elder (male or female)
Kaupapa Māori	Māori philosophy or purpose
Kaupapa Māori Rangahau	Research undertaken within a Māori epistemological framework
Kawa	Rules, procedures, protocols
Kawe Mate	A ceremony involving carrying the death of the deceased
Kōrero	Discussion, talk, story/stories
Kōrero Pūrākau	Stories, myths and legends

Koroua	Elder (male)
Kotahitanga	Commitment to a common cause
Kuia	Elder (female)
Kumara	Sweet potato
Mahinga kai	Food gathering places
Mana	Prestige, status, authority
Manawhenua	Customary authority and title over land and other *taonga* (treasures)
Maara kai	Cultivation sites
Manuhiri	Visitors
Marae	Cultural meeting place, grounds and buildings
Mātaitai	Sea food and resources
Mātauranga	Knowledge
Mātauranga Māori	Māori knowledge
Maunga	Mountain
Mauri	Life force, life principle
Moana	Sea, ocean
Mokopuna	Grandchild
Mōteatea	Ancient chants
Oriori	Lullaby/chant
Pā	Traditional Māori community place/fortified village
Paemaunga	Mountain range
Pākehā	New Zealand European
Pakiwaitara	Stories, myths, legends
Papakāinga	Original home ground, home base or village
Pātaka	Food storehouse
Pēpeha	Tribal saying
Pōhatu	Rocks or stones

Pou	Boundary marker, reference point
Puke	Hill
Rangahau	Research
Rāwaho	Outsider, not belonging to a particular tribe
Rohe	Area of occupation, region
Rongotaketake	Peacemaking sites
Rua kumara	Storage pit for *kumara*
Tāngata whenua	Person/people of the land, Indigenous People
Tangi	Lament, funeral
Tangi Atahu	Type of song known as a bewitching song
Taonga	Treasure/s
Tapu	Sacred, having special status
Taunga ika	Fishing ground
Tauranga waka	Canoe landing place
Tīpuna / tūpuna	The ancestors
Te Ao Māori	The world of the Māori
Te iwi Māori	Māori people
Te Ika a Māui	North Island of New Zealand
Te reo	The (Māori) language
Te Wai Pounamu	Common name for the South Island
Takitaki	Chant that recites *whakapapa* (genealogies)
Tauparapara	Introductory chant to a formal speech
Tikanga	Protocols, the right, correct, affirmative action
Tino rangatiratanga	Autonomy, self determination, independence
Tipuna/Tīpuna	Ancestor/ Ancestors
Tohunga	Specialist, expert, high priest of the *wānanga*, holder of esoteric knowledge
Tūrangawaewae	Place to stand, home ground

Uri	Descendants
Urupā	Burial site
Wāhi tapu/waahi tapu	Sacred site or sites
Waiata	Song
Waka	Canoe
Whai	Traditional string manipulation or the creation of string figures otherwise known as *Te Whai wawewawe a Maui*
Whaikōrero	Formal speech
Whakaiiro	Carving, inscription
Whakapapa	Genealogy
Whakataukī	Proverbial saying
Whānau	Family
Whanaungatanga	Family relationships
Whare wānanga	Institution of learning
Whenua	Land

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Chapter One: *Taku Tapuwae: Positioning*

Introduction

The *kumara* or sweet potato is widely known among Māori for its sweet taste and is referred to in *whakataukī*[1] in this manner:

"Ehara te kumara e kōrero mō tōna ake reka"

Translated, it means:

"The kumara does not boast of its own sweetness"

In the Māori world this *whakataukī* refers to the qualities of modesty and humility in a person; it also admonishes a person not to boast about themselves or their achievements. Furthermore, it cautions a person to keep sacred things close and to not disclose that sacred knowledge to those outside the inner sanctum of the *iwi* or tribe.

I use this *whakataukī* merely to underline my position as a Māori person, engaged in research within the western academy that brings into play a *kaupapa Māori* view. I use this *whakataukī* to introduce who I am, where I come from, and how I approach the task of writing up this dissertation.

Dr Paul Reynolds (2004), while negotiating his PhD, was encouraged by Dr Cherryl Smith to embark on a pathway of *Kaupapa Māori* research by positioning himself in context. (Macrons not used in the original text)

> One of the things you'll have to do in your thesis is to put yourself in context. You have to chuck out the "I'm an objective observer" rubbish. If you come from a **Kaupapa Maori** perspective, we always position ourselves, "who are we?" "where are we from?" And that question "where are we from?" is not only where are we from tribally but also where are we from in terms of our learning, our ideas, and what has shaped our ideology. And we speak from that. We claim the right to be speakers of and protectors of our own knowledge. That's a really important part for you to kind of nut out too and an important part to write. (Reynolds 2004:6)

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[1] *Whakataukī* is a tribal saying, a proverb. This *whakataukī*, while considered grammatically incorrect by academics in this form, was given to me by an elder from my tribal area. It is used in this form throughout the thesis, see pages 3 and 23

This is where I disclose who I am, where I come from, and what my worldview is. I do this because it informs my view of research and anchors my approach to this thesis. In doing this I am guided by the *whakataukī* above*: ehara te kumara e kōrero mō tōna ake reka.* I talk about myself, my background and where I come from not to boast but to open a window to my world and to provide a glimpse at that world through my set of lenses. This will give the reader an idea of how I approached this thesis; more importantly, this is where I make a stand and claim the right to be a speaker and protector of our brand of knowledge.

Cultural and Geographical Positioning

When my ancestors left the shores of Hawaiki to journey across the great sea of Kiwa*,* the Pacific Ocean, "to the land of the Long-lingering-daylight", the land of the long white cloud, they were advised by the priests who knew the "ancient *ara moana* or sea-paths of their ancestors" (Grace 1959: 36) who had made that same journey: (Emphasis added. Macrons not used in the original text)

> *"kia whakatau koutou ki a Atutahi ma Rehua;*
> *ko Atutahi e whakatata nei ki te Mangaroa!"*

> Direct your course to Canopus by Rehua (Antares);
> Canopus that is by the side of the Milky Way! (Grace 1959:36)

Thus I set my course: first by positioning myself geographically and culturally within the Māori view of the world; and second by positioning myself as a Māori researcher within the western academy guided by those well versed in the journey and well informed with Indigenous and Māori research methodologies.

Māori position themselves geographically and culturally in the world using a variety of methods such as *whakapapa*[2] and *pēpeha.*[3] *Whakapapa* is an important concept in the

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[2] *Whakapapa:* in its simplest form, *whakapapa* are genealogies. Williams (1985) describes *whakapapa* as the act of reciting genealogies and legends in proper order; a genealogical table, and to place in layers, one layer upon another

[3] *Pēpeha* is more than a localised tribal saying. *Pēpeha* is often translated as the sayings of an ancestor or even a tribal saying or even a proverb. *Pēpeha* also refers to charms, witticisms, figures of speech, boasts and other sayings. According to Mead & Grove, *Pēpeha* reflect thoughts on many aspects of Māori culture including history, religious life, conduct, ethics, warfare, marriage, death and weather. They are

Māori world. It encompasses Māori notions of identity and is a framework for understanding the Māori worldview. It determines the cosmological connections to the heavens, the earth and all the living things within the environment. It is also the instrument whereby Māori derive their intimate connections to the land and how they articulate their sense of belonging to their sacred places, stretching back hundreds of years. It is the source of their rights to *tūrangawaewae,* their place to stand in the world, and their personal *mana*[4] and *tapu*. The *whakapapa* that defines my geographical centre is encapsulated succinctly in a special *pēpeha* that defines my position within this world and is widely used by tribal members of the Taupō region:

Ko Tongariro te maunga   *Tongariro is the mountain*
Ko Taupō-nui-a-Tia te moana   *Taupō-nui-a-Tia is the lake*
Ko te Heuheu tonu te tangata   *te Heuheu is the chief*
Ko Ngāti Tūwharetoa te iwi   *Tūwharetoa is the people*

The notion of reciting *pēpeha* is a cultural paradigm that locates Māori 'in a set of identities which have been framed geographically, politically and genealogically" (Smith 1999a: 126). This *pēpeha* describes features of the land clothed with names given to the region by ancestors who inherited the region. Inherent in each name is a sacred corpus of oral traditions that describe the deeds of the ancestors, imbue the land with character and shape the identity of the local *iwi* or tribe as a separate and unique people of Aotearoa, New Zealand; behind each name is a story. These are the oral traditions that position the author geographically and culturally as a member of the *Tūwharetoa* tribe and as a Māori within the Māori view of this world.

Four great ancestors, who shaped the cultural landscape of the Taupō region, are referred to in this *pēpeha* either directly as is *te Heuheu* or by inference as is *Ngātoroirangi,* who could be considered one of the most important founding ancestors

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often used in formal speeches heard on the marae and are used to convey timely lessons. See Hirini Mead & Neil Grove., (2003) Ngā *Pēpeha a Ngā Tīpuna: The Sayings of the Ancestors*. Victoria University Press: Wellington.

[4] *Mana* and *tapu*: there are a lot of connotations associated with these two principles. *Mana* can refer to the power and authority of the ancestors, spiritual power and prestige, the enduring power of the gods. It has also been referred to as a spiritual force endowed from the gods (refer to: Salmond 1985, Barlow 1991, Marsden 1992). *Tapu* is derived from the power and influence of the gods. All living things are imbued with *tapu*; *tapu* equates to sacredness, respect and deference. (Barlow 1991)

of Ngāti *Tūwharetoa*, *Tūwharetoa* the eponymous ancestor of the tribe in the region and *Tia* after whom Taupō derives its name. It was *Ngātoroirangi* who laid the foundation for occupation of these territories by his descendants who eventually became known as *Ngāti Tūwharetoa*.

In the *pēpeha*, *Tongariro* is referred to as the sacred mountain of the *Ngāti Tūwharetoa* people of the Taupō region who derive their connection to the mountain through the *tohunga* ancestor of that tribe *Ngātoroirangi*. He was the *tohunga* (high priest) of *Te Arawa* canoe and from whom they, the *Tūwharetoa* people, primarily derive the *mana* or right to inhabit the Taupō region.

The *Arawa* canoe is reputed to have landed in Aotearoa around 1350 A.D guided by the esoteric knowledge of *Ngātoroirangi* the *tohunga*, captained by *Tama-te-kapua* his close kin with whom he had a strained relationship. On landing at *Maketū* on the east coast of *Te-ika-a-Māui*, the North Island of Aotearoa New Zealand, two important ancestors from the *Arawa* canoe set off inland to claim lands for their descendants. Both ancestors, *Ngātoroirangi* and *Tia,* became well known in the oral traditions of the *Tūwharetoa* people and are synonymous with the Taupō region (Ballara 2004, Grace 1959). The trek inland for both ancestors began at Maketū, where their canoe landed, and converged at a place called Taupō 135kms inland from Maketū.

Ngātoroirangi the *tohunga* and his followers travelled south from Maketū down the east coast of the North Island to the mouth of what is now the Tarawera River at Matatā. The original name of the Tarawera River was Te Awa-a-te-Atua (river of the god), conveying the esteem in which his followers held *Ngātoroirangi*. From here *Ngātoroirangi* travelled up the Tarawera River to Lake Tarawera where he climbed Ruawahia peak and saw Tauhara Mountain nestled to the east of Lake Taupō. He then traversed the landscape arriving at Tauhara Mountain where he erected a *tuahu* (altar) to ensure the gods would grant him safe passage. It was while he was on Tauhara that he spotted his relative *Tia* journeying around the lake. It was while on Tauhara he bespoke the lake for his descendants and to make his point cast his spear called *Kuwha*

into the lake where it landed near Wharewaka; it is still there today in the form of a tree (Ballara 2004, Grace 1959).

It is at this point that *Tia,* his relative, enters the scene. *Tia* journeyed inland from Maketū to Rotorua where he and his party settled for a short period before moving on. His journey further inland from Rotorua to Taupō can be traced through a number of places that bear his name: Horohoroinganui-o-Tia 'the great cleansing of *Tia'* now known as Horohoro, Atiamuri indicating that *Tia* was following in someone else's footsteps, Te Maroa-nui-a-Tia in reference to a ritual involving food, the Aratiatia 'the stairway of *Tia'*, Oruanui-a-Tia 'the great decision of *Tia'*, and Taupōnui-a-Tia often referred to 'the great cloak of *Tia'* (Ballara 2004).

Taupōnui-a-Tia derives its name from an incident involving *Tia* who noticed while he was at a place called Paka, now known as Hamaria, a high rocky cliff which resembled the cloak he wore around his shoulders.[5] He established a post called Hikurangi just below the cliff to which he fastened his cloak. He then named the cliffs Taupō-nui-a-Tia. The name was subsequently given to the lake itself and the land surrounding the lake stretching from Atiamuri in the north, to the northern slopes of Tongariro Mountain to the south; from the Hauhungaroa ranges in the west to the Kaimanawa ranges in the east (Ballara 2004, Grace 1959).

When *Ngātoroirangi* descended from Tauhara Mountain he travelled south along the eastern shores of Lake Taupō setting up a series of *tuahu* or altars along the way at Rotongaio, Te Hatepe, Hamaria, and Motutere thus establishing his claim to the region. When he arrived at Motutere he spotted Tongariro in the distance and decided that he would climb that mountain. From Motutere he travelled to Tokaanu then on to Tongariro which derives its name from an incident involving his ascension (Grace 1959).

On his way up the mountain, *Ngātoroirangi* was overcome by the intense cold and on reaching the summit petitioned his ancestral spirits and his sisters *Kuiwai* and

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[5] This is one interpretation or story behind the meaning of *Taupō-nui-a-Tia*.

Haungaroa to send him fire to heat his cold body (Grace 1959:63-64): *"Kuiwai e! Haungaroa e! ka riro au i te tonga, tukuna mai te ahi"* The fire gods *Te Pupu* and *Te Hoata* came tracing a trail of fire from Hawaiki through to Whakaari or White Island, Moutohora, Okakaru, Rotoehu, Rotoiti, Tarawera, Paeroa, Orakeikorako, Taupō and Tokaanu right up to Ketetahi springs on the northern slopes of *Tongariro* Mountain. *Tongariro* derives its name from this incident *"ka riro au i te tonga"*; to be overcome or seized with cold. This is the story behind: *Ko Tongariro te maunga, Ko Taupōnuiatia te moana.*

Ko te Heuheu te tangata: Te Heuheu is one of those names that is synonymous with *Tūwharetoa* in the Taupō region and has been for several generations. The name itself was derived from an incident involving a plant known as a *maheuheu* , a brushwood which had grown over the entrance to a cave bearing the bones of an important ancestor known as *Te Rangipumamao*. One of the important chiefs of that period was *Hereara* also known as *Herea*. *Herea*'s wife *Rangiaho*, who was with child, decided that should the baby be a boy she would name him *Heuheu* in remembrance of her relative *Te Rangipumamao* whose burial cave was guarded by the *maheuheu* plant. *Herea* was also given the name *Te Rangimaheuheu* by his wife at the birth of their son. The name *te Heuheu* was subsequently taken as a family name and seven generations later *te Heuheu* is still the *ariki* or paramount chief of *Ngāti Tūwharetoa* (Ballara 2004:139-142, Grace 1959: 235,236).

Herea was the first of the *Heuheu* line to become *ariki* of the *Ngāti Tūwharetoa* of Taupō. He was followed by *Tukino* later called *Mananui*, then *Horonuku*[6] who was named after the incident that killed his father, *Tureiti* who was literally born late, then *Hoani*, Sir *Hepi* and Sir *Tumu* (Dr) who is the current *ariki* of *Ngāti Tūwharetoa.*

Ko Ngāti Tūwharetoa te iwi: Ngāti Tūwharetoa the *iwi* or tribe of the central north island region surrounding Lake Taupō derives its name from their eponymous ancestor *Tūwharetoa* who lived in and around the Kawerau region in the 16th century. They

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[6] *Iwikau* the brother of *Mananui* became *ariki* of *Ngāti Tūwharetoa* at the death of his brother

trace their origins back to the *Arawa* canoe which bore the famous ancestors *Tia* and *Ngātoroirangi*. *Tūwharetoa* himself did not occupy the Taupō region during his life time but his *uri* (descendants) did. It wasn't until the time of *Tūrangitukua* six generations from *Tūwharetoa* that *Ngāti Tūwharetoa* began to establish their *mana* in the *Taupō* region.

Eleven generations later from *Tūrangitukua* and his contemporary *Tūtetawha*, I was born to *Tūwharetoa* parents.[7] From here we must return to the point at which we began; to the *pēpeha* that illustrates who I am, where I come, and offers a small glimpse into my world; it also succinctly describes my geographical and cultural centre and firmly positions me at the point where I explore the notion of *kaupapa Māori rangahau* or research based on Māori concepts.

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[7] See table 1.1 for the *whakapapa* that traces the author's descent from *Tūwharetoa* himself. The *whakapapa* is included to honour my ancestors and to provide a framework for defining my connections to my homelands.

Genealogy chart (whakapapa):

Top row: Uiraroa — Tūwharetoa — Paekitawhiti

Tūwharetoa / Paekitawhiti children: Rongomaitengangana, Manaiawharepu

Left line (from Uiraroa → Rakei-ue-kaha):
Rakei-ue-kaha → Rereao → Whakawhitiao → Mania → Rakeiatu → Karihi → Whatupakina → Totokia → Ngakoiro → Tawhena → Tetekura → Taranui → Ngaki → Ngaki Manga → Mareikura

Rongomaitengangana line:
Tutapiriao → Rongoteahu → Piri → Tunono → Turangitukua → Te Rangitautahanga / Hinerangi

Te Rangitautahanga → Te Mahaoterangi → Te Tawirioterangi → Tuteohu → Te Paekitawhiti → Te Rito-o-tau → Kaiwai → Te Ahunga → Te Hokimutu → Kahungunu → Tukino → Te Kotuku

Hinerangi → Taina → Te Mahau → Tukino[1]

Manaiawharepu line:
Whakatihi → Tupoto → Taneturiwera → Hinetuki → Tutetawha → Te Rangiita / Turumakina

Te Rangiita → Parekawa → Kikoreka → Puraho → Moeroro → Rangiaho → Mananui[2]

Turumakina → Tawhioterangi → Te Oingaoterangi → Tukino[1] → Hereara → Mananui[2] → Horonuku → Tureiti → Te Uira Rehia

Bottom connections:
Hohepa → Hoani → Te Kuru → Raniera

Mareikura — Raniera → Tereinamu

Te Kotuku — Te Uira Rehia → Te Tawirioterangi

Tereinamu — Te Tawirioterangi → Hauiti

Note: *Tukino[1] from the Hinerangi & Turumakina lines is the same person. Likewise Mananui[2] from the Te Ranigiita & Turumakina lines is the same person*

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Table 1.1: Whakapapa - Genealogy

Academic Positioning: Kaupapa Māori Rangahau

Whenever Māori engage in debate, discussion, or *whaikōrero* on the *marae* or within the ancestral houses or in research, *whakataukī* and *pēpeha* are common tools used to engage, instruct and edify an audience. To engage this section and introduce the concept of *kaupapa Māori rangahau*, I refer a well-known *whakatauki*: *"ā mua, i muri ō kōrero"* or in other words: the decisions of the future reside in the past; for Māori, research is often thought of as a journey stretching back to the future (Turama Hawira, personal communication, Feb 2009).

Kaupapa Māori rangahau is research which adheres to "first principles" (Hawira 2009, personal communication). The term *kaupapa* translates as guiding principles (Marsden 2003). According to Rawinia Higgins in her doctoral thesis, a *kaupapa Māori* research paradigm "develop[s] values, actions, customs and reflections of realities that are intrinsic to Māori identity" (Higgins 2004:5). Paul Reynolds in his doctoral thesis *Ngā Puni Whakapiri*, describes *kaupapa Māori* research as an "Indignous [way] of knowing and doing research" (Reynolds 2004:42) where the "validity of Māori knowledge and Māori cultural values are taken for granted" (Reynolds 2004:49). A *kaupapa Māori* research strategy is one that is derived from and located in *te ao Māori* (the Māori worldview) (Ka'ai 2005, Reynolds 2004, Walker et al 2006) encapsulates Māori values and cultural practices, and is a reflection of the "relationship Māori have to the land and the environment" (Ka'ai 2005:3). Charles Royal argues that Indigenous peoples need to express their interpretations of their worldviews and create their "own indigenous epistemologies and theories of knowledge" (Royal 2002:12). Linda Smith in her book *Decolonizing Methodologies: Research and Indigenous Peoples* provides an alternative approach to Indigenous research and researchers. Her book is a much sought after academic source for Indigenous scholars around the world. *Kaupapa Māori* research rejects the notion of outside control of "authority and truth" and locates research within Māori "epistemological version of validity" thus firmly investing "the power [of research] within Māori cultural practices" (Bishop 1998:1) whilst locating Māori at the centre (Bishop 1998) in "control of the research agenda" (Walker et al 2006:334) rather than the outside. Thus Māori researchers refer to methodology as "kaupapa Māori research or Māori centred research" where "indigenous values, attitudes and practices" are at the core of their approach (Smith 1999a:125).

Graham Smith in his address to the *Kaupapa Māori* Symposium argues that a *kaupapa* Māori approach positions Māori at the centre having a transformative effect that encourages *iwi* Māori to:

> reclaim the validity and legitimacy of [their] own language, knowledge and culture; to position [their] own ways of knowing as being relevant and significant in the `elite' knowledge production and reproduction `factories'. (Smith 2003:4)

In effect, *kaupapa Māori* encourages Māori to take "responsibility for transforming their own condition" (Smith 2003:2) and to focus on what it is Māori want and what Māori are about (Smith 2003:3) or rather *kaupapa Māori rangahau* is research conducted "by Māori, for Māori and with Māori" (Walker et al 2006:333) . As Reynolds argues, "the real strength in Kaupapa Māori Theory [is] its transformative nature" (Reynolds 2004:55).

Māori refer to *tikanga* as ethical behaviour; or in the case of research, an ethical and appropriate approach to research that demonstrates respect for *tikanga*, cultural practices and people (Cram 2001). Research into tribal knowledge requires an "ethical and respectful" (Smith 1999a:139) approach as it embraces *tikanga* practices or principles such as *whanaungatanga* or the responsibility to maintain respectful relationships (Hawira 2009) or as Russell Bishop articulates *whakawhanaungatanga* the concept of induction into the family (Bishop 1996). *Whanaungatanga* and *whakawhanaungatanga* both derive from the root word *whānau* (family); both terms imply connectedness between the researcher and the participants. For Māori, research into tribal knowledge within the inner sanctum of the Māori world carries with it a significant degree of social responsibility. This responsibility manifests itself in observing an ethical approach to research and carries with it an unspoken obligation to reciprocate by sharing knowledge (Hawira Feb 2009). The concepts of reciprocity and connectedness are a significant part of the researcher's responsibility to "give back to the community" (Reynolds 2004:48).

Research into tribal knowledge also embraces *kaitiakitanga*, or the concept of active preservation and nurturing of all *taonga* (something of great value) tangible or intangible in a state of balance (Marsden 1992), and *kotahitanga*, the concept of

commitment to a common cause (Hawira Feb 2009). Research conducted using these "first principles" and observing *tikanga* often results in access to tribal lore through recognized knowledge holders who are often *kaumatua* (elders) (Walker et al 2006).

Tribal lore is often expressed in terms of *whakapapa, karakia*[8]*, mōteatea, whakataukī, pēpeha,* and *kōrero pūrākau* and is underpinned by the concept of *mana. Tino rangatiratanga* is the expression of sovereignty, or the ability to exercise *mana* and underpins the concept of *kaupapa Māori* (Pihama, Cram, & Walker 2002). The purpose of *kaupapa Māori rangahau* is to maintain the *mana* or *tino rangatiratanga* of the tribe. Thus when Māori undertake research into tribal knowledge, the researchers' job is to maintain the *mana* or sovereignty of the *iwi* (tribe) (Hawira Feb 2009).

Tribal knowledge has its roots in the sacred institutions or houses of learning known as *whare wānanga.* In some tribal areas, the *whare wānanga* derived its beginnings from the exploits of the *atua Tāne-te-wānanga*, or *Tāne- nui-a-Rangi* who climbed to the highest heavens and secured the *kete wānanga* or the sacred knowledge baskets (Smith 1913, Marsden 1992). *Tāne* also brought back the blueprint for the constructing the *whare wānanga* to house this sacred knowledge.[9] Tribal knowledge is passed down in *whare wānanga* from generation to generation to those who are specifically chosen and trained in the disciplines of memory retention (Marsden 1992, Royal 1998). This systematic and meticulous transmission of tribal knowledge still exists today in some form in the Māori world. The *mana* of that tribal knowledge is maintained by key individuals that were known as *tohunga* in the ancient Māori world (Hawira Feb 2009).

To the initiated who understand the cultural conventions of the tribe, tribal knowledge can be found everywhere: within the intricate *whakairo* (carvings) of ancestral *pātaka* (food storehouses) and houses both inside and outside (Hawira Feb 2009) and in the place names (Davis 1990, Carter 2005) and stories embedded in the landmarks that make up the tribal landscape and ancestral domains (Davis 1990). Tribal knowledge is found in the oral archives of *mōteatea, tauparapara, karakia, pakiwaitara, pēpeha,*

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[8] *Karakia* are complex incantations. *Mōteatea* are traditional songs or chants
[9] This is one version of the story of how the *kete wānanga* were bought to earth.

whakataukī, whakatauāki, whaikōrero and in the recitation of tribal *whakapapa*. Most of these sources of tribal knowledge, although recorded, cannot be understood unless one understands the cultural conventions and is then taught by one who is initiated; these offerings must then be carefully memorised and rehearsed thoughtfully by the uninitiated (Marsden 1992, Royal 1998, Hawira Feb 2009).

To return to the original enquiry: what is *kaupapa Māori rangahau*? And what place do principles occupy in research? Kathy Irwin (Smith 1999a:184) refers to "kaupapa Māori as research which is 'culturally safe', which involves the 'mentorship' of elders, which is culturally relevant and appropriate while satisfying the rigour of research, and which is undertaken by a Māori researcher, not a researcher who happens to be Māori" (Smith 1999a:184).

The position of a researcher is artificial wherein they are granted admission into the inner sanctum of tribal customary domain. In some tribal areas the highest level of esoteric, sacerdotal lore has never been spoken of to the uninitiated within the tribe let alone those from outside the tribe such as researchers. In some instances, sacred lore has never been uttered in any other languages except Māori (Winitana 2006:2).[10] Tribal knowledge such as this is traditionally reserved for a chosen few usually blood-kin. To engage in research as an outsider involving some aspect of tribal knowledge is to be admitted as a *rāwaho* (outsider) into the inner circle of tribal customary domain. Therefore, there is an unwritten obligation as a researcher to observe certain principles of behaviour or *tikanga*. The sacred nature of traditional knowledge given, demands the reciprocation of respect and that knowledge is returned (Hawira, Feb 2009).

Given the sacred nature of tribal lore and the unspoken demands required of Māori researchers begs the question: why start this dissertation?

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[10] Chris Winitana: *Ngāti Tūwharetoa WAI 575* Briefs of evidence *Otukou*, 11-20 October 2006, p2

Personal Positioning

There were essentially two reasons why I started this dissertation. One was to complete a promise uttered as a 15 year old youth following the passing of my grandmother. The other more primal reason was to fulfil an oath made at the graveside of my mother several years later. My grandmother, *Mareikura*, and my mother, *Tereinamu*, both had full *whakapapa* Māori ancestry and were speakers of their native tongue. Both were at ease in the Māori world where the metaphysical blended with the physical; where ancestors were revered and often thought of as living breathing entities. My grandmother particularly was gifted in *karakia* and *mōteatea* and spoke a language unique to that generation. She lived in an era and with a genre of great orators and exponents of *mōteatea;* an art that is reputed to be perhaps 2000 years old (Ngata & Jones 2006, part 1: xi). It was not uncommon for Māori in that era to sing or chant for three days without repeating a song or chant. Some could even 'boast' (in the *kumara* sense) to know several hundred songs. On her death bed my grandmother sang her last *mōteatea* in recognition of her ancestors who had come to take her home. My mother and my grandmother were shaped and influenced by a remarkably different world to mine, a world I am coming to appreciate as I sift through the *mōteatea* and as I am taught the *karakia*. This thesis is largely shaped by *mōteatea* which I will explore in terms of mapping ancestral landscapes.

If I think carefully about the principles that governed the life of my mother and that of my grandmother, they were crucial to the survival of their tribal identity. Thus, two of the most important and influential people in my life shaped the beginnings of what proved to be a monumental task without equal. This has been a largely selfish pursuit over several years of perfecting a set of research skills whilst compiling a substantial piece of self-indulgent writing. The strength of the PhD process is in the time it allows for one to both seek and unveil the font of wisdom. For this to occur requires time dedicated to ruminating and drawing deductions from divers and diverse sources. The number of years required for a PhD to mature allows for a slow acquisition of the wisdom within; and so it is in the Māori world as it takes time to grow a great tree in the forest of *Tāne*, the keeper of the forests.

Context of the research

Quite simply, this thesis is about our *whenua*, our land and how we as Māori are defined by the relationship and connections we have with that land. Our land is referred to in everything we do: the chants and songs we sing, the stories we tell, the food we grow and gather, the resources we harvest, the places that create a sense of awe and belonging, the battles our ancestors have fought and the cherished memories we have cultivated generation after generation. *Whenua* or land is the enduring element that binds our collective history and knowledge together into a single seamless continuous story. Those stories are still being told today; it is our legacy for the *mokopuna*, the following generations. It defines who we are in this world and as we of *Tūwharetoa* say:

Ko Tongariro te maunga,	*Tongariro* is the mountain,
Ko Taupōnuiatia te moana,	*Taupōnui-a-Tia* is the lake,
Ko te Heuheu te tangata,	*Te Heuheu* is the chief,
Ko Ngāti Tūwharetoa te iwi.	*Tūwharetoa* is the tribe.

I speak of the *whenua* as if it were a personal and intimate friend; one that I was introduced to when I was but a boy of nine walking hand-in-hand with my grandfather. His name was *Raniera te Kuru*; a man whose memory I cherish and have remembered since his passing many years ago. I mention my grandfather because it was he that took me crayfishing in the *Tokaanu* river that ran past his house. He took me to Ratana pā, to Maunganamu, to the hot pools, *ngā wai koropupū*, to the lookout above the homestead on Hirangi Road, to *Piripekapeka urupā*, to the *moana*, to *Puhaorangi* and *Hirangi marae* and to *Rotopounamu* nestled on the hill above Rotoaira and Otukou *Marae*. He took me to places that I still frequent today. More importantly, he ignited in me a spark that fuelled my thirst for learning about the *whenua* and by extension the Māori world.

As I grew older I began to explore the *whakapapa,* the *mōteatea,* the *karakia,* and the *kōrero*. I began to learn about the people who inhabited the land before my grandfather and his generation; my ancestors. I began to learn the *mōteatea* and *haka* composed by eminent ancestors that illustrated the lives of those ancestors. I began to learn various types of *karakia* that were a part of the ancient esoteric world of the ancestors. I also began to sift through and understand the stories of yore which added character to the

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ancestors and meaning to the *whakapapa*. I sat with the elders and paid attention to what they were talking about on the *marae* and in private sessions with them. I would stand alongside my mother when we were at *tangi* and pepper her with questions. I began to forge relationships with *kaumatua* (the elders)*,* both *kuia* and *koroua* that still exist to this day. I consider these relationships my personal pool of cultural knowledge which I continually draw from. Decades later, I feel that I have a relationship with the *whenua* and the ancestors and yet I am still learning.

But this dissertation is not about the *whenua* per se; nor is it about the relationships that Māori have cultivated with that land; neither is it about my personal journey of learning and cultivating a relationship with the land. Rather, it is about finding a way to blend this unique ancestral relationship to *whenua* with Geographical Information Systems (GIS) mapping technologies without any of the 'stories' losing any of its uniqueness or the land losing any of its integrity.

Indigenous Context

GIS is considered the current mapping tool of choice around the world for managing large disparate sets of data. It is currently being used by Indigenous peoples around the world for a variety of reasons such as supporting research conducted on tribal lands and economic development as in the case of the Agua Caliente Band of Cahuilla Indians located in Palm Springs CA; or tracking diminishing territories as in the case of the Coeur d'Alene tribe of Idaho; and mapping the original homelands consisting of hunting and trading areas as well as mound sites and village locations of the Chickasaw Nation of Oklahoma; in Alaska the Columbia river intertribal fish commission use GIS to display land ownership and the distribution of steelhead trout and to plan for future activities; ancestral boundary maps are delineated by the Confederated tribes of the Coos, lower Umpqua and the Siuslaw Indians of Oregon (Sappington 2008).

Another Tribal use of GIS was to create a map that tracked an inter-tribal canoe journey. The week-long 2007 annual inter-tribal canoe journey was hosted by the Lummi coastal Nation of Washington. This annual event recreates the traditional

highways of the ancestors. A similar event was hosted by the Muckleshoot Indian Tribe of Auburn Washington in 2006; in both cases, GIS was used to create maps featuring the traditional ancestral highways (Sappington 2008).

In other parts of the world such as Canada, the Lil'wat Nation of British Columbia use GIS to trace the impact of logging, mining, road building, and construction and recreation activities on their traditional territories over the last eighty years. Further south in México, GIS is being used to capture local knowledge of the Nahua community, Cuatlamayán. Participatory research mapping is being used to develop digital geography of indigenous México (Sappington 2008).

Further south in Guatemala, GIS has an interesting and innovative application: merging modern spatial information tools with a narrative form of geography or geography conveyed through stories, legends and traditions based on collective experience. This application has crucial implications for this thesis and forms part of the solution to the problem of merging Māori notions of land with modern spatial information technologies. It is known as the *Lienzo*, "the map that tells a story" (Ibárgüen2009) and is discussed in detail in Chapter Four.

Focus of the research

Māori have a similar approach wherein they convey their narrative form of geography based on the collective experience of successive generations. Narrative or cultural geography is communicated using *mōteatea* or classical chants and song, *tauparapara* which are part of classical speech making, *kōrero pūrākau* or stories and legends and other traditional arts. Storytelling is a huge part of the Māori cultural landscape wherein each place name has a story attached to it featuring ancestors, events and activities.

This thesis is similar to Indigenous or tribal uses of GIS in that it looks at blending modern spatial information mapping tools to geography conveyed by narratives; the cultural geography of Māori. The purpose of the thesis is to examine the use of GIS mapping technologies to record instances of those integral ancestral relationships with

the *whenua* in a way that does not undermine the *tapu* or integrity of that cultural geography. In order for this to occur, two critical themes need to be explored. One: the concept and content of the geography of narratives as articulated by Māori culture; and two: how to merge the geography described by a set of narratives with modern GIS mapping technologies. These two themes will draw together three important concepts that will potentially provide the solution to this thesis. Furthermore, the potential long-term benefit is the development a tribal Cultural Information System based on Indigenous or Māori paradigms.

Critical Concepts

The three crucial concepts that provide a solution for merging cultural space with geographic space is: first, the concept of the *paepae* in articulating a space created by blending two worldviews: Māori and Spatial discussed in Chapter Two. Second: the innovative application of GIS and other technologies merging with the cartography of history as depicted by the 500 year old *Lienzo* in Guatemala discussed in Chapter Four. Third: the map biography method, also discussed in Chapter Four, promulgated by Milton Freeman (1976) in the early 1970s in Canada followed by the seminal volumes of Terry Tobias (2000 & 2009); a method that provides a means to translate the *mōteatea* into a sketch for projection into geographic space.

The map biography method for recording oral information about *whenua* relationships and ancestral territories can be adapted for use by Māori and implemented into GIS technologies. More importantly, this method is adapted and used in a case study; a *mana whenua* research report that requires maps conveying oral traditions.

Breakdown of Thesis

This thesis is broken down into eight chapters; this chapter, being the first, positions the author geographically, culturally and spiritually before exploring the *kaupapa Māori* principle of research. It sets the platform for engaging in academic research based on a *kaupapa Māori* approach that will blend tribal knowledge with the tools of GIS.

GIS mapping technologies is used extensively around the world by Indigenous and non-Indigenous groups, organisations and individuals to manage and manipulate large amounts of disparate geographical or spatial information. Its application renders down the real world into a series of *x,y z* coordinates that is considerably different to how Māori or Indigenous peoples view the world. Regardless, GIS technology has the potential for Indigenous peoples including Māori to manage their ancestral homelands based on their world view.

Chapter Two sets the platform for understanding the need for exploring a different approach to using GIS technologies; an approach that reflects the Indigenous view as expressed using narratives. Since narratives such as storytelling and song are used widely by Indigenous peoples, to achieve this we will first need to look at the nature of the Indigenous world view contrasted against the Western world view. Second, a discussion of the Māori world view as conveyed by cultural narratives will be explored. These two concepts are imperative to the foundation of this thesis. The worldview discussion will form the infrastructure for understanding the makeup of the ancestral landscape which in turn will help us create a method or model for implementing GIS technologies. Furthermore, Chapter Two will explore the role of the *paepae* in providing part of the solution to this thesis.

GIS technologies provide a powerful suite of tools for managing geographical or spatially organised data. Indigenous peoples have also developed a unique set of tools and methods over a long period of inhabitation that help them blend with the environment they call home. Chapter Three looks at how Indigenous peoples see their world, their land, their environment, their home, and their places of inhabitation. This chapter will look at the unique features that make up their cultural landscapes. GIS captures and displays data based on a mathematical portrayal of the surface of the earth, whereas Indigenous societies see that same space in terms of the relationships that exist between them and their environment. This fundamental difference is crucial to understanding how Indigenous knowledge about place can be merged with GIS mapping technologies.

GIS mapping technologies offers a range of tools that can assist Indigenous tribes to articulate their ancestral territories, tell their stories, map their biographies and protect their land. Chapter Four explores how Indigenous peoples are using GIS mapping technologies to articulate their notion of belonging to the landscape. Furthermore, this chapter provides the framework for exploring Māori concepts of belonging to the land. In particular, Chapter Four discusses two of the critical concepts that form part of the solution for merging Māori notions of geography as articulated by narratives with GIS technologies: the innovative approach of the *Lienzo* project of Guatemala and the map biography method of the First Nations of Canada.

Māori are part of a wider Indigenous group of people that inhabit various parts of the globe. Indigenous peoples are different in their language and customs but remarkably similar in their approach to describing their relationship with the land or *whenua* as it is widely known by Māori. Chapter Five delves into the Māori world with regard to the oral traditions that inform the makeup of their ancestral territories. Māori have developed their own unique way of describing their relationship with the land in a systematic way using narratives that create a unique cultural imprint on the landscape. This chapter is the infrastructure for developing the model that will be used to blend GIS mapping technologies with Māori narratives of geography.

Narratives are part and parcel of the cultural makeup of Māori and were used to clothe the land with a layer of information forming a cultural landscape that is unique to Aotearoa New Zealand. Chapter Six details the use of one of these narratives as a means of describing and creating a biographical sketch of the cultural landscape, based on the map biography method, as expressed by the ancestors. This chapter describes the methodology used to translate an oral tradition into a spatial tradition. It takes several *mōteatea* or traditional chants, and creates biographical sketches of each one; then uses GIS mapping technologies to express those biographical sketches in spatial context within a western framework.

Māori have a host of oral traditions that form part of the narratives that inform their ancestral territories. Of all the oral traditions available to use in this dissertation, I chose

to work with *mōteatea*. I did this on purpose largely because of my abiding interest in *mōteatea,* my grandmother's influence, and because *mōteatea* contain a beautiful language imbued with metaphors and clues to the landscape; they also conceal hidden meaning lost to the modern world. Certain types of *mōteatea* contain references to *whakapapa* or genealogies, *karakia* or classical incantations and stories about battles and great deeds of bravery. *Mōteatea* also contain references to places, landmarks and well-known geographical features that envelop the landscape. Furthermore, *mōteatea* have a way of unfolding in your mind as you chant creating a virtual image of place; it literally brings the landscape into the mind's eye. Thus if *mōteatea* can unfold the landscape in the mind, the challenge then is to create a biographical sketch based on the images generated in the mind. This biographical sketch of oral narratives can then be projected into geographic or cartographic space providing a solution to the problem of merging GIS technologies with cultural space or the Māori notion of cultural geography as articulated by oral narratives.

Chapter Seven transfers the theoretical basis of map biographies into a real world case study. It examines the application of the methodology within a real world case study that investigates mapping of oral traditions to support a *mana whenua* research report in Aotearoa New Zealand. It involves the creation of map biographies of living tribal informants, digitizing that information into an electronic format for inclusion into GIS and creating a series of maps that describe those living biographies. It also includes creating map biographies of select *mōteatea* that describe the uniqueness of that *iwi* rather than the cultural landscape.

This chapter tracks the actual experience of implementing a methodology; it looks at the pitfalls, the techniques, the resources, and the interviews. It also looks at how *mōteatea* provides a window into the depth of oral traditions of *iwi* Māori and how they hold the key to understanding the cultural landscape expressed by the ancestors of Māori. We discover that *mōteatea* is one of the keys to understanding the Māori world view; it is also one of the keys that stores and unlocks a host of information much like the function of a database in a GIS. As Jan Kelly (1999) comments, oral narratives and *kōrero* provide critical information that inform Māori maps in much the same way that a database holds critical information about data in GIS.

The last chapter reviews the content of the entire thesis. It commences by clarifying the need for research based on principles of *kaupapa* Māori, examines the potential of GIS for articulating geography based on narratives, and explores the challenge of translating an oral tradition into a spatial tradition based on the three critical concepts: the *paepae*, the *Lienzo* and the map biography. It concludes by evaluating the real-world implementation of the methodology described in Chapter Seven.

Contribution to new knowledge

The main contribution to new knowledge from this thesis is the creation of a new cultural-geographical space consisting of two world views brought together by three integrated concepts: the *paepae,* the *Lienzo* and the map biography. The *paepae* creates new space; the map biography converts the oral narratives into a sketch, the *Lienzo* projects cultural space into geographic space.

This thesis also describes the ancestral Māori notions of landscape embedded with narratives creating a geography based on narratives, a cultural geography. Furthermore, that new cultural-geographic space is used to blend modern spatial information technologies with the geography of narratives based on a Māori view of the world. Or rather, the solution is to project cultural space into geographic space without changing either; thus cultural space does not lose its cultural integrity and geographic space remains intact.

This thesis is based on a *Kaupapa Māori* philosophy which has been used as a basis for ancestral guidance, as a process of implementation, as a theory to examine modern and emerging spatial information tools and technology, and as praxis for implementing a new approach to merging GIS and cultural landscapes. It explores the cultural space created by examining *mōteatea* in an alternative way. This thesis contributes to new knowledge by examining ancestral landscapes embedded in *mōteatea* and presenting a method for creating biographical sketches of the *mōteatea;* thus creating a special space for ancestral voices to be heard without loss of integrity. This comes with the realization of the depth of knowledge in *mōteatea* and the depth of the sense of place exhibited by the early ancestors of Māori.

One final note on the content of this thesis is expressed aptly by Professor Linda Smith where she states: "So much of the 'method' used in this kind of empirical research gets written out that the voices of the researched become increasingly silenced as the act of organizing, analyzing, and interpreting the data starts to take over" (Smith 1999b:14). To ensure that this does not occur I have heeded the lessons I was taught growing up; in this respect I have ensured that the voices of the ancestors remain intact in the creation of the *mōteatea* maps that depict their worldview.

Conclusion: *mā te huruhuru te manu ka rere*

I began with two *whakataukī* that provided a small measure of insight into my approach; the first, *"ehara te kumara e kōrero mō tōna ake reka"*, was intended to keep everything in perspective and within the context and objectives of this dissertation. The second, *"kia whakatau koutou ki a Atutahi ma Rehua; ko Atutahi e whakatata nei ki te Mangaroa!"* was used to guide and direct the course of this dissertation by those who have sailed these *ara moana* or ancient sea paths; referring to the academic research pathway.

Research carried out by Māori academics or graduates within a Māori context is often scrutinized heavily by the Māori community notwithstanding the academic community; this dissertation will be no different. Any research which explores the Māori world in any way, even though this thesis proposes a method for creating biographical sketches out of oral traditions and translates that information into a GIS format, carries with it an enormous weight of social responsibility to my tribe and to Māori generally. Māori communities tend to view any research into their world in much the same way as a pig and the chicken create bacon and eggs; the pig is committed, whilst the chicken merely contributes (Personal communication Pip Pehi Feb 2010).

I am expected to get this right before it is committed to print; once it is in print, it tends to remain forever to be used and referred to by everyone and anyone who may not be well informed about the Māori world view. Hence I have made every effort to position myself at the outset of this dissertation and established my approach as *kaupapa Māori*; who I am, where I come from and how I approach this dissertation, as a Māori engaged

in academic research from a Māori point of view. I have made every effort to treat the Māori content including the *whakapapa*, the *mōteatea* and the *karakia* within the body of this work with the utmost respect. They were given to me with the expectation that I will uphold the *mana* and *tapu*.

As *Tūwharetoa,* born and bred in the Taupōnui-a-Tia region of the *Tūwharetoa* tribe, I claim the right to speak of and protect our brand of traditional knowledge. I do so knowing the limitations of my knowledge and understanding; I also do so knowing that other Māori graduates will follow in my footsteps. My upbringing as Māori has shaped and influenced my learning, my ideas, my way of looking at the world, my understanding of the land and my ideology. This is the platform from which I launch this dissertation; and I use this *whakataukī* from my tribal area to pave the way: (Grace 1959: 166-167)

E Tuwharetoa e!	*Tuwharetoa, be careful*
Kia ata whakatere i te waka nei,	*when launching your waka,*
kei pariparia e te tai,	*Lest it be overcome by the tide*
ka monehunehu te kura.	*And its plumes drenched.*
Ka whakamarotia atu ano,	*It is well to advance and to*
ka whakahokia mai ki te kapua	*stretch out,*
whakapipi	*But in the event of reverses,*
ka mate kainga tahi	*return to those left behind*
ka ora kainga rua	*where strength is reserved*

This was uttered by *Tamamutu* the son of *Te Rangiita*, the *ariki* or paramount chief of the Taupō region in his time that referred to *te kapua whakapipi* as the guardian clouds of the tribe. These clouds equate to unity as the foundation of their strength in times of stress, great need and critical decision making. I use this *whakataukī* in a similar fashion as a signal to walk with the ancestors as I dissect their voices in completing this task.

Heoi anō,
Mā te huruhuru te manu ka rere!

A bird flies because it has wings

Chapter Two*: Translating an oral tradition into a spatial tradition*

Introduction

This chapter sets the platform for understanding the need to explore a different approach to using GIS technologies; an approach that reflects the Indigenous view of the world as expressed by traditional forms of narratives.

Since narratives such as storytelling and song are used widely by Indigenous peoples, including Māori, to blend tribal knowledge with GIS technologies there is a need to look at the nature of the Indigenous world view contrasted against the Western world view. This will provide background for understanding the composition of and the thinking behind the Indigenous world. Furthermore, it will provide a glimpse at the makeup of the ancestral landscape which will in turn assist us to create a method for merging tribal knowledge with GIS technologies.

Merging tribal knowledge with modern spatial information mapping tools has enormous implications and benefits for Māori. Used within the proper cultural context and practices, GIS would benefit Māori in managing their cultural landscapes and seascapes, keeping pace with the requirements and demands of local and national governments, and managing or protecting future demands for development of their lands. Moreover, GIS may well provide Māori with the tools to exercise and express their *mana*[11] over their ancestral territories.

The crux really is the retention and exercise of *mana* over *whenua*, *moana*, and *tangata* as articulated by the principles of the Treaty of Waitangi (Hayward, no date: pp. 493, 494).[12] However, this thesis could support tribal *mana* in other

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[11] *Mana* can be described as the power of the ancestors, power and prestige, and the power of the gods; it also relates to spiritual power. *Mana whenua* has several applications. It is the power one has, to claim a territory defined by one's ancestry with the right to rule that territory; with this *mana* comes the responsibility to care for the land and to procure a livelihood from the land. It also relates to the innate *mana* of the *whenua* that was planted by the gods within *Papatūānuku* the earth Mother. Given that the Earth is our Mother, *Mana whenua* is concerned with the respectful treatment of the *whenua* or land. *Mana moana* is the equivalent of *mana whenua* relating to aspects of rights to resources and respectful treatment of the *moana* or sea. *Mana tangata* is related to personal *mana* acquired by a person according to his or her ability and effort to develop the necessary skills to gain knowledge in particular areas.
[12]The Principles of the Treaty of Waitangi, Compiled by Janine Hayward http://www.waitangi-tribunal.govt.nz/doclibrary/public/Appendix(99).pdf Accessed July 10 2010; Appendix 1: Principles of the Treaty of Waitangi, http://www.doc.govt.nz/upload/documents/about-doc/role/policies-and-plans/cms1-appendix123.pdf Accessed July 10, 2010. The **Treaty of Waitangi**, signed in 1840, is the

significant ways such as: retaining tribal uniqueness as an Indigenous people whilst taking advantage of modern spatial information technologies to keep pace with global development; protection of sacred tribal landscapes using GIS technologies.

Thus it makes sense to explore the potential that modern spatial information tools offer for managing tribal landscapes. First by discussing the worldviews that govern the way we look at the world; second by exploring the issues surrounding translating an oral tradition into a spatial tradition; third by discussing the methodology for approaching the problem.

Section One: ka pū te ruha, ka hao te rangatahi[13]

Aotearoa New Zealand is no longer an isolated group of islands perched below the equator in the lower South Pacific. Advances in information and communications technology,[14] the speed and availability of the internet,[15] coupled with the worldwide growth and acceptance of social networking[16] and micro-blogging[17] shrinks the world, metaphorically, to the size of a living room or even a small office. The internet, the World Wide Web[18] coupled with the technology surrounding the proliferation of small inexpensive but powerful personal computers has accelerated the flow of information and communication around the world. The information and electronic age is clearly upon us.

founding document of Aotearoa/New Zealand between the British Crown and Māori. See Claudia Orange (1987) *The Treaty of Waitangi* Allen & Unwin and Port Nicholson Press, for a detailed discussion on the Treaty

[13] *Ka pū te ruha, ka hao te rangatahi*, the old net is cast aside, the new net goes fishing. (Hakopa 1998)

[14] Information and communications technology refers to a broad field encompassing computers, communications equipment and the services associated with them. It also includes the telephone, cellular networks, satellite communication, broadcasting media and other forms of communication.

[15] The Internet is a global network of computers connected via a network of ISPs or internet service providers that allow computers to access and exchange information via the World Wide Web.

[16] Social networking/media refers to the facility for building a network of online communities across continents and political boundaries. Social Networking sites typically allow the exchange and sharing of information instantly across the world. Facebook, Myspace, Bebo and Linkedin are examples of social network sites.

[17] Micro-blogging is an online service that allows subscribers to post brief messages, typically 140-200 characters in length that is accessible by other subscribers of the same service. Posts can be written or received with a variety of computing devices, including cell phones. Twitter, Pownce, Tumblr, Jaiku are examples of an web-based micro-blogging services that connects subscribers around the world.

[18] The World Wide Web, more commonly known as "the web", consists of a network of computers from around the world that facilitates the exchange of resources including text, graphics, audio and video through hypertext transfer protocol.

Culture and technology

Indigenous peoples are not immune to the proliferation of information technologies. Thus, it is important to determine the role information technologies will play in supporting the aspirations of Indigenous peoples. Central to this, is the need to bear in mind the purpose, and the reason for their use; after all, technology is merely a tool that is only as good as its' ability to meet the aspirations and objectives designed by its users.

Tribal language, knowledge systems and principles are inseparably connected with identity. It follows that these facets are associated with their ancestry and ancestral territories; this is what makes land so important. In this respect, Indigenous peoples are regarded as the exclusive owners of their cultural and intellectual property. This raises the issue of protecting Indigenous knowledge without compromising Indigenous values and Indigenous control.

Any response to the adoption of modern spatial information technologies must allow Indigenous peoples greater control over the process and the parameters for the definition, development, transmission and use of indigenous knowledge. Alongside this is the development of an Indigenous Framework for the protection of Indigenous knowledge.

Cultural survival and issues such as the continuation of micro-indigenous identity and the maintenance of micro-indigenous languages within the context of a rapidly encroaching global society are important to *iwi* Māori. This dissertation advances the notion that Indigenous frameworks are required to maintain control or *tino rangatiratanga*[19] over indigenous cultural heritage. Furthermore, GIS mapping

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[19] The Treaty of Waitangi, considered the basis for British settlement and governance in New Zealand, consisted of a preamble, three articles and a postscript. The differences in the English and Māori versions of the Treaty have been the source of tension and frustration for Māori. The preamble set out Hobson's main objectives of sovereign authority and a more settled form of government. The English version of article one states that the chiefs were to give up their powers of sovereignty over their tribal areas whilst the Māori version states that Māori were to cede (*tuku*) to the Queen (*kuini o Ingarani*) the government (*te Kawanatanga*) of all their lands (*o ratou wenua*). To Māori, *kawanatanga* did not represent sovereignty. Article two comprises two main issues: protection and pre-emption. The English version guaranteed Māori "the full exclusive and undisturbed possession of their Lands and Estates Forests Fisheries and other properties" whilst the Māori version guaranteed *te tino Rangatiratanga* (sovereignty)

technologies can be used within this type of framework to promote cultural survival and maintain indigenous identity.

For Māori, the adaptation of any new technologies should be viewed in light of principle two of the principles of the Treaty of Waitangi (Hayward p. 494) which espouses *tino rangatiratanga* and the protection of *taonga*[20] such as land and language in order to survive as a unique culture within the context of a global community.

Technology in Culture

Cultures have always been influenced by three dynamic and interrelated components: sociological, technological and ideological. The sociological component consists of the customs, institutions and codes that make up a culture; the technological component comprises tools, weapons and techniques whilst the ideological component part embodies cultures concepts, ideals and belief systems. Sowell (1994) claims that cultural patterns affect the economic and social advancement of the human race. Furthermore, he adds that in this age of rapidly advancing technology, the key to a culture accepting technology is based largely upon that culture's perception of how it should be employed. According to White (1975) it is the technological component that determines and varies the formation and structure of the other two components. Furthermore, White (1975) suggests that the maintenance and existence of cultural systems depend upon the technological component.

Indigenous societies are known to value their unique relationships with the environment and all its offerings. This in turn influences their cultural practices, their language and their identity. These, along with cultural survival, are important issues to Indigenous societies such as Māori. Fundamental to GIS design and development for Indigenous

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over their lands (*o ratou wenua*), their dwelling places (*o ratou kainga*), and all kinds of property or things of value (*o ratou taonga katoa*) (Orange 1987). Barlow (1993) argues that the term *Arikitanga* (which embodies the concept of supreme *mana*) is closer to sovereignty than *Rangatiratanga*. The pre-emption clause in Article two gave the Crown absolute right of first refusal to disposal of Māori land. Both versions of Article three offered Māori the rights and privileges of British subjects, whilst the Postscript contained a short statement acknowledging that the signatories to the Treaty understood its contents (Orange 1987).

[20] A *taonga* is something of great value such as land or language.

societies is the need to understand their unique relationship with the environment, the supporting land administration systems and GIS technology.

GIS and other modern technologies can be used within an Indigenous framework to promote cultural survival and maintain Indigenous identity. However, in order to make this work this thesis advances the notion that Indigenous frameworks based on Indigenous worldviews are required to ensure that the cultural information that informs this framework remains intact without loss of meaning or its cultural function. In this manner and only in this manner will Indigenous peoples maintain control over their cultural heritage.

Spatial information technologies have an important role in environmental management and sustainable development and in cultural heritage survival. In this respect, spatial information technologies provide an appropriate framework for bringing together spatial information from diverse sources. For Indigenous societies this raises important issues to do with cultural integrity: issues such as data security, data access, data identification, data location and storage and data integration. It also raises many issues concerned with intellectual property rights, privacy and custodianship. In this regard, indigenous people consider themselves the custodians of their cultural knowledge including their ideas regarding spatial information.

For Māori, the concept of information technology offers an old challenge with new or innovative solutions or approaches. Kamira (2002) argues that conceivably, any system which is capable of storing, analysing and disseminating information can be considered an information system. The concept of an oral narrative with similar potential as an information system to store, analyse and disseminate information is critical to the makeup of a culture such as Māori. Within Māori society oral narratives such as *whakapapa, karakia* and *mōteatea* have been used for hundreds of years to store, analyse and disseminate their cultural knowledge, to keep their society intact and to maintain their notion of identity and of belonging to their part of the world. These techniques will be explored more fully in Chapters Three, Five and Six.

Section Two: Indigenous Worldview versus Western Worldview

Oral traditions

Pre-literate societies have a unique way of seeing the landscape. An oral tradition refers to the use of various oral techniques used by pre-literate Indigenous societies to accumulate, store and transmit their knowledge. Indigenous cultures throughout the world are known to have accumulated vast bodies of traditional knowledge through direct and intimate contact with their environment, which has kept them alive for many generations. This body of knowledge was more than often passed down in an oral fashion using song, dance and storytelling coupled with direct observation and active participation in their environment and, in the case of Māori, with the aid of visual media such as *whakairo* or carvings.

For the Yupiaq peoples of Alaska, elders passed on their knowledge using stories but also required younger members to participate in activities such as fishing and hunting. Participation was necessary in order to learn proper techniques and use of their technology, which was necessary for survival in their harsh environment (Kawagley 1995).

Another example refers to the hunter-gatherer San peoples who inhabited much of the Kalahari Desert in Southern Africa for several thousands of years. The San hunter-gatherers survived on knowledge and skills developed by longitudinal study and inhabitation of their unforgiving environment and were able to navigate across hundreds of kilometers of desert landscape without getting lost (Crawhall 2003:8).

Like the Yupiaq of Alaska, the San use stories in a similar way to illustrate key actions required for their survival especially in hunting which are often accompanied with realistic sound effects imitating the animals involved (Crawhall 2003). These two extreme examples, of the Yupiaq in Alaska and the San in the Kalahari Desert, demonstrate the clear use of traditional knowledge to interpret, understand and live with the environment.

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Oscar Kawagley (1995) describes in his book *A Yupiaq Worldview*, the principles underpinning the Yupiaq worldview. These principles consist of maintaining a balance in nature, and the interconnectedness of all things in the universe. Their entire system of values was tied to maintaining balance and interconnectedness to all things. Balance in nature was maintained by rituals and ceremonies whilst the concept of connectedness, as Kawagley (1995:15) writes is "a common philosophical or ecological thread among all people" and among different races around the world. To understand this worldview, Kawagley (1995) adds that one must understand the key concepts embedded in the Yupiaq word *ella*.

> Variations of this one word [ella] can be made to refer to weather, awareness, world, creative force or god, the universe, and sky. . .As a manifestation of their *ella*, the Yupiaq developed a body of values and traditions that would enable them to maintain and sustain their ecological worldview. (Kawagley 1995:15)

This concept of connectedness is not unlike that found around other parts of the world. Kawagley (1995) describes their understanding of this concept using a familiar shape in their world known as a tetrahedron, a pyramid shape with a triangle as a base. The tetrahedron represents a fishing tripod in their society. The apex in the structure represents the Yupiaq worldview; the points in the base of the structure represent the spiritual realm, the human realm and the natural realm. This structure represents the balance, cohesion, strength, support and connectedness of all the elements contained in the structure. The overarching concept of worldview is supported by all three other essential elements; hence the notion of connectedness of all things in the universe.

Western traditions

In contrast, western societies have developed advanced technology and techniques to help them interpret and see the same landscape. In the same way as Indigenous peoples understand the landscape through the accumulation of traditional knowledge; a spatial tradition has its own unique way of understanding and interpreting that same landscape. A spatial tradition refers to the use of maps and other related spatial information technology[21] as a way of understanding and representing layers of information about

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[21] Spatial Information Technology Tools include: Aerial and satellite remote sensing imagery, Global Positioning Systems (GPS), and Geographic Information Systems (GIS)

the landscape. Spatial data is information that describes the physical location of objects and the relative relationships between those objects. A Geographic Information System (GIS) is a computer application used to store, view, and analyze geographical or spatial information. They are often referred to as mapping systems capable of linking attribute information and characteristics of an area to its geographic location. GIS combines two powerful information systems: a database of attribute information and a mapping system, which can display geographical location. This system can capture, store, and manipulate geographic or spatial data. Spatial data from such a database can be converted into images and reproduced in the form of maps.

Maps are one of the earliest forms of spatial representation of the earth. Early maps were drawn on stone, wood-bark, hide, and clay tablets. One of the oldest known maps unearthed in 1930-31 at Yorghan Tepe near Kirkuk is a clay tablet dating from c.2300 B.C (Millard 1987: 113-114). Several processes, including photoengraving, wax engraving, and lithography are now used to reproduce maps. Spatial information captured by modern information technology and tools such as aerial photography, satellite imagery and Global Positioning Systems (GPS) can be used to produce accurate digital maps of most parts of the world. Unlike paper maps, digital maps can be combined easily with layers of attribute information about geographical locations.

A map is one form of spatial information technology and a technique which is used widely around the world to display and convey information about various features of the landscape. It can be described as an abstract graphical document that represents a particular worldview of the natural world. A map employs graphic language in the form of symbols, shapes, lines and points to construct layers of information about the landscape and is the product of a particular society's values and worldview.

Poole (1995a) comments that maps:

> . . . have always been both symbols and instruments of power. After flag
> raising came the naming of places to express possession for the
> gratification of distant patron of exploratory expeditions. Now, a
> revisionist tendency is reasserting itself: indigenous peoples are using

maps to re-name and reclaim their lands. Their maps remain instruments
of power, but a creative and restorative power . . . (Poole 1995a:1)

Pearce and Louis (2008:110) point out that all cultures including Indigenous cultures engage in some form of mapping and that mapping is a reflection of cultural conventions.[22]

Indigenous worldviews versus western worldview

Ka'ai (1995: 24) points out that "we all carry around our own sub-conscious culturally [and socially] conditioned filters for making sense of the world around us"; this is the premise for societal belief systems and tends to inform the communities we belong to. Ka'ai (1995) also points out that it is not until we are confronted by someone with a vastly different set of views that we begin to examine our cultural and social filters that we have taken for granted, in an attempt to make sense of them; it is also the point at which confrontation takes place between two contrasting worldviews.

Indigenous peoples around the world have a unique way of viewing the world. Knudtson and Suzuki (1997:13-15) provide insight and an analysis of the beliefs and practices of indigenous people from around the world. The following characteristics were identified as distinguishing their worldviews from the predominant beliefs and practices in western society:

Indigenous Worldview	Western Worldview
Notions of Spirituality entrenched in all elements of the cosmos	Notions of Spirituality is embedded in a single Supreme Being
Human-beings have enormous responsibility for maintaining harmonious relationship with the natural world	Humans exercise unbridled dominion over nature for personal and economic gain

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[22] Indigenous mapping is discussed in Chapter four.

Emphasis on reciprocity between human beings and the natural worlds; resources are viewed as gifts	Natural resources are seen as commodities for unilateral economic exploitation
Human beings are to honour Nature routinely through daily spiritual practice	Spiritual practices are based on convenience and usually set apart from daily life
Wisdom and ethics are obtained by direct observation and interaction with the natural world	Wisdom and ethics derived from human reasoning far removed from nature
The Universe is viewed as dynamic, ever-changing natural forces	Universe consists of a vast array of static physical objects
The Universe is viewed as a holistic, integrative system underpinned by a unifying life force	The Universe is reduced to small conceptual parts
Time is circular and characterised by a series of natural cycles that sustain all life	Time is thought of as a linear escalator of "human progress"
An acceptance that Nature will always contain profound mysteries	A presumption that Nature is entirely decipherable to the rational human mind
Tends to view human thoughts, feelings and communication as inextricably linked to all other processes of the universe	Tend to view human thought, feeling and communications as separate from the world
Emphasis on celebrating and participating in the orderly designs of nature	Emphasis on dissecting the world for their own ends
Honour and respect for elders is based on their demonstrating profound and compassionate reconciliation of outer- and inner-directed knowledge	Respect for virtually anyone based on material and academic achievement as well as chronological old age
A profound sense of empathy and kinship with other forms of life	There tends to be a sense of separateness from and superiority over other life-forms
Human relationship with nature are	Human relationship with

| viewed as a continuous two-way dialogue | nature is often a one-way, vertical dialogue |

(Adapted from Knudston & Suzuki 1997:13-15)[23]

Many of these Indigenous attributes can be found among Māori tribes of Aotearoa. To this extensive list offered by Knudtson and Suzuki (1997) can be added: Māori are often reminded of the lore of reciprocity towards one's own tribal affiliations in nurturing and growing the next generation and in being accountable for knowledge that is given to you. Furthermore, when engaged in academic research involving Māori, there is that underlying notion of *mana* and *tapu* associated with the knowledge that is given to you; there is a feeling that you need to get it right. Moreover, this is reflected in mapping the *mana* of the ancestral landscape as described in Chapter Seven.

As demonstrated above by Knudston and Suzuki (1997) the Indigenous worldview is vastly different from the Western worldview. According to Ka'ai (1995) confrontation occurs when two worldviews clash over trying to make sense of the other's world view using their own lenses.

Mapping and the clash of worldviews

Concerning clashes in worldview particularly in mapping, Pearce and Louis (2008) discuss the western concept of boundaries imposed upon the traditional Hawaiian *ahupua'a* system of land resulting in what they call a distortion in their meaning and function (Pearce & Louis 2008:115). Translating the *ahupua'a* boundaries into a western concept of boundaries neglected the:

> . . . Hawaiian concept of boundary as inclusive and fluid. . . [Thus the Hawaiian concept of boundaries] was misrepresented as a nonindigenous concept of boundary as an exclusive, fixed line. (Pearce & Louis 2008:115)

Furthermore, Pearce and Louis (2008) remark that mapping is a reflection of the ontological and epistemological structures of a culture and that:

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[23] Compare this with Clare Brazenor (Master thesis 2000:39) who highlights the fundamental differences between the way indigenous Australians (Aboriginals) see the land and the Australian cadastral system imposed upon their notion of land.

> . . . different map traditions develop separately in different cultures and are the unique manifestations of needs for spatial tools in that particular time and place. When one society expresses spatial concepts by using the rhetorical structures of another society's cartographic tradition, it is a process of cartographic translation in which information is inevitably lost. The history of the mistranslation and misrepresentation of indigenous cartographies into Western cartographies virtually defines the history of Western colonization and coercion of indigenous peoples. The roots of this mistranslation are evident when nonindigenous and indigenous cartographies are compared. (Pearce & Louis 2008:110)

To impose the western view of the world upon Indigenous peoples is to invite confrontation, distortion of the meaning and function of one culture and the negation of that culture to exist on its own values. In the case of early Māori, colonial surveyors began to impose their system of demarcating the land with boundary markers. Although the idea of boundary markers was not foreign to Māori there was a marked difference in the way Māori and the Colonisers regarded them. Māori regarded them as "historical and cultural artefacts" (Byrnes 2001:103); the British colonisers looked at them as "powerful symbols of British occupation" (Byrnes 2001:97). Article 31 of the Declaration on the Rights of Indigenous Peoples is clear, that:[24]

> Indigenous peoples have the right to maintain, control, protect and develop their cultural heritage, traditional knowledge and traditional cultural expressions, as well as the manifestations of their sciences, technologies and cultures, including human and genetic resources, seeds, medicines, knowledge of the properties of fauna and flora, oral traditions, literatures, designs, sports and traditional games and visual and performing arts. They also have the right to maintain, control, protect and develop their intellectual property over such cultural heritage, traditional knowledge, and traditional cultural expressions.

The problem facing Indigenous peoples and Māori in particularly is one of translating their notions of ancestral landscapes into something that can be used in GIS using their own worldview. Pearce and Louis (2008:123) reiterate this phenomenon:

> The problem that faces indigenous peoples worldwide is to find a way to incorporate Western [geospatial technologies[25]] and cartographic multimedia while minimizing the mistranslations, recolonizations, and assimilations of conventional technoscience. [Otherwise we risk losing some of the information in the translation.]

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[24] International Work Group for Indigenous Affairs (IWGIA), *Declaration on the Rights of Indigenous Peoples*, http://www.iwgia.org/sw248.asp, Online version page 32 & 33, accessed June 10, 2010.
[25] Geospatial Technologies include: GPS or Global Positioning Systems, GIS or Geographical Information Systems, digital maps, and satellite images.

Pearce and Louis (2008:123) add that traditional wisdom can be merged with modern technology by making the:

> . . . translation more accurate through a theoretically informed and innovative application of cartographic language, the combination of "traditional wisdom" with "modern technical know-how," [thus]we can demonstrate the effectiveness of [Geospatial Technology] and multimedia as tools not only for protecting cultural sovereignty but also for articulating exemplary cartographic practices for the shared knowledge space of the transmodern.

At some point, the pivotal question must be posed: why would Indigenous peoples expose their traditional knowledge to the world by mapping their cultural information at the risk of being exploited? Crawhall (2003) offers this insight:

> Mapping cultural landscapes is a powerful tool for mobilising indigenous peoples' voices and knowledge in land claims, in community development, for intercultural dialogue and for creating new livelihood opportunities. (Crawhall 2003:10)

There are a host of reasons why Indigenous peoples should map their ancestral territories ranging from demarcating ancestral boundaries, to mobilising indigenous voices and knowledge in land claims, recovering traditional knowledge and histories to merely finding out what is there. For Māori, it is a matter of being able to maintain *mana* or integrity of their ancestral domains, to retain *tino Rangatiratanga* of their *taonga* which includes land, to retain their links to the land and thus maintain their identity. All these concepts of connection to ancestral places, and linking identity to land are explored in Chapter Three.

Furthermore, Crawhall (2003:10) asserts that the "use of Information and Communication Technologies (ICT) by indigenous peoples is one way to explore, affirm and re-empower indigenous languages, cultures and knowledge systems." To which identity can be added. The blend of information technology with the ways of the ancestors gives indigenous people powerful tools to negotiate the future of their people.

Thus mapping done with the consent and contribution of community members becomes more than a map product; it becomes a 'process' with an outcome or result. Of this phenomenon Tobias (2009:18) reflects on the map biography style of mapping as:

community based, comprehensive, informed by the experts and other First Nations, methodologically sound and trust-based. This is a true reflection of cultural values.

Section Three: Māori World View

I te timatanga ko te kore: in the beginning

Knowledge in pre-European Māori society was handed down from generation to generation using various oral systems common among Indigenous peoples; two such systems are *karakia* and *whakapapa*. Both were used to detail how the Māori world came to be. There are various accounts of how that world began, but in one cosmological chant featured below, the world began with *te kore*, to the birth of all things, and in a series of genealogical stages eventually produced gods, land and people.[26] (Emphasis added)

I te timatanga ko te kore, nā te kore i ai	*In the beginning was <u>TE KORE</u>, from te kore,*
Ko te kore te whiwhia	*sometimes referred to as the state of 'nothing'*
Ko te kore te rawea	*all things in the heavens and the earth were*
Ko te kore te tāmaua	*manifest; this was the first creative phase a*
Ko te kore te matua e hua, e hua	*phase of unlimited potential*

The extract of the *karakia* above, describe in the form of *whakapapa* the creation of the heavens and the earth beginning with a state widely known as *te kore* from which all things were born. Following this state was a period of time known as *te pō* or various levels of darkness.

He ioio nui, he ioio roa,
he ioio matua ka nguha
he ioio taketake ki taku aro tēnei au

Nā te kukune te pupuke	*From conception known as te kukune there*
Nā te pupuke te hihiri	*began a swelling (pupuke), and an increase,*
Nā te hihiri te māhara	*leading to thought (māhara) and*
Nā te māhara te hinengaro	*remembrance, to the consciousness*
Nā te hinengaro te manako	*(hinengaro), to a strong desire (manako),to a*
Nā te manako te wānanga	*state of knowledge (wānanga) and learning*
Nā te wānanga te matauranga	*(matauranga)*

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[26] This *karakia* was sourced from a *Kaumatua* (elder) of the Taupō region. It is currently taught to the children of *Te Kura Kaupapa Māori oWhakarewa i te reo ki Tūwharetoa* in Taupō

Ka noho i a te Rikoriko ka puta ko te pō e
Ko te pō nui
Ko te pō roa
Ko te pō uriuri
Ko te pō kerekere
Ko te pō tangotango
Ko te pō te kore e kitea
Ko te pō whāwhā
Ko te pō tiwhatiwha
Ko te pō namunamu
Ko te pō tāhuri atu
Ko te pō tāhuri mai ki taiao
Te korekore i takea mai ki te pō tē kitea
Mai i te pō tuatahi ki te pō tuangāhuru
Ko te hahautanga
Ko te nuku atu, Ko te nuku mai
Ki tērā taha, ki tēnei taha

Whakaea anga nuku, whakaea anga rangi
Ko Rangihaupapa, ko Rangiwhāroro, ko
Rangitakoto e hua, e hua
E hua tō tino, e hua tō aro
E hua he tipua ariki, he tipua atua, he tipua
rangi e hua
Ka tāpapa atu a Ranginaonao ariki
Ki Rangimamao, Ki Rangitatara o tiritiri o
Rangi, E Io ē
Takiritia te ara tipua, te ara atua, te ara rangi
E Io-taketake ē
Whakaheke i tua, whakaheke i tai

E tipu, e rea
He nihoniho, he rearea, he kateatea
Te pū, te more, te weu, te aka, te rea, te pō
Te wao nui

Ko Ranginui e tū ake nei
Ko Papatūānuku e takoto iho nei
Tūturu o whiti whakamaua kia tina
Haumi ē, Hui e! Taiki ē!

The second creative phase was TE PŌ of which there were several forms; te pō nui, te pō roa, te pō uriuri right down to te pō tāhuri mai. This is known as the phase of darkness or ignorance.

Thus emerged Ranginui the sky father and Papatūānuku the earth mother; from these two emerged the world of light or te ao mārama and the beginning of humankind.

The creation-*whakapapa* outlined in the *karakia* above culminated in the cohabitation of *Ranginui* (the sky father) and *Papatūānuku* (the earth mother) as described in the last part of the extract above. For most Māori, the union of *Ranginui* and *Papatūānuku* forms the basis for their perspective of the physical world, all living things therein, and how their ancestors interacted and related with it.

The idea of a sky father and earth mother are constant themes across many *iwi* throughout Aotearoa New Zealand.[27] For example, in the region at the top of the North Island of New Zealand the *Ngāpuhi* worldview is illustrated thus (Royal 1998:70): (emphasis added)

> *He mea hanga*
> *Ko PAPATŪĀNUKU TE PAPARAHI*
> *KO NGĀ MAUNGA NGĀ POUPOU*
> *KO TE RANGI e titiro nei TE TUANUI*
> *Pūhanga Tohorā titiro ki Te Ramaroa*
> *Te Ramaroa titiro ki Whiria*
> *Ko te paiaka o te riri, ko te kawa o Rahiri*
> *Whiria titiro ki Panguru, ki Papata*
> *Ki te rākau tū papata ki te uru.*
> *Panguru Papata titiro ki Maungataniwha,*
> *Maungataniwha titiro ki Tokerau*
> *Tokerau titiro ki Rākaumangamanga*
> *Rākaumangamanga titiro ki Manaia*
> *Manaia titiro ki Tūtāmoe*
> *Tūtāmoe titiro ki Maunganui*
> *Maunganui titiro ki Pūhanga Tohorā*
> *Ko te whare ia tēnei o Ngā Puhi.*
>
> *A house is constructed.*
> *PAPATŪĀNUKU IS THE FLOOR*
> The *MOUNTAINS ARE THE POSTS* and
> *RANGINUI IS THE ROOF.*
> *Pūhanga Tohorā looks to Te Ramaroa*
> *Te Ramaroa looks to Whiria*
> *The root of anger, the proceedings of Rahiri.*
> *Whiria looks to Panguru, to Papata*
> *To the numerous trees that stand in the west.*
> *Panguru Papata looks to Maungataniwha*
> *Maungataniwha looks to Tokerau*
> *Tokerau looks to Rākaumangamanga*
> *Rākaumangamanga looks to Manaia*
> *Manaia looks to Tūtāmoe*
> *Tūtāmoe looks to Maunganui*
> *Maunganui looks to Pūhanga Tohorā*

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[27] Royal (1998) in his doctoral thesis provides several examples from around Aotearoa of the creation stories. Chapter 3 of his thesis, pages 37- 48, provides examples from Māori Marsden of the *Ngā Puhi* region, Pei Te Hurinui of *Waikato-Maniapoto*, Nēpia Pōhūhū and Te Matorohanga of *Ngāti Kahungunu ki Wairarapa*, Mohi Ruatapu of *Ngati Porou*, Teone Taare Tikao of *Ngāi Tahu*, and from Mātene Te Whwhi of *Ngāti Toa & Ngati Raukawa*.

In the *Ngāpuhi* tradition illustrated above, their tribal region is represented metaphorically by a *whare* (house) where *Papatūānuku* is the floor, *Ranginui* is the roof and the mountains mentioned in the *pēpeha* are the *pou* (posts) of the *whare* that separate heaven and earth and demarcate their significant tribal landmarks.

The Emergence of *Te Ao Mārama:* the Māori worldview

The separation of *Ranginui* and *Papatūānuku* is the starting point for *Te Ao Mārama,* the Māori worldview (Royal 1998:48) and the emergence of the ancestors of the Māori from darkness into the world of light eventually leading to the creation of Māori. Following the union of *Ranginui* and *Papatūānuku* many children were born to them, all male. Some of these illustrious ancestors played a major role in creating the world or *te ao mārama*, populating the world with their progeny, creating the first Māori ancestor and providing Māori with knowledge.

There is no single pan-tribal version of the creation tradition; differences occur from tribe to tribe (Royal 1998). What is evident though across tribes is the eventual separation of *Ranginui* and *Papatūānuku* by their children and the subsequent emergence of their children into the world of light, *te ao mārama*. According to *The Lore of the Whare Wananga* (Smith 1913), there were at least seventy children and foremost among them were *Tāne-mahuta, Tāwhirimātea, Tangaroa, Tūmatauenga, Rongomātane* and *Haumiatiketike* because of their roles in the world we live in.

The separation of the primeval parents is attributed to *Tāne-mahuta;*[28] *Ranginui* their father was propped up into the heavens and became their sky and *Papatūānuku* remained as their earth mother and nurturer. *Tāwhirimātea* was opposed to the separation so he fled to the heavens to be with his father *Ranginui*. He became the

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[28] *Tāne-mahuta* has several names, as *atua* (god) of the forest he is known as *Tāne-mahuta,* having completed the heavens he became known as *Tāne-nui-a-Rangi,* he was also known as *Tāne-te-wānanga* because of his role in securing the baskets of knowledge (*ngā kete wānanga*), because of his role in creating humankind he became known as *Tāne-matua,* sometimes he is referred to as *Tāne*.

mighty *atua* of the winds and storms and once he was established waged war against his siblings and their progeny for their roles in the separation of their primeval parents.

He decimated the trees of the forests that were the progeny of *Tāne-mahuta* the *atua* of the forests, and disrupted the domain of *Tangaroa,* the *atua* of the oceans and seas, and his offspring. His mighty winds caused the children of *Rongomātane* (the *kumara* and cultivated plants) and *Haumiatiketike* (fern root and uncultivated plants) to flee into the bosom of *Papatūānuku.* Of all the brothers, *Tūmatauenga* was the only one who withstood the wrath of *Tangaroa*. Thus he became known as the *atua* of war epitomising the fierce and war-like nature of humankind; and because of his brothers' failure to fight against *Tāwhirimātea* he turned against them.

He humiliated his brothers by turning all their progeny into food and eating them making them *noa* (to become ordinary or to free from *tapu*). Herein lies the rationale for humankinds' dominant position over all things in nature (Walker 1978). Now the earth was ready to be populated by humankind.

The creation of the first woman *Hineahuone* is credited to *Tāne* who was assisted by his brothers. According to the stories *Hineahuone* was created from the *one* (red ochre) at a sacred place known as *kura waka;* once she was formed *Tāne* breathed life into her thus bringing to life the first of the Māori ancestors (Ngata & Jones 2006, part 3: 4-5). (Emphasis added)

ko te whare hangahanga tēnā *a Tāne nui a rangi* <u>*I TE ONE I KURA WAKA*</u> *I tātaia ai te puhi ariki* *Te hiring-matua* *Te hiringa-tipua* *Te hiringa-tawhito-rangi*	This is part of one verse of a very long *oriori*.[29] This particular verse is a *karakia* that refers to the birthing process. In this part the sacred place *kura waka* is mentioned as the birth-place of the first woman

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[29] An *oriori* is a classical chant used to instruct and edify children and young babies.

These incidents surrounding the union of *Ranginui* and *Papatūānuku*, their eventual separation and the emergence of the *atua* into *te ao mārama* who play a role in preparing the earth and creating the first ancestor of the Māori, connects Māori to the gods of the creation and to the natural elements who are their relatives. As Anne Salmond (1993:39) writes in her book *Two Worlds*, of the Māori of pre-European Aotearoa that they: "lived in a world where gods, people, land and sky, plants, birds reptiles, fish and other animals shared in a unity of being which was expressed in a language of common descent." This phenomenon is reflected in the stories and *whakapapa,* especially the cosmological genealogies depicting the creation stories of *Ranginui, Papatūānuku* and their children who play a crucial role in the creation of mankind and the makeup of their view of the world.[30]

Marsden and Henare (1992:3) offer this insight on the Māori worldview as:

> . . . the central systematisation of conceptions of reality to which members of its culture assent and from which stems their value system. The world view lies at the very heart of the culture, touching, interacting with and strongly influencing every aspect of the culture. In terms of Maori culture, the myths and legends form the central system on which their holistic view of the universe is based.

Charles Royal (2002) adopts this view adding that adherence to a particular worldview determines what an individual or group values in the world and how that value is manifest in the form of behaviour. He also adds that indigenous:

> . . . is taken to mean those cultures whose worldviews place special significance or weight behind the idea of the unification of the human community with the natural world.(Royal 2002:2)

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[30] The Māori world view is summarised in the document *Hinatore ki te ao Māori: a glimpse into the Māori world view*. (2001)Ministry of Justice: Wellington, NZ. Pages 9 – 19 discuss the Māori world view and the role of the children of *Ranginui* and *Papatūānuku* in the Māori world.

Two worlds in one country: The *Paepae*

Jahnke (1999:193-209) describes the *pae*[31] as a transitional zone that defines the line of negotiation between two co-existing, juxtaposed worlds in Aotearoa New Zealand; the customary world of the Māori as expressed by *marae*[32] and mainstream New Zealand as depicted by currently accepted icons of New Zealand culture. In his article, he describes the elements that make up an Indigenous framework for blending disparate worlds in art. These are: kinship, ritual, a political and culture centre, or backbone, and a set of values. These elements combine to form a unique Māori identity within a largely Pākehā framework. Jahnke (1999) poses an interesting idea of juxtaposing the Māori world with the Western world in art that is worth exploring in terms of blending the notion of Māori ancestral landscapes with another widely recognised model of the western world; that of GIS mapping technologies.

The *paepae* occupies an important position and role within the Māori world on the *marae* between *tangata whenua* (home people/hosts) and *manuhiri* (visitors). The *paepae* is where two groups of people meet in a formal fashion based on *kaupapa* or a compelling reason and exchange greetings based on the *kawa* (formal procedures and

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[31] The **Pae** or **paepae** occupies an important position and role in the rituals of encounter on the *marae* between **tangata whenua** (home people/hosts) and **manuhiri** (visitors). The **Marae** is the cultural, political, social and tribal centre of Māori tribes (rural) and communities (urban). The *marae* complex includes at a minimum: a **whare tīpuna** (a house that is the embodiment of an ancestor), a **marae-ātea** (a grassed courtyard situated in front of the *whare*), a **whare kai** (eating house), a **tomokanga** (entrance-way to the *marae-atea*), and the *paepae*. The *paepae* is the area (usually a row/s of seats) set aside for **kaikōrero** (orators) who are generally **kaumatua** (elders) to sit for ceremonial occasions on the *marae*. Generally speaking, only acknowledged orators, those who possess tribal knowledge and lore are permitted on the *paepae* as speakers. There is always a *paepae* for the home people and a *paepae* for the visitors. Both *paepae* are situated opposite each other on either side of the *marae-ātea*; the host *paepae* will be to one side of the *whare tipuna*, whilst the visitor *paepae* will be near the *tomokanga* directly opposite and facing the host *paepae*. At a formal welcome (called a **pōhiri** or **pōwhiri**) a ritual of encounter occurs between the hosts and visitors. The visitors gather at the entrance-way and wait for the *karanga* (a call by a **wahine** or woman). *Manuhiri* (visitors) are first welcomed onto the *marae-ātea* with a **karanga** from the hosts welcoming the visitors to the *marae*. The visitors usually reply in kind with their own *karanga*. This process ushers the visitors through the entrance-way onto the *marae-ātea* where they gather and stand momentarily before being seated on the visitors' *paepae*. The male *kaumatua* occupy the front row of both *paepae* (the speaking platform) where **whaikōrero** (formal speeches) take place between the host-*paepae* speakers and the visitor-*paepae* speakers. There is at least one speaker from each side, often more depending upon the nature of the gathering and the importance of the visitors. Following each speech a **mōteatea/waiata** (traditional song) is performed. The last speaker of the visitors lays down a **koha** (gift – usually money) signalling to the hosts that he is their final speaker. The visitors then exchange **hongi** (pressing of noses) with the hosts and are ushered into the *whare kai* for food. The process on the *marae-ātea* is **tapu** (sacred); once the visitors partake of the food, they become **noa** (free from *tapu*). The visitors now become part of the home people; enjoying the hospitality of the *marae* people and the **kaupapa** (purpose) of their visit proceeds.

[32] See footnote 31 above

protocols) of the hosts. The *paepae* is where the platform is set between the hosts and the visitors before the visitors are welcomed into the bosom of the host's *whare tīpuna*. Once this formal process is completed with the *karanga*, *whaikōrero*, *waiata*, giving of *koha*, *hongi*, and *kai*, the visitors become one with the hosts; a process Bishop refers to as *whakawhanaungatanga* (Bishop 1996). Until this takes place, no one can by-pass the *paepae* and enter into the bosom of the hosts; this procedure is set in place and must be observed to the letter.

In Jahnke's (1999) example of the *pae* as the boundary between two groups of people, Pākehā and Māori who hail from different cultural worlds, the *paepae* becomes the starting point for negotiating the shape of the space between these two worlds based on *kawa*. According to Jahnke (1999), the *pae* or boundary between distinct cultures can exist as a discrete well defined line or as a well-defined spatial domain that encompasses elements of both cultures by negotiation between both cultures.

Another analogy worth exploring in the context of Jahnke's (1999) *paepae* metaphor is that of the *matapihi* (window) of the *whare tipuna*.[33] The *matapihi* of a *whare tipuna* can be used to describe an interface to the outside world. If the *whare tīpuna* embodies the Māori customary world, the *matapihi* has a two-fold purpose. The *whare*[34] is a metaphor representing the body of an eminent ancestor of the host people and the window represents the eye of that ancestor. This allows Māori to glimpse and observe the outside world from inside the safety of their ancestral *whare*; it also allows the world to peek in through the window and glimpse the Māori world.

Marae: the cultural centre
In the analogy of the window above and that used by Jahnke (1999), both point specifically to what *iwi* Māori refer to as the Māori cultural and political centre; the *marae*, as the epitome of cultural expression. The *paepae* in Jahnke's discourse symbolises the barrier of negotiation between visitors and host whilst the *whare tīpuna* embodies ancestral and celestial protection. In the analogy of the *whare*, the *matapihi* of that *whare* represents the eye of the ancestor or the window to *te ao mārama* or the

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[33] *Whare Tīpuna* is an ancestral house which is part of the *Marae* complex.
[34] *Whare* is house

modern world. In this thesis, the *whare* represents an Indigenous Māori framework from which *iwi* Māori can rationalise their position as members of the wider global world and examine alien processes and new technologies such as spatial information technologies. Likewise with the analogy of the *whare tīpuna* and *matapihi*, Māori are able to observe, examine and interrogate alien processes from the safety of their worldview, using traditional methods of examining and understanding the world around them.

The *marae* is an essential part of the Māori worldview and has been described *as "te tūrangawaewae[35] o te iwi"* an enduring symbol of tribal identity, solidarity and uniqueness (Barlow 1991:71). *Tūrangawaewae* is the political and cultural centre for Māori. It is the place where kinship ties are recognised, and *iwi* affiliations are acknowledged. In Pre-European Māori society, *tūrangawaewae* would have been centred on the *marae*, which incorporated the surrounding mountains, rivers, lakes and other sacred places. Even today for many Māori *tūrangawaewae* is still centred in the *marae*; but for many more urban Māori, of several generations living remotely from their home-lands, the *marae* could well be a distant memory just like the ancient homelands of *Hawaikinui*, *Hawaikiroa* and *Hawaiki- pāmamao*. The cultural centre for urban Māori is not as "well-defined" as the rural *marae* set in a rural setting. Never the less, the *marae* still stands out as a cultural icon and centre piece within modern New Zealand society where the *paepae* is still the process by which all visitors and indeed new ideas are welcomed and interrogated.

The paepae as a spatial domain

The notion of the *paepae* offers an interesting solution with regard to bringing two diverse worlds together without changing either one. Each world maintains their independence and *mana*. To negotiate both worlds suggests an understanding and familiarity with both worlds. How do Māori who have been brought up in both worlds negotiate between the two? According to Jahnke (1999), there is a line between both worlds, which is defined as the *paepae*, the line of demarcation and negotiation. Rachel

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[35] The concept of *Tūrangawaewae* derives from the words: *Tū* – to stand, *Tūranga* – standing place, *waewae* – literally meaning the feet, thus *Tūrangawaewae* literally means "a standing place for the feet".

Rakena takes this further to suggest that this line can be expanded, metaphorically, to form a spatial domain which can accommodate aspects of both cultures (personal communication, 2005); it is within this space that Māori move from one end across that space to the other end quite comfortably. It is this concept that will be used to explore the possibility of blending modern spatial information technologies with cultural knowledge or the geography of narratives.

The role of traditions beyond the *paepae*

The aim of this thesis is to merge an oral tradition with a spatial tradition without diluting the integrity of the cultural information and without changing either tradition or imposing the Western worldview onto the Māori worldview. Both worldviews have a history and a set of values attached which influence behaviour, knowledge systems, and perspective on land and connectedness to that land. In terms of this thesis, it is worldview that influences the way we as members of different communities use spatial information technologies to engage with our landscapes; and it is technology, such as that offered by spatial information technologies, that simultaneously impacts and enhances Indigenous cultures and societies; thus either forcing or encouraging them to adapt to the introduction and influence of new technology on their own terms or someone else's. If it is done on their own terms, it can be done without diluting the values that underpin their culture.

Previous sections above discussed the vital role technology plays in a cultural system. While cultures are influenced by three dynamic and interrelated components: sociological, technological and ideological, Sowell (1994) claims that the key to a culture embracing technology is based largely upon that culture's worldview and perception influencing how it should be employed. White (1975) added that it is the technological component of a culture that profoundly maintains the existence of a cultural system. If a culture does not adapt or embrace the introduction of new technologies on its' own terms and values then it will blend into the "Western Gaze" of observing the world.

Barbara Bender refers to the notion of "Western Gaze" where maps are considered as "part instrument" and "part result" of this phenomenon (Bender 1999:31). She refers to this concept as a way of "perceiving and experiencing the world" skimming the surface and surveying the land from an ego-centred viewpoint treating the land as a passive object (Bender 1999:31). This phenomenon is viewed as a discourse of power and control influencing the Western view of the world and creating maps that reflect the nature of that view. Hence, this Western view tends to create maps that "cover the surface of the world with a homogeneous Cartesian grid" providing a birds' eye view of the world (Bender 1999:31) representing "place, boundaries and perspectives as abstract knowledge" appearing to have no regard for social connectedness to place (Bender 1999:41); a prominent feature of Indigenous worldviews.

Indigenous peoples view the world in a remarkably different way where their knowledge of their particular part of the world is seen as "accumulated observations of generations" (Allison 1999: 273), a replication of "social and political relationships" (Ayres and Mauricio 1999:314), as emanating from "ancestral beings [who emerge] from particular places, and [who act] upon an empty landscape to create all the features of the land and all the parts of the natural world" (Strang 1999: 208), as containing numerous "tribal narratives that recall their mythical importance" (Basso 1996:85), as a "connection to the *āina* (land)" and as their *kaikua'ana* (elder sibling) (Oliveira 2006:5-6), and as "landing spots of ancestral navigators, as locations where people emerged into the world" (Andrade 2009:2), as the sky Father and the earth Mother, *tūrangawaewae* and *whakapapa*, "connecting Māori in elemental ways to [the land]" (Smith 2001: 60). To map these Indigenous concepts of land is to use a different set of lenses or frame of reference.

Wood (1993:18) cited in Bender (1999:32) refers to maps as a 'transparent window on the world' to which Bender adds that the frame of reference of the "window isolates one view at the expense of another." Or in other words, negating or ignoring the existence of an alternative, Indigenous view of the world who use a different frame of reference or lenses. On another note, maps are seen by Māori and other Indigenous peoples as a tool of resistance and as a means to express their sense or view of the

world wherein their historic stories, narratives, songs and identity are anchored spatially in the land (Bender 1999:41). In this respect, Claire Smith refers to the links between the "social constructions of the land" and Indigenous land use and identity wherein landscapes are shaped by human action and in turn landscapes shape human action (Smith 1999:189); and "social identity is constructed and reconstructed in relationship to place and ancestral associations, as people (in the Barunga region, northern Australia) move through their landscapes" (Smith 1999: 193). Furthermore, this sense of connection and identity to place is reinforced as people move about the land learning about the "relationships between place and their ancestors" (Smith 1999: 193).

Māori and indeed Indigenous peoples worldwide and the cultural patterns and traditions they observe play a vital role in the economic and social advancement of the human race (Sowell 1994) beyond mere adaption. Cultures are dynamic, fluid and flexible and are at ease with embracing new challenges that impact their societies. This is adequately demonstrated by Māori in their great Polynesian ancestors such as *Māui*, *Tāne* and *Tawhaki*; and more recently by the ancestors of the many *waka* who navigated the great ocean of *Kiwa* settled in Aotearoa. Thus, it comes as no surprise that spatial information technologies and techniques have become an additional tool for Māori and other Indigenous communities to advance their own community's based on their own terms as will be discussed in following chapters.

Section Four: Translating an oral tradition into a spatial tradition

It has been demonstrated in the previous sections that it is unlikely that the meaning and function of a traditional Māori worldview can be translated into a western worldview without diluting the integrity of the cultural information that informs that view. For example, Pearce and Louis (2008) in their article discuss the notion of imposing a western concept of boundaries upon the traditional Hawaiian *ahupua'a* system of land resulting in a loss of cultural information. It has been demonstrated that it is worldview that defines, informs and underpins the very essence of an oral tradition. Since oral traditions are the preferred method for understanding, describing and transmitting knowledge about the makeup of an ancestral landscape and special places, clearly, oral

traditions must inform the way spatial information systems are used for capturing and delineating that cultural view of the landscape. Hence a spatial tradition is born out of a cultural worldview rather than one imposed onto it.

Indigenous peoples treat traditional knowledge with a great deal of respect. Because of the *tapu* or sacred nature of this knowledge, it is important that they control their own information. Bill Kemp and Lorraine Brooke of Strata360[36] illustrate this point:

> The most important lesson learned from the Nunavik (Quebec) experience is that the indigenous peoples must first and foremost control their own information. It has also become clear over the years that the knowledge base of indigenous peoples is vital, dynamic and evolving. Merely "collecting" and "documenting" indigenous environmental knowledge is in fact counterproductive. These knowledge systems have been under serious attack for centuries and the social systems that support them have been seriously undermined. … It is not a question of recovery and recording indigenous knowledge, it is one of respect and revitalization.' (Brooke & Kemp 1995:27)

Article 31 of the Declaration on the Rights of Indigenous Peoples also endorses this notion. [37]

The problem

The notion of protecting the *tapu* and *mana* of Māori cultural information is akin to those sentiments expressed above by Kemp and Brooke as well as in the Declaration on the Rights of Indigenous Peoples. [38] It is integral to the aim of this thesis which is concerned with is how to translate an oral tradition's view of an ancestral landscape into a spatial tradition.

Methodology for blending two information systems

The methodology must be consistent with a cultural perspective that does not marginalise that culture's belief systems. Crawhall (2003:5) argues that:

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[36] STRATA360 is a Montreal-based company that specialise in Indigenous and Traditional Knowledge mapping, web development, and graphic design; they also provide assistance for community mapping activities. http://www.strata360.com

[37] See Section two

[38] Declaration on the Rights of Indigenous Peoples: http://www.iwgia.org/ accessed June 10, 2010.

> Mapping done in a western intellectual framework may further marginalise indigenous voices.

He adds further words of caution, that with:

> . . . the wrong methodology and motivation, the mapping process can violate people's sacred beliefs and leave people vulnerable to further exploitation and marginalisation. Mapping with a good methodology, that empowers communities and helps them to come to grips with the challenges of cultural resources management, can help to fight poverty and associated pathologies. (Crawhall 2003:10)

With this in mind, the methodology for exploring how indigenous notions of geography can be blended with GIS mapping technologies is framed from an Indigenous perspective. It is important to bear in mind that the process is as important to the Indigenous mind as the end product. The process will manifest itself within the makeup of an oral tradition that consists of baseline components that define each culture. Furthermore, the techniques that oral traditions use to record their brand of indigenous knowledge and in particular how their land is clothed with that intimate knowledge plays a pivotal role in the process and the makeup of the end product. Māori perspectives are examined to see how they nestle into a wider Indigenous perspective. Once that is established the oral techniques that Māori use to convey their sense of the world are explored forming the basis for the development of mapping and the use of mapping technologies among Indigenous peoples and among Māori. Moreover, this will lead to a discussion on how the geography of narratives using *mōteatea* can be mapped based on the Māori world view. Finally in Chapter Seven, these ideas will be tested in a real-world case study

Conclusion

The critical issues discussed in this chapter that form part of the solution for this thesis are: first, that Indigenous peoples are not unfamiliar with the concept of technology in their cultures; second, worldview is important in how technology is employed and how Indigenous peoples view their world with their own set of lenses; third, to impose another worldview onto Indigenous worldviews is to encourage loss and disintegration the of cultural way of doing things; and fourth, the role of the *paepae* in forming part of

the solution for designing a model to integrate GIS technologies with the geography of culture.

Indigenous peoples are not unfamiliar with the concept and use of technology as a vital component of their societies as demonstrated in section one. It is part of the makeup of every culture around the world which underpins the progress and advancement of those societies.

Section two discussed Indigenous notions of worldview and how they differ with those of the western worldview. It also examined the loss of cultural information experienced by implementing a western perspective of boundaries on top of an Indigenous style of traditional boundaries as articulated in the Hawaiian ahupua'a system. Furthermore, this section briefly referred to the map biography data collection method as a reflection of true cultural values; that is, the process of mapping is as important as the product of mapping.

Section three explored the concepts underpinning the Māori worldview and the way in which that worldview distinguishes the Māori view of land. We also examined Jahnke's (1999) example of the *pae* or *paepae* as a boundary between two worlds and as a starting point for negotiating the shape of the space between these two worlds. This concept has repercussions for finding a way to blend ancestral landscapes as articulated by the Māori worldview with modern spatial information technologies. The *pae* or boundary between distinct cultures could conceivably act as a metaphor for blending the two worlds. In this way, the *pae* can exist as a discrete well defined line or as a well-defined spatial domain that encompasses elements of both cultures by negotiation between both cultures.

Section four explored the problem that this thesis is concerned with: how to translate an oral tradition's view of an ancestral landscape into a spatial tradition using modern spatial information mapping tools without that body of cultural information losing any of its integrity or cultural impact. The problem will be applied to Māori narratives in Chapter Six.

The following chapter will discuss Indigenous sense or knowledge of place covering methods for storing knowledge leading to how place informs indigenous cultures. In the same way, Māori sense or knowledge of place is examined using specific techniques such as *karakia*, *mōteatea* and *whakapapa*. Finally, Chapter Three will look at the makeup of an ancestral landscape and contrast that with the makeup of a spatial landscape.

Chapter Three: Indigenous Sense of Place

Introduction

Indigenous peoples have a unique view of the world as discussed in Chapter Two. The way Indigenous peoples see and interact with their world, their environment, their home and their place is crucial to this chapter. It is this worldview that defines how they map the discrete elements that make up their world and informs their cultural and ancestral landscapes.

The intention of this chapter is to illustrate how Indigenous peoples see their world, their land, their environment, their home, and their place. In some small way, to understand the unique features that makes up their cultural landscapes. Spatial information systems capture and display data based on a mathematical portrayal of the surface of the earth, whereas Indigenous societies see that same space in terms of the relationships that exist between them and their environment. This fundamental difference is crucial to understanding how Indigenous knowledge about place can be incorporated into spatial information systems without compromising their view of the world.

This chapter is divided into three sections: the first dealing with Indigenous sense of the world; the second, dealing with Māori sense of the world; and the third looks how spatial information systems make sense of the world.

Section One: Indigenous Knowledge of Place

Introduction

For Indigenous peoples, features of the land are more than three-dimensional points, lines, polygons, locations and relative positions. The Indigenous worldview describes their relationship to the heavens, the earth and the environment they inhabit as one seamless world within which they have occupied a unique position among all other living things for many centuries. They perceive and inhabit this world in terms of relationships. Their relationship with the heavens and the earth is determined by their creation stories. This relationship with the land and with the environment sustains their cultures and determines who they are. Land for Indigenous peoples is linked to their

identity; land is essential to their survival; land is pivotal to the continuation of their distinct culture.

Indigenous peoples throughout the world have similar characteristics that form the basis of their distinctive cultures. Each culture draws from a huge storehouse of knowledge, passed down in an oral fashion from generation to generation in various forms that inform the origin of their existence. Typically, stories, songs, chants, poetry, dance and various art forms constitute some of the techniques and systems used to store, recall and convey knowledge from generation to generation. Common among Indigenous cultures is their unique understanding of the cosmos, their position within the cosmos, their intimate relationship with deity and their connection with the enduring environment they inhabit. It is because of their reliance on, respect for and relationship with the environment that Indigenous peoples clothe the landscape with song, story, history and poetry permeating and influencing their view of the world. These are some of the characteristics common among Indigenous peoples that form the basis for their identity as a distinctive culture and describe their intimate relationships to their place of habitation.

The Mayan people of the maize

An understanding of and an intimate relationship with the environment is fundamental to the survival of any subsistence culture. Every culture has a storehouse of knowledge built up over several generations detailing their relationships with the environment. Stories such as myths and legends are widely used as a means of communicating ideas and passing on knowledge. Myths hold deep cultural meaning for every socio-cultural group on earth. Creation myths, in particular, represent their understanding, relationship and orientation to the cosmos. For the Maya peoples, their creation myths reveal how maize is not only the material that formed the first humans but also the staple, which nourishes humans. Creation myths also provide a window into Maya daily life and show how important subsistence agriculture is to their existence (Huff 2006).

The Maya of Guatemala are known as "the people of the maize" (Huff 2006:81) and have a strong tradition of storytelling. Maize is pivotal to their society and is vital to their history and traditions. Their stories inform them that they were made from maize. According to their stories, the maize comes from the Stone Mountain in the land of the Jakaltek. [39] The secret location was revealed to the first father by the ant whom he had seen carrying a kernel of corn. When the first father went to the Stone Mountain he could not open the mountain to retrieve the corn so he called upon the lightening to assist him. Inside the mountain were the seeds of all the staple foods including corn, squash, chilli peppers, beans and cacao which the first father shared with all four corners of the earth (Huff 2006).

Maize has a key role in Maya daily lives by providing sustenance and is a tangible reminder of their traditional spiritual and cultural beliefs and social activities. As a subsistence culture revolving around the cultivation of maize, families and communities were involved in the cycle of maize production and consumption. This constant cycle of nature over several generations represented a Maya attachment to land and place. This implied a special relationship to land, lake, and mountains in order to maintain their daily existence. Thus maize and land are essential to Maya culture, identity and sense of place which is conveyed using their strong "oral storytelling tradition" (Huff 2006:83).

Maya storytelling
Stories have a powerful role in the Maya civilisation. Their brand of stories describe their ideas about the origins of the universe, illustrate their worldview, reflect their cultural practices and behaviour, transmit their cultural identity and communicate the Maya sense of place. Their stories also explain the importance of maize in their culture and lives and how they became known as "the people of the maize" (Huff 2006:81).

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[39] The *Jakaltek* people are a *Mayan* people of Guatemala who have lived in the foothills of the Cuchumatanes Mountains in north-western Guatemala since pre-Columbian times

Maize is a central theme in all types of stories in the Maya culture. Their stories help to shape and inform their identity. [40] For example, Maya mythological stories hold deep cultural meaning for them and refer to their creation myths that feature maize as the means by which the first father constructed the human body; maize also represents sustenance for them. Their myths also give accounts of the deeds of gods and heroes, and contain rites of harmony between the universe, themselves and others (Huff 2006). Another form of story known as *Cuentos Mayas*, feature prominently in everyday Maya lives and are often used to clarify their values and shifting cultural beliefs. Cultures are known to be in constant motion and dynamic. These types of stories are often used to provide insight into specific cultural behaviour and to the constantly shifting forms of cultural practices. They also help to understand cultural institutions that govern everyday Maya lives (Huff 2006).

Leah Huff (2006) describes the Maya sense of place as a "human experience" (Huff 2006:81) in a specific location developing a connection to the landscape through meaningful "spiritual, cultural, communal, and emotional" interaction with the land over several generations (Huff 2006:82). The way in which humans dwelt on the land imbued the land with a unique identity based on their relationships with place (Basso 1996, Huff 2006). Their perceptions of knowing the landscape intimately through generations of association and cultural knowing supported their social constructs and provided meaning and context for their view of the world (Huff 2006).

The heart of the Maya view of the world and understanding of place lies in the life cycle of maize (Huff 2006). Maize is sacred to Maya life and is featured in every part of their culture, philosophy, and their creation stories involving the first father and the discovery of corn from which they derive their source of sustenance (Huff 2006).

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[40] Popular stories help to shape and inform identity, forms connection to land, and shapes a sense of place within the person (Huff 2006)

The Yupiaq ways of knowing

In another part of the world, the Yupiaq[41] peoples know all too well the harsh realities of surviving in the unpredictable environment of south-western Alaska. Over centuries of living close to nature, they have developed an immense empirical knowledge base reflecting their understanding of the natural environment (Barnhardt & Kawagley 1999). As a result, they possess a number of survival strategies that help them cope during times of need. Yupiaq (also known as Yup'ik) Elders use stories to pass down knowledge from generation to generation thus preserving traditions, which were vital to their survival. Encouraging children to observe and work alongside parents, grandparents and older siblings whilst fishing, hunting, and food gathering also reinforced knowledge and skills crucial for their survival.

Kawagley (1995) noted that Yupiaq people view the world as being composed of five elements: earth, air, fire, water, and spirit. The incorporation of spirit in the Yupiaq worldview shows an awareness of the interdependence of humanity with the environment, a reverence for and a sense of responsibility for protecting the environment.

Indigenous Sense of Place

The Director General of United Nations Educational, Scientific and Cultural Organization (Mayor 1994) defines traditional knowledge in the following way:[42]

> The indigenous people of the world possess an immense knowledge of their environments, based on centuries of living close to nature. Living in and from the richness and variety of complex ecosystems, they have an understanding of the properties of plants and animals, the functioning of ecosystems and the techniques for using and managing them that is particular and often detailed. In rural communities in developing countries, locally occurring species are relied on for many - sometimes all - foods, medicines, fuel, building materials and other products. Equally, people's knowledge and perceptions of the environment, and their relationships with it, are often important elements of cultural identity.

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[41] The Yupiaq (also known as Yup'ik people) are Indigenous peoples of western and south-western Alaska

[42] Alaska Native Science Commission (ANSC), accessed March 2010, Fourth Paragraph
http://www.nativescience.org/html/traditional_knowledge.html

Indigenous people are unique in that their knowledge systems form the corpus of an oral tradition, which is often enshrined in legend and cloaked in mythology. Oral techniques are the primary method used to preserve their identity clothing the land in stories that are passed down from generation to generation. Over the course of several generations of sowing the land with their unique brand of culture, in the form of stories, chants, poetry, art forms and song, the land becomes an intimate part of that culture, is integral to their identity and essential to their survival. The depth of their knowledge is embedded in the long inhabitation of a particular place wherein they become one with the land.

Yupiaq knowledge systems

Indigenous cultures around the world have cultivated, preserved and passed on their distinctive worldviews and associated knowledge systems for many centuries. This depth of knowledge was acquired over many generations of direct experience with the natural environment. In the day-to-day rigour of living, their laws and lore were developed and continually tested to ensure their survival. The First Nations people known as the Yupiaq are acquainted with the harsh reality of surviving in the inhospitable conditions of Alaska.

Indigenous knowledge is derived from a long and sustained inhabitation of a particular place over many generations, which reflected their unique way of looking at and relating to the world and the universe. Experience in the natural environment was their teacher, from whom they developed their lore and laws vital for their survival. It was in this context that Yupiaq peoples developed the immense knowledge base, innovative technology, empirical skills and techniques necessary to sustain their communities (Barnhardt & Kawagley 2005). Through longitudinal observation and empirical study, they formed an understanding of, a respect for and a bond with their environment that allowed them to develop advanced methods and technology to co-exist with nature.

Technology was a vital part of the growth and development of every Indigenous culture. Yupiaq knowledge is clearly demonstrated in the technology they employed. Their technology springs from their observation and extensive study of their sub-arctic environment and their need to survive in its harsh conditions. For example fishing is a

typical water based activity recognised throughout the world. However, the Yupiaq had to adapt their technology and techniques to catching fish in rivers, under ice, on the shores of a bay and in the open ocean. Each item of fishing gear, such as fish traps and nets, is made specifically to suit different conditions. Yupiaq fishermen needed to understand the nature and behaviour of each body of water and the patterns of behaviour of each species of fish. They also needed to understand the tidal patterns and how the water flowed in rivers. On land, they needed to understand the habits and movements of birds and wildlife including seals, walrus, whales, moose, the caribou and many species of waterfowl developing a wide range of hunting gear to suit. An extensive knowledge of a wide variety of edible plants to supply the body with necessary vitamins was required as was knowledge of medicinal plants and other local wild plants. Part of their survival skills required knowledge of how to prepare clothing from animal skins and how to prepare and preserve food for long-term storage. Elders of the Yupiaq use storytelling as a means of passing on their traditional knowledge to younger generations (Kawagley 1995).

Storytelling is a universal and ancient art form used widely around the world to influence and inform the lives, experiences and dreams of peoples in every part of the globe. It is no different for Indigenous peoples. Stories are an integral tool used by Indigenous peoples throughout the world to store and transmit their knowledge from generation to generation preserving their worldview. Indigenous stories reflect their 'lore' and rules dictating their behaviour and conduct with the land, the environment and every living thing therein. Maya storytelling, discussed in the previous section, has a pivotal role in Maya civilisation and describes their ideas about their worldview and how their sense of place is communicated.

Hawaiian sense of place
Genealogies, central to the Hawaiian sense of place, refer to an intimate connection of people to the land and vice versa. And like other Indigenous peoples, knowledge is revered in place and reflected in the names that are given to places. Place in *kanaka*

Maoli[43] thought is very much akin to that of their Polynesian relatives the Māori of Aotearoa. Kapa'a Oliveira highlights the importance of place as a:

> . . . connection to the 'āina (land). In ancient times, *Kanaka Maoli* lived in harmony with their environment. Their great respect for the land and sea was an extension of their general belief that the 'āina was their *kaikua'ana* (elder sibling). Therefore, *Kanaka Maoli* had an obligation to love and respect the 'āina, who in turn provided for the every need of its younger sibling. The Hawaiian language does not have a word meaning, "to own land." Rather, *Kanaka Maoli*, like other Indigenous peoples generally believe that the 'āina is embodied with a spiritual essence; it is alive and they are related. Because every life form and finally *Kanaka Maoli* are genealogically related via cosmogonic accounts, everything has *mana* (spiritual power). Therefore, it is the role of the people to serve as stewards of the 'āina and the resources of all realms of the natural environment. (Oliveira 2006:5-6)

Oliveira asserts that *Kanaka Maoli* identity is tied to a specific place; not just any place, but the place where one comes from. In this sense, identity is informed by where they come from.

> The study of place is important for determining who *Kanaka Maoli* are as a people. . . One's identity is undeniably linked to one's place. . . individuals identified themselves with the island that they were from. Therefore, people living on the island of Maui would not consider themselves to be Hawaiian or *he Hawai'i*. Instead, such a person would say, *He Maui au*, "I am from Maui." A person from O'ahu would likewise be called *he O'ahu* rather than the collective term, "Hawaiian," as applied today to people from any island. (Oliveira 2006:8)

Carlos Andrade in his book: *Hā'ena: Through the eyes of the ancestors*, examines the importance of place, and asserts that named places are considered sacred to Hawaiian people. They form an enormous repository of ancient knowledge derived from the collective memories of numerous generations, provide a foundation for the identity of the native Hawaiian and permit a glimpse at the ancient world through the eyes of the ancestors.

> Hawaiian traditions pinpoint places as landing spots of ancestral navigators, as locations where the people emerged into the world, or as arenas in which

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[43] *Kanaka Maoli* is used by Kapa'a Oliveira in her PhD (2006:1) dissertation to refer to Native Hawaiians. *Kanaka Maoli* means, "real people".

they lived, fought battles, engaged in love affairs, and buried the dead.
(Andrade 2009:2)

Oliveira (2006:6-7) writes of this phenomenon of place, linking the *mana* of place to the act of naming:

> By studying places and their names, one is able to better understand the worldview of a people. Through place names, features of the landscape, resources of the land and sea, and events of the past are revealed and attached to particular places. Place names, and knowledge of specific places and their resources is a form of Hawaiian epistemology. Knowledge is 'rooted in place'.

Renee Louis, in an article with Margaret Pearce (2008:114), agrees with the notion that place is a repository for cultural knowledge and that:

> Hawaiians understand place as a multidimensional metaphysical continuum that ranges from the heavenscape through the landscape on to the oceanscape. (Pearce & Louis 2008:113)

Part of this article examines the potential for expressing cartographic language in Hawaiian. She asserts that knowledge of place is not only understood and absorbed via the five human senses but also by what she refers to as the 'abstract senses' of:

> . . . intuition, place, time and connection to the past, present and future. (Pearce & Louis 2008:114)

Which she asserts forms a:

> . . . critical part of Hawaiian spatial-knowledge acquisition, symbolization, and transmission and can only be accessed through various cultural practices, including prayer, ceremony, visions, and dreams. (Pearce & Louis 2008:114)

She then expresses a view similar to those of the Māori of Aotearoa wherein the land is a living entity, all natural elements are interrelated and significant and that Hawaiians are connected genealogically to the land and that the act of naming honours the land. This she calls 'depth of place'.

> From a Hawaiian perspective, all natural and cultural resources are interrelated and culturally significant. They believe the *'āina* (land) is alive,

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embodied with a spiritual essence, and that they are genealogically linked to it as their *kulāiwi* (homelands). Hawaiians honor the *mana* (spiritual power or essence) of their *kulāiwi* through the act of naming. Hawaiians named all parts of their environment, thus making their individual attributes of each known. (Pearce & Louis 2008:114)

Furthermore, Hawaiian depth of place is expressed through what she and Oliveira (2006) refer to as performative mapping practices which include:

> . . . *moʻolelo* (narrative historical accounts), *ʻōlelo noʻeau* (proverbs), *mele* (songs), *hula* (dances), *kiʻi pōhaku* (petroglyphs), *kalaina* (carvings), and *lei* (garland) making, *kapa* (bark cloth), and *kākau kaha* (tattoo) design. It is also expressed in mapping on the landscape through the traditional political boundaries of the *ahupuaʻa*. (Pearce & Louis 2008:114,115)

Oliviera (2006) adds that these performative mapping practices create the Hawaiian landscape and Hawaiian identity. Her dissertation, nestled in geography, examines "Hawaiian sense of place" as constructed by Hawaiians in a Hawaiian way. The unique aspect about her dissertation is that she constructed her ancestral domains and cultural maps without the use of conventional means of map construction.

Western Apache links to place

In other parts of the world, the practice of linking stories, ancestors and names to significant places is evident in the lives of the Western Apache peoples of east-central Arizona. Keith Basso in his article "Wisdom Sits in Places" encounters the Western Apache practice of employing stories linked to significant places to teach lessons and instil wisdom. When stories are linked to significant places, those places act as a concrete reminder of ancient wisdom that emanate from those stories.

> "Wisdom sits in places. It's like water that never dries up. You need to drink water to stay alive, don't you? Well, you also need to drink from places. You must remember everything about them. You must learn their names. You must remember what happened at them long ago. You must think about it and keep on thinking about it. Then your mind will become smoother and smoother. Then you will see danger before it happens. You will walk a long way and live a long time. You will be wise. People will respect you." (Basso 1996:70)

In order to absorb the wisdom of places a great deal of reflection and thinking about place-centered narratives often occurs as Basso (1996) clarifies:

> [The Apache are always thinking] of place-centered narratives, thinking of
> the ancestors who first gave them voice, and thinking of how to apply them
> to circumstances in their own lives. (Basso 1996: 80)

Eventually the narratives are consulted as guides for what to do and what not to do in specific situations. In this respect, place or landscape is central to the mental and social development of an Apache person where the narratives are viewed as an important repository of knowledge and where:

> . . . features of the Apache landscape, their richly evocative names, and the
> many tribal narratives that recall their mythical importance are viewed as
> resources with which determined men and women can modify aspects of
> themselves of themselves, including, most basically, their own ways of
> thinking. (Basso 1996:85)

To sum up, as Apache peoples drink from places:

> . . . they acquire knowledge of their natural surroundings, commit it to
> permanent memory, and apply it productively to the workings of their minds
> – they show by their actions that their surroundings live in them. (Basso
> 1999:86)

And it is this landscape, the landscapes of their imaginations that "most deeply influences their vital sense of place" (Basso 1999:86).

Understanding the way in which Indigenous peoples around the world are connected to their land is crucial for coming to grips with Māori notions of connectedness to the land. Māori share similar oral traditions that embed their genealogies, histories and stories in the landscape. This is the key to understanding the importance of place to Māori which will be discussed in the following section.

Section Two: Māori Knowledge of Place

Introduction

The purpose of this section is to help develop an understanding of traditional Māori perspectives on land, which involves identifying key cultural values and beliefs in

relation to land. It also involves looking at the narratives that describe the origins of knowledge, which will provide an appreciation of some of the key cultural values and the feeling Māori have towards knowledge embedded in land. This in turn will provide some basis for exploring alternative approaches to mapping ancestral landscapes and the use of modern mapping technologies such as GIS. This section covers these cultural values and beliefs in sufficient detail to provide an overview of the Māori perspective and an insight into the thinking behind the Māori view of the world and the way information, or rather knowledge, about land is revered and understood.

This section is discussed in three parts: part one provides a breakdown of the origins of knowledge, and the cultural concepts and values that underpin the traditional Māori society and their perspective of land; part two looks at how these traditional concepts informs Māori sense of place and knowledge of place; and part three investigates how Māori knowledge of place governs the way Māori interpret land and the mapping of ancestral territories.

An insight into the Māori world

A discussion about traditional values and concepts about land provides the foundation for establishing whether Māori had a clear method for understanding and interpreting their landscape. The following section will examine the principal values and concepts that govern Māori interpretation of their ancestral landscapes. These will include the role of *kōrero tawhito* (ancient traditions), *whakapapa* the framework for understanding how the Māori world was ordered and organised, the *tapu*[44] associated with all forms of knowledge, and *mana* associated with *whenua* (land).

Pre-European Māori organised their society based on a system of values or principles rather than a set of rules. The purpose for exploring these traditional concepts is to develop an understanding of how Māori relate to their *whenua*. This will be a cursory glance and not a definitive discourse of these principles. It is felt that a reasonable level of competency in *te reo* (Māori language) is required for a full comprehension of traditional Māori concepts. As Paul Temm (QC) of the Waitangi Tribunal (1990:36)

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[44] *Tapu* refers to the state of sacredness

states: "(t)o understand the people, the culture and the values, one must understand the language."

However, this section will provide a background for understanding Māori concepts and notions about land. Furthermore, it will provide an insight as to how those concepts can be interpreted by maps and mapping technologies. The following section will use the language of *karakia* and *mōteatea* to illustrate the Māori world, as it is felt that the language is the vehicle for conveying the depth of understanding about culture.

Kōrero tawhito

Kōrero tawhito were a crucial part of Māori society and are shrouded in myth and legend stretching back to the ancient homelands of *Hawaiki* (Ministry of Justice 2001). They have been described by Dr Ranginui Walker as a reflection of the ideology, principles and behaviours of a society. He also states that:

> Sometimes a myth is the outward projection of an ideal against which human performance can be measured and perfected. Alternatively, a myth might provide a reflection of current social practice, in which case it has an instructional and validating function. (Walker 1978:20)

The primary purpose of *kōrero tawhito* is to convey knowledge from generation to generation; and like most Indigenous cultures without a script to record their histories, Māori employed several oral techniques to achieve this. *Mōteatea*, *karakia*, *kōrero pūrākau* and *whakapapa* are just some of the oral techniques that were used for this purpose. *Kōrero tawhito* begins with the mythical creation stories involving *atua* (deity) and *tīpuna* (ancestors).

Creation of the Heavens and the Earth

The early Māori ancestors lived in an era where *atua*, *tāngata* (people), the heavens and the earth and all living things therein shared a common cosmological descent (Salmond 1991) that are expressed in *karakia*. There are many accounts of how this occurred and who the main actors and events were but in the cosmological account depicted in Chapter Two section three, the universe began with *te kore*, winding its way through various genealogical stages to the creation of the sky Father, *Ranginui,*

and earth Mother, *Papatūānuku*; the precursor leading to the creation of the world we live in and the creation of people.

Karakia are often used to depict the creation stories. The *karakia* used in section three of Chapter Two contains the elements that illustrate the creation of the heavens in three phases: phase one, *te kore* described as void, nothingness or potential to be; phase two, *te pō* or the periods of darkness; and phase three *te ao mārama*, the emergence of the world of light with the separation of *Ranginui* and *Papatūānuku* and the subsequent emergence of humankind.[45]

Another example of how oral techniques were used to pass on knowledge, and in this instance, about the creation myth is found in the following *mōteatea*. This chant is a *takitaki* that recites various genealogical stages from *te kore* leading to the creation of the heavens and the earth, the creation of people down to the arrival of the early ancestors of the Māori to Aotearoa:

Takina takina ki runga[46]	Recite the genealogies above and below,
Takina takina ki raro	beginning beyond *te kore* and through the
Ki tua i te kore	various phases of *te kore*
Ko te kore whiwhia	
Ko te kore rawea	
Ko te kore tamaua	
Ko te pō, ko te pō nui e	This is the phase known as *te pō,* or darkness
Ko te pō, ko te pō roa	
Ko te rikoriko e	The heavenly bodies such as the stars *te*
Ko te mango o te rangi	*mango o te rangi, Mapuhahana, Matariki* and
Mapuhahana rā Matariki Maraurumawera	*Maraurumawera* as well as planets, *Tarewa*
Ko tarewa i te pō	which is also known as *Marewa*, and the sun
Ko marewa i te ata	or *Tamanuitera*
Ko tama tama ki runga	
Ko te ao tū e	This section refers to the *Rangi* and *Papa*, the
Ko te rangi ko te papa	sky father and earth mother and their
ko te pana ki runga	separation as *ko te pana ki runga*
Taku ara ki runga	*Taku ara ki runga* refers to the pathway of
Ko Tūmatauenga	*Tāne*. This is followed by his brother
Ara takapau rangi, takapau nuku	*Tūmatauenga* and the *takapau* or birthing
	mats of the heavens or *Rangi* and the earth or

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[45] Charles Royal in his doctoral thesis, 1998, Chapter 3 *Te Ao Marama* provides *whakapapa* and *kōrero* about the creation of the heavens and the earth and the emergence of *te Ao Marama*, the Māori worldview.

[46] Composed by *Pare-tu-ki-te-rangi*, of the East Coast, *Te Ika a Māui*. This *takitaki* was sourced from a *wānanga* that the writer attended in April 2004, Dunedin region.

nuku.

Me ko tikiahua mai i Hawaiki	*Tikiahua* is sometimes referred to as the first
Ko Io Ko Ira ka tū ko Hawaiki	Human man. The rest of this section refers to
Ko te nui, ko te roa, pāmamao e	*te ira tangata* or the birth of humankind, and
	their habitation of the ancient homelands of
	Hawaiki nui Hawaiki roa and *Hawaiki*
	pāmamao
Ko te tokowha e	*Ko te tokowha* refers to the four brothers of
Te hianga rā e	*Māui* who is often known as *te hianga* or the
Te moana pukepuke ko te ika rā e	mischief one. The brothers go deep sea
Ko te hiku o te rangi	fishing and end up fishing up Aotearoa
Kukumea mai rā ki roto ki te rua	referred to in this part as *ko te ika rā*. *Te hiku*
	o te rangi refers to *Hikurangi* on the East
	Coast of *te ika a Māui*, the North Island of
	New Zealand where *Māui*'s canoe ended up.
Kātahi ka rongo e	*Nā wai te tangata ka rapa te whai* is a phrase
Nā wai te tangata ka rapa te whai e	that depicts the quickness or mental sharpness
Ka kii ake mai rā ka kii ake atu e	of a person. The ancestor *Ruatepupuke*, is the
Ki te ao mārama ki te rangi ki runga	grandson of *Tangaroa*.
Ka kii ake ai e	
Nā aku tīpuna, nā Ruatepupuke	
Ko te whai, ko te wawe	
Te wawata rā e	
Ko te mara pūwha	
Takina takina mai rā	
Takina takina mai e	The art of *whai* or string figures is often
Ko te whai wawe wawe a Māui tikitiki a	referred to as *Ko te whai wawewawe a Māui*
Taranga	*tikitiki a Taranga*
Ka aue te aue	
Kaati au nei ē ī	

This *mōteatea* is full of *whakapapa*, hence the beginning *takina takina ki runga*, (recite the genealogies above) and *takina takina ki raro*, (recite the genealogies below) and then it launches into the *whakapapa* of the heavens and the earth. This particular *takitaki* is often accompanied with *whai* or traditional string manipulation or figures depicting each phase of the creation story from *te kore*, through *te pō*, the creation of *te rikoriko* (the family of stars) and other heavenly bodies such as *tarewa* and *marewa* as well as *tamanui te rā* or the sun. It also traces the beginning of humankind, the ancient homelands of *Hawaiki* and to the discovery of Aotearoa by *Māui* our famous Polynesian ancestor. This entire story is told by chant and reinforced by *whai*.[47] In this instance the *whai* is the storyboard depicting each figure whilst the chant or *takitaki* provides the detail or *kōrero* illuminating the story.

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[47] Full name: *Te Whai wawewawe a Māui tikitiki a Taranga*

Both the *karakia* and the *mōteatea* illustrate the creation myths of the Māori; and both include *Ranginui* and *Papatūānuku*. From these two, several children were born. These children were born into a world of darkness trapped between the embrace of their parents. The third phase of the creative process, *te ao mārama*, occurred when one of the sons, *Tāne*, separated their parents. *Ranginui* was thrust high into the heavens, and *Papatūānuku* remained as the earth mother.

Creation of Humans

The emergence of humankind is another part of the *kōrero tawhito* attributed largely to *Tāne* who was assisted by some of his brothers. He moulded the female form out of the earth taken from a sacred place called *kura waka* and breathed life into her. Again, parts of this story are captured in the oral traditions such as the following *oriori*, a special type of *mōteatea*:[48] (Emphasis added)

ko te whare hangahanga tēnā *a Tāne nui a rangi* <u>*I TE ONE I KURA WAKA*</u> *I tātaia ai te puhi ariki* *Te hiring-matua* *Te hiringa-tipua* *Te hiringa-tawhito-rangi*	This is part of one verse of a very long *oriori*. This particular verse is a *karakia* that refers to the birthing process. In this part the sacred place *kura waka* is mentioned as the birth-place of the first woman

Another *mōteatea* that portrays part of the creation of humankind is one composed by *Rangiuia*[49] for his son. This portion illustrates the procreative act:[50]

Ka tū te ringaringa *Ka tū te waewae* *Ka tū te māhunga* *Ka toro mai tōna ure ki roto i te tipuaki e* *Koia te tatea* *Ka tapa tū ki roto ki te kanohi ko te karu tēnā* *Ki te pongaihu ko te kea tēnā* *Ki te waha rā ina ko te mare tēnā* *Ki te kēkē rawa ko te rikowerawera* *Ka hāngai i te tara me ko hinemanuhiri*	This is part of a single verse of a very well-known *mōteatea* composed by *Rangiuia* for his deceased son *Tuterangiwhaitiriao* of te *Aitanga a Hauiti*. It refers to the formation of the female form: the limbs or *ringaringa* and *waewae* and the head or *mahunga*. It also refers to the bodily fluids that ooze from the eyes, the ears, the mouth and armpits; then the *mōteatea* refers to the female genitals or *tara*.

The first woman moulded by *Tāne* is known as *Hineahuone* or *Hinehauone*. These names refer to the maiden formed out of the earth, as the name *Hine-ahu-one* suggests

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[48] '*He oriori mō Tu-tere-moana*', lines 4-6, pages 4,5, *Ngā Mōteatea: The Songs*, Part 3, A. T. Ngata & P. Te H. Jones (2006) Edition

[49] *Rangiuia* was a contemporary of *Te Kani a Takirau* of the *Uawa* region, East Coast North Island.

[50] *Rangiuia* composed this epic *mōteatea* for his first born son who was killed by *mākutu* or curse.

while *Hine-hau-one* refers to the maiden formed from the earth (represented by the word *one*) and life (*hau*) was breathed into her.

In the *takitaki* used above to illustrate the creation of the heavens and the earth, the *takapau rangi* and the *takapau nuku* are mentioned. These are the birthing mats of the heavens and the earth. The next few lines of the *mōteatea* mention *Io* and *Ira*. *Io* is short for *Io-wahine* which is another name for the first woman. *Ira* refers to *te ira tangata* or the human element.

Taku ara ki runga *Ko Tūmatauenga* *Ara TAKAPAU RANGI, TAKAPAU NUKU*	*Taku ara ki runga* refers to the pathway *Tāne* used to climb to the highest heaven to retrieve the baskets of knowledge. This is followed by his brother *Tūmatauenga* (*Atua* of war) and the *takapau* or birthing mats of the heavens or *Rangi* and the earth referred to as *nuku*.
Me ko TIKIAHUA mai i Hawaiki *KO IO KO IRA ka tu ko Hawaiki* *Ko te nui, ko te roa, pāmamao e*	*Tikiahua* is sometimes referred to as the first male. The rest of this section refers to te ira tangata or the birth of humankind, and their inhabitation of the ancient homelands of *Hawaikinui*, *Hawaikiroa*, and *Hawaiki pāmamao*

Te ira tangata is what makes us human and is mentioned in other oral prose or *tauparapara* such as the following:[51]

Tēnei au, tēnei au
Te hōkai nei i ōku tapuwae. . .

Ka puta te IRA TANGATA *ki te whai ao, ki te ao mārama* *Tihei mauri ora!*	Humankind burst forth into the world of light!

Ranginui and *Papatūānuku* had many children, some of which play a vital role within the environment. Six in particular are well known including *Tāne*[52] who is the progenitor of mankind; he is also the *tipuna*[53] or atua of forests. *Tāwhirimātea* is the

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[51] See the following page for the full version
[52] *Tāne* is known by many names: *Tāne-nui-a-Rangi* because of his role in completing the creation of the heavens, *Tāne-mahuta* because he was known as the *atua* of the forest, and *Tāne-te-wānanga* because of his role in retrieving the baskets of knowledge from the highest heavens.
[53] *Tīpuna* or *Tūpuna*: in this instance taken to mean *atua* or godlike-ancestor

tipuna or *atua* of the winds, *Tūmatauenga* is the *tipuna* or *atua* of war, *Tangaroa* is the *tipuna* or *atua* of the oceans, *Rongomātane* is the *tipuna* or *atua* of peace, the *kumara* and cultivated plants, whilst *Haumiatiketike* is the *tipuna* or *atua* of the *aruhe* and uncultivated foods.

The role and importance of Whakapapa

Whakapapa is an important concept in the Māori world which determined connections and relationships within Māori society and determined one's membership within recognised kin groups. In the most basic sense, *whakapapa* refers to genealogies and shows descent from an eponymous ancestor as depicted in Table 1.1, Chapter One where the author traces his own *whakapapa* from *Tūwharetoa*, the eponymous ancestor of *Ngāti Tūwharetoa*, through a series of generations to himself. *Whakapapa* is also the concept Māori use to "define [their] cultural spaces and [their] perceptions of place within the environment" (Carter 2005:8). Everything has *whakapapa* as depicted in the creation stories linking every part of the environment, the heavens, the *atua* and Māori together: the trees, the mountains, the birds, the fish, the plants, the earth mother *Papatūānuku*, and the sky father *Ranginui*, the different levels of the heavens as portrayed in the *karakia*.[54] *Whakapapa* has been described as a mental construct for encoding and recording Māori knowledge of the origin of the universe, the emergence of *te ao mārama* through the separation of the primal parents and their understanding of the world and their place in it (Roberts et al, 2004:1).

Everything has an origin to which its *whakapapa* can be traced: the creation of the heavens and the earth, the emergence of humankind, all the elements of the earth, the source of all knowledge, and the migration to and inhabitation of Aotearoa. *He Pātaka Kupu,* published by Te Taura Whiri i te reo,[55] is a Māori language dictionary in Māori. All the words in this dictionary are assigned an *atua* to which they derived their origin and trace their *whakapapa* to.[56] The word *whakapapa* traces its descent back to

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[54] *Karakia* portraying the creation of the heavens and the earth and the emergence of humankind is described in section 3 of chapter 2.

[55] Te Taura Whiri i te reo is the Māori Language Commission set up in 1987 to promote the use of *te reo* (the Māori language) to ensure that *te reo* is not lost but becomes a living treasure in Aotearoa
http://www.tetaurawhiri.govt.nz

[56] *He Pātaka Kupu: te kai a te rangatira, Ngā Atua,* p.ix

Tūmatauenga and the primeval parents *Ranginui* and *Papatūānuku* (Te Taura Whiri i te reo 2008:115). In terms of the aims of this thesis, *whakapapa* is the framework which Māori use to determine their relationships and their connections to the land. As Lyn Carter (2005:8) writes: "when Māori look at the landscape they 'see' kinship relationships." *Whakapapa* not only pervades the landscape, it also pervades the oral narratives of *mōteatea* and *karakia*.

Mōteatea such as *oriori* illustrate the importance of *whakapapa* such as the one composed by *Hinekitawhiti* for her grandchild *Ahuahukiterangi*. The purpose of this *oriori* was to educate and instruct the child in her chiefly ancestry, sacred places and associated histories. It begins with *whakapapa*, contains a body of knowledge referring to sacred geographical places and ends with symbols of the child's chiefly lineage. The extract below is part of the opening lines of the *mōteatea*: (Ngata & Jones 2006, Part 1:4) (Emphasis added)

Kia tapu hoki koe nā Tuariki, e!	May you be set apart, as is fitting for a descendant of *TUARIKI*;
Kia tapu hoki koe nā Porouhorea!	May you be set apart, as is fitting for a descendant of *POROUHOREA*;
Kāti nei e noa ko tō taina ē!	Let only your younger relative be free from restriction.
Whakaangi i runga rā he kauwhau ariki ē, *Koi tata iho koe ki ngā wahi noa.*	Soar gracefully on high, O chieftainess, And do not descend too near to the common places.
Whakatūria te tira hei Ngāpunarua, *Tāhuri ō mata ngā kohu tapui, kai* *Runga o te Kautuku, e rapa ana hine ī* *Te kauwhau mua i a Hinemakaho* *Hai a Hinerautu, hai a Tikitikiorangi,* *Hai konā rā korua, ē!*	Project your journey to *NGĀPUNARUA* Then turn your eyes to the interlaced mists, Which float above *KAUTUKU*; for the maiden Seeks the first-born line from *HINEMAKAHO*, Such as *HINERAUTU* and *TIKITIKIORANGI*; And there you will be with your elder.

The opening lines begin with the *whakapapa* or genealogy that defines the child's status in her society with reference to her illustrious ancestors *Tuariki* and *Porouhorea*. The chant then connects the child to several significant places on the East Coast such as *Ngāpunarua* and *Te Kautuku* both of which have defining roles in the history of the east coast. Other nobles of the east coast region are referred to including: *Tikitikiorangi, Hinemakaho* and *Hinerautu* who are all associated with *ariki whakapapa*.

Source of knowledge

The source of knowledge is illustrated in the story of *Tāne* and the *kete wānanga* which were retrieved from the highest part of the heaven, the sacred realm of *Io*. The importance of seeking knowledge from the sacred baskets is illustrated in the *oriori* composed by *Tuhotoariki* for *Tuteremoana*[57] a child born of *ariki* status. The following extracts from this *oriori* provides an example of this; it also describes the means by which *Tāne* acquired the sacred baskets (Ngata & Jones 2006, part 3: 6): (emphasis added)

Haramai, e mau tō ringa ki TE KETE TUAURI, *Ki TE KETE TUATEA, ki TE KETE ARONUI*	*Tuteremoana* is instructed to take hold of the three baskets of sacred knowledge known as *te kete tuauri, te kete tuatea* and *te kete aronui*
I pikitia e Tāne-nui-a-rangi i te ara tauwhāiti *Ki te Pū-motomoto o TIKITIKI-O-RANGI* *I karangatia e Tane-nui-a-rangi ki a Huru-tea-a-rangi* *I noho i a Tonganui-kaea,* *nāna ko Parawera-nui* *Ka noho i a Tāwhiri-mātea,* *Ka tukua mai tana whānau* *Titi-parauri, Titi-matanga-nui, Titi-mata-kaka* *Ka tangi mai te hau mapu, ka tangi mai te rorohau,* *KA EKETIA NGĀ RANGI NGĀHURU MĀ RUA I KONEI* *E tama, ē i*	*Tāne-nui-a-rangi* climbs to the highest heaven known as *Tikitiki-o-rangi* with the help of the children of *Tāwhirimātea* the *tipuna* of the winds: *Ka eketia ngā rangi ngāhuru mā rua i konei*

In another verse of the same *oriori* we note that the child *Tuteremoana* is encouraged to follow the footsteps of *Tāne* in acquiring knowledge. This same verse also illustrates the role of *Tūmatauenga* in the quest for the three baskets of knowledge: (Ngata & Jones 2006, part 3: 6)

Haramai e tama, i te ara ka takoto i a Tane-matua *Kia whakangungua koe ngā rakau matarua nā Tu-mata-uenga* *Ko ngā rākau tēnā i patua ai te Tini o Whiro i te Pae-rangi;* *Ka heke i Tahekeroa,* *Koia e kume nei ki te pō tangotango* *Ki te pō whāwhā o Whakarua-i-moko,* *E ngunguru rā i Rarohenga,*	*Tuteremoana* is encouraged to follow the pathway of *Tāne* *Tūmatauenga* fights the hordes of *Whiro*, an elder brother of *Tāne*, who tries desperately to stop *Tāne* from climbing to the highest heaven to retrieve the three sacred baskets of knowledge. It is at *te Paerangi* that a great battle is fought and the hordes of *Whiro* were confined to *Tahekeroa* and finally to *Rarohenga*

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[57] '*He oriori mō Tutere-moana*', pp. 2-19*Ngā Mōteatea: The Songs*, Part 3, A. T. Ngata & P. Te H. Jones (2006) Edition

In another verse, *Tuteremoana* is again encouraged to seek for sacred knowledge:

(Ngata & Jones 2006, part 3: 8) (Emphasis added)

Haramai e tama puritia te aka matua
Kia whitirere ake ko te Kauwae-runga, ko te Kauwae-raro,
kia tāwhia, kia tāmaua, kia ita i roto a Rua-i-te-pukenga, a Rua-i-te-horahora, a Rua-i-te-wanawana, a Rua-matua taketake o Tane.

TE KAUWAE RUNGA and TE KAUWAE RARO are branches of knowledge of which the child is encouraged strongly to grasp firmly: *KIA TĀWHIA, KIA TĀMAUA* and *KIA ITA*

In this next verse, the *oriori* points out the sacredness of knowledge by referring to the realm of *Io-matua-te-kore,* the most sacred of all the heavens: (Ngata & Jones 2006, part 3: 8) (Emphasis added)

Whakarongo mai e tama! Kotahi tonu te Hiringa i kake ai Tāne ki TIKITIKI-O-RANGI
Ko te hiringa i te māhara.
Ka kitea i reira ko IO-MATUA-TE-KORE anake
I a ia te Toi-ariki, te Toi-uru-tapu
Te Toi-uru-rangi, te Toi-uru-roa;
Ka whakaputa Tane i a ia ki te WAITOHI
Nā Pu-hao-rangi, Nā Oho-mai-rangi,
Te wai whakaata nā Hine-kau-orohia

Tāne is granted entrance into *Tikitiki-o-rangi,* the highest and most sacred part of the heavens where *Io-matua-te-kore* (*Io-matua-te-kore*) resides. He is subjected to the *tohi* ceremony so that he is clean or pure enough to enter into the presence of *Io*. In this extract *Io* is described as all powerful, all sacred and the source of the universe

The story of the *kete wānanga* is also captured in the following oral prose known as *tauparapara*: (Ka'ai 1995:36) (Emphasis added)

Tēnei au, tēnei au
Te hōkai nei i ōku tapuwae
Ko te hōkai nuku, ko te hōkai rangi
Ko TE HŌKAI A TAKU TĪPUNA A TĀNE-NUI-A-RANGI
I pikitia ai ki te RANGITŪHĀHĀ
Ki TE TIHI O MANONO
I rokohina atu rā
Ko Io Matua Kore anake
I riro iho ai
Ngā kete o te wānanga
Ko TE KETE TŪĀURI
Ko TE KETE TŪĀTEA
Ko TE KETE ARONUI
Ka tiritiria, ka poupoua ki Papatūānuku
Papā te whaititiri
Hikohiko te uira
Ka kanapu ki te rangi
I whētuki ki raro rā
Rū ana te whenua e
KA PUTA TE IRA TANGATA
KI TE WHAI AO KI TE AO MĀRAMA

This *tauparapara* begins by describing the journey of securing the baskets of knowledge as *te hokai a taku tīpuna a Tāne*

This section refers to a place called *te Rangitūhāhā* the highest heaven also known as *te tihi o Manono*. It was here that the ancestor *Tāne* met *Io matua kore* (*Io matua te kore*) who resides at this most sacred place. He retrieves the sacred baskets: *te kete tuauri, te kete tuatea* and *te kete aronui*

Humankind is brought forth into the world of light

Karakia, mōteatea, tauparapara and *whakapapa* were some of the classic oral techniques used by Māori to convey knowledge from one generation to the next. The above examples have been used to demonstrate how the Māori world came into existence, how humankind was created and how the baskets of knowledge were given to humankind.

These ancient themes feature prominently in the Māori worldview and provide a window by which the philosophy known as *Kaupapa Māori* can be appreciated. Because knowledge came from celestial sources, it is regarded as *tapu* and the process of acquisition of said knowledge is cloaked in ritual. Furthermore, knowledge or information has enormous spiritual and cultural significance for Māori. Thus, since information regarding land has cultural significance this has implications for storing cultural knowledge in systems such as GIS mapping technologies; this must be carefully thought through so that the *tapu* of the cultural information is respected and maintained.

Māori *connection to place*

The relationship between Māori and Aotearoa is rooted in their worldview stretching back through their cosmological *whakapapa* to the creation myths from whence their ancestral gods emerged into the world of light, through the separation of their sky father *Ranginui* and their earth mother *Papatūānuku* and to the creation of humankind by their ancestral gods. These beliefs have been transmitted from generation to generation through the spoken word in the form of *karakia*, *whakapapa*, and *mōteatea* wherein value systems were interwoven into those accounts. These values were the foundation of their interactions with others and the environment. These systems of knowledge regulated behaviour and perpetuated norms of Māori society. The combination of cosmological beginnings and connectedness to the Māori world through various stages of *whakapapa* or complex genealogies creates a sense of attachment[58] which Māori

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[58] Māori attachment to land is well documented by Buck (1950), Firth (1959), Sinclair (1981), Yoon (1986), Asher and Naulls (1987), Kawharu (1977) and many others.

have towards their environment cemented in place by observance to ritual and ceremony.

The significance of place is connected with ancestral events which occurred at specific locations within the tribal domain. There are numerous well-known stories depicting ancestral events that occurred at specific locations around Aotearoa and within specific tribal territories leaving behind place names as historical signposts of those events. As Sir Tipene O'Regan writes:

> The names in the landscape were like survey pegs of memory, marking the events that happened in a particular place, recording some aspect or feature of the traditions and history of a tribe. (Cited in Davis 1990: xiii)

At the arrival of the some of the canoes to Aotearoa around 1350 AD, the ancestors of those canoes began naming and claiming land as they went. One of those canoes was the *Mataatua* which landed at *Moana a Toi te Huatahi* in the Bay of Plenty. While the canoe was moored in the bay it managed to slip her moorings and began to drift out to sea. None of the men were around at the time but *Wairaka*, a woman of chiefly descent, decided to do something about it. She uttered her famous words *"me whakatāne au i ahau"*, "I will make myself a man" and dragged the canoe back to the beach. The place at which this event occurred bears the name *Whakatāne* in remembrance of that event (Davis 1990: 4).

The names embedded in the landscape contain a huge amount of information about the land and reflect the relationship of one place with another. They are also signposts that point to the presence of human habitation and ancestral events. When the early ancestors arrived they brought with them from their ancient homelands a vast history which they replanted in their new territory by giving the new landscape old names thus transplanting that ancient history in new settings (Davis et al, 1990: 5).

The *Māui* names are an example of this occurrence as discussed in Chapter One. The *Tainui* waka on landing embedded names in the new landscape from *Hawaiki,* the old

homeland, such as *Motu Tapu* at *Waitematā*, and *Waihāhā* and *Waihihi* near *Ōtāhuhu*
(Davis et al, 1990: 4).

The famous east coast ancestor *Paikea* brought many names with him from his old
home island. The account given in *He Kōrero Pūrākau* details his journey from *Ahuahu*
down to his arrival at *Whangarā-mai-tawhiti* on the east coast where he began to name
places after those in his old homeland. (Emphasis added)

> "Rite tonu tēnā ki PAKARAE; tēnā ki WAINGUTU; tēnā ki TOKA KUKU; tēnā ko
> te rite ki RANGITOTO; tēnā ki TE UHIA I RAKAU; ko te rite tēnā ki
> PUKEHAPOPO; tēnā ki WAIPAEPAE; tēnā ki WHAKAKINO; tēnā ki AHI
> RARARIKI; tēnā ki AHI RARAIHE; rite tonu tēnā ki TU TAPUNINIHI; tēnā ki
> TAHA TU O TE RANGI tēnā ki TE WARUHANGA A HINE; ēnā ki PUKEHORE me
> TE RERENGA. Ko ēnei ingoa he ingoa nō taku kāinga i Rangiātea moutere."
> (Davis 1990: 49-53)

Many more examples of naming exist in Māori history stretching back to *Kupe* who is
recognised widely in the *Hokianga* region for naming several places; he also named
many places in and around *Te Whanganui-a-Tara*, and the top of the *Te Waipounamu*
the South Island, (Davis 1990:8-17). *Tōhē* is known for naming places around the
Hokianga (Davis 1990:18-23); *Kahupeka* (Davis 1990:24-29) named places around the
middle of *Te Ika a Māui* as did *Tia* and *Ngātoroirangi* when they left *Maketū* on
arriving on the *Arawa* canoe and headed inland to Taupō[59] (Grace 1959: 58-68).

The combination of cosmological beginnings coupled with complex genealogies gave
Māori a great sense of attachment to their land; the added concept of transplanting
history and embedding names into the landscape gave further meaning to their
connections to the landscape. Furthermore, the Māori concept for land is embedded in
the word *whenua* which also means afterbirth of a newborn child. Given that
Papatūānuku is described as the Earth Mother, She had a nurturing role in Māori lore
from which all drew sustenance from. Thus connection to place is tied to genealogy,
cosmological beginnings, transplanted history, ancestral events, plus an emotional tie
with their Mother transcending geographical boundaries.

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[59] Many more examples are given in Davis, Te A., (1990) *He Kōrero Pūrākau.*

How does the Māori notion of naming compare or contrast with that of Pākehā (Non-Māori) New Zealanders? Of this difference between the way Pākehā New Zealanders and Māori see the same landscape, Ailsa Smith (2001) writes:

> The significant difference between Pākehā and Māori lies in whakapapa which connects Māori in elemental ways to this landscape and stretches back through mortal and godlike ancestors to the earliest ages of the world. (Smith 2001: 60)

Lyn Carter (2005) argues that English discourses have always rendered Māori in a temporal context within their own country rather than a spatial context that firmly establishes:

> . . . Māori in another time, occupying some distant past. [Thus rendering] their stories of occupation and ongoing relationships with the landscape as seemingly irrelevant in a contemporary situation. (Carter 2005: 8)

The act of naming places to commemorate ancestral events, as was the case with *Tia* and *Ngātoroirangi,* or after parts of the body, imbues the land with *mana* and with *tapu;* it also embeds knowledge into particular places. Place names embedded in landscape identify specific geographical regions or areas which are significant to Māori. Places and their names attached to particular places reveal the Māori worldview and unfold the history of the landscapes. Hence knowledge is rooted in place.

Knowledge of place is found in the rich oral traditions of the Māori, especially that of *mōteatea*. *Mōteatea* is a rich oral tradition comprising a collection of knowledge, histories, customs and values which are passed down the generations. They give us special insight to the minds and lives of the ancestors and are couched in a metaphorical language incidental to their era. They form works of epic poetry that use distinctive tunes and uncommon rhythms that facilitate retention. They evoke emotion and stir inner memories that transform into vivid images of people, of past histories and of place. In addition to this, *mōteatea* remind us of the *whakapapa*, the ancestral events, the old stories, and the historical landmarks thus restoring the tradition of connecting people to their special places. This is the reason why *mōteatea* is chosen to test the notion of blending spatial information technologies with cultural knowledge.

Section Three: Ancestral Landscapes within the Spatial System

Maps: a reflection of worldview

Maps are techniques which have been used by preliterate and modern societies from the dawn of civilization to communicate their understanding of the makeup of their territories. Lyn Carter (2005: 9) describes maps as instruments to "locate human actions in spatial context." Furthermore, she describes maps as:

> . . . ideology-based perceptions of the world, [which] contain the values and beliefs of a people [and] illustrate [different] ways of knowing how the world was shaped. (Carter 2005:9)

Robert Rundstrom (1990) describes mapping as a process that is fundamental to lending order to the world. He adds that maps are a reflection of worldview and that:

> By transforming a given way of thinking into material reality, maps simultaneously reflect and reinforce the world view or spatial thought of a culture. (Rundstrom 1990: 1)

Terry Tobias (2000) reiterates the ease in which First Nations people navigate their homelands by carrying:

> . . . maps of their homelands in their heads. For most people, these mental images are embroidered with intricate detail and knowledge, based on the community's oral history and the individual's direct relationship to the traditional territory and its resources. (Tobias 2000: 1)

For Indigenous peoples, maps both reflect and reinforce cultural values and beliefs of the people who make them (Rundstrom 1990). Whether maps are created on the ground with a stick, or on clay tablets, cloth, paper or more modern spatial information technologies such as GIS, the power of the map rests with those who control the maps.

In terms of the aim of this thesis, understanding what underpins spatial information technologies is crucial to understanding how Māori ancestral landscapes can sit within or beside spatial information systems without compromising their worldview. What follows is a discussion of the origins and *whakapapa* of GIS and spatial reference

systems; the foundation of any geographical or spatial dataset commonly seen on maps or in GIS. A spatial reference system allows us to accurately and unambiguously identify locations and features on a map using a framework defined by a coordinate system. This is crucial for understanding how land information is treated through the western or spatial lens. From this we can work out how to use spatial information technologies to record instances of Māori ancestral landscapes as articulated by their worldview.

The *whakapapa* of GIS

Geographical information systems (GIS) have been in use in Aotearoa New Zealand for at least twenty years although earlier systems for mapping forests were cumbersome and difficult to use. Its *whakapapa* or origins evolved from a long history of map making stretching back to the time of Rameses II of Egypt and even further back to "Babylonian cuneiform tablets" (Bernhardsen 1992:1). However, it was the Greeks that were thought to have created the first set of "realistic maps" employing the first known "rectangular co-ordinate system" around 300 B.C (Bernhardsen 1992:1). While it was the Romans who first employed the concept of a cadastre to record and register properties, it was the Greeks who came up with the idea of the cadastre and cadastral. As societies evolved, so too did the techniques and skills for delineating property, coastlines, countries, navigational charts, topography, the location of towns and the natural features of the earth's surface in the form of maps (Bernhardsen 1992). However, as discussed above, maps were a reflection of worldview and did not favour Indigenous notions of landscapes; the same can be said of the origins and structure of GIS.

The term GIS was coined as far back as the 1960s by Roger Tomlinson (Wright, Godchild & Proctor 1997). While GIS can be thought of as a collection of tools and techniques for creating digital maps, it is a very powerful tool in the way it has revolutionised how spatial data is handled and used. It is essentially an information system that derives spatial data from interpreting features of the earth and representing them symbolically within an information system. GIS performs operations on spatial and non-spatial data and includes a set of sophisticated tools which have "the ability to

store, manipulate, analyse, represent", display and connect geographical and attribute information (Hakopa 1998:51). Furthermore, GIS has the ability to "store and analyse complex and integrated layers of spatially referenced information that include cultural information and Indigenous knowledge" (Hakopa 1998:51). GIS has a host of applications and is seen in many aspects of our daily lives such as Google Earth, urban and regional planning applications, wildlife management, tourism, electricity and roading networks and many other applications that support the development and growth of modern societies. Thus, spatial data and its accompanying attribute data can be thought of as an asset having value; commercial value that can be traded for a price (Openshaw & Goddard 1987).

While spatial data can be viewed as a commodity with real commercial value, any form of information, about landscapes is seen by Indigenous peoples, Māori included, as having intrinsic value; to Māori it is a *taonga*. Nancy Obermeyer voiced this concern that the:

> . . . people who developed GIS worked within specific institutional environments (largely white males employed in academic and governmental institutions in North America and Europe) that forged the boundaries of their task. Moreover, existing technology, software logic and specific spatial theories influenced and sometimes limited their choices as they worked. These, in turn, shaped the kind of GIS that are available today. (Obermeyer 1998: paragraph 5)

Harris and Weiner support the notion that GIS imposes its conception of space:

> GIS imposes a way of knowing and of representing nature and society spatially. The cartographic metaphor is a recent consequence of the academization of geography that has privileged the map and the map-based (and, thereby, GIS-based) conceptualization of space. (Harris & Weiner 1998: paragraph 24)

Furthermore Brodnig and Mayer-Schönberger sought solutions for bridging the gap between spatial information technologies and traditional knowledge and noted that:

"the adoption of science-based innovations and technologies by local people has often been stifled by their perceived incompatibility with traditional value systems and cultural practices". (Brodnig & Mayer-Schönberger 2000: 2)

The Western Gaze

GIS has a history nestled within what Bender refers to as the "Western Gaze" (Bender 1999:31). It is not culturally neutral and given the impact it had at its introduction to Indigenous peoples over 20 years ago, it posed both risks and opportunities (Rakai 1994b:51). In the early 1990s, Tonga looked at the potential for adopting GIS for improving its' land management systems. Savai Latu sounded this warning that the "way in which the Tongans [manage] their affairs should be studied with great care before introducing the alien technologies" (Latu, Benwell & Davies 1996:212). Furthermore, "several unsuccessful attempts were made in the past to introduce land information technology into the country" which failed "because the users were not aware of the benefits and the developments usually followed the line of thinking of the analysts" (Latu *et al* 1996:212). Duerden and Keller add that traditional decision making is "the most appropriate approach . . . where GIS derived solutions are sequentially discussed, evaluated and modified in community meetings" (Duerden and Keller 1992:14).

Putting aside the obvious tension that exists between the two world views and epistemologies, and the perceived "hegemonic power relations embedded in GIS" (Brodnig and Mayer-Schönberger 2000:8) as well as its inherent origins in the "western gaze" (Bender 1999:31) GIS does offer powerful options as a tool and a means to accomplish the aims of this thesis if it is used appropriately within the context of traditional values. The real value of GIS is not in the way it manipulates spatial and non-spatial data, but in its ability to meet the cultural aspirations of *iwi* and other Indigenous communities around the world.

Cartesian coordinate system

GIS uses a series of points, lines and polygons to represent surface features of the earth which easily fit into an *X,Y* and *Z* coordinate system such as that provided by the Cartesian or rectangular coordinate framework (Galati 2006). A Cartesian coordinate

system uses a framework of axis known as X, Y and Z to determine the position of features on the surface of the Earth (Blick 2007:11, Galati 2006). Both the positive X and the positive Y axis lie in the Equatorial plane. The X axis passes through 0^0 longitude, while the Y axis passes through 90^0 East longitude forming a right angle with the X axis. The positive Z axis runs from the centre of the earth along the Earth's rotational axis passing through 90^0 North latitude (Blick 2007:11). All three axes originate from the centre of the earth.

Map Projections

In contrast a projected coordinate system uses a two-dimensional coordinate system to represent relative positions of features on the surface of the earth. Map projections make allowances for the curvature of the ellipsoid and permits surface features to be projected on to a flat sheet of paper such as a map (Blick 2007:17, Galati 2006). Local coordinate systems work well if the area being mapped is small and distance, direction and area are at such a scale that the curvature of the earth is not a factor in the computations. One of the problems with map projections representing a curved surface on a flat surface is distortion. The amount of distortion, however, can be calculated and compensated for.

Map projections use a rectangular grid coordinate system where the coordinates are described in terms of metres east and metres north of a designated origin. The origin is often termed the false origin. The main map projection system used in New Zealand is the New Zealand Transverse Mercator 2000 Projection which is used for the 1:50 000 topographical maps (Blick 2007). The other map projection is the New Zealand Map Grid (NZMG) for the 260 series of topographical maps published by Land Information New Zealand (LINZ).[60]

Geographic or spatial reference systems provide a stable network that is able to integrate geographical datasets from multiple sources into a single geographical reference framework. Mapping tools such as GIS portrays features of the earth and rely on a stable spatial reference system to integrate and display that data consistently. The

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[60] LINZ is a New Zealand Government organisation responsible for land titles, maintaining the geodetic and cadastral survey systems as well producing topographic information

power of a GIS lies in its ability to draw together diverse datasets into a single framework using a system of layers representing different features. For example, separate layers of information might include a network of roads, a subdivision of lots, underground services such as water, electricity, gas, and telecommunications network. GIS is able to bring all these datasets together in a meaningful way due to the ability of a spatial reference system to define each of these datasets in terms of a set of coordinates (Blick 2007:30,31). Thus, a spatial reference framework provides a means by which all the data in a GIS can be inter-related geographically.

The challenge would be to test the ability of spatial reference systems to integrate knowledge or information regarding cultural space or rather the geography of narratives as described by *mōteatea*. It is evident that spatial reference systems provide a stable network for integrating geographical datasets but clearly, cultural data such as that described in section two above does not fit easily into this type of reference system without losing its cultural intent and integrity. This is further explored in Chapter Five and Six.

Conclusion

It has been demonstrated that western worldviews cannot translate the meaning and function of a traditional worldview without diluting the integrity of the cultural information that informs that view. That is simply unacceptable for it is worldview that defines, informs and underpins the very essence of an oral tradition.

For Māori, oral traditions have been the preferred method for understanding, describing and transmitting knowledge about their landscapes and special places; in this respect, oral traditions charaterise their cultural and ancestral landscapes. Juxtapose that with modern spatial information systems for capturing and delineating that same view of the landscape and a spatial tradition is born out of that worldview.

Like other Indigenous peoples around the world, Māori have a unique way of viewing the world based on their interpretation of the origins of that world. In that understanding, they are related to all things in the creation. To the *atua* (gods) who organised every aspect of the world, to all the trees and animals and plants that inhabit

the world, and to the environment that offers up that which ensures their survival, and to the land that records their footsteps and connects each generation together in one seamless archival record.

This chapter has looked at the unique way in which Indigenous peoples look at land and everything associated with land. It is called worldview: their understanding and rendering of the world and environment around them. This perception of the world determines how Indigenous peoples see the places they inhabit and how all the discrete elements that make up that place blend into a single seamless and enduring landscape; their ancestral landscape. It is this landscape that is central to this thesis.

Modern Spatial Information Systems and techniques are widely acknowledged in many parts of the world as the leading edge tool for managing any form of land information. Any landscape including those acknowledged by Indigenous peoples as ancestral can be captured and displayed using these tools. However, this type of representation is far too narrow and incapable of rendering the fullness of the makeup of an ancestral landscape

Why should Indigenous peoples use GIS to capture ancestral landscapes? To give full power and capacity to Indigenous peoples to maintain, manage and retain their notions of landscape.
How can this be done? The next chapter will look at Indigenous attempts to create maps of their ancestral landscapes, the origins, rationale and purpose behind mapping, the interpretation of the mapping tools and techniques, and the development of the GIS amongst Indigenous communities.

Chapter 4: Indigenous Mapping: Tools for Interpreting their World

Introduction

Indigenous peoples interpret their places in a rather unique way reflecting their view of the world they live in. Chapter Three discussed how Indigenous peoples see their world, their land, their environment, their home, and their place; it examined the unique features that make up their cultural landscapes. Understanding this interpretation of place is crucial to finding appropriate ways to blend Indigenous knowledge of place with spatial information systems. Conceding this, the platform is now set to explore Indigenous mapping.

Indigenous mapping is an interpretation of place, of history, of identity, of relationships. This chapter will examine how Indigenous peoples map their interpretations of place. Special attention is given to the map biography method as it underpins the technique used in Chapters Six and Seven. Furthermore, this chapter will look at how Indigenous peoples have adopted modern mapping techniques and sophisticated information technology and more importantly, the reasons or motivation behind the use of these tools.

The reasons are many if not varied but render down to the Indigenous sense for belonging to, rather than ownership of, their land and pressing their claims for land, resources and territory. In particular, the most important reasons for mapping is for reclaiming their ancestral domains, demarcating their traditional territories, identifying and mapping their cultural resources and assets, and revitalising their cultural identity in the face of an ever encroaching global and amorphous society.

This chapter will approach the subject of Indigenous mapping in two sections: the first section will examine cultural mapping. It will introduce this issue by looking at the origins of mapping, the reasons behind mapping leading into the motivations behind Indigenous adoption of mapping; then it will explore cultural mapping. Section two will examine Indigenous GIS and the stories behind them. It will look at several studies that reflect the innovative ways Indigenous peoples have adopted spatial information technologies.

Section One: Cultural Mapping: a tool for interpreting Indigenous landscapes

Map or Be Mapped

'Map or be mapped' a phrase borrowed from Karl Offen (2003) in his article narrating place and identity; a paper that highlights the Miskitu land claims in North-eastern Nicaragua. Offen (2003) asserts that during the colonial period, mapping served as a tool for dispossession of native lands and was a reflection of the colonial period.

> Western mapping technologies have not been favorable to indigenous peoples. During the colonial period, maps materially and symbolically initiated the ongoing process of native land dispossession. As knowledge systems and didactic devices, maps helped create the reality they purported to represent and, thus, shaped and reflected the colonial project. (Offen 2003:384)

Thomas R. Berger, QC in the foreword of *Living Proof* (Tobias 2009) echoes this sentiment:

> . . . to indigenous peoples around the world, [maps] resonate with a dark ferocity and foreboding. For five centuries, maps were used to codify, to justify and to sanction an often bloody – and always cruel – colonization of the New World. Maps almost were used as instruments of empire, human constructs imposed as a means of converting chunks of the earth's surface into real estate, bought and sold by non-aboriginal people. (Tobias 2009:8)

Mac Chapin (2006) adds that:

> . . . one of the uses of maps has been to stake out and claim land. This function was put on dramatic scale during the European Age of Exploration and Colonization from the 15th through the 19th centuries. As empires expanded, cartographers were enlisted to transform huge areas of the globe into real estate. (Chapin 2006: 2)

Following the colonial period, mapping was used to support sovereignty:

> In the postcolonial era, new states reinforced their tenuous nationhood by deploying maps as logos to legitimize their territorial sovereignty and to spatialize a national identity. (Offen 2003:384)

Again Berger (Tobias 2009) contends that:

[with] a few simple strokes of the cartographer's stylus, governments attempted to alienate indigenous peoples from their territories. (Tobias 2009: 8)

David C. Nahwegahbow, of the Whitefish River First Nations near Manitoulin Island, Ontario reflected on a conversation he had with a Crown Minister:

Just a few years ago, I remember talking to a provincial cabinet minister about forestry operations that were going to have a serious negative impact on Algonquin lands and the Algonquins' ability to sustain themselves. The minister said, "Prove it to me!" Clearly, words were not sufficient. That was a seminal moment in my life, and in my work. (Tobias 2000: vi)

Maps have also been used more recently to secure rights to resources as Berger (Tobias 2009) writes:

Government lawyers continue today to exercise the power of maps to legitimize claims over lands and resources. Maps have also been enlisted by multi-national companies to gain concessions over commodities such as oil, minerals and timber. (Tobias 2009: 8)

Conceding this, Offen (2003) describes the resilience indigenous peoples displayed in using western mapping technologies to create:

. . . their own maps about themselves and their lands . . . [to] re-present native toponyms, cultural landscapes, and territorial claims . . . [and] to retain [their] cultural and territorial viability as a people. (Offen 2003: 384)

Berger (Tobias 2009) also describes the resilience of Indigenous peoples following the colonial era and the effect it had on the Indigenous landscape:

Colonial maps, however, could not erase the knowledge of the land held by indigenous peoples. (Tobias 2009: 8)

To locate the early Māori experience, in the 19th century, in the context of creating new survey maps of their homelands, former chief surveyor James McKerrow in 1889 declared that the new colony had no landmarks and that they would have to "create boundaries in the unoccupied wilderness" (Byrnes 2001:95). That McKerrow would

refer to Aotearoa as an "unoccupied wilderness" was contrary to how the early Māori ancestors viewed their land rendering them invisible allowing, as Byrnes remarks, the colonial surveyors "to extend the space and hegemony of the settler community" (Byrnes 2001:95) .

The creation of survey maps required placement of boundary markers. Māori were not unfamiliar with boundary markers. Like other Indigenous peoples, Māori had a rich naming tradition from the time of the first arrivals of the early ancestor up to the arrival of the British colonial surveyors and settlers. They often established boundary markers to delineate their domains from contiguous tribes. As Byrnes observes:

> For Maori, land was the basis of tribal economy and community life. Land was identified through whakapapa and a system of rights and privileges that often relied on boundary markers. . . Boundaries. . . [included]. . . natural features like hills, coasts, rivers, and even cliff faces. . . In the absence of natural features, markers would be made on the ground: a pile of stones, a post or a hole dug into the ground. These signifiers, and the narratives that accompanied their making, would then be committed to memory. (Byrnes 2001:100-102)

Thus the early Māori attached enormous significance to boundary markers and looked upon them as "historical and cultural artefacts" (Byrnes 2001:103) imbued with *mana.* In contrast, Byrnes records that survey boundary markers used to delineate land, represented "powerful symbols of British occupation" (Byrnes 2001:97). Surveyors focussed on creating straight boundary lines with little regard for well-established significant cultural sites such as *kāinga*, *pā, urupā* and *mahinga kai* (Byrnes 2001). Hence the creation of new boundaries by surveyors and their theodolites represented to Māori loss and alienation from their traditional domains (Byrnes 2001). Thus the whole idea of colonisation is the "stripping away of *mana* and an undermining of *rangatiratanga"* (Smith 1999a:173). This thesis argues that mapping must be a process that involves maintaining *mana* and restoring *rangatiratanga.*

Although maps were used primarily to alienate Indigenous peoples from their natural environments, the new maps could not erase the history etched into the landscape by the generations that had inhabited those areas. Nor could those maps erase the

memories and passion their Indigenous inhabitants had for their homelands. However, without maps in the modern world, Indigenous peoples have found it increasingly difficult to defend their ancestral territories from annexation and appropriation of its natural resources.

Grand Chief Stewart Phillip, President of the Union of British Columbia Indian Chiefs (UBCIC) reiterated the burden placed on Indigenous peoples to create maps of their own territories:

> As Indigenous Peoples, we have continually and vigorously resisted being forcefully removed from our traditional territories. We have done so in the face of rapidly changing times and demands, at all times rooted in our spiritual connection to and knowledge of our responsibilities to our respective territories. With the continuing exploitation of the many resources of our territories come relentless, ongoing attempts to negotiate by government and/or industry. When those attempts fail, it often leads to litigation whereby we bear the burden of proof in court to demonstrate the harmful impacts to our territory, our culture and to our communities. (Tobias 2009:7)

To this Berger adds that:

> During the last 30 years, in defense of aboriginal title and rights, indigenous peoples have used maps to convey their histories and express their knowledge of the land. These maps have played an important role, not just as an expression of knowledge, but also as an important tool for effecting change in Canadian jurisprudence. (Tobias 2009:8)

He also reiterates that:

> . . . in the past indigenous peoples lacking maps of their own territories have had great difficulty defending their rights in the face of official government maps. (Tobias 2009:8)

In Australia, Aboriginal groups fighting for recognition of native title are required to prove continuous and undisturbed occupation, use and connection of their ancestral territories in accordance with traditional lore and customs. The Honourable John Von Doussa, QC writes that claimants are required:

> . . . to establish that they hold rights and interests possessed under traditional laws acknowledged, and traditional customs observed, by them substantially uninterrupted since the time of colonization, and that by those laws and customs they have a connection with the land or waters. Proof of their continuing connection with land or waters through use and occupation in

accordance with traditional laws and customs has led to long and complex litigation. (Tobias 2009:9)

However, the principal problems faced by the claimants are the challenges to the reliability:

> . . . of their oral evidence as to their continuing use and occupancy of the land and waters claimed, and objections taken that "expert evidence" based on general enquiry amongst members of the claimant group does not meet the requirements of the laws of evidence to be admissible in litigation. (Tobias 2009:9)

Von Doussa (Tobias 2009) acknowledges that this could have been alleviated if there had been land use and occupancy mapping carried out. Nancy Peluso (2005:280) warns that "given the alternative futures – of not being on the map, as it were, being obscured from view and having local claims obscured, there almost seems to be no choice."

In contrast to the early experiences of mapping in Aotearoa undertaken by the colonial surveyors to impose British control, maps are now an essential tool for Māori to articulate their claims to *mana whenua* (rights of occupation), established by *iwi* prior to the Treaty of Waitangi, to the Waitangi Tribunal.[61] A *Mana Whenua* Report to the Tribunal is usually accompanied by a series of maps depicting significant cultural sites such as *kainga*, *pā* sites, *urupā*, *marae*, *mātaitai* sites and so on, as evidence of use and occupation by *iwi* and their ancestors. These maps form what O'Regan calls "oral maps" (Davis 1990: xiii) which is supported by Kelly (1999) who writes that these "oral maps are still the validation for land claims, many of which are being resolved only now through the detailed work of the Waitangi Tribunal" (Kelly 1999:26). *Mana whenua* mapping is detailed in Chapter Seven.

Pearce and Louis (2008) urge informed use of mapping asserting that:

> . . . geospatial techniques and technologies are not inherently inappropriate for indigenous cartographic representation; rather, we perceive them as flexible and capable of being adapted to suit traditional indigenous cultural geographies if used in an informed way. We suggest that informed use can

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[61] The Waitangi Tribunal, set up under the Treaty of Waitangi Act of 1975 and its subsequent amendments, was established as a Commission of inquiry "to make recommendations on claims relating to the practical application of the Treaty and to determine whether certain matters are inconsistent with the principles of the Treaty" (The Treaty of Waitangi Act 1975 p.908).

be achieved through an emphasis on cartographic language, that is, by
focusing on the structures of the map and the mapping process and finding
ways to shape those structures in order to convey the structures of
indigenous cartographies. (Pearce & Louis 2008: 109, 110)

Cultural mapping is a double-edged sword: on the one hand it documents the oral
traditions of Indigenous peoples; on the other hand it changes the nature of that
information it purports to protect and preserve. Pearce and Louis (2008) comment on
this notion that:

[Cultural mapping] overwhelmingly apply Western cartographic language by
using [Geospatial technologies[62]] to represent indigenous cultural
knowledge. (Pearce & Louis 2008: 109)

Pearce and Louis (2008) argue strongly that Indigenous cultural knowledge is often
assimilated into the conventional western map and urges caution:

Methodological approaches to indigenous mapping have varied depending
on the particular political and cultural context in which they arise, from the
traditional land-use studies of Canada and Alaska to the participatory
mapping programs of Asia and Africa and the implementation of large-scale
tribal GIS programs in the United States. Issues of ontological and
epistemological differences in cartography and map symbolization between
indigenous communities and those who design, market, and provide
instruction in GT (including GIS software) generally have not been
addressed. As a result, indigenous cultural knowledge is often distorted,
suppressed, and assimilated into the conventional Western map. This
practice of locating cultural knowledge without expressing the spatial
meanings and interrelationships of that knowledge preserves "only a
superficial cultural diversity through its products, ceremonies, and
performances whose meaning will be diluted through secular decontexted
performances." (Pearce & Louis 2008: 109)

Although maps are widely recognised in the Indigenous world as having been used as a
tool of oppression of Indigenous peoples and of dispossession of their ancestral
territories, maps are now being used by Indigenous peoples as weapons for reclaiming
their lands and tools for interpreting and articulating their notions about land.
Indigenous peoples around the world are reclaiming their histories, their toponyms,

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[62] Geospatial technologies (GT) include digital maps, satellite imagery, GPS (Global Positioning
Systems) and GIS (Geographical Information Systems)

their cultural landscapes, and their viability as people through the articulation of their ancestral landscapes; by simply sketching lines on a piece of paper to create maps.

Mapping Cultural knowledge

The simple process of sketching a series of lines and symbols onto a piece of paper to create maps has become a crucial tool for Indigenous people to record and document their cultural knowledge and reclaim their place in the world. The process of committing cultural knowledge to paper[63] using mapping tools is often referred to as cultural mapping; a term that often carries with it a host of connotations. Cultural mapping[64] has been described as a method for Indigenous peoples to demarcate and protect their traditional boundaries, to have their rights in their lands recognised, to lay claim to and defend their land and natural resources, to gather and guard their traditional knowledge, to manage their traditional lands and resources, and to exert their self-determination.

Traditional ecological and cultural knowledge and practice are the basis of Cultural maps, which form what Poole (1995:1) calls "packets of environmental data". Indigenous peoples are known to use these types of maps to defend their traditional territories or to reclaim their historical places by renaming them in their own language. Environmental data captured by GPS technology is often compared or linked to other environmental databases captured by the same means.

A fundamental right in the cultural mapping process is the right to retain their cultural knowledge. For Māori this equates to *tino rangatiratanga* and the protection of cultural treasures or *taonga* as articulated in Article 2 of the Treaty of Waitangi. Young (2003) supports this notion of retaining cultural knowledge in his keynote speech to the ASEAN[65] symposium. Pearce and Louis (2008) add that protecting Indigenous cultural knowledge and cultural sovereignty is a common challenge among Indigenous peoples

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[63] As opposed to committing cultural knowledge to memory as is the case with oral traditions

[64] For a more in depth discussion on Cultural Mapping: See UNESCO website: http://www.unescobkk.org/index.php?id=4960, Poole (2003 & 1995), Chapin (2006), Langton (1994), Young (2003), Louis and Pearce (2008), and Tobias (2000 & 2009)

[65] ASEAN, is the Association of Southeast Asian Nations, and Inter-Government Organisation formed in 1967, designed to advance economic, social, cultural progress and regional peace.

that continues to unite them. Furthermore, the Declaration on the Rights of Indigenous Peoples declared in Article 31 that:[66]

> Indigenous peoples have the right to maintain, control, protect and develop their cultural heritage, traditional knowledge and traditional cultural expressions, as well as the manifestations of their sciences, technologies and cultures, including human and genetic resources, seeds, medicines, knowledge of the properties of fauna and flora, oral traditions, literatures, designs, sports and traditional games and visual and performing arts. They also have the right to maintain, control, protect and develop their intellectual property over such cultural heritage, traditional knowledge, and traditional cultural expressions.

Indigenous peoples are the acknowledged repositories of intangible knowledge and are the key to locating their tangible assets. It is they who determine the types of maps required, and methodology employed to manage their resources. This in effect gives the community control over their cultural resources and assets.

Cultural mapping is used to document traditional knowledge thus building up a repository of local knowledge and resources. Pearce and Louis (2008) maintain that as a result:

> . . . indigenous mapping has emerged since the 1970s as a movement that utilizes the power of maps for visually explaining and defending issues that arise from cultural use of territory, including land claims, natural resources, and sovereignty. (Pearce & Louis 2008: 108)

Many Indigenous communities have been displaced from their traditional territories for generations and have lost their link to the land, cultural practices and heritage. It is essential to document local traditions and information about historical sites to instil pride and identity and a sense of belonging before they are completely lost.

UNESCO[67] describes cultural mapping as both a technique and a tool. It is a technique for building community capacity and a tool for safeguarding cultural diversity towards

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[66] International Work Group for Indigenous Affairs, *"Declaration on the Rights of Indigenous Peoples,"* http://www.iwgia.org/sw248.asp accessed 28 April 2010
[67] UNESCO: United Nations Educational Scientific and Cultural Organisation

"social and economic development" (Clark, Sutherland & Young 1995).[68] Cultural mapping tools, techniques and instruments are employed to identify and record cultural resources, activities, as well as current and historical community cultural practices. [69] Poole (2003), on the other hand, draws a distinction between tenure maps and cultural maps citing that whilst the content may be the same, they differ in several ways. The tenure map was primarily for security of tenure whereas the purpose of the cultural map was cultural revitalisation.

Chapin (2006) interprets the purpose of mapping in terms of primary and secondary reasons:

> The primary purpose of mapping of this sort has been, and will continue to be, to claim and defend land and natural resources. Secondary goals include strengthening political organization, recording traditional history and culture, developing education programs on a variety of topics (such as the environment), and planning for economic development. (Chapin 2006: 1)

Whilst Pearce and Louis (2008) advocate the necessity for:

> . . indigenous communities to adapt Western mapping techniques for the representation of local knowledge [which is] essential to both the preservation of indigenous cultural diversity and the realization of indigenous self-determination in the face of global change. (Pearce & Louis 2008:109)

> Maps are now fundamental to indigenous self-determination and perceived to be essential tools for portraying indigenous environmental, political, cultural, and socioeconomic landscapes. (Pearce & Louis 2008:108)

Aboriginal scholar Professor Langton (1994) asserts that the purpose of cultural mapping is for "social, economic and cultural development." She goes on to say that intangibles such as:

> Subjective experiences, varied social values and multiple readings and interpretations can be accommodated in cultural maps, as can more utilitarian 'cultural inventories'. (Langton 1994: 19-20)

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[68] Keynote speech given by Clark, Sutherland and Young in 1995, see the UNESCO website:
http://www.unescobkk.org/culture/our-projects/cultural-diversity/cultural-mapping/
[69] UNESCO: http://www.unescobkk.org/index.php?id=4960 Accessed March 2010.

She also emphasizes that 'place' has value and is pivotal for social development:

> The identified values of place and culture can provide the foundation for cultural tourism planning and eco-tourism strategies, thematic architectural planning and cultural industries development." (Langton 1994:19-20)

At a global scale Young (2003) suggests that there are three good reasons for cultural mapping: first, understanding and sharing culture and cultural diversity; second, re-thinking history; and third, promoting creativity and development. UNESCO agrees that mapping natural and cultural landscapes is crucial to protecting cultural diversity. Young (2003) adds that cultural mapping as a "tool of mutuality", and a "tool for creating togetherness" in a world full of diverse cultures, thus making them visible to the world.

Young (2003) also argues that cultural mapping has a key role in a nation re-thinking its history. Furthermore, he contends that cultural mapping allows a nation to re-discover itself by uncovering hidden heritage and histories. Moreover, he asserts that re-working the past and exploring cultural diversity are brought together through cultural mapping to leverage cultural and social capital.

Preliterate Indigenous societies relied on oral methods for transmitting cultural knowledge from generation to generation. Louis (2007:134) asserts that for Indigenous communities, oral histories, narratives, and spiritual practices and rituals are an important avenue for transmitting their cultural knowledge. They are embedded with cultural nuances that can only be understood and translated by one who is inducted into that inner sanctum and cultural circle of understanding.

Indigenous peoples have a fundamental right to ensure their cultural knowledge is protected as articulated in Article 13 by the Declaration on the Rights of Indigenous Peoples: [70]

> Indigenous peoples have the right to revitalize, use, develop and transmit to future generations their histories, languages, oral traditions, philosophies, writing systems and literatures, and to designate and retain their own names for communities, places and persons.

Thus mapping their culture will allow Indigenous Societies to pass these cultural assets from one generation to the next using a different medium. Their maps will form a unique expression of their understanding of the world and reflect the tangible and visual expressions of their brand of cultural knowledge, their values, and spiritual connections to the heavens and the earth; these maps will stand as living proof and as a testimony of their identity in a world consumed with absorbing them into a single global culture.

Use and occupancy mapping

Maps inscribed on paper or generated in the mind are not new to Indigenous peoples. According to Fox (1998:1), maps have been used for "thousands of years for defining the boundaries of their homes." Hugh Brody (1981:45,46) in his book *Maps and Dreams* reiterates how the elderly amongst the Beaver Indians of Northern British Columbia were able to literally dream up maps in their heads depicting trails used for hunting. He also describes the native intuition of knowing the location of the animals and fish at certain times of the year and the routes that were required to navigate to those locations. Since their survival depended on their ability to locate food sources

across their territories, it was important to create accurate maps in their heads. This section looks at the origins, emergence and development of a technique pioneered in Canada that was used to create maps depicting how indigenous peoples used and occupied their landscapes.

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[70] International Work Group for Indigenous Affairs, *"Declaration on the Rights of Indigenous Peoples,"* http://www.iwgia.org/sw248.asp accessed 28 April 2010

According to Chapin (2006:2), the creation of maps for "political purposes" was carried out in the 1960s and 1970s in Canada and Alaska by geographers and anthropologists in an "attempt to document the occupancy and use of land"; whereas maps created for Indigenous peoples, by Indigenous peoples around the rest of the world commenced in the late 1980s and 1990s (Chapin 2006:2-7). [71] Often recognised by some as a form of Participatory GIS or PGIS, (Chandler et al, 2006:51) the Inuit Land-Use and Occupancy Project of the 1970s was the first known documented study of its kind. Hundreds of Inuit were interviewed in this project resulting in some two-hundred plus maps depicting "seasonal subsistence activities"; since then, further studies have emerged throughout Canada. The land use and occupancy study conducted by Milton Freeman in 1976 for the Inuit of Canada became the method employed by the Indigenous peoples of Canada for negotiating the recognition of their rights to their traditional territories, providing documental evidence of those rights and documenting the knowledge of their elders (Tobias 2000: xii). For Indigenous peoples, the recognition of traditional rights and ownership to ancestral territories and lands is the first step towards assuming responsibility for their lands.

The central aim of Land-Use and Occupancy Projects has been to preserve the traditional knowledge and ways of life of the elders, and ensure that this knowledge is passed on to future generations (Tobias 2000). Given that when elders pass away, a library of unique information is lost, thus elders are important to the cultural survival of the people (ANSC Website[72]).

The amount of information compiled from these projects has provided a rich source of traditional ecological and cultural knowledge crucial for the survival of each unique culture. This storehouse of cultural information provides a valuable tool for local communities to demarcate the extent of their ancestral territories and locate areas of historical and cultural significance such as hunting sites, fishing and trapping resources and burial sites. These studies are often useful on many levels such as establishing co-

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[71] Chapin provides a brief overview of the introduction of mapping for and by Indigenous peoples in his article Native Lands in 1980s working with Indigenous peoples in Central America: the Mosquitia of Honduras, the Darien of Panama, Brazil, Nicaragua, and Guatemala

[72] ANSC is the Alaska Native Science Commission website: http://www.nativescience.org/issues/tk.htm Accessed March 2010.

management agreements with outside agencies, assisting with land-use planning decisions, and addressing land claim issues (Tobias 2000: xii).

Map Biographies
In his book Hugh Brody (1981) presents the idea of 'map biographies' prepared for several Indigenous groups in the Canadian Northwest including the Ojibwa, Yukon, Inuit, Naskapi-Montagnai, and Dene. The technique is based on collecting information from Elders, hunters, trappers, fishermen and gatherers about how they used and occupied the land; the map biography represents a single person's life history describing the extent of the use and occupation of their ancestral lands. Fox (1998:1) asserts that this method of documenting map biographies virtually became the sole method for documenting claims to ancestral lands in Canada. Tobias in his two books (2000 & 2009) details how this method is applied and simply refers to land use and occupancy mapping[73] "as the geography of oral tradition, or the mapping of cultural and resource geography' (Tobias 2000: xi). In contrast, O'Regan thinks of mapping traditional landscapes as "oral maps" (cited in Davis 1990: xiii).

Tobias (2000), in his guidebook to land use and occupancy mapping, describes the hunter-gatherer subsistence lifestyle of aboriginal communities and the visible evidence of their existence etched into the landscape; he also points out that some activities leave no footprints, no "visible evidence". However, as Tobias (2000) writes:

> Instead, they etch themselves in the minds of those who travel their homeland in search of physical and spiritual sustenance. (Tobias 2000: 1)

Tobias (2000) then refers to mental images and maps of their homelands carried around in their heads:

> First Nation peoples carry maps of their homelands in their heads. For most people, these mental images are embroidered with intricate detail and knowledge, based on the community's oral history and the individual's direct relationship to the traditional territory and its resources. Land use and occupancy mapping is about documenting those aspects of the individual's experience that can be shown on a map. It is about telling the story of a person's life on the land. Over time individual experience becomes part of the collective oral traditions, a story of much grander proportions. In this

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[73] Tobias (2000) thinks of land use and occupancy; land occupancy and use; traditional use; traditional land use and occupancy; current use; cultural sensitive areas as the same type of mapping.

respect, use and occupancy mapping is a means to help record a nation's oral history. (Tobias 2000:1)

Participatory Mapping

Participatory mapping is another mapping method that has been employed in various local communities around the world for a wide variety of uses including the mapping indigenous and cultural knowledge (Pearce and Louis 2008). This method differs from use and occupancy mapping and the creation of map biographies in that it employs any number of different techniques ranging from simple hand-drawn maps, the creation of three-dimensional modelling[74] that show the relationships of villages, forests, and swiddens through to using more complicated tools such as GIS. Both participatory mapping and land use and occupancy mapping are concerned with mapping the geography of oral traditions common among Indigenous peoples.

Spatial information technologies include an array of techniques such as simple hand-drawn sketch maps to more complex methods including the creation of three-dimensional models, the use of remote sensing software, GPS and GIS (Fox 1998:1). Sketch maps can be drawn with a stick in the sand or on bare earth, with a pencil or charcoal on paper, or even with blood etched into boards. As Fox (1998) writes:

> Spatial information technology can help demonstrate a close and continuing connection between a community and their land by illustrating the spiritual, economic, and residential dimensions of human-land relations such as ethnohistory, folk taxonomies of flora and fauna and other natural features and processes, place names, myths and legends, etc. (Fox 1998: 2)

Cultural Mapping

UNESCO identifies cultural mapping as an essential tool, methodology and technique for preserving and safeguarding the "world's intangible and tangible cultural" resources and assets.[75] These assets range from historical and culturally sensitive sites, local traditions and knowledge of resource management, ancestral territories and seasonal

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[74] According to Jeff Fox (1998:2) participatory mapping is being used in Northern Thailand villages, and in the Kayan Mentarang Nature Reserve in East Kalimantan, Indonesia. Giacomo Rambaldi, Julius Muchemi, Nigel Crawhall & Laura Monaci (2007) *Through the eyes of the Hunter-Gatherers: participatory 3D modelling among Ogiek indigenous peoples in Kenya*. Information Development. Vol. 23, Nos. This article describes participatory mapping in Kenya

[75] UNESCO Bangkok website: http://www.unescobkk.org/index.php?id=2536 accessed March 2010

movements and activities. Cultural mapping is more than the cartographic representation of land, but includes other "cultural resources and information recorded by alternative techniques." (UNESCO[76]) Cultural mapping projects have emerged among the Kalahari San Bushmen (Crawhall 2003), the Maya (Huff 2006) and Inuit (Freeman 1976) peoples since the 1970s.

Peter Poole (2003) provided a detailed report for UNESCO regarding the origin and purpose of cultural mapping[77]. He argues that Indigenous peoples tend to look at mapping as having a specific function. Cultural mapping (referred to as tenure mapping by Poole 2003) was used primarily for cultural revitalization and is recognised as a vital instrument for:

> . . . recovering control of lost territory, or negotiating access rights to traditional resources or of defending recognised territories against indiscriminate industrial resource extraction. (Poole 2003: section 2.5. fourth para)

Professor Marcia Langton, one of Australia's leading Aboriginal scholars describes cultural mapping as a means to identify and document Indigenous cultural resources (Langton 1994:19-20). She adds that cultural mapping can also record cultural practises "as well as other intangibles such as their sense of place and social value."

Renee Louis (2004:8), Indigenous Hawaiian cartographer describes how Indigenous peoples produce maps in their own language, which are "sensitive to their own cultural and spiritual traditions." Louis (2007:131) insists on Indigenous methodologies being applied to geographic research where she describes Indigenous methodologies as "alternate ways of thinking." (Louis 2007:133)

For Māori, maps of their ancestral landscapes "carry a huge amount of information" about those landscapes and about the "relationship of one place to another." (Davis 1990: xiii) Although a map does not tell us anything about the place names embedded

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[76] UNESCO Bangkok website: http://www.unescobkk.org/culture/our-projects/cultural-diversity/cultural-mapping/ , para 4, accessed March 2010
[77] Cultural Mapping and Indigenous Peoples: A report for UNESCO. Peter Poole, March 2003

in the landscapes, those names carry with them a huge amount of meaning and are a signpost to the human element evident in an oral tradition (Davis 1990:xiii). Often, the meaning of names can only be understood through their association with other names and other places connected through an ancestor or a series of memorable events and epic stories. These stories are repeated often and carefully passed down to each successive generation; thus keeping the history alive and in the present reinforcing the meaning of the names embedded in the landscape. It is the collection of these stories, events and ancestors connected to the names embedded in the landscape that form what Sir Tipene O'Regan refers to as "Oral Maps" (cited in Davis 1990:xiii); a living breathing map, a map that tells a story.

To create maps depicting these living landscapes requires the presence of the human element; that which breathes meaning into the map. It is possible that these stories of place and people can be unlocked through cultural mapping; a process which interprets the elements of Indigenous landscapes. It is critical, then, for Indigenous peoples and for Māori engaged in mapping their ancestral landscapes to adapt these methods in a manner consistent with traditional thinking and doing, or worldview, and more importantly, sensitive to their spiritual and cultural traditions.

Mapping Indigenous Landscapes

If maps are a graphical representation that describes the physical attributes and environs of landscapes and their spatial relationships; then maps have always been a part of the cultural world of Indigenous communities. Indigenous peoples are now using modern mapping tools for a variety of reasons. From the mapping of significant cultural and geographical features in the Amazon to the demarcation of communal territories in Nicaragua to secure tenure, Indigenous peoples find their voice in maps. As discussed below, the Ye'kuana tropical forest dwellers of southern Venezuela use maps to demarcate their traditional territories whilst the Darién of the Panama use maps to illustrate how they use the lands and the natural resources. The San Bushmen of the Kalahari Desert found it imperative to use mapping technologies to aid them in reclaiming their native homelands.

The Kalahari San

The South African San Institute (SASI) project of the mid-1990s concerned with mapping the reclaimed homelands of the San peoples of the Kalahari Desert provides some insight into valid reasons why Indigenous peoples should look into using maps or mapping software to map their cultural or ancestral landscapes.

For many years, the San were a group of "displaced, socially fragmented Indigenous people" who were occupying the least productive parts of their original homelands (Crawhall 2003: 10). In 1994, a group of San peoples, representing the ‡Khomani San, launched an attempt to reclaim their land under a new South African law. Their claim was for the return of their ancestral rights in and to their traditional land in the Southern Kalahari Desert.

SASI, in cooperation with Strata360 and Open Channels,[78] were enlisted to assist the ‡Khomani San community to create maps of their land claim and in the process revive their cultural heritage (Crawhall 2003:10). As a traditional oral culture the San elders had many stories of their region passed down from generation to generation but the opponents to their claim challenged the San to provide more compelling evidence to prove that they were the original occupants of that region (Crawhall 2003:10).

SASI enlisted the assistance of Dr Hugh Brody, anthropologist, and Bill Kemp, a geographer, both known for their vast experience in mapping parts of Northern Canada. The Indigenous peoples of Northern Canada were able to produce "complex maps showing the migratory patterns of animals and marine life" (Crawhall 2003: 10) and because they had maintained a continuous connection to and tradition of hunting throughout their ancestral territories, they were able to "map hundreds of kilometers of their territory from memory" (Crawhall 2003:10). The major difference between the San and the First Nations people of Northern Canada was that the First Nations peoples had undisturbed possession and use of their homelands; the San, on the other hand, had been removed from their homelands and lost cultural contact with their Indigenous

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[78] OPEN CHANNELS is a Media NGO from the United Kingdom

practices for several generations. Brody and Kemp helped the San understand how valuable their oral traditions were to supporting their claim and "how the experiences, stories and knowledge of the old people could be rendered into a textual [or] visual form." (Crawhall 2003: 10) Furthermore, by:

> . . . using maps, the intangible heritage of the ‡Khomani San could be transformed into a medium that would be meaningful to the owners of the knowledge and also to the other stakeholders… (Crawhall 2003: 10)

A review of San cultural knowledge and practices was undertaken involving the collection of stories, recording of views of the elders, and timelines were constructed to show the movement and historical occupancy of the region. Genealogies, affidavits and oral histories were also recorded. However, "it was the mapping that opened up… a new dimension where the indigenous people's voices and cultural framework could be converted into a meaningful medium" (Crawhall 2003:10).

The Indigenous rural communities of the Amazon

Smith et al (2003:25) describes maps as the creation of "mental images" that humans use to navigate through the maze of geographical space. Like other Indigenous peoples who depended upon their intimate working knowledge of their natural habitats for their survival, the rural Amazonian peoples were acutely aware of their natural surroundings and the spatial relationships between the important features of their environment. They created mental images of their surroundings which they used to find their way around their territories (Smith 2003). Orientation came naturally to them within their natural surroundings and they were able to determine direction and distance from their homes to important physical and social features of their environment. This became an important facility when they began to map their world using modern methods and tools (Smith 2003).

The ability to carry mental images of their natural surroundings in their heads was crucial to the survival of the Indigenous rural peoples of the Amazon. Although these images were not expressed in a graphical manner, it allowed them to read and retain the

landscape in their minds and navigate through the maze of geographical features to locate food, plants, cultivations and animals essential for their survival. Furthermore, because of this facility for holding images of their territories in their minds they adjusted quickly to reading modern maps which helped them map their significant sites (Smith 2003).

Smith (2003) sites two examples where maps were created to define specific territories linked to Indigenous communities. The first example involved a number of Indigenous communities in the northern part of the Peruvian Amazon who wanted to protect their natural resources in the headwaters of three rivers; the Ampiyacu, Apayacu and the Algodón from outside poachers. The second involved the Amuesha people who wished to reestablish their historical and cultural ties to an area in the central jungle region of Peru.

Northern Peruvian Amazonians
The first example involved working with leaders from community organisations and consulting with members of twenty-five communities to identify the location of gardens, hunting and fishing areas, forest resources, streams, other features and important natural resources on transparent base maps which were later verified using GPS. The local Indigenous populations used the base maps and satellite images of their territories to orient themselves and to validate the resource-use areas. Sites of cultural significance were also marked on the base maps resulting in 25 separate community maps illustrating their resource use (Smith 2003).

Information from each community map was then digitized and loaded into a GIS from which a draft composite map of all 25 community maps was produced. The Indigenous communities then verified the information contained on the composite map checking the location of resource use, areas of cultural significance and new geographical features. Coordinates for actual hunting and gathering sites were collected using GPS units and were added to the composite map. The composite map was then corrected and used alongside satellite images to mark out the boundaries of a proposed communal reserve in 2001 (Smith 2003).

The Amuesha Peoples

The Amuesha peoples who occupy a narrow corridor of land in the Amazon rain forest extending from San Ramon in the south to Pozuzo in the north were slowly squeezed out of their ancestral territories by an "influx of Andean and European settlers" beginning in 1860 yet managed to retain connection to their ancestral lands through their oral histories (Smith 2003:23). Their oral traditions contain a wealth of knowledge pinpointing special places, mountains, rivers, pools, caves and other geographical features that make up their ancestral and cultural landscape. Their system of toponyms coupled with their extensive storehouse of oral histories referred to important historical figures that were linked to places within their indigenous territory providing a means to map their landscape.

The Amuesha's strong cultural memory of place and history was the critical factor in mapping their ancestral territory in the 1990s. Their oral storehouses are known to contain several hundred oral histories wherein they were able to identify and georeference with names, stories and songs just over 100 mountains (Smith 2003).

Two other vital sources of information that contributed to their cultural maps included current working knowledge of geographical features and historical documents dating back to the late 16th century. These local indigenous communities can still "identify and name geographical features, historical sites" and significant cultural sites within their communities (Smith 2003:24). Some of the historical documents dating back to the 16th century recounted information about place whereas data from the 19th and 20th century contained hydrographic information connected to Amuesha toponyms (Smith 2003).

The data gathered was extensive; pinpointing areas that indicated past connections to the region. Data included place names, associated histories and commentaries, GPS locations of historic places plus a huge amount of hydrographical data including "rivers, streams, springs, waterfalls", and pools of water. Other data included old trails, "caves, dwelling sites, nesting sites, salt licks, and sacred sites, including former temple

sites" (Smith 2003:24). All this data was loaded into a GIS and processed producing overlays to the base maps containing community boundaries.

Both of these examples illustrate how Indigenous communities are using modern maps and mapping tools to define their cultural landscapes. Smith (2003) describes both examples as pivotal to reclaiming and defending their ancestral territories, organizing information about their traditional territories, defending their cultural rights, reclaiming their histories, and for managing and developing their ancestral territories into the future.

The Caribbean Coastline

The Caribbean coastline of Nicaragua is home to several Indigenous groups including the Creole, Rama, Mayangna (Sumu), Garifuna, Mestizos and the Miskitu. The Miskitu (or Miskito) people of the Caribbean coast of Honduras and Nicaragua are the largest Indigenous group in the region and have been prominent in fighting for territorial rights for the Indigenous peoples of the Nicaraguan Atlantic Coast.

The Miskitu people inhabit an area known as the Mosquito Coast along the Caribbean-Atlantic coast of Nicaragua, Central America. This region is made up of lowland coastal areas, savannas and rainforests. The north-eastern part of Nicaragua, known as the Moskitia, was the subject of the Indigenous Miskitu community land claim in the 1990s. The Indigenous communities wanted control over their assets which included forest and fishery products, mineral deposits and seafood. Control over their ancestral territories and its resources were crucial to them. Although part of the Mosquito extends into the east coast of Honduras, only the Nicaraguan area was the subject of this mapping project (Offen 2003).

Offen (2003) describes the lack of titles the Indigenous communities of the Mosquitia had to their lands. The participatory mapping project of 1997 was designed to address this issue by providing an opportunity for the local Indigenous and Creole communities to demarcate their territories to secure tenure. Furthermore, this mapping project

provided a means for the Indigenous communities to articulate their own concepts of land and resource use, ownership, control, and historic rights to land.

The Nicaraguan mapping project of 1997 was a joint effort involving the Center for Investigation and Documentation of the Atlantic Coast (CIDCA),[79] led by the Central American and Caribbean Research Council (CACRC) and funded by the World Bank. In 1996 CACRC was able to buy inexpensive, low-precision GPS receivers, train residents in the council's mapping methodology, and encourage those indigenous societies to map their own territories (Offen 2003).

Although GPS receivers were employed in the mapping project, magnetic compasses were used from time to time to determine boundary points by taking compass bearings and estimating distances (Offen 2003).

The role of Miskitu narratives and history
The Miskitu mapping project relied heavily on a rich source of narratives, held by the "community intellectuals", containing historical accounts that informed the Miskitu community of their cultural rights to land as Indigenous peoples (Offen 2003:387). The Miskitu community intellectuals are considered as the keepers of the narratives and are regarded as the next generation of elders-in-the-making. Community intellectuals are experts at narratives and referred often to Miskitu geography using "metaphorical language steeped in commonplace landscapes, traditional parables and biblical allegories" (Offen 2003:387) and sketch maps of the Mosquitia region.

Cultural landscapes form an essential part of Indigenous identity which include all manner of traditional lore and beliefs used to define who they are. The Miskitu ancestors left their footprints embedded in the landscape in the form of place names forming an essential theme in the narratives. Their cultural landscapes included "petroglyphs, certain humanized plant distributions, hunting trails," and special places permeated by spirits (Offen 2003:388). Mappers gathered ethnographic data about the

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[79] Nicaraguan research institute

communities, emphasizing the past and present land use, to provide evidence of historic and current land claims.

Mosquitia is home to several Indigenous communities who speak different languages; each language has their own place names for the same place. The final maps completed in 1998, contained 90 sheets that represented 100 communities and identified most markers with a single name agreed to by community members who were active in the mapping project. These maps allowed the Indigenous communities to protect, as well as profit from, their properties and assets.

The Ye'kuana people of southern Venezuela

The Ye'kuana people of southern Venezuela are tropical forest dwellers of the Amazon and the Orinoco Basins that have lived as hunters and slash-and-burn horticulturists in that region for around 4000 years (Arvelo-Jiménez & Conn 1995, Lauer 2005). Over that time they developed a storehouse of knowledge consistent with, and an understanding of, the tropical forest ecosystem they inhabited, living on produce from their gardens, fish and game, wild fruits, nuts, insects, worms and frogs (Arvelo-Jiménez & Conn 1995, Lauer 2005). Ye'kuana means "people of the canoes"[80] or "people of the *curiara* (dugout canoe)" derived from the importance of the canoe in their culture and their ability to navigate a wide river territory covering some 30,000 square kilometers.

The Ye'kuana were forced to demarcate their boundaries in defense of their traditional territories. Their ancestral territories were exposed to political intrusion amounting to invasion by national and regional governments that established a biosphere[81] and national park on their lands without consultation (Arvelo-Jiménez & Conn 1995, Arvelo-Jiménez 2000, Lauer 2005). Nelly Arvelo-Jiménez (2000:738-739) describes the convergence of three political crises that threatened the continued existence of Ye'kuana culture forcing them to reclaim their ancestral territories and address their cultural survival. First: the Ye'kuana had waited for twenty-two years for the

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[80] http://www.chez.com/yekuana/OURWORLD/OUR%20WORLD.htm accessed December 2009
[81] A Biosphere Reserve is an international conservation area designated by the UNESCO to protect and preserve the natural resources and systems of an area that is threatened by development.

Government to address the issue of ancestral land property and "produce an unequivocal definition of indigenous land rights". Second: the creation of conservation areas that extended into their ancestral territories imposing foreign ideas about conservation and restrictions on their way of life. Third: frequent land invasions of their ancestral territories by "small-scale gold miners" of neighboring countries, which lead to violence and death. Thus, in 1993 a formal claim to their lands was launched requiring the physical self-demarcation of their ancestral territories (Arvelo-Jiménez & Conn 1995, Arvelo-Jiménez 2000).

The Ye'kuana physical self-demarcation project of their ancestral lands had several key benefits including (Arvelo-Jiménez 2000, Arvelo-Jiménez & Conn 1995): the defense of their territorial boundaries to encroachment and invasion by outsiders; the restoration of their traditional culture, the reconstruction of the first steps taken by their ancestor Kuyujani in demarcating the original boundaries of their lands; and the ability to interact with the modern world in a way that strengthens their indigenous culture rather than diluting it. This process also allowed them to protect the natural resources within their territories and recreate the "maps of their minds" for the world to see.

The Ye'kuana approach to demarcation was a unique blend of modern and old technology. It included the use of modern GPS technology to collect data for the production of technical maps, the scripting of documents depicting elements of Ye'kuana culture and belief systems and the recitation of oral histories to retrace the footsteps of their illustrious ancestor Kuyujani and his original demarcation.

Ye'kuana oral histories had a pivotal role in laying out the historical and cultural foundations of the lands claim. Their oral histories allowed the Ye'kuana to redefine the very first demarcation of their lands and were important in restoring their traditional culture. From their oral histories, the Ye'kuana were able to retrace the first steps of their founding ancestor Kuyujani, a cultural hero, who at the beginning of time conducted the very first demarcation of their lands which he left in trust to the Ye'kuana. He also explained the meaning of each landscape feature and left instructions regarding the use and care of the land, and then vanished with a prophecy that he would return (Arvelo-Jiménez & Conn 1995). This act formed a sacred bond

between the Ye'kuana and their ancestral lands. For the Ye'kuana, their land means physical and cultural survival for them (Arvelo-Jiménez 2000, Arvelo-Jiménez & Conn 1995); an ancestral gift worthy of being protected.

Ye'kuana villages in the upper Orinoco held a number of general meetings to discuss the most effective strategies to protect their ancestral lands. Part of that strategy included documenting their histories. The people chose wise man José Félix Turón to document aspects of the sacred history used to support and legitimize their claim to their ancestral territories. This sacred text embraces their worldview and encompasses some of their most sacred religious, historical and cultural elements and beliefs. It deals with three main themes: first, the Ye'kuana version of the origin and creation of the Earth; second, the Ye'kuana worldview featuring the intimate relationship between the tree of life and the origin of agriculture as well as the role of the cultural hero Kuyujani in forging the link between the Ye'kuana and the cosmological order; and third, the Ye'kuana cultural belief systems and way of life that give meaning and identity to them as a people (Arvelo-Jiménez 2000).

The physical self-demarcation project of their ancestral lands documented their sacred history as part of the overall strategy to support a formal claim to their ancestral lands. Two maps were produced, demonstrating traditional land use activities such as fishing and hunting as well as highlighting places of economic and cultural significance, to support the historical document which was delivered to the government (Arvelo-Jiménez & Conn 1995, Arvelo-Jiménez 2000).

The Darién of Panama

The Darién region of Eastern Panama is, historically, the territory of three Indigenous peoples; the Kuna, Emberá, and Wounaan. It is also the site of a biosphere reserve and two indigenous *comarca*[82] homelands (Herlihy 2003). The Darién region is a hot, humid area of tropical rain forest, which serves as a natural barrier between Panama and Colombia. The Darién National Park established in 1980 was declared a World Heritage Site in 1981 and a Biosphere Reserve in 1983 (Herlihy 2003).

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[82] *Comarca* is a traditional region or administrative division

Peter Herlihy (2003) describes one of the first Participatory Research Mapping (PRM) projects undertaken in Latin America, in the Darién region to address what he calls "the most inaccurately mapped province in the country" even though the Indigenous peoples had "fought for recognition of their land rights in the face of encroaching outsiders". The Indigenous leaders understood the power of maps and readily "embraced the idea of a mapping project to document their expanding settlements and natural resources" (Herlihy 2003:315).

Herlihy (2003) describes PRM as a new way of developing geographic knowledge, combining the disciplines of cartography and ethnography;[83] where the mapping process engages with local cognitive geographic knowledge. The project involved collecting detailed cognitive spatial knowledge the local Indigenous people's had of their surrounding lands and resources and transforming that body of knowledge into standard maps, graphics and descriptive information.

For centuries the Wounaan[84] and Emberá people were semi-nomadic forest dwellers who lived as hunter-gatherers and fishermen. Typically, they developed an extensive storehouse of knowledge of their environment and all its inhabitants helping them to adapt and survive in their unique environment. The Wounaan[85] and Emberá people understood the natural rhythms and patterns of the rainforest and all its inhabitants, including wildlife, incorporating them into their stories, dances and cosmological beliefs. Their technology reflected their understanding of the environment and their subsistence culture.

The PRM project had two objectives: first to create maps illustrating the Indigenous peoples use of the lands and natural resources in the Darién region; and second, to present those results to a national forum on the Darién and its Indigenous peoples (Herlihy 2003).

A series of workshops and field work sessions were held to gather relevant subsistence activity, land and resource-use information across the study area divided into twenty zones. Questionnaires, drafted at workshops, were designed to gather subsistence land-

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[83] Mac Chaplin and Bill Threlkeld produced an extensive study in Ethnocartography entitled: Indigenous Landscapes: A study in Ethnocartography (2001) Center for the support of Native Lands.
[84] http://www.nativeplanet.org/indigenous/embera/ accessed December 2009
[85] http://www.nativeplanet.org/indigenous/embera/ accessed December 2009

use information such as the location of natural resources, fishing and hunting areas, forest resource areas, fruits and medicinal plants, timber for canoes and areas frequented by outsiders gathering resources. Significant landmarks and toponyms were also collected (Herlihy 2003).

Community members, who held relevant geographical information covering the twenty zones, were selected for interviews. The prepared questionnaires acted as guidelines for gathering information regarding areas of subsistence activities. These were accompanied with simple sketches illustrating community "cognitive geographical information" thus locating these subsistence areas within a spatial context (Herlihy 2003:321).

Three sets of different media were used to create twenty different base maps which would be populated with the cultural information gathered in the interviews with local knowledge holders. Simple base maps covering all twenty zones containing the location of settlements, hydrographic features, mountains and other geographical features were produced. Six of the base maps were created from the outdated cartographic maps. A further eight base maps were produced from a series of archival aerial maps that were labelled with relevant geographic information. The final six base maps were prepared from the Panamanian census maps.

All the cultural landscape data gathered from the local communities that represented "thousands of place names and resource-use sites" were plotted onto the twenty zonal base-maps (Herlihy 2003:322) producing the first set of draft maps of their territory. The draft maps were edited and verified by the communities from which the final set of maps was produced at a scale of 1:50,000. This project was an exercise in transforming local cognitive geographical knowledge into standard maps that could easily be understood by themselves and outsiders (Herlihy 2003).

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Conclusion

It is the nature of all Indigenous peoples to tell stories as is the case with all the mapping projects described in this section. For the Darién region of Panama and the semi-nomadic forest dwellers that lived as hunter-gatherers and fishermen, it was to collect and transform their detailed cognitive spatial knowledge of their surrounding lands and resources into maps, graphics and descriptive information. For the tropical forest dwelling Ye'kuana people of the Amazon and the Orinoco Basins of southern Venezuela who had developed a storehouse of knowledge consistent with the tropical forest ecosystem, it was to demarcate their boundaries by retracing the first steps of their founding ancestor, Kuyujani, who conducted the very first demarcation of their lands which he left in trust to the Ye'kuana; this was done in defense of their traditional territories against political invasion and intrusion by their regional government. For the Miskitu people of the Mosquito Coast it was to demarcate and secure tenure to their communal territories and thus provide a means for the Indigenous communities to articulate their own concepts of land and resource use, ownership, control, and historic rights to land. For the communities of the Peruvian Amazon, it was to use modern maps and mapping tools to define their cultural world in order to reclaim and defend their ancestral territories, their cultural rights, their histories, and for managing and developing their ancestral territories into the future. And for the Kalahari San peoples, it was to claim their ancient rights in and to their traditional land in the Southern Kalahari Desert.

Another mapping project that discovered the power and importance of modern mapping tools and methods to help preserve and promote their unique culture was the *Lienzo* of Guatemala. The *Lienzo* project employed an innovative and novel approach to blending an ancient narrative of their geography with GIS mapping tools to bring to life a 500 year old cloth map that told the epic story of conquest.

Section Two: The Lienzo Project

The map that tells a story

One of the most compelling and innovative projects that draw attention to blending the Indigenous technique of narratives with modern web and GIS technologies is the *Lienzo* project of Guatemala (Ibárgüen 2009). The *Lienzo de Quauhquechollan*[86] is known as "the map that tells a story." Compiled almost 500 years ago, the *Lienzo de Quauhquechollan,* considered the first known map of Guatemala, was painted on handwoven cotton cloth between 1530 and 1540 and depicts the story of how the *Quauhquecholteca,* allied with the Spanish, conquered Guatemala between 1527-1530. What is so unique about this project is that the *Lienzo* is considered part of the historical cartography genre; where history is tied to geography (Ibárgüen, 2009:1-3).

The history depicted by the *Lienzo* is conveyed using a series of unique symbols and pictograph images; the full meaning of the map is conveyed with oral narrations. In other words, the *Lienzo* is a map with a story wherein the map acted as a storyboard and the full meaning was conveyed to an audience by a trained *Quauhquecholteca* storyteller (Ibárgüen 2009).

> In our world [the *Lienzo*] belongs to the genre of historic cartography. In the pre-Hispanic world, it belongs to the Mesoamerica tradition of documenting stories of migrations and conquests within their geographical contexts (known as codices). The principal difference with contemporary maps is that, in indigenous documents, geography does not exist without history; nor is history always linear. For the indigenous artists, what was important was to evoke a specific experience, not just to describe a territory. The narrative gave life to the map, not the other way around.

> Another difference between the *Lienzo* and western maps and [*sic*] is that the "reading" of a *lienzo* was a unique experience. *Lienzos* were presented as part of a community ritual, perhaps stretched out on the ground in plazas or marketplace where members of the community could admire them and learn about the stories they told. Instead of being approached in silence, they were always accompanied by an oral narration told by a trained storyteller, who used the *lienzo* as a storyboard as he regaled the audience (Ibárgüen 2009:3-4).

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[86] The *Lienzo de Quauhquechollan,* measures 8ft 5" x 10ft 6", painted onto hand-woven cotton cloth, dated somewhere between 1530-1540 and depicts the story of how the *Quauhquecholteca* conquered Guatemala in alliance with the Spanish in 1527-1530. Digital restoration began in 2007, dynamic web mapping in 2009 http://www.lienzo.ufm.edu/ accessed May 2010

Figure 4. 1: The Lienzo de Quauhquechollan – the map that tells a story. Used with permission of the UNIVERSIDAD FRANCISCO MARROQUIN (Guatemala).

Digital conversion and Web mapmaking

The *Lienzo de Quauhquechollan* was digitally restored over a period of almost nine months in 2006 by an extensive team of experts in anthropology, archaeology, pre-Columbian iconography and epigraphy, ethnobotany, digital technology, graphic design, history, lighting, photography, storytelling and textiles. Once all fifteen sections had been restored, the story was scripted along the lines of the *Quauhquecholteca* storyteller, and animated with a new musical score and sound effects to accompany each segment of the story.[87]

The next step was to blend modern mapping technologies with the geography of a narrative so that it could be displayed on the web. Luis Fernandez (Ibárgüen 2009) explains their innovative approach: (Emphasis added)

> Our goal was to find a way to *MERGE MODERN CARTOGRAPHIC TOOLS WITH THE CONCEPT OF "LIVING GEOGRAPHY"* through which the

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[87] See http://webmaplienzo.ufm.edu/lienzo/ to view the restored product, accessed May 2010

Mesoamerican peoples communicated stories, legends, and traditions based
on collective experience, and which had a narrator as a key component.

. . . we set out to create a web mapping application that would not only relate
the places identified on the Quauhquechollan canvas with an actual
geographic location, but also with the events that took place. . . Our solution
was to develop a _TIMELINE TOOL_ that assumes the role of the "narrator,"
and allows the user to relate historic events with geographic places—
enriched by information—by navigating on the _Lienzo._ (Ibárgüen 2009:3-4)

The idea of using a timeline to replace the role of the narrator in deciphering the context
of the map is an innovative approach. This is an approach that could be adopted on a
static map which merges modern technologies with the geography of narratives. A
timeline tool could be used in the sameway to replace the role of a narrator or
complement the narrative[88] itself; the map would assume its cartographic role in
depicting the geographical location of the places and the people that are part of the
history.
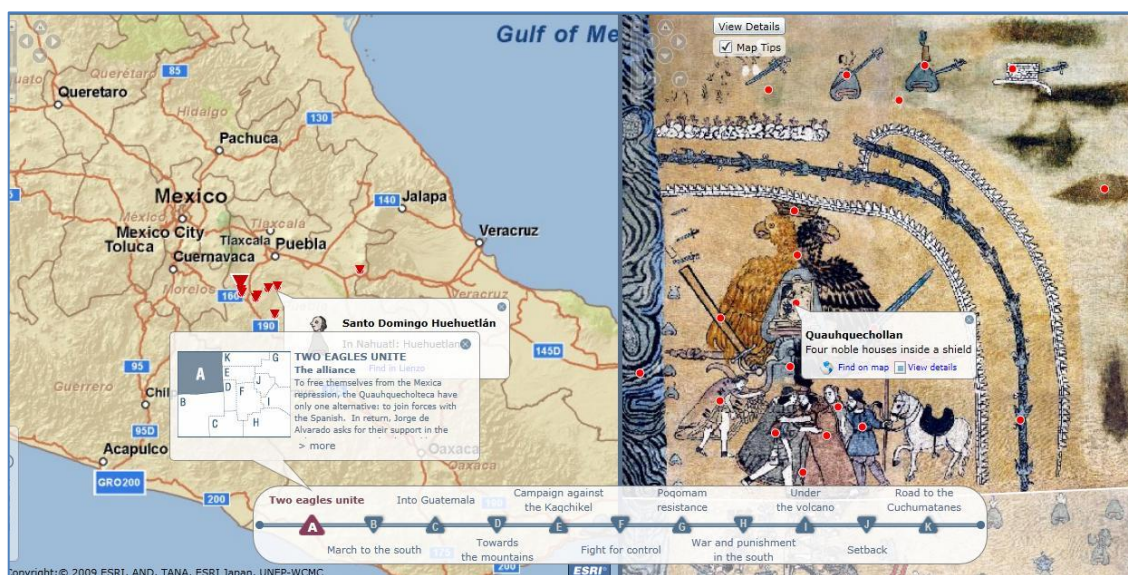
Figure 4. 2: The above image shows the juxtaposition of the modern geographic map and the Lienzo map.
The timeline allows the user to navigate through the Lienzo and the modern map depicting the places on the
Lienzo simultaneously. Used with the permission of the UNIVERSIDAD FRANCISCO MARROQUIN
(Guatemala).

The _Lienzo_ has no spatial reference; it is a story board that merely recounts the events of

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[88] See Chapter Six for an example of how a timeline tool would replace the role of the narrator or
narrative

the conquest as it unfolded in a continuous and seamless path weaving through both time and place. Although the *Lienzo* identifies specific towns, routes and events it does not give spatial location. Thus the developers had to give a spatial reference to the *Lienzo* in order to load the map into a map service.

With the *Lienzo* positioned in geographical space the user is able to navigate though the modern map and the *Lienzo* simultaneously using the timeline. The timeline allows the user to zoom to the exact location on both the *Lienzo* and the modern map and access descriptive information about each location; in this manner the timeline assumes the role of the narrator.

Figure 4. 3: the above image shows a zoom-in view of the Lienzo & the modern map. Used with the permission of the UNIVERSIDAD FRANCISCO MARROQUIN (Guatemala).
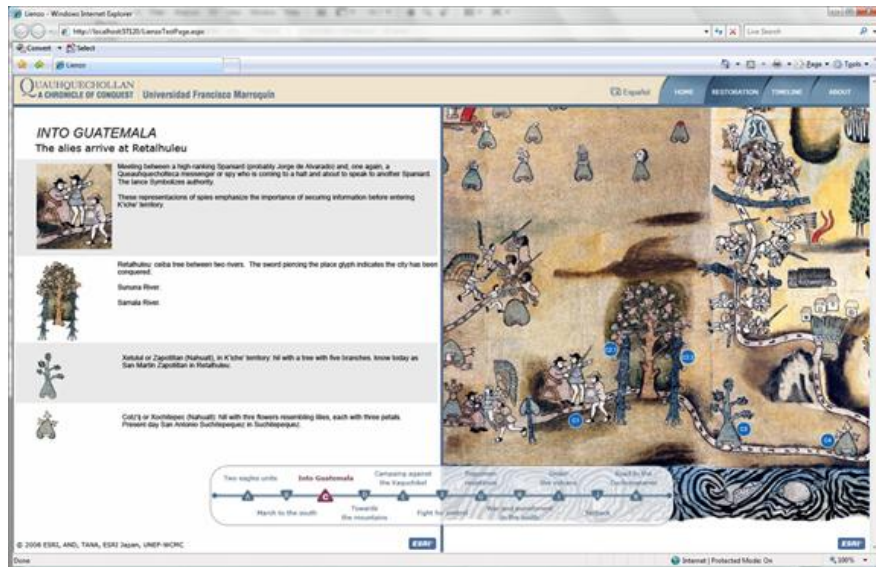
Figure 4. 4: Building on Silverlight API to 'flip' the modern map viewer (left-side) to provide details of the events unfolding in the Lienzo. Image used with the permission of the UNIVERSIDAD FRANCISCO MARROQUIN (Guatemala).

Conclusion

The groundbreaking *Lienzo* project merging traditional culture with modern mapping and web tools offers some direction in solving the objectives of this thesis. This thesis is concerned with merging traditional oral narratives with modern mapping technologies in such a way that the *mana* or integrity of the cultural knowledge is not compromised in any degree. Recognising this, the *Lienzo* project's ingenious approach to mapping oral narratives confirms that oral narratives and modern technology can work symbiotically together. The use of a simple timeline tool may provide the link to interpreting the landscape articulated by oral narratives when blended with mapping and web tools. This concept is explored further in Chapter Six.

Section Three: Indigenous GIS

Indigenous Mapping

The Indigenous Mapping Network[89] (IMN) is an organisation of professional GIS volunteers who work with and for Indigenous or Native communities and whose

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[89] The Indigenous Mapping Network's (IMN) is a conduit for native individuals and groups to meet and build relationships, and assist one another in accomplishing sovereignty goals. Their goal is to bridge the gap between traditional "mapping" practices and modern mapping technologies. (See the IMN mission statement, URL: http://indigenousmapping.net/ accessed May 2010.

mission is to "empower native communities by connecting them with the tools they need to protect, preserve, and enhance their way of life within their aboriginal territories."[90] One of ways in which the IMN accomplish this mission is by hosting an annual conference for Indigenous and Non-Indigenous individuals and organisations who work with and for Indigenous and Native communities to share their research and projects.

The conference provides a forum for building and strengthening relationships, a vital element in working with Indigenous peoples, and bridging the gap between traditional mapping practices and modern mapping and spatial technologies.[91] The principle of building relationships is the foundation of conducting mapping research with Indigenous groups such as *iwi* and is explored and articulated further in Chapter Seven. The 2009 IMN annual conference provided a means for reviewing some of the techniques currently in use by Indigenous communities that would protect and preserve their sacred sites and ancestral landscapes.

The 2009 IMN Conference was hosted by the Oneida First Nations Tribe of Green Bay Wisconsin, United States of America. The conference brought together Indigenous and Non-Indigenous peoples and groups from across the United States, Canada, Australia and New Zealand who are involved with providing Indigenous communities with technology and skills to manage their environmental knowledge and cultural heritage; in effect, bridging the gap between traditional mapping practices and modern spatial and mapping technologies.[92]

Whilst all the presentations were related to the application of GIS tools and mapping Indigenous knowledge, a few stood out that provide some insight to how Indigenous people are protecting their ancestral landscapes; one of the those presentations was given by Christopher Overdorf, of Jones & Jones Architects Landscape Architects and Planners. He spoke of a custom-made GIS-based tool currently being utilized by the Nisqually tribe. It allows tribal planners to communicate the presence of sacred sites to

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[90] IMN mission statement URL: http://indigenousmapping.net/aboutus.html accessed May 2010
[91] IMN mission statement URL: http://indigenousmapping.net/aboutus.html accessed May 2010
[92] IMN mission statement URL: http://indigenousmapping.net/aboutus.html accessed May 2010

non-tribal entities without revealing their exact locations. It uses a hydrographic modelling extension to ArcGIS known as ArcHydro[93] rather than standard mapping conventions of points, lines and polygons. It creates watersheds to protect cultural resources thus providing a way to map what should not be mapped or rather what should not be unveiled to the public at large. This is a universal problem for Indigenous peoples all around the world including Māori; thus the idea proposed by the use of ArcHydro may provide a viable option for Māori to communicate and map their sacred sites without revealing the exact location.

Another presentation, given by Steven DeRoy, referred to First Nations peoples across Canada and their use of GIS tools to manage and plan future use of their homelands. They use a technique known as map biographies[94] pioneered in the 1970s to document indigenous knowledge of use and occupancy; GIS tools are used to convert that knowledge into maps. The map biography method is essentially a data use and occupancy collection method described in detail by Terry Tobias (2000 & 2009). His technique details a series of steps that allow First Nations researchers to "logically and sensitively elicit, record and analyze detailed use-and-occupancy data" (Tobias 2009:17).

It would appear that Indigenous people share similar relationships with their ancestral domains and face similar problems in protecting and preserving their cultural assets. It was particularly pleasing to network with Indigenous and Non-Indigenous groups with similar experiences, problems and unique solutions to those problems. For example, as an Indigenous woman, Dr Donna Miranda-Begay of the Tubatulabal and Navajo Nations works closely with her own community. Her presentation was concerned with mapping Cultural Sensitive Resources in a sensitive way. She advocates an approach built on trust and understanding. This suggests that working with Indigenous peoples and tribes is an innately intuitive process that is part and parcel of being indigenous, having a knowledge of your language, an understanding the customs and protocols and a sense for the historical background and political makeup of the tribe.

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[93] The tools contained in ArcHydro permit the creation, manipulation, and display of hydrological features and objects within the ArcGIS environment. ArcHydro combined with ArcGIS provides the flexibility to work with watershed datasets as well as stream and river networks.
[94] The map biography data collection method is explored further in Chapter Seven.

A number of key principles were common among the tribal and non-tribal participants including: Indigenous or tribal control and respect of knowledge; tribal involvement in the mapping of tribal lore, managing cultural landscapes, mapping community values; and identifying what should be mapped and recorded. Other concerns included: identifying what information should stay restricted to the community; and the protection of cultural resources, a priority for tribal planners, which is not always met by non-tribal planners or government agencies. Of universal concern among Indigenous people was how to communicate the sensitivity of cultural resources; the implementation of tribal and Indigenous values into the use and application of GIS; and finally building trust and understanding with Indigenous communities in the entire mapping process.

Building trust and strengthening relationships is a constant theme with many Indigenous people. It is the key to mapping oral histories for *iwi* as explored in detail in Chapter Seven. As Dr Ridges pointed out, developing relationships of trust with the local communities was the key to unlocking the potential for those communities sharing their stories about their sacred sites (personal comments Dr Malcom Ridges June 2009).[95]

Documenting oral histories are of great concern to Indigenous nations. First Nations are recording their oral traditions using map biographies that are digitized into map format. These maps provide evidence for proving "Aboriginal rights and title" to territories and help to "negotiate co-management agreements" over tracts of land. They are also used to determine the likely "impacts of development activities", provide up to date evidence of ongoing use and occupation of tribal territories, and "provide baseline data for future planning initiatives" (DeRoy 2009:12).

Conclusion

Mapping of Indigenous lands is largely a social event as much as a technical exercise of applying spatial technologies to collect information about how they relate to their

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[95] Ridges, M., (2009) VIP mapping: Values, Interests & Priorities. Keynote address given to the Indigenous Mapping Network Conference, June 2009, Green Bay Wisonsin.

homelands. As Indigenous peoples carry 'maps in their heads', Indigenous mapping is largely a reflection of how they see and interpret their places, their history, their identity, and their relationships with their lands. Some authors have urged caution in adopting western mapping practices to map their notions of land; however, maps can represent worldviews and show the historical and cultural connections between people and landscapes.

This chapter examined why Indigenous peoples began to map their interpretations of place and explored some of the innovative methods that emerged out of Canada in the early 1970s to claim back their territories and to become visible as a unique people with a unique view of the world. Furthermore, this chapter looked at how they have adopted modern mapping techniques and sophisticated information technology to protect and preserve their sacred places; and more importantly, the reasons or motivation behind adopting spatial technologies. Several authors have suggested a need for Indigenous communities to adopt and adapt GIS mapping technologies to maintain a grasp on their traditional cultures in the face of an encroaching global culture.

Some of the mapping projects that have emerged are very innovative and provide glimpse at how Indigenous peoples are mapping their cultural landscapes in a way that reflects the nature of their culture; such as the *Lienzo* project of Nicaragua. The *Lienzo*'s innovative approach forms part of the solution for this thesis in finding an appropriate way to merge modern spatial information technologies with instances of Māori oral narratives.

The following chapter will explore how Māori interpret landscape and how Māori *iwi* and groups are applying mapping and mapping technologies to their cultural landscape.

Chapter 5: Interpreting the Māori World using Maps

Introduction

GIS mapping technologies has found widespread use within Indigenous communities around the world. Chapter Four examined how Indigenous peoples map their interpretations of place. It also looked at examples of how they have adopted modern mapping techniques and sophisticated information technology to map their sacred places and more importantly, the reasons or motivation behind the move. Moreover, Chapter Four unveiled one of the key concepts that will form part of the solution for this thesis; the *Lienzo*. This chapter turns the attention to the Māori world and their interpretation of place.

Māori interpret place in much the same way as other Indigenous peoples; their interpretation is based on their world view. This chapter is about *whenua*, it is about Māori notions and concepts about land and ancestral landscapes, and the ways in which Māori ancestors interpreted their places and described their landscapes. This chapter will examine the introduction of mapping and mapping technologies and the benefits of Māori adopting mapping technologies. It will look at how Māori interpret their sacred and ancestral sites and landscapes with illustrations drawn from a huge body of oral narratives. It will examine some of the earliest maps created by Māori ancestors at the point of contact with the Europeans; it will also look at how the ancestors used oral narratives to describe and delineate spatial relationships before it considers the adoption of GIS mapping tools.

GIS mapping tools have been adopted by Māori to manage their spatial information. Although GIS has been available in this country for at least two decades there is very little information available in the way of publications or research by Māori. Hence an examination of Māori uptake of GIS is conducted using information gathered from two Māori specific GIS conferences. The first *hui* or Māori GIS conference occurred in June 1996; the second in May of 2009[96].

This chapter will explore the subject in three sections. Section one will be a discussion on *whenua* and ancestral landscapes. Section two will be a discussion on mapping in Aotearoa*;* exploring maps made at the point of contact with European. This section will

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[96] At the time of writing, another Māori GIS conference was hosted in Wellington, September 2010.

also look at methods used by Māori ancestors to determine spatial relationships. The third section will look at recent attempts by Māori to adopt and adapt the use of modern mapping technologies such as GIS.

Section One: *He tāngata, he whenua*: the blending of place and people

Ancestral Landscapes and sense of place in Aotearoa

Māori interpret place using a raft of oral narratives such as *kōrero pūrākau* or ancient stories involving ancestors, *whakapapa* or complex genealogies, *mōteatea* or classical chants, *whakataukī* or proverbial sayings, *karakia* or ancient incantations and *pēpeha* or ancestral utterances. Chapter Two explored the Māori worldview and the makeup of that view. More importantly, Chapter Two provided examples of how the Māori view of the world can be illustrated using *whakapapa* and *karakia*.[97] Chapter Three extended the examples in Chapter Two using *karakia*, *whakapapa* and *mōteatea* to illustrate Māori cosmology and the creative stories, the formation of humankind, the importance of *whakapapa*, and the source of knowledge for Māori. Chapter Three also described the position Māori occupy in the universe and the world they inhabit. This section will look at ways in which Māori describe their place, their homelands, and their ancestral landscapes using similar examples from oral narratives.

One of the most important elements in the sense of place that binds Māori to their landscape, and vice-versa, is the concept of *whakapapa*. This was considered in Chapter Two and Chapter Three. The importance of *whakapapa* in articulating of sense of place is illustrated by Ailsa Smith wherein she states that *whakapapa* (2001: 60):

> . . . connects Māori in elemental ways to this landscape and stretches back
> through mortal and godlike ancestors to the earliest ages of the world.

The Māori sense of place is captured in song, story and ritual. Robert Bruce Hay (1990) asserts that rituals, place names and stories cultivated a sense of place:

> Māori belong to the earth, especially around their *marae* (meeting house and
> grounds), referring to that location as *papa kāinga* (home ground) and their

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[97] See Chapter 3 Section 2 for detailed discussion on the use of *karakia* and *whakapapa*

'place to stand' (*tūrangawaewae*). Māori sense of place is culturally developed through tribal rituals, and reinforced through place names, carved designs, and legends which remind them of their heritage. (Hay 1990: iii)

Hay (1990) raises two key concepts in the above extract: that of *papakāinga* and *tūrangawaewae*; notions that are part of the Māori landscape. *Tūrangawaewae* describes a sense of belonging, a 'place to stand' that is derived from *whakapapa* to the region and people of the region, living in the region and actively participating in tribal affairs. *Papakāinga* is a concept that is related to location or *whenua tipu;* it is your home, your place, the place where you belong.

Douglas Sinclair in King (1992: 64) adds that this belonging to the earth is often reflected in the passion that Māori have for their land: (macrons not used in original text)

> *Ma te wahine ka tupu ai te hanga nei, te tangata*
> *Ma te whenua ka whai oranga ai*
> *Whai hoki, ki te tangohia to wahine e te tangata ke*
> *Ka ngau te pouri ki roto i a koe*
> *Na, ki te tangohia te whenua e te tangata ke*
> *Ka tapu to pouri ano*
> *Ko nga putake enei o te whawhai*
> *Koia i kiia ai*
> *He wahine, he oneone, i ngaro ai te tangata*

The translation offers some insight into the reasons Māori go to war; the value of land is embedded within the text:

> Women alone gives birth to mankind,
> Land alone gives man his sustenance.
> No man will lightly accept the loss of
> his beloved wife, nor that of his sacred land.
> It is said truly that a man's destroying passions
> Are the love of his wife and love of his land.

Ma te whenua ka whai oranga ai, in other words, 'land alone gives man his sustenance' is a reflection of the role of *Papatūānuku* the earth mother; her role is that of nurturer, our role is that of guardian, caretaker or *kaitiaki*. *I ngaro ai te tangata* reflects the lengths a person will go to, to protect his land and women.

Song of the landscape

Song or rather *mōteatea* is another way in which Māori express their sense of place. *Puhiwahine* in her epic song *Ka Eke ki Wairaka*, describes her sense of place with *kaati au ka hoki ki taku whenua tipu, ki te wai koropupū i heria mai nei*. "Thus I return to my homelands, to the bubbling pools that were brought here." (Ngata & Jones 2006, part 1:200)

The *oriori*[98] composed for *Tamaunga o te rangi* by *Maperetahi* (Ngata & Jones 2006, part 3:38-55) is an classic *whakapapa-whenua*[99] song that reveals all the special places that *Tamaunga* belongs to thus providing another example of sense of place embedded in song. For example, the following extract identifies seven special places that *Tamaunga* is encouraged to remember: (Ngata & Jones 2006, part 3:44) (Emphasis added)

Kia whakarongo koe te mahi a-waha	You are now to listen for the voice
Nō tō tuahine, nō Rua-kapanga-nui	Of your sister, *Rua-kapanga-nui*
Whāia atu rā kai Te Kahika e	Trace it to *TE KAHIKA,(1)*
Kai Te Raparapa e	Thence on to *RAPARAPA,(2)*
Ka hikoi te haere	Hasten the footsteps
Me kore e mau i a koe	And you may yet overtake her
Kuhu atu e koe ngā rauaruhe kino	Enter the wild fern-lands
I roto Karangaroa, kia ui e roto	Among the hills of *KARANGA-ROA,(3)*, pondering the while
Ko hea tēnei whenua? heke atu e koe	"What lands may this be?" you will now
I roto o Te Houi, kia kau rā koe	descend into *TE HOUI(4)* and there you will
I ngā wai ratarata i roto Manga-o-wira	bathe in the clear waters of *MANGA-O-WIRA,(5)*
Kia whakaeke koe te Niho-o-te-kiore	now ascend up on to *TE NIHO-O-TE-KIORE (6)*,
E whawhai atu ana Te Mata o Rangaranga	and you will then wend your way to *TE MATA O RANGARANGA,(7)*
Ka puta ka tae koe kai te kainga nā	thence onward and you will reach a home

Apart from the first verse, the entire song contains significant place names. Children are often taught in this manner about the extent of their *whenua tipu*, their sacred places that are a part of their ancestral histories and stories.

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[98] A. T. Ngata & P. Te Hurinui Jones (2006) *Ngā Mōteatea*. "He Oriori mō Ta Maunga-o-te-rangi." Part 3: 38-55
[99] The land imbued with place names and ancestors

Another element of the Māori landscape is the way in which spatial relationships were determined. The following song, a *tangi atahu* composed by *Tutekohi* (Ngata & Jones 2006, part 3: 388-395) at the death of his dog relates to famous ancestors and their dogs; it also provides clues to how the natural elements are used to locate important fishing grounds.

The following extract mentions two stars: *Rehua* and *Eretoro* and the southerly wind known as *Tonganui*[100] to locate a specific fishing ground at night. (Ngata & Jones 2006, part 3: 392, lines 23-24) (Emphasis added)

Ka whanake i raro rā te pūai a Rehua	It goes down with moisture from <u>*REHUA*</u>,
Te pūai Eretoro, Tonganui	The moisture of <u>*ERETORO*</u>, and of <u>*TONGANUI*</u>

Although this song does not explicitly indicate how to locate the fishing ground, it was used to implant the information into the child's mind at a young age. When the child was old enough to raise the question about the meaning behind the song he/she would be taught those lessons.

Another part of the song contains heavenly *whakapapa; Hine-rau-maukuuku* (*Ma-uku-uku* in the song) and *Tauwharekiokio* who were two of the wives of *Ranginui* the sky father. These two names are reflected in the landscape of the *Tūranga* region: they depict the wetlands and dry-lands (Ngata & Jones 2006, part 3: 392). (Emphasis added)

He wahine iti nā Rangi, koia rā Mā-uku-uku	A junior wife of Rangi the sky father was <u>*MĀ-UKU-UKU*</u>
He wahine iti nā Rangi, Tauwharekiokio	A junior wife of Rangi the sky father was <u>*TAUWHAREKIOKIO*</u>
Unuhia rawatia i roto i tēnei	Tis' from here we will extract,
Kei Turanga rawa, e tama	And commence in *Tu-ranga*, o son.

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[100] Ngata & Jones (2006) Part 3: 395-395 refers to *Tonganui* in the notes as the "name of the house on which the hook of *Māui* was caught". Māori names/place names often have several meanings.

Loss of life was a constant theme in *mōteatea*. Often, composers drew upon their intimate knowledge of the special places, the environment, the genealogies, the histories and the tales of that person to compose a fitting tribute to the deceased person. In this *waiata tangi* (lament) composed by *Mananui te Heuheu* for his father *Hereara*, *Mananui*, known as the *taniwhā* of Taupō, displays his unique insight to his world in the opening lines: (Ngata & Jones 2006, part 1: 262) (Emphasis added)

Titaka kau ana ngā manu o te ata,	The birds of the morning fly distressfully
ka riro ko koe rā, ī	about, now you are gone!
Haere rā e pā, i te hāhātanga o PIPIRI	Depart, O Sir, with the first breath of Winter.

Mananui is referring to the mist that rises from the frost that is often a feature of the Taupō region especially during the winter months or *Pipiri*. Several lines down, *Mananui* chants: *"Kawau aroarotea, ka tū tēnei kei te paenga i o riri"* (Ngata & Jones 2006, part 1: 262, line 10). He refers to the *kawau* or shag that is sometimes seen on Lake Taupō landing on a rock called *Te Upoko o Waipare* often referred to as a *taniwhā* or demon. When the shags land on the rock and fly off one by one, it is perceived as an omen of death (Ngata & Jones 2006).

Te Heuheu lived in the village of *Waihī* on the southern edge of Lake Taupō. The following line *"Nō ngā rake Manawa i te tahatika ki Pungarehu"* (Ngata & Jones 2006, part 1: 262, line 12) is a reference to *Pungarehu*, a place just above the *Waihī* village.

Geographical, Cultural and Spiritual Positioning

Māori have a unique way of positioning themselves geographically and culturally within their world. This is often achieved using *pēpeha* or *whakataukī*; for example, I belong to the *Tūwharetoa* tribe of the Taupō region, of Aotearoa New Zealand, thus we use this *pēpeha:*[101]

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[101] This *pēpeha* describes features of the land clothed with names given to the region by ancestors who inherited the region. Inherent in each name is a sacred corpus of oral traditions that describe the deeds of the ancestors, imbue the land with character and shape the identity of the local *iwi* or tribe as a separate and unique people of Aotearoa, New Zealand; behind each name is a story. These are the oral traditions

Ko Tongariro te maunga	Tongariro is the mountain
Ko Taupōnuiatia te moana	Taupōnuiatia is the lake
Ko te Heuheu tonu te tangata	te Heuheu is the chief
Ko Ngāti Tūwharetoa te iwi	Tūwharetoa is the people

As a member of the *Tūwharetoa* tribe of Taupō it would be appropriate to use the above *pēpeha* to position myself geographically and culturally within Aotearoa. Thus wherever I roam within my own country it is appropriate to convey who I am to others using this *pēpeha* or a variation of it, but these elements are always present no matter what the variations. To be culturally positioned means to be positioned within the world; this is often expressed by the following *whakataukī*:

| E kore koe e ngaro | You will never be lost |
| He kākano i ruia mai i Rangiātea | (you are) a seed planted in Rangiātea |

When *whaikōrero* (formal speeches) are uttered at formal proceedings whether on the *marae*[102] or at other venues, *whakataukī* or proverbial sayings are one of the techniques often employed by *kaumātua* (elders). *Whakataukī* are used to teach, to reinforce a point, to encourage wise action or often to persuade careful debate about crucial issues before decisions are made. For Māori, the *whakataukī* above, is often used to inform them that wherever you roam, or whatever you do, you will never be lost if you always remember who you are and where you come from. A sense of place coupled with a sense of belonging to a specific place feature highly in the Māori ethos. *Rangiātea* is unique in this instance in that it represents a place in a spiritual realm as well as a place in the physical realm or earth. Hence a spiritual positioning to a place in the highest heaven is established.

In the traditional *kōrero pūrākau* (legends) of the Māori, *Rangiātea* occupies a significant position as the spiritual homeland or origins of the Māori. *Rangiātea* in the

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that position the author geographically and culturally as a member of the *Tūwharetoa* tribe and as a Maori within the Maori view of this world.

[102] See Chapter two, section three, subsection: two worlds in one country for an explanation on the function of the *marae*

above *whakataukī* refers to the *marae ātea* (forecourt) in front of the *whare* of *Io-Matua-te-kore*, the Supreme Deity. The *kākano* (seed) refers to the spirits of humankind. The inference drawn from this proverb is that the seeds were sown in the spiritual homelands or origins of the Māori; in *Rangiātea*, the realm of the Supreme Being, *Io.*[103]

Just as *Rangiātea* in the highest heaven was imbued with *tapu,* so too are the *marae* in Aotearoa considered a *wāhi tapu* (sacred place). *Iwi* throughout Aotearoa *whakapapa* (trace their links) to a *marae.* The word *marae,* however, is generally used to refer to the whole complex, including all the buildings and the open space surrounding the *wharenui.* The *marae* carries great cultural meaning and significance and is the political, social and cultural centre of *iwi* Māori throughout Aotearoa. Technically, the *marae ātea* is the enclosed space or forecourt in front of a *wharenui* (meeting house). The *marae ātea* is very *tapu.* Visitors to the *marae* are welcomed onto the *marae ātea* in a very formal fashion. To enter onto the *marae* is to be enclosed by the *tapu* of the area and the *kawa* (protocols) of the *marae.* Formal speeches are conducted on the *marae ātea* between the hosts and the visitors. The speakers from both sides are located on the *paepae* (seated area for speakers) where *whaikōrero* (formal speeches) are exchanged before the visitors are permitted into the inner sanctum of the *wharenui.*[104]

According to the account given by *Whatahoro* (Smith 1913), *Rangiātea* was located in the upper-most heaven known as *Te Toi-o-ngā-rangi*, or *Tikitiki-o-rangi* and was the abode of a single deity, *Io-matua-te-kore*. As such, this place was considered to be of the highest *tapu,* a *wāhi tapu* of the highest order, insomuch that everything in that realm was imbued with the same level of *tapu* (sacredness).

An ancient institution known as the *Whare Wānanga* was situated within the realm of *Io* and contained knowledge of the highest order; the *Whare Wānanga* was known as

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[103] *Io* had many names: *Io-matua-te-kore; Io-nui, Io-roa, Io-matangaro, Io-i-te-pukenga, Io-i-te-wananga* and so on.
[104] See Chapter Two, section three: the Māori world view, for a full explanation of the rituals of encounter that occur on the *marae* and the *tapu* associated with the formal occasions that occur on the *marae.*

Rangiātea. In the account given by *Whatahoro*, it was from this sacred realm that the great ancestor *Tāne-nui-a-rangi* came to obtain the three baskets of knowledge mentioned in chapter 3. Those baskets were brought to earth and housed in a purpose built *Whare Wānanga*; these baskets became the resource for Māori for ordering their society (Smith 1913). Thus, Māori are able to position themselves culturally and geographically within Aotearoa, and spiritually within the cosmos among the *atua*.[105]

Embedding the landscape: the merging of *tāngata* and *whenua*

Pre-European ancestors of the Māori demonstrated innovation and adaptability from the time of the settlement of Aotearoa up to the present day. On their arrival to Aotearoa, the ancestors of the modern Māori adapted quickly to their new environment implementing skills, arts and technology developed in previous lands (Buck 1950). Land and the natural environment yielded resources that quickly became the central element in their survival, permeating the fabric of their society to such an extent that the land became known as the mother of all living or *Papatūānuku.*

Often, the early ancestors looked upon the land as possessing human characteristics and referred to the land as ancestor. For example, *Tama-te-kapua*,[106] captain of *Te Arawa* canoe, having observed *Maketū* point in the distance, stood up touched his nose and pointing to the spur pronounced: *"ko te kureitanga o taku ihu"* translated as "the bridge of my nose". Other members of the canoe followed suit naming landscape features after parts of their bodies. *Tia* called a small hill *"Ko te takapu o Tapuika"*, "the belly of *Tapuika*"; *Hei* designated a stretch of land between a mountain and a range *"Ko te takapu o Waitaha"*, "the belly of Waitaha" (Grace 1959:52). Further examples of naming traditions can be found among other *iwi* all over Aotearoa, New Zealand (Davis 1990).

Royal (2002:27) refers to the "unification of land and people", which is amply demonstrated by the naming traditions of the early Māori. He cites the statement

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[105] The lore of the *Whare-wānanga,* or, Teachings of the Māori college on religion, cosmogony and history recorded by *Whatahoro* from the teachings of *Te Matorohanga* and *Nepia Pohuhu*, *tohunga* or priests of the *Whare-wānanga* (*Te Rawheoro*) of the East Coast, New Zealand; translated by S. Percy Smith. (1913).

[106] *Tama-te-kapua*, *Tia* and *Hei* are all ancestors of the *Te Arawa* canoe.

Mananui te Heuheu, ariki of *Ngāti Tūwharetoa*, made when he "rejected signing the Treaty of Waitangi in 1840" as an example of this feature of unification. *Te Heuheu* referred to certain mountain peaks as parts of his body thus making the land sacred; a sacred domain for his spiritual authority: (macrons not used in original text)

> *Ka naomia atu e ia, ka motuhia tona tinana; kotahi o ona kuwha ka whakairia ki runga o Titi-o-kura, kotahi ki runga o Otairi, kotahi o ona peke ki runga o Paretetaitonga, kotahi ki runga o Tuhua maunga. Ko tona mahunga ki runga o Tongariro, ko tona tinana me takoto ki Taupo. Ko tena kupu nana he whakatapu i te whenua, ara, hei rohe mo tona mana….*
>
> His body then 'fell' away. One of his thighs was alight upon Tītī-o-kura, [107] another upon Ōtāiri. One of his shoulders was upon Paretetaitonga, another upon Tūhua. His head was upon Tongariro and his body lay upon Taupō. This was done to render the land sacred and as a domain for his spiritual authority. (Royal 2002:28)

In addition, one of the more apt descriptions of land is found in the 1835 Declaration of Independence where the land is referred to as: *"he whenua rangatira",* the chiefly land (New Zealand History Online, Transcript, para 1). [108]

More recent examples that refer to land as *wāhi tapu*, or sacred places, include that of the Rotorua tribal grouping, *Ngāti Rangiteaorere*. They drew attention to the stand of 150 year old *kahikatea* trees nestled at one end of the Rotorua airport as *"ngā iwi o Rangiteaorere",* the people of *Rangiteaorere*. [109] *Ngāti Pukenga* in the *Tauranga* area registered the mountain behind their *marae* as a *wāhi tapu*. This was designed to protect the mountain as a *wāhi tapu* and to recognise the *maunga* as a cultural icon; their *maunga* is often referred to as *"he maunga whakairinga kōrero"*, [110] a mountain that stands as a record of the words of their ancestors over many generations.

Land as cultural survival

Land was and always has been imperative to the economic survival of Māori; today it is central to the cultural survival of Māori. Several events emerged over the last four

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[107] Tītīokura, Ōtāiri, Paretetaitonga, Tūhua and Tongariro are all significant mountains or peaks in the North Island. Taupō is the largest lake in New Zealand nestled in the centre of the North Island.

[108] New Zealand History Online Website: http://www.nzhistory.net.nz/media/interactive/the-declaration-of-independence Accessed March 2010. The Declaration of Independence of New Zealand signed in October 1835 by thirty-four (swelling eventually to fifty-two by 1839) Northern chiefs who became known as the Confederation of United Tribes and the British resident at New Zealand, James Busby. The Declaration was an attempt by Busby towards making New Zealand a British colony.

[109] *Marae*: TV programme, Television One ,Sunday, 8 December, 2002.

[110] Te Awanuiarangi Black, *Marae* TV programme, Television One, Whiringa-a-rangi (November) 2002.

decades that demonstrate Māori passion and commitment with regard to cultural survival as a unique people. Māori were experiencing signs of loss: of language, of family structure, of tradition and of land and status. This gave rise in the 1970s to prominent protest groups such as *Ngā Tamatoa*, the *Waitangi* Action Committee and *He Taua* who employed the art of protest to highlight a range of Māori concerns including loss of land and the decline of the Māori language. Furthermore, the 1970s saw the rise in Māori demands for recognition of the Treaty of Waitangi with calls to honour the Treaty. Whina Cooper at age 82 led the Land March or *hikoi* covering the length of the North Island, from *Te Rēinga* (at the tip of the North Island) to Wellington (at the bottom of the North Island) in 1975. One of the aims of the march was to obtain a guarantee that "not one more acre" of Māori land would be alienated. The march captured on-route thousands of supporters which included "those searching for their *Māoritanga*[111] and those afraid of losing it". [112] As a result of sustained protest against breaches of the Treaty of Waitangi by the Crown, the Waitangi Tribunal was established under the Treaty of Waitangi Act 1975. The Waitangi Tribunal was established as a Commission of Inquiry to investigate any claims of breaches of the Treaty of Waitangi that had occurred from 1975. This mandate was amended in 1985 to investigate claims back to the signing of the Treaty in 1840.

More recently the Labour Government's controversial Foreshore and Seabed legislation of 2004 galvanized Māori from all around the country once again to march on Parliament. The hugely divisive bill designed to strip Māori rights under article two of the Treaty of Waitangi to the foreshore and seabed brought Māori together in a *hikoi* from both the top of the North Island and the bottom of the South Island converging en-masse on Parliament grounds in May 2004. The *hikoi* clearly demonstrated Māori passion and connection to the land.

The concept of Māori belonging to the land and water is entrenched in the cosmological premise that the earth is *Papatūānuku* the Mother and that through divine genealogical links, Māori belong to her just as she belongs to Māori. The Māori sense of belonging

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[111] *Māoritanga* is an earlier term for *tikanga* or customs
[112] Waitangi Tribunal Report: *Pathway to Protest*. http://www.waitangi-tribunal.govt.nz/reports/northislandnorth/wai009/chapt09/chapt0902.asp accessed May 2010.

is also reflected in the Māori language. For example, as a person from the tribe of *Tūwharetoa* it is appropriate to say *Nō Ngāti Tūwharetoa ahau,* I am from the *Ngāti Tūwharetoa* tribe. When Māori speak of belonging to the land, they would say *nōku te whenua*, I belong to the land, rather than *nāku te whenua*, the land belongs to me, in the sense of ownership rather than an intimate relationship. Hence the notion of *tāngata whenua* is that *tāngata* (people) belong to *whenua* (land) and *whenua* belongs to *tāngata*; hence the merging of *tāngata* and *whenua*.

Section Two: ancestral mapping in Aotearoa

Māui and his fish

The great Polynesian ancestor *Māui*, known in Aotearoa as *Māui-tikitiki-a-Taranga* or sometimes *Māui-pōtiki,* is credited with performing a number of memorable and exceptional deeds. Often referred to as *te hianga* or mischief one, the most significant deed that influences this chapter is the fishing up the North Island of New Zealand known as *te Ika a Māui*, the fish of *Māui*, using the enchanted jawbone procured from his grandmother *Murirangawhenua.* This is significant because *te ika a Māui* or the North Island resembles the shape of a type of fish; more specifically, the type of fish that *Māui* caught was a *whai*[113] or stingray. The early ancestors were able to distinguish the shape of the islands of Aotearoa New Zealand in much the same way that a map can delineate and represent the geographical shape of land.

As Brian Marshall (2005) noted:

> . . . the [*Māui*] myth serves to illustrate that early on, from canoe voyages
> around the coastline and explorations of its interior, Māori had developed an
> acute awareness of the geographical shape of the North Island. The myth
> shows how well the Māori had "mapped" New Zealand before any
> Europeans arrived to put it on paper. (Marshall 2005: 1)

This event is immortalized in *mōteatea* such as *Taku Kuri* (Ngata & Jones 2006, part 3:388-395) composed by *Tutekohi* at the death of his dog *Kauere-huanui*. Part of the second verse refers to the fish of *Māui* or *ki te ika i hiia e Māui* and further along *kia*

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[113] The fish that *Māui* caught is also referred to as a *kupakupa* or *kopakopa*.

kai ake he kupakupa, which refers to the fish of *Māui* as *he kupakupa*. Ngata & Jones 2006, part 3: 392) (Emphasis added)

Whakarua mai ki uta nei,	Let it drift in with the nor' east sea breeze,
<u>*KI TE IKA I HIIA E MĀUI*</u>	To the fish fished up by *Māui*
Tiria atu taku mounu nei	Let me now place a spell upon this my bait
Kia kai ake he <u>KUPAKUPA</u>	So that it might be taken by the <u>*KUPAKUPA*</u>

The incident is also mentioned in the following *takitaki,* part of which refers to *Māui* as *te hianga* and to *te ika rā* being the fish that he caught. [114]

Ko te tokowha e	*Ko te tokowha* refers to the four brothers of *Māui*
<u>*TE HIANGA*</u> *rā e*	who is often known as *te hianga* or the mischief
Te moana pukepuke	one. The brothers go deep sea *(te moana pukepuke)*
<u>*KO TE IKA*</u> *rā e*	fishing and end up fishing up Aotearoa referred to
Ko te hiku o te rangi	in this part as <u>*KO TE IKA RA*</u>.(that fish)
Kukumea mai rā ki roto ki te rua	

Place names scattered around Aotearoa also reflect *Māui's* deed. For example the North Island is referred to as *te ika a Māui* (the fish of *Māui); other* names include *Te Matau a Māui* (the fish-hook of *Māui*) and *Te Upoko o Te Ika a Māui* (the head of the fish of *Māui*) which are names found in the *Uawa* region. *Te matau a Māui* is also a name found in *Heretaunga* or Hawkes Bay from *Te Mahia* to *Te kauae* (jawbone) which is situated at the southern tip of the Hawkes Bay. The Wellington area is sometimes referred to as *te Upoko o te ika a Māui*. *Te Hiku o te ika a Māui* (the tail of the fish of *Māui*) is the Northland region whilst *te kauae o Māui* (*Māui*'s jawbone) is in the Hawkes Bay area. The South Island of New Zealand is sometimes referred to as *Te Waka a Māui* (the canoe of *Māui*) whilst *Rakiura* or Stewart Island is *Te Punga o Te Waka a Māui* (the anchor of the canoe of *Māui*) (Davis et al 1990:41). Place names embedded in the landscape such as these above, mark historical events that occurred at that place and are often linked to the ancestors who left their mark and an enduring legacy of their deeds. The names embedded in the landscape linked to a body of history are how *Māori* create what is referred to by Tipene O'Regan as "oral maps" (cited in Davis 1990: xiii).

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[114] Refer to Chapter 3 for the full version of the *takitaki*

Although the fish tale bears no resemblance to conventional mapping techniques, this thesis argues that Māori possessed the ability to create maps of their ancestral territories in their own unique way; by imbuing the landscape with story, song, and genealogies and committing this information to memory. Of this phenomenon, Tipene O'Regan writes:

> The meaning of many Māori names, though, can only be understood through their connection to other names and other places. Whole series of names belong together in groups, commemorating journeys of exploration by an ancestor, the myth memory of how the land was made or a series of traditional events and people relationships. . . . [the stories and groups of] Māori names [are] what we call Oral Maps. (Cited in Davis 1990:xiii)

Kelly (1999:1) asserts that Māori possessed the ability to create maps of their landscapes and convey those spatial relationships to another "culture that possessed a different language, history, and perception," at the time when Māori first made contact with Europeans. The following section examines the earliest known maps drawn by Māori ancestors that illustrated their ability for understanding and conveying spatial relationships.

Early Māori Maps

Te Horeta te Taniwha

The earliest known map created by Māori was drawn for James Cook in 1769. Charles Heaphy, surveyor, and John White, author of the *The Ancient History of the Maoris, His Mythology and Traditions*, both record this incident many years later (Barton 1998). *Te Horeta te Taniwha,* who hailed from the Hauraki Gulf and the Coromandel Peninsula, was a leader of the *Ngāti Whanaunga* tribe. He was twelve when he, and other Māori, set foot on the *Endeavour* and witnessed the men drawing a chart of the coastline with charcoal on the deck of the ship. According to Heaphy and White, Cook requested a sketch of the coast. The Māori complied sketching the "Coromandel Peninsula, Great Barrier Island, the Hauraki Gulf and the eastern coast of the Auckland Peninsula as far as Cape *Rēinga*" (Barton 1998:501). Of this incident, Milligan writes that "a Maori chief drew on the deck an outline of the neighbouring coasts" (Milligan

1964:1). Place names were added at Cook's request. Incidentally, no record of this map exists.

Barton (1998) writes of this first map:

> This was the first contact that Māori of the area had with Europeans, and it seems very unlikely that they had seen any charts on the *Endeavour*. If they did, they probably did not know their use. Yet when Cook spoke and made marks with charcoal on the deck, they knew that he required an outline of the land and supplied it. The drawing of the map, the understanding of what Cook wanted, and the alacrity in supplying the information are convincing evidence that Māori were familiar with drawing maps and had been doing so before the visit of the *Endeavour*. (Barton 1998: 501)

Tuki

Another incident that demonstrated Māori capacity for drawing maps involved the kidnapping of *Tuki Tahua* and *Ngāhuruhuru,* both Northland chiefs, at the request of Lieutenant Governor King of Norfolk Island in 1793. Milligan (1964), Salmond (1993), Barton (1998), Kelly (1999) and Head (2006) all record the events surrounding the kidnapping and creation of *Tuki's* map. *Tuki* and his companion were taken to Norfolk Island where they were required to teach the locals how to make flax rope. While they were there, King asked them about their country; *Tuki* proceeded to draw a map of Aotearoa on the floor with chalk and later on paper.

Kelly (1999) quotes McNab's comments about *Tuki*'s attempt at delineating the Islands:

> . . . I had no copy of Capt. Cook's Voyages, to compare with Tookes Chart, but on the Britannia's arrival, the master of that ship favoured me with Cook's first voyage, in which as a Chart of New Zealand: and on a comparison the similitude of Took's Chart to Captain Cook's is very striking; particularly the East side of Ea-hei-no-maue, where Tooke lives. (Kelly 1999:11)

David Collins agrees with this assessment as recorded by Kelly (1999):

> With chalk on the floor of a room set apart for that purpose. From a comparison which Governor King made with Captain Cook's plan of those islands, a sufficient similitude to the form of the northern island was discoverable to render this attempt an object of curiosity; and Too-gee was persuaded to describe his delineation on paper. (Kelly 1999:11)

Tuki's drawing of the Aotearoa New Zealand does not remotely resemble a modern map of Aotearoa, nor does it even resemble the shape of a fish. What this map reflects though are the places that are important to him; the places he was most familiar with, from his perspective as a Northland chief. Milligan argues that *Tuki's* map "included the sorts of things which were of interest and practical importance to him. Everything else was left out" (Milligan 1964:14). Furthermore, *Tuki's* knowledge was concerned with explaining where "he and Huru had been captured and where their homes were"(Milligan 1964:14). For example, *Te Rēinga* and the pathway of the spirits which runs down the centre of his map. Lyndsay Head makes this observation in her doctoral thesis:

> . . . the idea of drawing a map was foreign, [but]the mind behind the drawing was Maori. What mattered to Tuki was not the contours of the land, but who the chiefs were, the location of the *pa* (forts), the number of warriors they mustered, and the lines of communication between them. The development of musket warfare is sometimes said to have militarised Maori society, but this view is erroneous. Long before the introduction of muskets, Maori attention was absorbed by the *mana* of fighting strength, and not by the extent of territorial possessions. (Head 2006:44)

Salmond (1993) comments on *Tuki's* map saying that it

> . . . is a socio-political description of the upper North Island, with some brief comments (and inaccurate coastlines) for southern New Zealand. The key features of Tuki's map included 'Manoui-tavai' (Manawatawhi), the largest of the Three Kings Islands). . . 'Modey-Mootoo on which Te-kapa has an Hippah' (Murimotu, where chief Te Kapa was said to have had a fortified village or paa). . . 'Terry-inga' (Te-Reinga), the spirits' place for leaping off into the underworld, which was shown at the termination of a spirits' pathway (Te Ara Whaanui) running from the bottom to the top of the North Island, where it terminated at a symbol which represented the tapu tree there. (Salmond 1993:216)

The list of place names and other features, including the above, identified by Milligan (1964) and Salmond (1993) on *Tuki's* sketch include Moodo Whenua (*Muriwhenua*), Ho-do-do (*Oruru*), Moodeewye (*Muriwai*), Te Wy-te-wi and Wytoa (possibly dwellings), Wongar-ooa (*Whangaroa*), Tu-ko-rawa (*Tukarawa*), Teer-a-witte (Te Raawhiti), T'sou-duckey (*Hauraki*), Tettua Woodoo (Te Tai Hauauru?), Cho-ke-ang'-a (*Hokianga*), Poenammoo (*Te Waipounamu*), *Tauroa*, Motu-aca-ete (*Motuakaiti*), Motu-aca-nui (*Motuakanui*), Motu-cowa (*Motukawanui*), and Panike (*Pānaki*)

Tuki's map of Aotearoa is the earliest known map drawn by Māori that still exists. Governor King sent it to London and is entitled: *Chart of New Zealand Drawn by Tooke-Titter-a-nui Ware-pedo.* From a cultural perspective, *Tuki* drew what was important to him. This is reiterated by Head:

> This map is almost the earliest surviving Maori documentary evidence of the shape of Maori thinking; it is a mind map rather than a geographical artefact. It delineates a strictly tribal world (Head 2006:45)

South Island

North Island

Te Reinga

Te Ara Whaanui -Pathway of the dead leading to *Te Reinga*
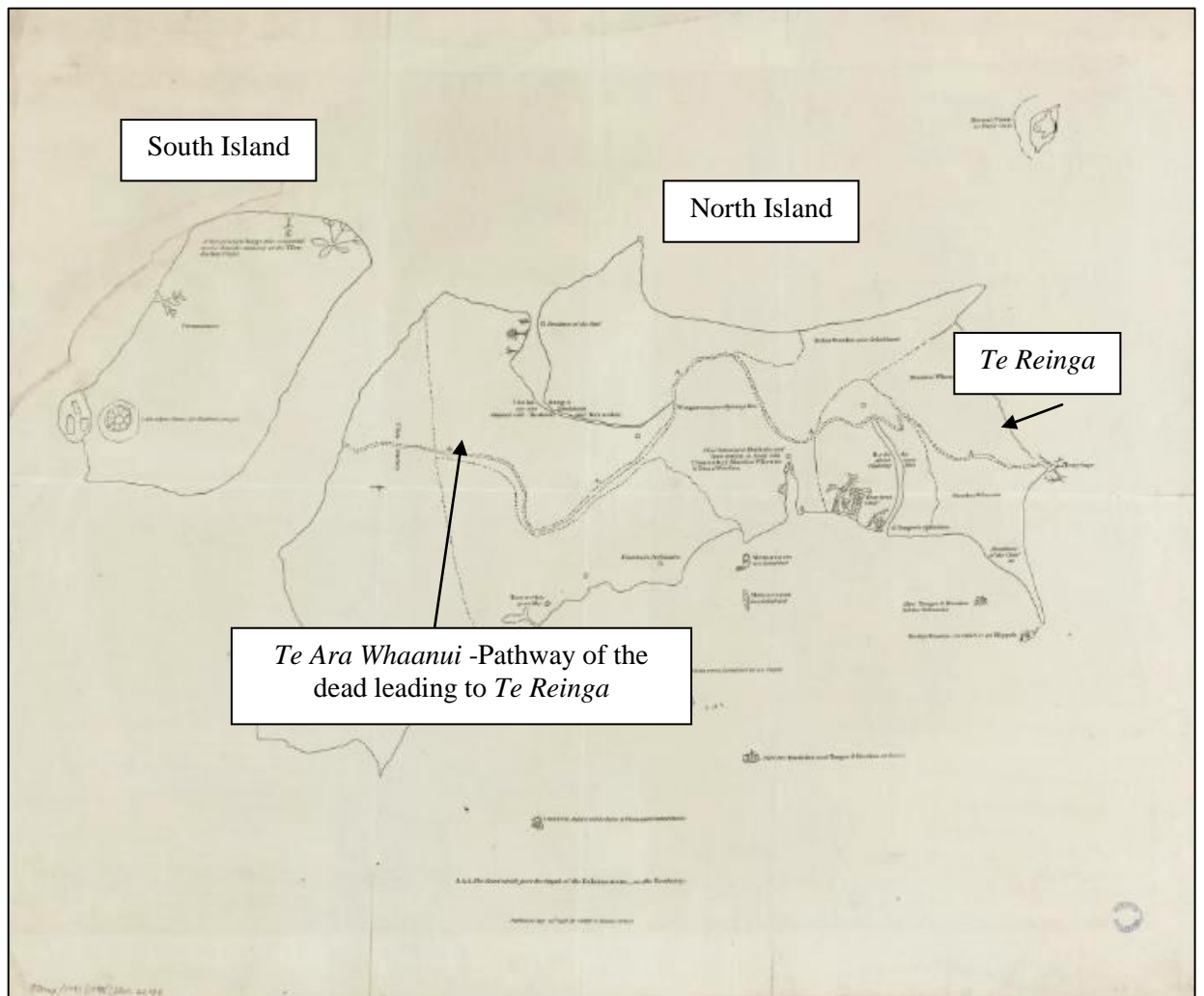
Figure 5. 1 Tuki Map of Aotearoa *(Used with permission from the National Library NZ, Ref: **MapColl-CHA-2/1/9-Acc.36440**) (Notation added)*

Korrakorra

Phillip L. Barton (1998) reveals that there are only two known accounts that describe maps of the North Island drawn by Māori. One account is given by John Liddiard Nicholas; the other is recorded by William Cotton.

Nicholas spent most of his time in and around the Bay of Islands where he met a chief called Korra-korra[115] who lived in a village near Cape Brett. He drew a map for Nicholas:

> Yet in a rude sketch of Eaheinomauwe or the Northern Island, which Korra-korra drew for me upon paper, he described between the East Cape and Queen Charlotte's Sound, a high island on the eastern side, which at intervals vomited forth fire and smoke, and from which place I should suppose the above volcanic substances were procured. (Barton 1998:501)

Te Heuheu

William Cotton's account is recorded in "Renata's Journey" compiled by Helen M. Hogan. *Mananui te Heuheu*, the *ariki* of *Ngāti Tūwharetoa*, was hosting George Augustus Selwyn, the Anglican Bishop of Aotearoa who was accompanied by *Renata Kawepo Tama ki Hikurangi* and others. The group were travelling from Waimate North to Whanganui and stopped over at *Te Heuheu*'s village at the south end of Lake Taupō and slept the night. The following morning, *Te Heuheu* and Bishop Selwyn were engaged in a brief conversation at which the great chief became very animated. Cotton records that:

> [Mananui became] very excited on all questions connected with land, in consequence of the late disturbances at the south. He said there were enough Pakehas in the country, that no more shd [*sic*] come. That Taupo his rangatiratanga (kingdom) is the toenga (the remnant) of the whole country, and that keep it he would. This he illustrated in a most graphic manner.
>
> He picked up a stick and drew a circle on the ground, about six feet over and sundry other around it. In the middle of the large circle, which he intended to represent Taupō, he set up a fern stick, to stand for Tongariro, and a smaller one leaning against for himself. I never saw such a grand figure as Te Heuheu's when bending in silence over his drawing. . .
>
> He stood for some minutes contemplating his work, and satisfying himself that it was all right.
>
> 'This' said he, 'is Port Nicholson kua riro ki te Pakeha' it has gone away to the Pakeha. This is Wanganui – kua riro ki te Pakeha. This is

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[115] Please note that this spelling precedes the standardised orthography of 1820.

Auckland etc. 'This is the Waimate' etc But this pointing to Taupo is mine & mine it shall remain. (Hogan 1994:89, 90)

Reko

The following sets of maps were created by Māori in the South Island of New Zealand. The first, a sketch on the ground, was produced in 1856 by *Reko* for surveyor John Turnbull describing a journey he had made 50 years ago from *Kaiapoi* just north of present day Christchurch to *Tuturau* on the *Mataura* River; a distance of 500 plus kilometres in a straight line. *Reko* sketched the route he took providing a bird's eye view of the interior of *te Waipounamu*, the South Island. According to the account given by Turnbull, a map had not yet been produced of the region by surveyors (Kelly 1990: 2-4, Barton 1998:504-505).

Reko drew a series of symbols on the ground representing various geographical features which formed part of his journey. A long line representing the *Matau* River now known as the Clutha, an irregular circle representing the sea shore, three eel shaped figures representing the lakes known as *Wakatipu*, *Wanaka* and *Hawea* and two lines, one representing the *Mataura* River originating from the south end of the *Wakatipu* river, the other representing the *Oreti* River. He also named the source of the *Waiau* and the *Waitaki* rivers (Lakes *Monowai*, *Manapouri* and *Te Anau* for the *Waiau* and Lakes *Ohau, Pukaki* and *Tekapo* for the *Waitaki*).

John Turnbull describes the route, as quoted in Kelly (1999):

> He now showed how he travelled from the [Kaiapoi] (situated to the north of Banks Peninsula) through the interior, until he came to Tuturau. The extension of settlement, and the present knowledge of the geography of the country, enable me now to trace the Māori's wanderings. It is evident that forty or fifty years ago he had passed through what is now called the Mackenzie Country, thence over the Lindis Pass to Lake Wanaka, thence up the Cardrona and down the Roaring Meg, where he described the existence of a natural bridge over which he crossed, and made his way southward by the Nevis and Nokomai rivers till he struck the banks of the Mataura: crossing this, he had gone over the Dome Pass, and arrived at the old native settlement of Tomogalak, from whence he had but two days journey along to the Wakaia Plains to his present location at Tuturau. (Kelly 1999:4)

Huruhuru

The second map was provided by *Huruhuru* from *Te Puna a Maru* on the southern bank of the *Waitaki* River to Edward Shortland described by Kelly as the Protector of the Aborigines for the Colonial Government of New Zealand around 1844. Shortland and *Huruhuru* met at *Te Puna a Maru* whilst Shortland was walking along the east coast of the South Island. On this occasion, *Huruhuru* provided a pencil sketch of some parts of the interior of the South Island. Kelly (1999) provides this account given by Shortland:

> He drew, with a pencil, the outline of four lakes, by his account, situated nine days' journey in-land of us, and only two from the west coast, in a direction nearly due west of our position.
>
> One of these, named Wakatipua, . . . The other three lakes, Hawea, Waiariki, and Oanaka, . . . Huruhuru pointed out on his chart the positions, and told me the names of several of their places of residence, and described the country through which the path across the land passed. He even told me the names of the principal streams and hills which it crossed, and of the places where parties travelling that way used to rest, at the end of each day. (Kelly 1999:5)

Huruhuru also pointed out places to stop for food along the way indicating that the early ancestors knew the landscape intimately.

Otago Māori: The middle island

The third map (Figure 5.2) was produced by Māori from Otago at the request of Edmund Halswell, the Commissioner for the Management of Native Reserves in 1842. Halswell required a map of the South Island of New Zealand.

Halswell provides this description of the extensive knowledge of their places:

> . . . every tree, shrub or flower, every minute vegetable and moss, has its own expressive name. Every mountain, hill, lake, and place, every nook, has an appropriate designation.   . . . [The Māori of the south are working on a map] of the entire Middle and Southern Islands, giving me a minute description of every bay and harbour round the entire coasts, with their native names, which generally convey a correct idea of the headlands, soil, &c. (Kelly 1999:8)

SKETCH
of the
MIDDLE ISLAND
of
NEW ZEALAND
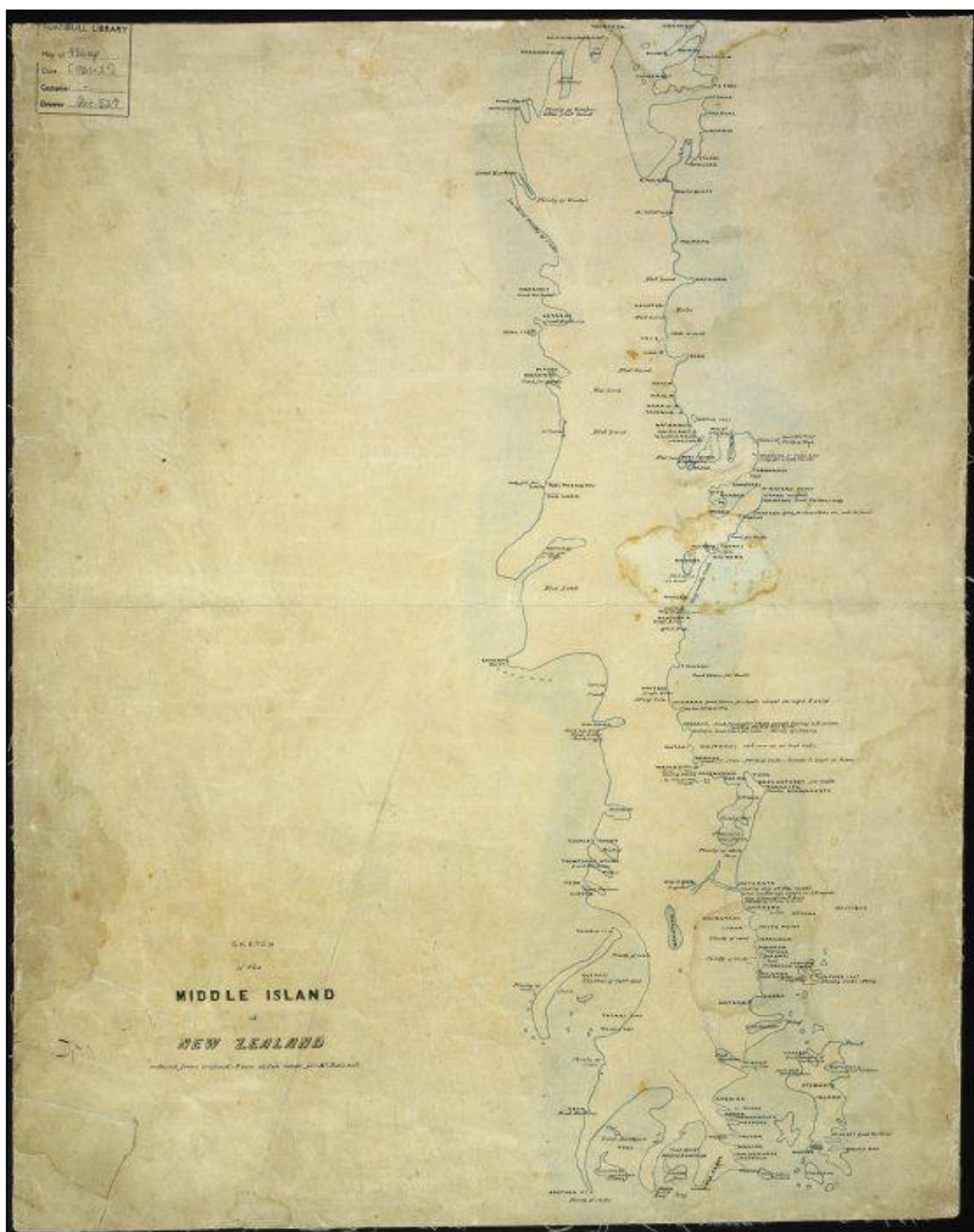
Figure 5. 2: Otago Māori Middle Island Map (Used with Permission from the National Library of NZ, Ref: MapColl-834ap/[1841-2?]/Acc.527)

All these maps provide an understanding of the ability of early Māori to navigate over large tracts of geographical space. They also demonstrated the ability to describe spatial relationships and understood fundamentally where they were geographically despite living in a society where knowledge was conveyed using oral techniques (Kelly 1999). Furthermore, Kelly (1999) [116] contends that Māori had an intimate knowledge of their places and landscapes despite their lack of literacy. She also adds that:

> The Maoris' easy facility with the concept of 'map' indicates that maps were made before Europeans arrived, and possibly on the same 'need-to-know' basis; that is, the sketch map in the dust filled a temporary explanatory role, the information that supported it being stored in the memory. (Kelly 1999:23)

The foregoing examples of early maps drawn by Māori are compelling evidence that Māori already possessed the ability to navigate their territories with skill and were able to describe spatial relationships pertaining to those territories. This skill was embedded in the complex nature of their oral traditions stored in their memories. They were able at will to recall tracts of information stored in the *whakapapa*, the *karakia* and the chants that gave meaning to their landscapes. The next section discusses chants or *mōteatea* as a means to navigate and describe ancestral territories.

Navigating Geographical Space using oral narratives

Kelly (1999) in her article discusses ocean navigation, the application of that skill towards navigating through geographic space, using the stars and other celestial bodies coupled with prominent landmarks to locate ocean fishing grounds, delineating boundaries using significant landmarks and using songs to mark out boundaries. There are many examples of songs that record instances of navigation, locating fishing grounds and delineating boundaries.

An example of navigating the oceans is reflected in the advice my ancestors received when they were about to embark on their journey across the Pacific Ocean to Aotearoa

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[116] Kelly (1999:12-15) provides detailed discussion of navigating geographical space, deep ocean navigation, spatial relationships and an intimate knowledge of place. She also discusses the intersection of Cosmology with prominent landmarks in locating fishing grounds.

New Zealand. They were advised by the priests who knew the ancient *ara moana* or sea-paths of their ancestors who had made that same journey (Grace 1959:36):

"kia whakatau koutou ki a Atutahi ma Rehua; *Direct your course to Canopus by Antares;*
ko Atutahi e whakatata nei ki te Mangaroa!" *Canopus that is by the side of the Milky Way!*

The extract below is taken from the epic *oriori* composed for *Tuteremoana* (Ngata & Jones 2006, part 3: 10). In this passage the ocean pathways of the ancestors are given as the two winds *Paraweranui* and *Tahu-makaka-nui*, expressed as "*Ko te ara tēnā i whakaterea mai ai o tīpuna ki konei*". (Emphasis added)

E huri tō aroaro ki PARAWERANUI, KI TAHU-MAKAKA-NUI Turn you towards the Mighty-northerly-blast and the Great-blistering-easterly-wind;
Ko te ara tēnā i whakaterea mai ai o tīpuna ki konei *That was the course upon which your ancestors voyaged hither*
E te kauika tangaroa Upon the deep sea school or whales, steered
Te urunga tapu o Paikea by the sacred ritual of *Paikea*,

Oriori were often used in the Māori world to convey distinct types of information; [117] the following extract shows the use of two stars, *Rehua* and *Eretoro*, and the southerly wind *Tonganui*,[118] to locate a fishing ground at night. During the day, the southerly *Tonganui* is used with the sun to locate the same fishing ground (Ngata & Jones 2006, part 3: 392). (Emphasis added)

Ka whanake i raro rā te pūai a Rehua It goes down with moisture from *REHUA*,
Te pūai Eretoro, Tonganui The moisture of *ERETORO*, and of *TONGANUI*

In the following extract, this *oriori* gives information about locating a *taunga-ika* or fishing ground using two hills and the sun at its position at noon. Located in *Te Araroa*, the *Awatere River* flows out towards *Taumutu* the site of the fishing ground. The *taunga ika* (fishing ground) is found by aligning both *Te Tawai* (a hill) and *Omarumapere* (a hill) with the sun in its position at noon (Ngata & Jones 2006, part 3: 42-44).

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[117] See Chapter 6 for more a detailed discussion of *oriori*.
[118] Ngata & Jones (2006, part 3: 394-395) refer to *Tonganui* in their notes as the house that *Māui's* hook latched onto. Māori names and place names have multiple meanings.

Piki atu e koe ngā pikitanga kino	You are to climb by the steep ascents
I roto o Te Tawai, hāngai te titiro	Within the vale of TE TAWAI, now look straight
Ki te waka heke mai i waho o Taumutu	At the canoe descending from TAUMUTU
Whakaangi i runga rā, kia tae atu ana	Scale yonder heights, so that you may reach
Omarumapere, hei a te Pare-mamaku	OMARUMAPERE and there meet Paremamaku

Mōteatea have been used to define boundaries, as in the case of the *oriori* for *Tamaunga-o-te-rangi* (Ngata & Jones 2006, part 3: 38-55). There are many instances in this *oriori* of prominent landscape features that define tribal boundary markers. For example, the extract above contains three sacred places.[119] The *oriori* for *Tamaunga* was also used in the Māori Land Court boundary deliberations because it contains numerous place names and significant landmarks as the extract above and below indicate (Ngata & Jones 2006). Chapter Six treats the entire song in detail.

The second extract from *Tamaunga's oriori* contains references to several significant harvesting and habitation areas and important persons: *Te Kaweka, Wai-puia, Te Peka a Haumia, Te Warowaro, Mate-te-rangi, Pakuri, Hapu-Poia, and Porou-Rangi* (Ngata & Jones 2006, part 3: 44). (Emphasis added)

Ka oho kai runga, e mau ki tō tao.	Be alert and upstanding, grasp your spear
Piki atu e koe i roto te Kaweka.	You are to ascend the valley of TE KAWEKA
Kia iri tō pae, auaka e koe	Take you the ridge trail, and do not
Hai haere i raro rā; whakaangi i runga rā,	Go by the low road, stay on the high lands,
Mā te Waipuia, kia whakaeke koe	Up there on WAI-PUIA, and you will ascend
Te Peka a Haumia. Tāhuri tō taringa	TE PEKA A HAUMIA. Now incline your ear
Te umere ka tangi; titiro tō kanohi	And listen to the joyful shouting, look you and see
Ki ngā wai weherua, ki te ahi ka kā	The twin dividing waters, and the fires now alight
I roto te Warowaro; i a Mateterangi,	Within TE WAROWARO; (they are) of MATE-TE-RANGI, of TE PAKURI, of HAPU-POIA,
I a te Pakuri, ko Hapupoia,	
Ko Porourangi, e!	(Yea), of Porou-rangi too!
Tēnā anō rā te pia o te harakeke a tō kōka,	There, too, is the gum of your mother's flax,
Hai puru mō tō waha, ka noa.	To place in your mouth in the *noa* rite

Kelly (1999) cites several examples to highlight the use of oral techniques that show an intimate relationship with their ancestral places. *Mōteatea* often embed geographical information in them such as the following extract composed for *Te Arakau of Te Arawa* (Ngata & Jones 2006, part 3: 364). (Emphasis added)

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[119] See Chapter 6 for a complete run-down of this *oriori*.

E tiu rā, ki te muri, ē	Swoop onwards then to the north,
Ngā hurihuri mānuka, i raro o Tumutara,	To the *manuka* scrub-lands below *TUMUTARA*,
Ngā rākau tū iho, i runga Ihoweka,	To the trees standing on the summit of *IHOWEKA*,
Ngā wai e rere, i raro Rangitaiki;	To the waters flowing below there at *RANGITAIKI*,
Ngā puke tū iho, i runga o 'Tauaki,	And to the hills rising up on to '*TAUAKI*.
Kia mārama koe, ko te whakamau atu,	Clear then is the view as you gaze afar off
Ngā kōngutu awa, i raro Whakatāne,	To the river's mouth down there at *WHAKATĀNE*,
Ngā rae ka rou, i waho Kohi,	And the headlands thrusting out beyond *KOHI*,
Ki ō irāmutu, Ki a Te Umu-tu-ura,	Where your nephews abide with *Te Umu-tu-ura*;
Māna e hōmai, te muri aroha ki a tāua nā	Verily he will as of yore tender us a loving
ī.	greeting.

The place names mentioned in this *mōteatea* describe a pathway often used by *Te Arakau* when travelling from the Rotorua region across to Whakatāne via these places: Tumutara on the *Tarawera River*, Ihoweka a crossing over the *Rangitaiki River,* the *Rangitaiki River*, *Tauaki* which is short for *Putauaki* a prominent mountain in the region, Whakatāne and *Kohi* which is a headland in Whakatāne, the name given to the town.

Another example of *mōteatea* that records instances of naming or *taunahatanga,* is the *oriori* composed for *Wharau Rangi* by *Rangi-Takoru. He Kōrero Pūrākau* (Davis 1990) describes the story of *Hau*[120] who is in pursuit of *Wairaka*. The *oriori* recounts the incidents that led to the naming of rivers down the west coast of the North Island from Whanganui to Waikanae. The fourth verse that contains the place names is as follows (Ngata & Jones 2006, part 3: 510-513). (Emphasis added)

Kimikimi noa ana ahau, e hine,	I am trying to remember, O maiden,
I tō kunenga mai i Hawaiki,	How it was you sprang forth from *Hawaiki*,
I te whakaringaringa, i te whakawaewae,	How the hands were formed, then your feet,
Te whakakānohitanga.	Until your face took shape.
Ka mānu, e hine, te waka i a Rua-tea,	Now afloat, O maiden, is the canoe of *Rua-tea*,
Ko Kurahaupo.	And 'tis *Kurahaupo*,
Ka iri mai tāua i runga i Aotea,	We two were carried hither aboard *Aotea*,
Te waka i a Turi.	The canoe of *Turi*.
Ka ū mai tāua te ngutu Whenuakura;	We landed at the river's mouth at *WHENUAKURA*;(1)
Huaina te whare, Rangitawhi;	The house there was named *Rangitawhi*;

---

[120] According to *Ngā mōteatea*, (Ngata & Jones, 2006, part 3: 509), the ancestor *Hau* named these places, although the identity of *Hau* is in dispute. According to *Ngata, Hau* was in search of his daughter. According to another account, it was *Hau-nui-a-Paparangi* who named *Whanganui*.

Tiria mai te kūmara;	The *kūmara* was then planted;
Ka ruia mai te karaka ki te taiao nei.	The karaka, too, soon flourished in the land.
Keria iho e Hau o te punga tama wahine,	*Hau* thereupon dug the extra female plots,
Ka riro i ngā tuāhine, i a Nonoko-uri i a Nonoko-tea	Which were taken by his sisters *Nonoko-uri* and *Nonoko-tea.*
	To mark them off, the border of a robe was hung.
Ko te here i runga ko te korohunga.	*Hau* scooped up a handful of earth
Kapua mai e Hau ko te one ki tōna ringa.	From the portion of the Staff-of-*Turoa*;
Ko te Tokotoko-o-Turoa;	He then crossed the river
Ka whiti i te awa,	Which won him great renown, and it was *WHANGANUI*;(2)
Ka nui ia, ko Whanganui;	He splashed through cloudy waters, hence *WHANGAEHU*;(3)
Tīehua te wai, ko Whangaehu;	He felled a tree so he could cross, hence *TURAKINA*; (3)
Ka hinga te rākau, ko Turakina;	He strode across the land, hence *'TIKEI*; (4)
Tīkeitia te waewae, ko 'Tikei;	Then he stumbled, O maiden, hence *MANAWATU*;(5)
Ka tatu, e hine, ko Manawatu;	A buzzing sound assailed his ears, hence *HOKIO*;
Ka rorowhio ngā taringa, ko Hokio.	A tiny stream he named his own, hence *OHAU*; (6)
Waiho te awa iti hei ingoa mōna, ko Ohau;	He held his staff as he spoke, hence *OTAKI*; (7)
Takina te tokotoko, ko Otaki;	The waters beyond were lost in the sands, hence *WAIMEHA*; (8)
Ka mehameha, e hine, ko Waimeha;	He stood and stared in amazement, hence *WAIKANAE*;(9)
Ka ngahae ngā pī, ko Waikanae;	Then he breathed a sigh of relief
Ka tangi ko te mapu, ē.	For he come to *Wairaka*,
E tae hoki ki a Wairaka,	He cast a spell; fixing it above, and fixing it below.
Matapoutia, poua ki runga, poua ki raro,	It was thus he came to rest, O maiden!
Ka rarau e hine!	He gave a flashing glance, hence *WAIRARAPA*;(10)
Ka rarapa ngā kanohi, ko Wairarapa,	Indeed it was there your ancestor gazed about him.
Te rarapatanga o tō tipuna, ē.	The clouds lifted up on high, hence *TE PAE-O-WHAITIRI (11);*
Ka mohiki te ao, ko Te Pae-a-Whaitiri;	The lengthened day was made to detain *Kai-tangata*
Kumea, kia warea Kai-tangata	Out on the open sea.
Ki waho ki te moana.	The beam was made and posts were fixed;
Hangā te paepae, poua iho;	The posts were Stiffened-was-the-heavens and *Meremere*.
Te pou Whakamaro-o-te-rangi,	The family became the anchor of his canoe,
Ko Meremere.	They were *Te Hou-mea* and *Te Awhe-ma*;
Waiho te whānau, ko te punga o tōna waka	Enough, 'tis now ended, O maiden!
Ko Te Hou-mea, ko Te Awhe-ma;	
Kāti, ka whakamutu, e hine!	

The place names from the *oriori* for *Wharau-rangi:*

    Whanganui   Great river

Whangaehu	River of cloudy water
Turakina	River crossing on a felled tree
Rangitikei	River crossing by striding
Manawatu	Stumbling
Ōhau	River of *Hau*
Ōtaki	The holding out of a staff, or he made a speech
Waimeha	Water lost in the sands
Waikanae	Water of staring in amazement
Wairarapa	Water of a flashing glance

Other names mentioned in the *mōteatea* are: *Whenuakura* the landing placed of the *Aotea* canoe and *Te Pae o Whaitiri* a range of mountains north of Wellington.

The foregoing examples of *mōteatea* or song provide an understanding of the thinking of the Māori world; they also show that the early ancestors of the Māori contained significant detail about the makeup of that world. The songs also show that the Māori ancestral landscape was composed of complex stories, genealogies and histories and not just geography.

The Geography of Narratives: Maps that tell stories

The ancestral landscapes of the Māori is a "human landscape" (Kelly 1999:26) that is imbued with a lattice of cosmogonical myths, ancient histories and epic stories, complex genealogies and elaborate chants stretching back several hundreds of years, that drape the landscape. As an oral society Māori were used to telling stories, reciting genealogies, composing songs and reiterating chants and committing great tracts of information to memory. These oral forms were how Māori made sense of the world; this was how they organised their knowledge base and meticulously transmitted their knowledge fairly accurately from the memory of one generation to the memory of the next generation and were able to recall that information when required. Likewise, the land, from the cosmogonical beginnings of *Ranginui* and *Papatūānuku,* was imbued with the same type of *kōrero* or oral information gathered from each generation and passed on using their oral traditions. Thus, when an ancestor drew a line and other symbols in the sand or the earth, illustrating their ancestral domains, it was often accompanied by a *kōrero* or explanation that was drawn from this huge body of

knowledge stretching back several generations that had been intimately committed to memory. On this point, Kelly (1999) offers this insight:

> The maps we have are, in effect, the lines sketched on the ground with a stick. "This place here" (verbal description of a locality); "at that site" (a specific history is re-told, the stick resting on a point, tapping for emphasis, while the listener notes down a word, a place-name, occasionally a phrase, later inking it onto the map as text) "by this route" (drawing a generic line) "eight camps to travel the river" (European listener estimating the distance between at 15 miles and recording names on guessed-at localities). "The route is on the south side, the first place one can cross the river is here" (specific, locatable, geographic detail, possibly still current). "There is a high range of hills to the west of the lake, you will have to go around it" (noted by the European listener, and inked in later as a hachured, imagined, barrier range). (Kelly 1999:23)

It is evident that maps created by Māori, when they first met Europeans, and subsequently were accompanied by *kōrero*, conversations or stories, songs, *whakapapa*, and chants (Kelly 1999 & Barton 1998). Even today, Māori still tell stories about their ancestors, their *whakapapa*; they still sing the songs and chant the *karakia* that have been passed down. The oral traditions still survive especially when they create maps. [121]

Spatial relationships in Mōteatea

Māori oral traditions form a unique body of information that can be used to map the landscapes. *Pēpeha*[122] such as that described in Chapter One are used by *iwi* Māori around the *motu* (country) to define their cultural and geographical centres; add to this *tauparapara, kōrero tawhito, karakia* and *whakapapa*. *Mōteatea* are another rich source of traditional knowledge and often record the detail of the landscape such as the *waiata tangi* or lament composed by *Te Rangi-kaua-riro* of *Ngāti Rangiwewehi* for the fallen warrior *Te Arakau* who was killed in battle and the *oriori* composed for *Wharau-rangi*. Kelly (1999) describes the function of *waiata* and *pēpeha* in preserving spatial relationships. (Macrons not used in original document)

> The *waiata* and *pepeha* are two parts of the oral lattice. They express intimacy and familiarity with the natural landscape – not only with its lived experience and its human and mythic history, but also with information

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[121] Chapter 7 details a mapping project conducted for a *Mana Whenua* Report which included interviews and workshops with *kaumatua* and *Pakeke* to gather *whenua kōrero* (land information).

[122] Most tribes in Aotearoa have *pēpeha* that connects the tribe or the person with a place. For example in the Taupō region the *pēpeha* there is: *Ko Tongariro te maunga, Ko Taupōnuiatia te moana, Ko Te Heuheu te tangata, Ko Ngāti Tūwharetoa te iwi.*

about landscape. They were created for, or sung as, maps but within the formality of their structure they preserve spatial information in a condensed or symbolized form that is easily accessed by those who know how to read it. (Kelly 1999:25-26)

Furthermore, Kelly (1999) asserts that if "a map is not drawn, if it is spoken in a chant, then all of the problems of whether or not there were maps are dissolved." (Kelly 1999:26) Thus Māori were able to 'carry' their landscapes and notions of their homelands in their memories. Tobias (2000) in referring to First Nations writes of this phenomenon.

> First Nation peoples carry maps of their homelands in their heads. For most people, these mental images are embroidered with intricate detail and knowledge, based on the community's oral history and the individual's direct relationship to the traditional territory and its resources. (Tobias 2000:1)

Although these oral traditions do not explicitly describe spatial relationships they frequently embed geographical information as a way of reinforcing the spiritual relationships and connections that Māori have with the land, sea and heavens. Hence, Māori imbed spatial relationships into *mōteatea*.

Section Three: Māori Adaptation of GIS

Māori inclination for carving out new initiatives and for readily adopting modern technology to complement and enhance their cultural practises is reflected throughout recent and past Māori history. Recent examples include the use of steel chisels, steel adzes and chainsaws for carving wood, dentist drills for *tā moko,*[123] microphones for *whaikōrero* on the marae, fibreglass materials for constructing *waka ama,*[124] string for *whai*, modern tools for making *pūoro* instruments and using advanced recording equipment for engineering *pūoro.*[125] Māori now use a host of modern instruments for preparing *kai* and more recently, steel multi-*kai* cookers for *hāngi,*[126] TV and online facilities for teaching *te reo*, computers and multi-media tools to record *wānanga*,

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[123] *Tā moko* refers to traditional form of tattoo applied to all parts of the body.
[124] *Waka Ama* is an outrigger canoe
[125] *Pūoro* are traditional wind instruments used by Māori
[126] *Hāngi* is a traditional method of cooking food under ground

waiata and *whakapapa* as well as GIS and other mapping programs for managing Treaty claims and land information.

GIS is a relatively recent mapping tool adopted by Māori for a variety of reasons with very little in the way of publications or research available. There have been very few Māori mapping and GIS conferences in Aotearoa, the first explicit Māori GIS conference occurred in Wellington 1996; the second was the Information Technology and Communications conference in Otaki in 1999; and the third was held recently in Christchurch in May 2009.[127]

1996 Māori GIS conference

The 1996 Māori GIS conference hosted by Critchlow Associates Wellington provided the first glimpse nationally at what Māori were using GIS for. Hakopa (1998) cites a number of examples including:[128] *Te Ika Whenua*, *Te Rūnanga o Ngāti Porou*, *Waikato-Tainui, Te Puni Kokiri*, and *Manaaki Whenua* Palmerston North (Hakopa 1998:50-68). *Ngāti Porou, Tainui* and *Te Ika Whenua,* in particular, had at that time either intended or had established post-settlement development projects, land consolidation schemes, *hapu* resource inventories, social services, health services, forest management and 3D terrain models and communicating progress of their claims process to their *iwi* who lived in the more remote parts of their *rohe* or region.

The *Te Puni Kokiri* (TPK) Māori land and information base[129] and the *Manaaki Whenua Māori* values database project were slightly different in their use of GIS technology. The Māori land information base project began in 1994 and was completed in 1997. Its initial objectives were to:

[127] The 1995 International Indigenous Knowledge Conference in Wellington presented a number of papers on indigenous toponyms, mapping *waahi tapu* and cartographic literacy in Indigenous communities whilst a number of Indigenous and Maori GIS papers were presented at a conference of the Federation of Maori Authorities in 2003.
[128] Other GIS projects at the time of the 1996 Maori GIS conference included: Kai Tahu, mapping waahi tapu, Dunedin; Dr M Laituri of Auckland University, the regional resources evaluation project; Ngati Whatua o Kaipara ki te tonga Waitangi Tribunal claim. See Hakopa (1998) p57.
[129] *Te Puni Kokiri* official website: http://www.tpk.govt.nz/en/services/land/ accessed May 2010.

> . . . quantify the amount of Māori Land in New Zealand; second, to qualify how Māori land was being administered ; third, to determine the number of owners associated with any Māori block of land; and fourth, to assess the capital value of any block of Māori land. (Hakopa 1998:54)

The system was made available to the public in 1997 facilitating searches of Māori Land Court information about Māori freehold land throughout the country. The system can be used to locate individual Māori land blocks on a computer-generated map generating information such as: the size of each Māori land block, the number owners in the land block, topographical information such as roads and rivers and relevant management information for each block.

The following figures provide examples of the Māori Land Information Base at work. Figure 5.3 is the user interface of the Māori land information base. Figure 5.4 depicts the land block search facility. Figure 5.5 depicts the result of a search, in this case, the *Pukawa* 3D block outlined in red.
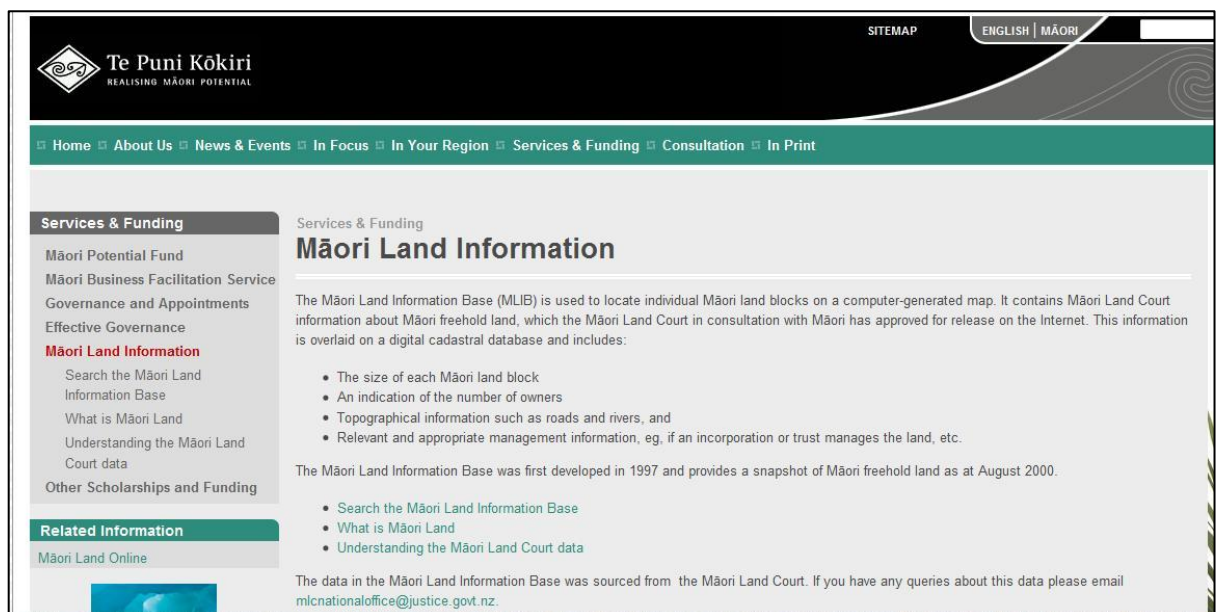
Figure 5. 3 Māori Land Information Base
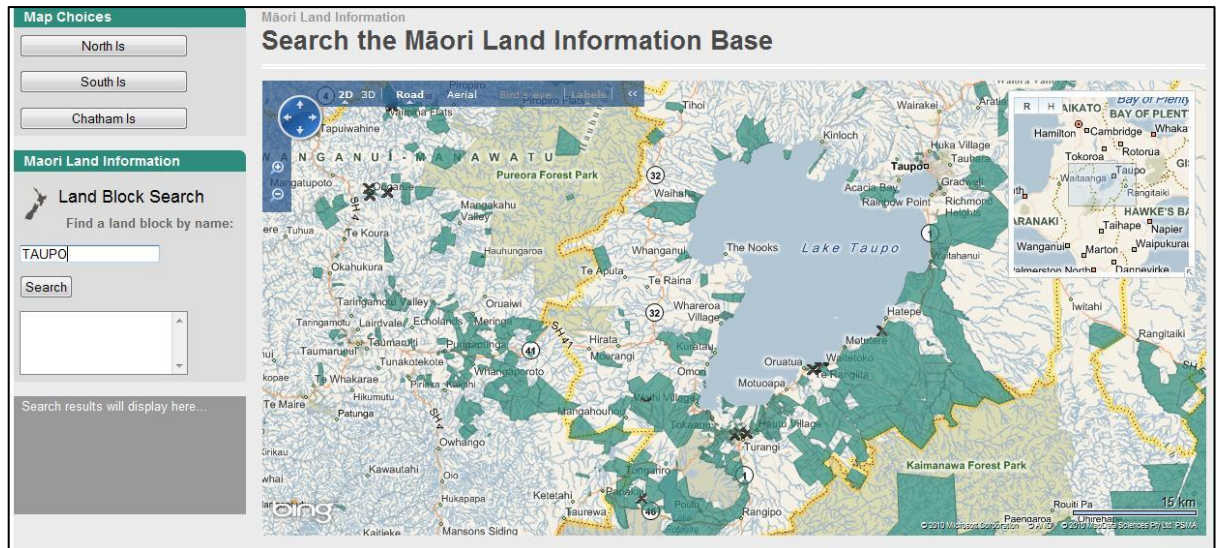
Figure 5. 4 Searching the Māori land information base; Taupō Region
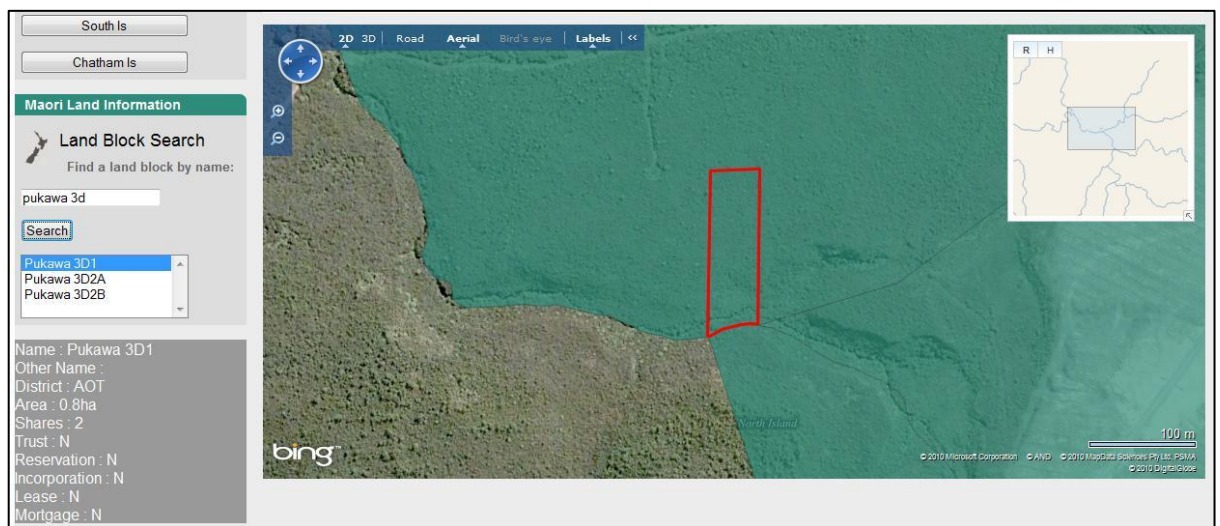
Figure 5. 5 Pukawa 3D block of land highlighted in RED (within the Taupō Region).

The Māori values database project, [130] discussed at length by Harmsworth (1995), (April 1996), (April 1997) and (1999) led to the development "of methods and frameworks for identifying, recording and storing Māori values and traditional knowledge in GIS for land use planning purposes" (Hakopa 1998:55). [131]

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[130] The development of the Māori Values Database was a response to the requirements of the Resource Management Act 1991, the *Ture Whenua* Act 1993 and the Treaty of Waitangi for the inclusion of Maori cultural, historical, spiritual and physical perspectives through *iwi* and *hapū* consultation in social and environmental land-use planning.

[131] See Hakopa (1998: 70) for preliminary hierarchical framework for recording Maori values information.

Figure 5.6 below illustrates Māori values as a series of layers. Access to some of the confidential layers can be restricted from the public view.
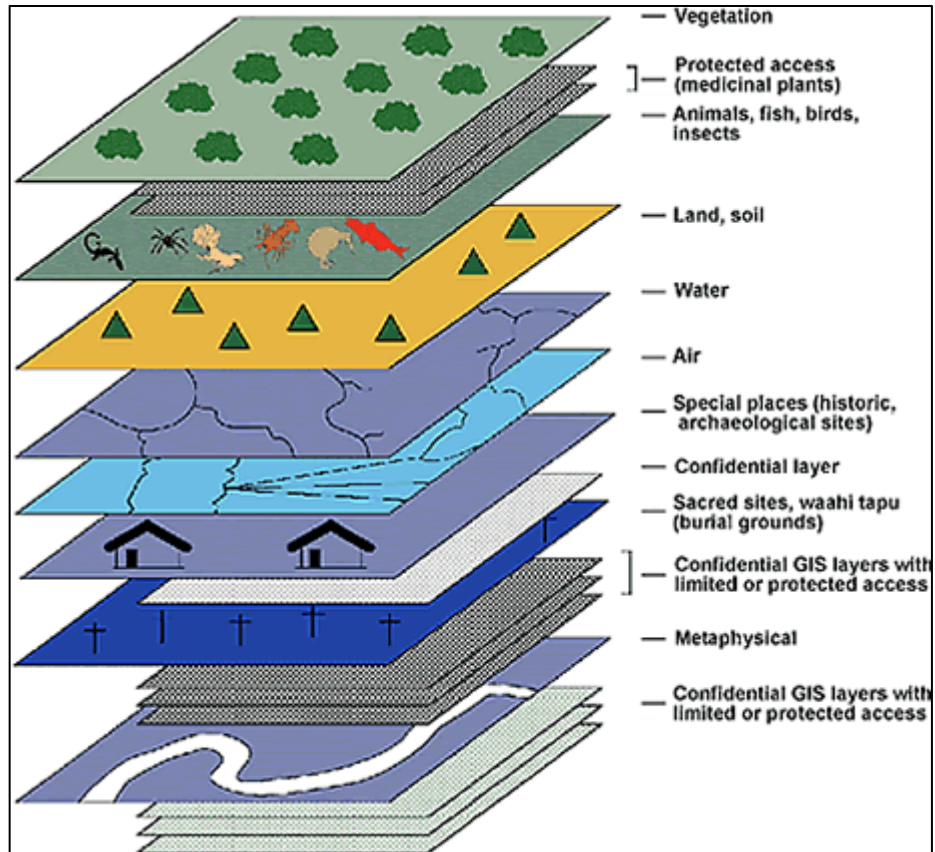
Figure 5. 6 Māori Values Information depicted as a series of GIS layers[132]

Underlining Māori use of GIS is the "preservation and protection of Māori knowledge and the active control and maintenance of the use of technology with their *matauranga* within a Māori paradigm; that is, the exercise of *tino rangatiratanga*, *kaitiakitanga* and *mana whenua*" (Hakopa 1998:56).

Hakopa (1998) cautions Māori in using GIS that:

> It is not enough for [them] to be merely entertained by the wizardry of new technology; they must take control and dictate what is appropriate technology and what are the appropriate methodologies for implementing and using it without compromising traditional values. It is absolutely

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[132] Sourced from Landcare Research Website: accessed April 2010
http://www.landcareresearch.co.nz/research/sustainablesoc/social/nzarmwebpap.asp

essential, that GIS is created by Māori, for Māori needs. New innovations
must empower and support the traditional structures already in place.
(Hakopa 1998:67)

Any new technology should not replace traditional structures of Māori society, but rather they should enhance and support those structures. Māori can benefit immensely from GIS technologies as demonstrated by Indigenous peoples around the world. This can be done without compromising the values and principles that make them a unique people.

2009 Māori GIS Conference

The 2009 Māori GIS conference[133] brought together a wide cross-section of people from around Aotearoa New Zealand involved with Māori communities at the flax-roots level, providing them with technology and skills to manage their cultural knowledge and heritage. This conference provided another nation-wide glimpse and update at the use of GIS among Māori. The theme of the conference *"GIS: Progress and protect what you value"* reflects the notion that *iwi* Māori and *iwi* groups are using GIS as a tool to progress their development aspirations as well as to protect their *taonga* (Māori GIS Conference 2009).

In keeping with the main objective of this thesis, that is: to find a way to blend Māori cultural knowledge with GIS mapping technologies without the Māori knowledge losing any integrity, the outputs of this conference provide a perfect avenue for exploring this notion. Thus, there were several objectives in examining these outputs: the first was to look for new or innovative approaches and applications of GIS within the Māori domain. Second, was to see if other Māori groups are exploring similar avenues for merging oral narratives with GIS mapping technologies. Third, was to examine how or whether Māori protocols are used in the context of extracting information from Māori communities for mapping and inclusion into GIS; and finally, to look at strategies for how Māori are communicating their cultural landscapes.

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[133] Māori GIS Conference: GIS Progress and Protect what you value, 13-15 May, Christchurch, NZ http://www.ngaitahu.iwi.nz/Events/2009/GIS-Maori-Conference/ accessed May 2010.

Exploring innovative approaches and applications of GIS

In terms of new or innovative applications of GIS within the Māori domain, Gerard O'Regan explored the potential of GIS to track the distribution of *pounamu* artefacts in the South Island. In this case, GIS was used to investigate "the variable distance between" the "artefact find-spots" and the actual "*pounamu* sources" (O'Regan 2009, Māori GIS Conference).

Another application of GIS illustrated by John Reid is in unlocking the potential of Māori land for economic development. Wind-farming and pastoral farming opportunities are being explored in the South Island using GIS for its analysis functions and ability to provide up-to-date information for making informed decisions; this is complementary to the on-ground knowledge and experience of the locals (Reid 2009, Māori GIS Conference).

Jon Proctor highlighted the use of GIS by *Rangitaane o Manawatu* and its *iwi* authority *Tānenuiarangi Manawatu* Incorporated, in merging "traditional knowledge with present day business functions and future planning" towards developing an *iwi/hapu* based GIS system. Of particular interest to this thesis, the database in the GIS was expanded and used as a storage device for cultural information that had been "spatially referenced" and included information from "surveyor's notebooks, Native Land Court Records, oral narratives and historical *waiata*" (Proctor 2009, Māori GIS Conference).

Finally, Nathan Kennedy of *Ngāti Whanaunga* is developing cultural maps and requisite datasets of *tāngata whenua* values for inclusion into the Resource Management Act 1991[134] statutory planning documents. Although this is a standard use of Māori GIS, what is of particular interest to this thesis are the methods employed for data collection and the thought given to storage of culturally sensitive knowledge. The methods employed by this project include extracting *tūpuna kōrero* from early survey block plans, collecting and documenting information from tribal knowledge repositories, digitizing *matauranga Māori*, "mapping Māori environmental outcomes and indicators", and interpreting "cultural knowledge with other contemporary

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[134] The Resource Management Act (1991) contains many provisions for safeguarding iwi interests and ensuring iwi participation in policy development and plans by District and Regional Councils.

datasets." The critical issues related to how the cultural knowledge would be stored and represented using modern technologies, the protection of Intellectual property rights and the accrual of benefits for local *tāngata whenua* (Kennedy 2009, Māori GIS Conference).

Merging oral narratives with GIS mapping technologies

The development of an *iwi/hapu* based GIS by *Rangitaane o Manawatu* and their attempt to merge traditional knowledge with day-today business functions is of particular interest to the objectives of this thesis. Besides collecting and storing data from surveyors' fieldbooks and the Native Land Court Records, spatially referenced data was collected from archaeological records, surveyor's maps, ethnologists' reports, tribal oral narratives and ancient *waiata*. Proctor comments that GIS has the capacity for linking the Māori world view and *iwi* management (Proctor 2009, Māori GIS Conference).

Kath Henderson, formerly of CFRT[135] a private trust, spoke of maps as an effective medium of protecting what we as Māori value. She also concurs that maps are an important means of depicting landscape knowledge. Kath commented that Māori are spatially sensitive through their knowledge of the landscape; as such, Māori could walk seamlessly "between two worlds" making it possible to become skilled GIS technicians with the ability to obtain knowledge held by *kuia, koroua* and *pakeke* (adult) knowledge holders. This is an advantage when engaged in oral and traditional history reports which involve gathering oral evidence and creating maps depicting significant sites. She advocates GIS in the future as a tool for Māori to negotiate their claims and towards using "multi-media solutions for narrating the social histories of the landscape." This could be an innovative approach towards documenting and storing Māori oral narratives (Henderson 2009, Māori GIS Conference).

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[135] Crown Forestry Rental Trust (CFRT) is a private trust funded by the accumulated rental fees paid by forestry license holders. The interest earned is used to help Māori claimants prepare, present and negotiate claims that involve Crown forest licensed lands; it also includes historical research and GIS.

The role of protocols in extracting knowledge from Māori communities

Any project involving the collection of Māori knowledge is bound by *tikanga* or protocols. From oral and traditional history reports as per CFRT (Henderson 2009 Māori GIS Conference) to the mapping of sites of significance for inclusion into the District plan as is the case with *Ngāti Whatua o Orakei* (Papa 2009 Māori GIS Conference)*; from the *Ngāti Awa* GIS whose layers include *waahi tapu* and *waahi taonga* and other sites of significance (Hughes 2009 Māori GIS Conference) to the *mahinga kai[136], waahi tapu/taonga* of *Te Waipounamu*. The *Ngāi Tahu* cultural heritage mapping project (Norton 2009 Māori GIS Conference) involves interviewing Elders and conducting site visits. The mapping of cultural and historical sites is conducted using GIS and is focused primarily on the South Island high country and *Kaikoura*. All these projects are bound by *tikanga* or a set of operational protocols to preserve the *mana* and *tapu* of the cultural knowledge.

Nathan Kennedy's cultural mapping project (Kennedy 2009 Māori GIS Conference) is linked to a *kaupapa* Māori framework provided by PUCM, the Planning Under Co-operative Mandates.[137] The PUCM framework developed a Māori framework and methodology with expert *kaumatua* working groups and allows for linking: [138]

> . . . kaupapa (foundation principles); associated environmentally important tikanga (fundamental rules governing Māori relationships with the natural environment); and Māori aspirations in the form of outcomes, to environmental indicators. It thereby provides a model for interpreting the effectiveness of RMA environmental management by local authorities that have Māori values as their foundation.

Communicating cultural landscapes

The Hauraki *iwi* GIS cultural heritage mapping project emerged for two main reasons: first, as a response to the values of *tāngata whenua* being largely ignored and entirely invisible in local government planning; and second in response to the disintegration and loss of important historical and natural resources (Waitai 2009 Māori GIS Conference).

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[136] *Mahinga kai* in this instance refers to sites and places where traditional foods and other natural resources were obtained

[137] PUCM website: http://www.waikato.ac.nz/igci/pucm/ accessed May 2010.

[138] PUCM website: http://www.waikato.ac.nz/igci/pucm/Whats%20new.htm, section 1: Environmental Outcomes from District Plans (RMA), Paragraph two, accessed May 2010.

The project consisted of transferring hand-drawn sketches of features on maps into GIS. GIS data sourced from external agencies and organizations, old place names and significant sites were added. A set of maps was produced depicting place names, archaeological sites, *kaimoana* (sea-food places) sites, rivers and streams, wetlands, breeding grounds, proposed marina sites, foreshore, mangroves, recreation areas, sewage discharge, and Māori tracks. The maps are, in a small spatial way, a reflection of their cultural landscapes; a reflection of their knowledge about the lands they inherit (Waitai 2009, Māori GIS Conference).

The *Ngāti Awa* GIS database is also a reflection of their cultural landscapes. Created in 2005 comprising over 100 data layers most of which were secured from government agencies, featuring *waahi tapu, waahi taonga, rohe moana*, *mataitai* areas, *rahui* areas and Māori reserves; all of which are part of the cultural landscape of most *iwi* (Hughes 2009, Māori GIS Conference).

The *State of the Takiwā* GIS introduced by Craig Pauling allows for communicating the cultural health of waterways testing over one hundred fresh water sites in 2007 from twenty separate catchment areas throughout the South Island. This system "assists *tāngata whenua* to gather, store, analyse and report on environmental information in relation to *waahi tapu", waahi taonga* and *mahinga kai* (Pauling, 2009). GIS in this instance is used to create a site rating map which summarizes all the results into a single image providing a "snapshot" of the health of the waterways in the South Island. This innovative approach allows *iwi* to monitor the cultural health of their environment in keeping with their role as *kaitiaki* of their cultural heritage and cultural landscapes (Pauling 2009, Māori GIS Conference).

Des Kahotea used GPS surveys and GIS mapping tools for defining an archaeological and cultural landscape as one of the most significant cultural landscape in Aotearoa. Located in the *Tauranga rohe* (region), the cultural landscape features numerous *pā* sites stretching from *Ngā Kuri a Wharei* in the north, all the way to *Otamarakau* in the south and inland to the *Kaimai* ranges. Some *pā* sites such as the terraced hill top site of *Mangatawa* have left an impressive and enduring mark etched into the landscape

(Christoffersen 2009 Māori GIS Conference). *Waahi tūpuna, waahi tapu* and *waahi tuturu* litter the landscape leaving behind their names embedded in the land. *Pukewhanake* is one such *waahi tūturu* located on *Te Puna* Station road. An impressive feature, it was a *pā* site once occupied by *Ngamarama* before the arrival of *Ranginui* and has been associated with several other ancestors of the region. *Mauao*, one of the sacred mountains of the region, is imbued with numerous historical sites as are the adjoining lands. *Parekura* sites, a reminder of past wars, *mahinga kai, mataitai*, coastal *maara* sites, *awa, maunga* and of course many stories that attend each of these sites all make up the impressive cultural landscape, a reflection of a history worth preserving and protecting (Kahotea 2009 & Christoffersen 2009, Māori GIS Conference).

Maps provide a snapshot view of the cultural landscape as portrayed by a series of dots, lines, polygons, raster images overlaid on top of base maps. They are what Barbara Bender refers to as a "homogenous Cartesian grid" that covers the suface of the earth providing a bird's eye view of the world (Ucko and Layton 1999).They give the reader an understanding of the sense and perhaps a depth of place populated by the early ancestors of the Māori. However, without the background histories, stories, chants, *whakapapa* and competency in the language that gives depth of meaning and knowing to each place, it is merely a superficial view of the Māori world; but nonetheless a view at the cultural landscape as portrayed by maps and mapping technologies.

GIS use in Aotearoa has grown since the 1996 Māori GIS conference in Wellington. Although GIS is still being used in creating maps for *Mana Whenua* Waitangi Tribunal claims, the range of use and the number of Māori users has increased remarkably. *Iwi* groups are now exploring economic pursuits,[139] environmental protection and preservation[140,141] preservation and recognition of *waahi tapu* and *waahi taonga*, the preservation of *pounamu* artefacts, and of course the collection and preservation of cultural knowledge. GIS is proving to be a valuable tool in articulating the makeup of ancestral landscapes and the preservation and protection of cultural knowledge that is part of the fabric of Māori society.

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[139] As per the wind farms and pastoral farming (Reid 2009)
[140] RMA statutory planning (Kennedy 2009)
[141] Waterways protection in South Island (Pauling 2009)

Conclusion

GIS mapping technologies has found widespread use among *iwi* Māori and communities around the Aotearoa New Zealand. It has proven to be a valuable tool in creating maps of their ancestral domains and for creating another medium for collecting, hosting and storing cultural knowledge for future generations.

Māori interpretation of place is in some ways very similar to other Indigenous peoples around the world; their interpretation is based on their world view. And just like other Indigenous peoples, Māori notions and concepts about land and ancestral landscapes were held in their heads; this gave them the facility to navigate through their territories with remarkable ease and intimate familiarity.

This chapter was largely about *whenua*, it was about Māori notions and concepts about land and ancestral landscapes, and the ways in which Māori ancestors interpreted their places and described their landscapes. This chapter examined a number ways in which Māori interpret their ancestral domains. In particular this thesis explored the use of *mōteatea* or classical songs Māori used to articulate their notions of land. Furthermore, a discussion of oral narratives showed how Māori interpreted the depth and sense of their places and their landscapes. Add to this the ready adoption of mapping technologies such as GIS to protect and preserve their sacred landscapes.

Finally this chapter was able to demonstrate that oral narratives such as *mōteatea* can be used to interpret Māori notions of their ancestral landscapes and that they can be mapped. The next chapter will look at how *mōteatea* can be merged with mapping technologies in a way that will not diminish the *mana* or *tapu* of the cultural knowledge.

Chapter 6: Cultural Mapping – Preserve what you value

"When I am no longer here, and I die,
I want it to be known in my language
that this was our land".
Anna Kassie,
‡Khomani San elder, South Africa

The Director General of United Nations Educational, Scientific and Cultural Organization (Mayor, 1994) defines traditional knowledge:

> *The indigenous people of the world possess an immense knowledge of their environments, based on centuries of living close to nature. Living in and from the richness and variety of complex ecosystems, they have an understanding of the properties of plants and animals, the functioning of ecosystems and the techniques for using and managing them that is particular and often detailed. In rural communities in developing countries, locally occurring species are relied on for many - sometimes all - foods, medicines, fuel, building materials and other products. Equally, people's knowledge and perceptions of the environment, and their relationships with it, are often important elements of cultural identity.*

SOURCE URL: http://www.nativescience.org/html/traditional_knowledge.html

Introduction

Māori interpret their notions about place based on their view of the world. Chapter Five examined their ancestral landscapes and the way in which they described those landscapes using oral maps; maps created using a huge body of knowledge which is manifested in variety of complex and detailed oral narratives. Chapter Five looked at the role oral narratives played in early attempts by Māori to create maps. Chapter Six will examine how oral narratives can be used to create maps of Māori ancestral landscapes

This thesis initially began with the idea of looking at how Indigenous, particularly Māori, ways of understanding and interpreting the land could be integrated into modern forms of capturing and displaying land information such as maps and, more recently, GIS. In order for any information about land to be recorded by conventional methods, including maps and GIS, that information must be compatible with conventional mapping formats. For example, a parcel of land can be reduced to a series of points each with an x and y coordinate, and a series of line segments that join those points together to form a closed polygon, which can then be represented, on a map and within GIS. The real world can be reduced to x and y coordinates and can be represented on maps or GIS with some degree of familiarity and reliability.

GIS is widely acknowledged for its ability to manage land information and display graphically the information it contains in its database in various formats including maps. Pre-GIS, maps were and still are used extensively in this country to represent Māori land information; or rather any information about Māori land that can be reduced to its simplest mathematical form, delineated and projected onto a plane surface known as a map.

Whilst some aspects of Māori land information dovetail easily into maps such as land parcel information and requisite attribute information, there are some aspects of the Māori ancestral landscape that do not. Likewise, whilst GIS can store and manipulate information about geographical features as well as conduct spatial analysis, like maps it cannot represent the ancestral landscape of Māori as described by its oral traditions in its fullness. Therefore, the challenge is to find a way to convert the oral traditional

information into a format that could be represented in a cartographic fashion without diluting its cultural value.

Chapter Six will address this issue in four sections: section one will look at the makeup of ancestral domains and how it informs mapping; section two will examine how oral narratives are employed by Māori to illustrate their cultural landscapes; section three will interrogate *mōteatea* and illustrate how ancestral landscapes are constructed; and section four will examine the creation of the oral maps using *mōteatea*.

Section One: Ancestral Domains

For Indigenous peoples, ancestral domains or cultural landscapes can be described by the longitudinal connections that group of people make with the land. For Māori, those connections can be understood in terms of the physical and spiritual relationships they develop with that territory over many generations.

Māori refer to cultural landscapes in terms of longitudinal connections to a well-defined geographical territory. The Māori view of land is often illustrated using a series of traditional stories, classical chants and cosmological genealogies that imbue the land with human characteristics causing Māori to refer to the land as their Mother, *Papatūānuku*. This view of the landscape lacks fundamental key elements, which prohibit that view of land of being captured and represented by mapping and spatial information technologies.

One solution to mapping a cultural landscape is to simply reduce the land to a series of x and y coordinates and record the spatial components only. Alternatively, satellite or aerial imagery could be used from which landscape features can be converted into spatial components. However, both approaches ignore the cultural or ancestral component of the landscape; thus the real value of ancestral landscapes is lost.

Tobias (2000) refers to mapping occupancy and use to determine connections to territory whilst Māori refer to mapping relationships, mapping *mana* and mapping the

whakapapa of the land to determine a connection to an ancestral domain. This is the makeup of an ancestral domain.

Māori form spiritual and physical relationships with their ancestral domains. Spiritual relationships are determined by their cosmological genealogies linking them to the heavens and the earth and to environment, from which they are born, within which they live the span of their lives, and to which they return once they die. The spiritual ties are further cemented by ritual, ceremony and by stories, which imbue the land with human characteristics. Thus certain places are imbued with sacredness because of the spiritual nature of what occurs there.

These characteristic relationships or connectedness to ancestral territories are encapsulated in a huge body of knowledge that are manifested in the oral narratives such as *whakapapa*, *karakia*, *pēpeha*, *whakataukī* and *mōteatea*. These oral narratives are some of the fundamental methods used by Māori to carefully pass on their knowledge to the next generation. Moreover, they are the means by which the ancestral landscapes can be interpreted and committed to maps.

Section Two: the oral narratives

Māori employ several oral techniques for transmitting their cultural knowledge from generation to generation; *mōteatea* was one such technique.

Mōteatea

Mōteatea are a rich oral tradition comprising a collection of knowledge, histories, customs and values which are passed down through the generations. They are a prolific source of *whakapapa, karakia*, sacerdotal content, stories about battles and deeds of bravery, instructions, warnings from as well as references to ancestors, places, landmarks, well-known geographical features and significant events. *Mōteatea* provide a special insight to the minds and lives of the ancestors and are couched in a metaphorical language incidental to their era. They form works of epic poetry that use distinctive tunes and uncommon rhythms that facilitate retention. The poetic phrasing of the *mōteatea* imbued with cultural information made it easy to memorise and recall.

They evoke emotion and stir inner memories that transform into vivid images of people, of past histories and of place. In addition to this, *mōteatea* remind us of the *whakapapa*, the ancestral events, the old stories, and the historical landmarks thus restoring the tradition of connecting people to their special places.

Whilst these were not composed to portray spatial relationships, prominent and important landscape features and people were often embedded in *mōteatea*. Thus, these narratives are perfect for translating the cultural landscapes into a spatial landscape.

Converting the oral assets

The intent of this chapter is to illustrate how oral assets can be converted into spatial assets and represented on a cartographic map. The process for converting the oral assets into spatial assets was rendered down into three simple stages: one, interrogating the narratives; two, creating a sketch of the oral information; and three, generating a cartographic representation of the information.

Stage One: interrogating the narratives

The purpose of the first stage was to dissect and interrogate a number of significant *mōteatea* thoroughly for any reference to place, person or activity. Seven *mōteatea* were chosen for their significant cultural information and for their capacity to portray important spatial information for mapping. Important place names are often mentioned in *mōteatea*, persons or ancestors often relate to one or more locations which can be mapped, and activity is always related to a specific place or location.

The first stage used a set of narratives derived from a collection of *mōteatea* that have been carefully preserved and handed down from generation to generation from the lips and memories of the custodians of oral traditions since they were composed.

The narratives for the first stage were extracted from a collection of *mōteatea* compiled by A. T. Ngata and Pei Te Hurinui Jones (2006 edition), entitled *Ngā Mōteatea: The Songs*.

Stage Two: Creating a Biographical Sketch of Oral Information

The aim of the second stage was to create a sketch of any reference to place in the order in which the information unfolded from the narratives selected in stage one. The oral information was reproduced in a format that would be easily understood by those who are familiar with the region and the narratives but very difficult for those who did not know the song or belong to the region. The sketches did not record or attempt to display any spatial relationships between these places; they merely recorded the 'journey' or information described by the narrative.

Stage Three: Cartographic Representation

The third stage involved generating a cartographic map of the oral information; or rather, populating a conventional cartographic map such as a topographical map with the oral information gathered in stages one and two, then digitising those mark-ups into electronic format for inclusion into GIS. The data is organised into layers and maps are then created depicting the landscape as articulated by the ancient narratives. The role of the *paepae* is examined at this stage, as it is the link between cultural space and geographic space. Although this stage is the simplest, it is the part that requires careful consideration as it challenges the cultural notions of both the *mana* and *tapu* of the cultural knowledge.

Māori treat their cultural knowledge with a measure of sacredness (*tapu*), as it forms part of their identity (*mana*) as a unique tribe (*iwi*) in Aotearoa and by extension in the world. The challenge in reproducing a map is to represent this cultural information in a manner that will not diminish the *mana* and *tapu* of the cultural information.

Maps of cultural knowledge

Creating maps of cultural landscapes and heritage are important for communicating with the outside world and interpreting the landscape. Maps can communicate value to local communities, international visitors and non-visitors. Māori can use maps to communicate the value of their culture and of their cultural heritage to the outside world in meaningful ways.

Maps provide the means for one culture to communicate to another using a common medium. An example of where these types of maps may prove useful would be with District or Regional Councils who are responsible for development in the region or even preparing the oral information to support a claim to the Waitangi Tribunal. In these examples, a map is a great way of being able to communicate the location of significant cultural heritage sites to the councils; maps can also communicate to the Tribunal the extent of the use and occupation of the area under claim.

Cultural knowledge in the Māori world is passed on using a collection of oral techniques; maps can be used to complement this process of intergenerational dialogue and transmission of knowledge using a series of maps illustrating the ancestral landscape. Other meaningful reasons to create maps include: the preservation of cultural heritage, management of cultural assets and heritage, resource and land use management and the identification and documentation of cultural resources.

This chapter, whilst concerned with maintaining the *mana* and integrity of cultural knowledge in the process of mapping, is focussed on creating a method for mapping Māori ancestral landscapes based on the oral narratives of *mōteatea* and using the concept of the *paepae* to link cultural knowledge to the geographical component.

Methodology

The purpose for interrogating the narratives was to illustrate how Māori interpret their landscapes and how they used oral narratives to map the spatial extent of their cultural space. The approach in determining cultural space was to look at the oral traditions of the Māori forefathers to determine what cultural space looked like to them. The spatial extent of that space would then be determined by creating a cultural map from the oral assets contained within *mōteatea* thus attempting to represent the cultural landscape as defined by *mōteatea*. Hence the process of determining the spatial extent of cultural space involves identifying the spatial assets inherent in the oral traditions; these are termed cultural assets. Cultural space is then projected that into cartographic space to create the spatial extent of those cultural assets. Cultural space remains cultural space as it is merely projected into cartographic space; hence both cultural space and

cartographic space remain unchanged. Cultural space and cartographic space is then linked together using the concept of the *paepae*.

To produce the initial sketches of the *mōteatea* involved several logical steps: first, identifying the spatial components within the narratives; second, creating a biographical sketch of the narrative information in the order in which it unfolded in the chant; third, developing an appropriate database to store the data and metadata; and fourth populating the database with the narrative data and appropriate metadata.

The Narratives

The narratives explored in this chapter are contained in seven culturally significant *mōteatea,* each with different themes. Each *mōteatea* provided sufficient cultural data to test the theory of mapping oral histories. The first was an *oriori*. An *oriori* is a classical chant composed for very young children of chiefly or warrior lineage. These types of chants were used to educate them in matters appropriate to their lineage. They were often chanted to the infant providing references to myth, historical events, significant sites and landmarks, rituals, tradition, *whakapapa* and well-known mountain ranges. *Oriori* were often used to preserve and pass on important tribal traditions. Compositions of this nature were often used to imbue and enculturate the youth with the myths and traditions significant to their people. The *oriori* composed for *Tamaungaoterangi* follows the classic style described above and was instrumental in title investigations in that region to the Māori Land Court (Ngata & Jones 2006, part 3).

The second and third *mōteatea* originate from different parts of the East coast of the North island of Aotearoa New Zealand. The second *mōteatea* is a *waiata tangi.* This type of *mōteatea* is a lament, a farewell tribute to honour those who have died or been killed. *Te Kani-a-takirau,* an important chief of the region, composed this particular *waiata tangi* for his only son and heir *Waikari*, whose loss could never be replaced. The song refers to an incident prior to the death of *Waikari* leading to the establishment of a unique boundary mark. The third *mōteatea* is another *oriori* composed for *Ahuahu-ki-te-rangi,* a child born of chiefly rank. This *oriori* contains references to illustrious

ancestors and significant sites and was designed to educate and guide the child and imbue this child with sacred knowledge of who she was.

The fourth and fifth *mōteatea* were composed by Puhiwahine. The fourth *mōteatea* is a widely recognised *waiata aroha*, a song about forbidden love between two close relatives that was frowned upon and eventually prevented. This song contains references to significant places, ancestors and to a marriage between two great mountains in the Taupō region whose union was sanctified by *Ranginui* the sky father himself. This *waiata, Ka Eke ki Wairaka,* is part of a journey for the composer who fifty years after she had composed her song met with her former lover. The fifth *mōteatea* is an *oriori* composed by *Puhiwahine* for her *mokopuna* (grandchild). It contains *whakapapa*, well-known landmarks and ancestral events.

The sixth *mōteatea* is a *waiata tangi* or lament composed for *Te Arakau te Umu* of *Te Arawa* who was killed in battle. Part of this *mōteatea* is selected because of the references it contains to pathways; it provides an apt example of how well the ancestors of the Māori understood their cultural landscape and were able to capture that notion in *mōteatea*. It is a prime example of how Māori created 'maps' of their landscapes using oral narratives confirming their ability to navigate through geographical space.

The seventh *mōteatea* is an *oriori* composed for *Wharau Rangi* and is an example of a *mōteatea* that records the incidents leading to the naming (a *taunahatanga*) of the rivers down the lower part of the west coast of the *Te Ika a Māui* the North Island of Aotearoa from *Whanganui* to *Waikanae.*

Each of these *mōteatea* are interrogated one by one, carefully extracting any references to geographical place that defined a spiritual or physical relationship to the land. *Whakapapa* or genealogies, important ancestors that inhabited certain places and information related to each place were also noted. Key information regarding significant activities such as harvesting, hunting, and battles related to place, or the location or fixing of harvesting areas using the natural features of the earth, or temporary settlements or permanent settlements, or actual significant 'markers' or

'features' of the heavens, land or sea were also noted. All this information relates to the way the ancestors of the Māori used and occupied their ancestral domains thus creating cultural space. The concept of the *paepae* is introduced as a space created by merging two worlds: cultural space as defined by cultural information contained in *mōteatea* and geographical space defined by a geographical framework.

The next stage is to create a sketch of the cultural information on a blank canvas; a biographical sketch representing the composer's complex cultural knowledge. Our task at this stage is merely to plot or fix each reference to place. Our canvas has no grid lines, no coordinates, no roads, no cadastre (boundary lines) and no hydrology or topography. At this stage there is no shape to the space; all the significant events, people, cultural references and historical places are plotted in the order in which that information unfolded in the *mōteatea* in a continuous and seamless path weaving through time, events and place.

Section three: mapping the *mōteatea*

Mōteatea I: He oriori mō Tamaunga o te rangi

This is a very complex and detailed *oriori* from *Te Kawakawa mai tawhito* region, now known as *Te Araroa* the East Cape of *Te Ika a Māui*, the North Island of New Zealand. It contains numerous place names, significant landmarks, relevant *whakapapa,* and references to historical accounts and stories. This *oriori* was used in Māori Land Court determinations because of the content (Ngata & Jones 2006, part 3:39).

Kuramaoa = Tautuhi

Whakarongomamao — Hineumu

Te Araihuka = Te Whakaangiangi — Tiheihei — Te Kakahuwhaia

Te Kokiri — Kauae — Te Kairae

Kaimatai — Hakaraia Waiaua — Whatiua

Tamaungaoterangi — Riria Takahua — Te Katene Ngatoko

Heni Kamaea
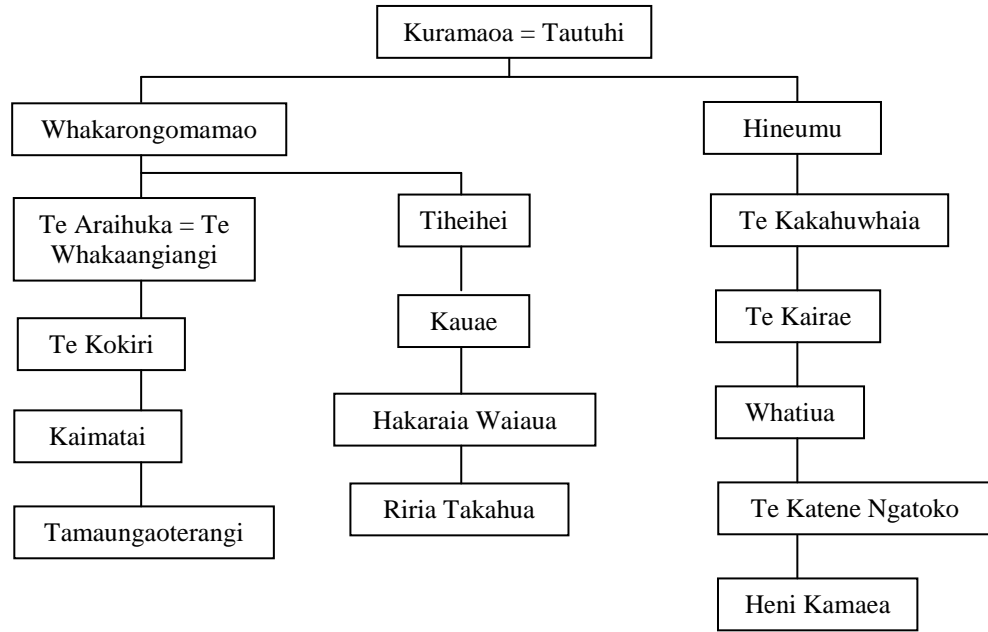
Figure 6. 1: Whakapapa of Tamaunga o te Rangi[142]

This *oriori* (Ngata & Jones 2006, part 3:38-55) was composed for *Tamaunga o te rangi* by *Maperetahi* and begins by reciting illustrious *whakapapa* or genealogies. The first verse refers to some of the progeny of *Tangaroa,* the god of the seas, who are associated with knowledge and thinking as well as carving and the weaving of cloaks. These ancestors are *Ruatepupuke, Ruatemahara* and *Ruatehotahota.* Two lines in this verse (*Tēnā anō rā tō tāua kahu* and *Hei kahu rā mō tāua ki te pō*) refer to a *kahu* or cloak woven by these ancestors, which possibly refer to cloaks of knowledge. Also within this first passage are references to important plants: *rauaruhe*, *kiekie* and *harakeke.* The *rauaruhe* was a food source whilst the *kiekie* and *harakeke* were important plants used for weaving mats, baskets, *tukutuku* panels and cloaks (Ngata & Jones 2006, part 3:42). (Emphasis added)

E tama e! He tangi aha tō tangi?	O Tama! This crying is your cry for what?
He tangi anō rā, he whakaahuru kore,	One cries, of course when there is no shelter
He tū nō tō kiri te tara rauaruhe.	Or the skin is pricked with a sharp-pointed fern leaf splinter
Taku kore rawa nei ki te rau kiekie,	Devoid am I of the *kiekie* leaf
Taku noho tonu nei ki te rau harakeke.	Content must I be with the flax leaf
Tēnā anō rā tō tāua kahu,	There is, of course, our cloak
Nā tō matua rā nāna i waihanga,	It was woven by your parent,

[142] *Whakapapa* source from: *Journal of the Polynesian Society*, Vol 57, 1948, supplement "Ngā Mōteatea", A T Ngata, pp271- 279. *Whakapapa* on page 272.

Nā Ruatepupuke, nā Ruatemahara,	By recess-of-knowledge, recess-of-thought
nā Rua-te-hotahota, nā Tua-waihanga	Recess-of-enterprise and by Prodigy-of-learning
Hei kahu rā mō tāua ki te pō.	As a robe for us to the realms of night

The passage that follows introduces several significant places. First mentioned is *Te Tawai*, followed by *Taumutu* and *Omarumapere*[143] (Ngata & Jones 2006, part 3:42-44). (Emphasis added)

Piki atu e koe ngā pikitanga kino	You are to climb by the steep ascents
I roto o Te Tawai, hāngai te titiro	Within the vale of *TE TAWAI*, now look straight
Ki te waka heke mai i waho o Taumutu	At the canoe descending from *TAUMUTU*
Whakaangi i runga rā, kia tae atu ana	Scale yonder heights, so that you may reach
Omarumapere, hei a te Pare-mamaku	*OMARUMAPERE* and there meet *PAREMAMAKU*

In the above passage, *Tamaunga* is encouraged to climb the hill *Te Tawai* and from the summit look out towards the ocean to the canoe coming in from *Taumutu* (Ngata & Jones 2006, part 3)*. Taumutu* is significant in several ways: it is a passage way for canoes to shore, a calm pool of clear water, and a *taunga ika* or fishing ground. The *Awatere* River, in *Te Araroa*, flows out towards *Taumutu*. The *taunga ika* is found by aligning both *Te Tawai* (a *puke* or hill) and *Omarumapere* (a *puke* or hill) with the sun in its position at noon.

Te Tawai is a hill above *Waione* and is also the name of a *pā* site over the other side of the hill *Te Tawai*. *Pare-mamaku* is a chiefly female ancestor. *Omarumapere* is a *puke* or hill in the *Whetumatarau* block in the *Manga-o-wira* valley situated near *Karangaroa* (Ngata & Jones 2006, part 3).

The segment below is replete with significant places known for harvesting of certain foods (Ngata & Jones 2006, part 3: 44). (Emphasis added)

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[143] NOTE: all the significant places are capitalised, italicised and underlined for emphasis

Kia whakarongo koe te mahi a-waha	You are now to listen for the voice
Nō tō tuāhine, nō Rua-kapanga-nui	Of your sister, *RUA-KAPANGA-NUI*
Whaia atu rā kai Te Kahika e	Trace it to *TE KAHIKA*,
Kai Te Raparapa e	Thence on to *RAPARAPA*,
Ka hikoi te haere	Hasten the footsteps
Me kore e mau i a koe	And you may yet overtake her
Kuhu atu e koe ngā rauaruhe kino	Enter the wild fern-lands
I roto Karangaroa, kia ui e roto	Among the hills of *KARANGA-ROA*, pondering the while
Ko hea tēnei whenua? heke atu e koe	"What lands may this be?" you will now
I roto o Te Houi, kia kau rā koe	descend into *TE HOUI*, and there you will
I ngā wai ratarata i roto Manga-o-wira	bathe in the clear waters of *MANGA-O-WIRA*
Kia whakaeke koe te Niho-o-te-kiore	now ascend up on to *TE NIHO-O-TE-KORE*,
E whawhai atu ana Te Mata o Rangaranga	and you will then wend your way to *TE MATA O RANGARANGA*
Ka puta ka tae koe kai te kāinga nā	thence onward and you will reach a home

Te Kahika, Te Raparapa and *Te Karangaroa* are used to identify the location of a particular hunting ground known for harvesting birds. *Te kahika* and *Te Raparapa* are referred to in the text as streams; they are also *puke*. *Te Manu-a-Ruakapanga,* otherwise known as the great bird of *Ruakapanga,* is a key figure in the stories relating to the *kumara* being brought to this country from a place called *Parinuitera* in the ancient homelands of *Hawaiki*. Hence, the use of *Ruakapanganui* in the passage above refers to the huge birds or huge numbers of birds found in the region.

Te Houi, Manga-o-wira and *Te Niho-o-te-kiore* are areas known to harvest *kiore* (rat) and fresh water fish. *Te Houi* is located in several different areas: first within *Te Whetumatarau*, second within *Mau-totara* and on the boundary with *Orangimarama*, third, near *Kopua-pounamu* and fourth in the *Manga-o-wira* valley. *Manga-o-wira* is mentioned in the text as "*ngā wai ratarata i roto Manga-o-wira*" or "the clear waters of *Manga-o-wira*". *Manga-o-wira* is a large river that flows into the *Awatere* River (Ngata & Jones 2006, part 3: 44-45, 48-49).

Figure 6.2: Biographical Sketch of Tamaunga mōteatea

Te Niho-o-te-kiore was known as a village and a place where the *hinau* trees grew
(Ngata & Jones 2006, part 3:48-49). *Te Mata-o-Rangaranga* is described in the text as

a village in *Omaika* (Ngata & Jones 2006, part 3:48-49); *Te Mata-o-Rangaranga* is also a cliff face where *kumara* grounds were terraced into the face of the cliff.

The passage below contains references to several significant harvesting and habitation areas and important persons: *Te Kaweka, Wai-puia, Te Peka a Haumia, Te Warowaro, Mate-te-rangi, Pakuri, Hapu-Poia,* and *Porou-Rangi* (Ngata & Jones 2006, part 3:44). (Emphasis added)

Ka oho kai runga, e mau ki tō tao.	Be alert and upstanding, grasp your spear
Piki atu e koe i roto te Kaweka.	You are to ascend the valley of TE KAWEKA
Kia iri tō pae, auaka e koe	Take you the ridge trail, and do not
Hai haere i raro rā; whakaangi i runga rā,	Go by the low road, stay on the high lands,
Mā te Waipuia, kia whakaeke koe	Up there on WAI-PUIA, and you will ascend
Te Peka a Haumia. Tāhuri tō taringa	TE PEKA A HAUMIA. Now incline your ear
Te umere ka tangi; titiro tō kanohi	And listen to the joyful shouting, look you and see
Ki ngā wai weherua, ki te ahi ka kā	The twin dividing waters, and the fires now alight
I roto te Warowaro; i a Mateterangi,	Within TE WAROWARO; (they are) of MATE-TE-RANGI, of TE PAKURI, of HAPU-POIA,
I a te Pakuri, ko Hapupoia,	
Ko Porourangi, e!	(Yea), of POROU-RANGI too!
Tēnā anō rā te pia o te harakeke a tō kōkā,	There, too, is the gum of your mother's flax,
Hai puru mō tō waha, ka noa.	To place in your mouth in the *noa* rite

Te Kaweka has been described as a hill, stream, cultivation and a ridge (Ngata & Jones 2006, part 3:51). The *Kaweka* stream is within the block known as *Omaika* and is close to *te Niho-o-te-Kiore* (Ngata & Jones 2006, part 3:51). The *Kaweka* ridge runs in a southerly direction from *Manga-o-wira* (Ngata & Jones 2006, part 3:51). The old trail began at *Totara-nui* situated at the mouth of the *Kotikoti-toki*, along the *kaweka* hill to *Waipuia*, then on to *Kohipu* through to *Te Pa-o-Ngaoho* and towards *Kopuapounamu* and *Tauranga-kautuku* (Ngata & Jones 2006, part 3:51).

The phrase "*ngā wai weherua*", refers to two branches of the *Awatere* River, the *Kopuapounamu* and the *Tauranga-kautuku* (Ngata & Jones 2006, part 3:44, 51). *Te Waipuia* is a stream whilst *Te Peka-a-Haumia* is described as a overhanging high point on *te Tihi-o-manono* (Ngata & Jones 2006, part 3:51). *Te Warowaro* was the site of an ancient cultivation area whilst another harvesting area was defined by *te Kaweka, Waipuia and Te Peka-a-Haumia* (Ngata & Jones 2006, part 3:51).

Mate-te-rangi, Te Pa Kuri, Hapu-Poia, and *Porou-Rangi* are ancestors; *Mate-te-rangi, Hapu Poia,* and *Te Pa Kuri* were also names given to settlements.

There is a reference to *harakeke* (flax) in the phrase *"te pia o te harakeke"* at *Te Warowaro* which was harvested for a variety of uses including weaving of clothing and as a remedy for illness (Ngata & Jones 2006, part 3:50, 51).

The short verse below contains references to significant harvesting places in the region of *Omaika* known as *Umukuri*, *Te Weka a Umutapu*, and *Mairenui* (Ngata & Jones 2006, part 3:46, 51). (Emphasis added)

E tapu tō tira, e ngere i a koe.	A sacred traveler are you, wherefore remove now your sanctity
Arahina atu rā hai te <u>Umukuri</u>,	You are to be escorted to <u>TE UMU-KURI</u>
<u>Te Weka a Umutapu</u>, hai <u>Mairenui</u>, e;	And to <u>TE WEKA A UMU-TAPU</u> *at* <u>MAIRENUI</u>
Ka tāwhi tō ringa, kāti ka hoki mai;	You will wave your hand in salutation before returning;
Ka ō koe kai roto kai te tāpui, nā.	For you are now with your kinsfolk

Te Umukuri and *Mairenui* were places known for collecting *aruhe* or fern-root whilst *Te Weka a Umutapu* was an old overgrown clearing (Ngata & Jones 2006, part 3:50, 51).

The section that follows refers to a hill known as *Wharerata* and a flat fertile area known as *Tapapahapu* (Ngata & Jones 2006, part 3:46, 53). (Emphasis added)

I a <u>Whatiua</u>, e, i a <u>Waiaua</u>.	(You are now) with <u>WHATI-UA</u>, and <u>WAI-AUA</u>
Ka haere tātau i te <u>ranga mārō</u>,	Let us therefore go by the stern pathway
<u>He kura takai puni, he tukutahi te tohu</u>:	To overwhelm the encampment in the headlong charge:
Waitohungia rā!	Yea, let it be so dedicated!
Ki roto te <u>Wharerata</u> ko te <u>Hamaiwaho</u>,	There within <u>TE WHARE-RATA</u> *is* <u>TE HA-MAI-WAHO</u>
Ko <u>Hineihorahia</u>; ki <u>Tapapahapu</u>	And <u>HINE-I-HORAHIA</u>; *at* <u>TAPAPA-HAPU</u>
Ko te <u>Koha</u>, e, ko <u>Rangiwhakaratoa</u>,	Is <u>TE KOHA</u>, indeed, and <u>RANGI-WHAKARATOA</u>
Ka tika ko te hono!	Verily they are worthy kinsfolk!
Takitakina rā!	To be greeted in speech and song!

Mentioned in the above verse are several ancestors and kinfolk of *Tamaunga*: *Whatiua, Waiaua, Te Hamaiwaho, Hineihorahia, Te Koha* and *Rangiwhakaratoa* (Ngata & Jones 2006, part 3:53). This verse also contains three phrases that refer to aspects of a battle: *"te ranga-mārō"*, *"he kura takai puni"* and *"he tukutahi te tohu"* (Ngata & Jones 2006, part 3:46). *"Ranga-mārō"* refers to a war party which will not turn back, and who will prevail or die in battle (Ngata & Jones 2006, part 3:53); *"he kura takai puni"* is a phrase that describes the attacking strategy of a war party (Ngata & Jones 2006, part 3:53); whilst *"he tukutahi te tohu"* is another expression that describes an attacking strategy or formation (Ngata & Jones 2006, part 3:53).

Spreads throughout the extract below are references to harvesting areas (Ngata & Jones 2006, part 3:46). (Emphasis added)

E Hora, te hū o te pūoro, kia whai rā koe *Te tira te rōreka, kia mau ko te hā*	O *Hora*! Sing the song, let us hear you Join the chorus in sweet song, let the lingering notes
Ki runga o Totara. Mā Tarawehi rā,	Be heard up there on *TOTARA*. 'Twill be *Tara-wehi*
Māna e kī mai, "Haramai rā, ē, *Ka haere tātau i te ara ngāwari."* *Kia kau koutou i roto te Matai;* *Kia ui e roto ki te maunga tipua,* *Nā Paoa rā, e!* *Ka haruru, ka tae koutou kai te Kawakawa, nā.*	Who will say, "Come hither, Let us now go by the easy pathway." You will all swim across *TE MATAI*; Inwardly apprehensive of the sacred mount, 'Tis of *Paoa*, no less! The rumbling noise is to herald your arrival at *TE KAWAKAWA*

The reference to *Totara* (*Podocarpus Totara*), *Te Matai* (*Prumnopitys taxifolia*) and *Kawakawa* (*Macropiper excelsum*) indicated a forest region used for harvesting. The nearby bay also yielded certain types of *pōhatu* (rocks) that were frequently used.

Te Matai was also a crossing near the mouth of the *Awatere* River whilst *Totara* was a high point above *Te Araroa* and is the point where descent to *Awatere* took place (Ngata & Jones 2006, part 3:53). *Kawakawa* was a sacred place situated above the cultivation at *Wai-ha-pokopoko*; its full name, *Te Kawakawa-mai-tawhiti* was the old name of *Te Araroa* (Ngata & Jones 2006, part 3:53).

The final verse refers to *Matokerau* as *"he wai nō te pō"*

Tēnā rā Matokerau, he wai nō te pō,	Thereabouts is *MA-TOKERAU*, with waters

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Hai puru mō ō koutou waha, ka noa.
Ka hoki mai ō tuākana,
Ka noho rā koe;
Kia whakarongo koe te huhū o te whiu;
Kia whakarongo koe te kekē pōhatu;
Kei hē rā koe te whana kai mānuka,

I a Whakaura ē, i a Turiri ē,
I a te Pākehā, i a te Auawhata, ī ē!

from the depths of night,
You are all to take your fill, and be made noa
Your seniors will return
But you will remain
You will then hear the swishing strokes
You will also hear the rattling pebbles
And be you mindful of the <u>*MĀNUKA*</u>-armed band
They are of <u>*WHAKAURA*</u>, e, of <u>*TURIRI*</u>, e
Of <u>*TE PĀKEHĀ*</u>, and of <u>*TE AUAWHATA*</u>, i e!

Matokerau is an ancient spring on the bank of the *Awatere* River (Ngata & Jones 2006, part 3:53); it is also one of the stars within *Mahūtonga*, the Southern Cross constellation. The line: *Te whana kai mānuka* is in reference to a fighting unit that used *mānuka taiaha*[144] as weapons (Ngata & Jones 2006, part 3:53). This unit would practice fighting on the beach hence the two phrases: *"kia whakarongo koe te huhū o te whiu"*, signalling the swish of weapons; and *"kia whakarongo koe te kekē pōhatu"* referring to the pebbles rattling as they fought on the beach (Ngata & Jones 2006, part 3:55).

Mōteatea II: Te Waikari

The second *mōteatea* entitled *He tangi mō te Waikari,* (Ngata & Jones 2006, part 2:190-193) is a *waiata tangi* or lament composed by *Te Kani-a-takirau* for his son *Te Waikari*. *Te Kani-a-Takirau* was the paramount chief of the east coast in his time; his son *Te Waikari* was the heir apparent. *Te Waikari*, known as *Te Kairangatira* the noble or anointed one, was betrothed to *Tapatapaaitu* the daughter of *Te Houkamau Te Nui* from *Wharekahika*. *Te Waikari* went to *Wharekahika* to live with her but she died before they could marry. He returned home to *Uawa* broken hearted and died soon after of a broken heart. His father, however, suspected that he had been cursed.

This is a relatively short song that tells of an incident that occurred prior to the death of *Te Waikari* that led to the establishment of a boundary marker known as *te pou a te Kani*. The lament begins with reference to the capture of two men, *Mahuika* and *Te Rerehorua*, following a battle at *Tautini pā* site (Ngata & Jones 2006, part 2:190-191). (Emphasis added)

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[144] *Taiaha* is a long hand-held weapon much like a staff; this one is constructed out of the wood from a *Manuka* tree

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Kia mate koe e Wai e	Would that you had died, o Wai
Mō Mahuika, mō te Rerehorua	For *MAHUIKA* and *TE REREHORUA*
Mō aku ahi manawa	For my heart-offering ritual fire

The two captives had their hearts roasted in a ceremony known as *ahi manawa* and then eaten by *Te Kani* at a place called *Waihoro* on the side of *Titirangi* Mountain in the *Uawa* region. Their severed hands were then secured to a post known as *te pou a Te Kani* at a place called *Te Mawhai*. This *pou* served as an effective boundary marker warning neighbouring tribes of the consequences of crossing the boundary.

Figure 6. 3: Biographical Sketch of Te Waikari Waiata Tangi

The rest of the lament continues with *Tokomaru* a seaside settlement on the East Coast of *Te Ika-a-Māui* the North Island of New Zealand and pays tribute to his only son with classical phrases. *Te Kani* refers to his only son as *te rau o Titapu* an expression of respect for and to a person. *Titapu,* the feathers of birds such as the *Toroa* or *Kotuku* were worn by high-ranking individuals (Ngata & Jones 2006, part 2:190-191). (Emphasis added)

Ki roto o <u>Tokomaru</u>	Within the vale of <u>TOKOMARU</u>
Mō taku kauika kopuni	For my company of noble fallen ones
E pae i te takutai one	Who lie out there upon the strand
Tauware te waka	Quite forlorn is the canoe now floating
Ki te kopua nei, e	Within the lagoon, ah me
Tū tonu mai rā, e Wai,	Stand steadfastly there, o Wai
<u>TE RAU O TITAPU</u>, e	The plume of <u>TITAPU</u>
Ka hinga kai raro	Now fallen and lies there prone
Taku kōhuru tōtara	My once sturdy totara sapling
Ehara i te tangata	He was no ordinary mortal
Taku kuru hauhunga,	My shelter from the bitter cold
Taku whakateitei	He was my renowned one
Ki ngā whenua, nā ē	Throughout all the land, ah me

Mōteatea III: he oriori mō Ahuahu ki te rangi

The third *mōteatea* is an *oriori* composed by *Hinekitawhiti* for her *mokopuna* (granddaughter) *Ahuahukiterangi*, a child born of high rank (Ngata & Jones 2006, part 1:2-7). *Ahuahukiterangi* inherited her rank and *tapu* or sacredness from her illustrious ancestors *Tuariki* and *Porouhorea* who are revealed in the opening lines of the song. *Hinekitawhiti*, a descendant of *Te Aotawarirangi* who was a *mokopuna* of *Hauiti*, was living in *Te Ariuru* at the time she composed this waiata.

The purpose of this *oriori* was to educate and instruct the child in her chiefly ancestry, sacred places and associated histories. It begins with *whakapapa*, introduces scared geographical places and ends with symbols of the child's chiefly lineage (Ngata & Jones 2006, part 1:4). (Emphasis added)

Kia tapu hoki koe nā Tuariki, ē!

Kia tapu hoki koe nā Porouhorea!

Kāti nei e noa ko tō taina ē!

Whakaangi i runga rā he kauwhau ariki ē,
Koi tata iho koe ki ngā wāhi noa.

Whakatūria te tira hei Ngāpunarua,
Tāhuri ō mata ngā kohu tāpui, kai
Runga o te Kautuku, e rapa ana hine ī
Te kauwhau mua i a Hinemakaho
Hai a Hinerautu, hai a Tikitikiorangi,
Hai konā rā kōrua, ē!

May you be set apart, as is fitting for a descendant of *TUARIKI*;
May you be set apart, as is fitting for a descendant of *POROUHOREA*;
Let only your younger relative be free from restriction.
Soar gracefully on high, O chieftainess,
And do not descend too near to the common places.
Project your journey to *NGAPUNARUA*
Then turn your eyes to the interlaced mists,
Which float above *KAUTUKU*; for the maiden
Seeks the first-born line from *HINEMAKAHO*,
Such as *HINERAUTU* and *TIKITIKIORANGI*;
And there you will be with your elder.

The opening lines begin with the *whakapapa* or genealogy that defines the child's status in her society with reference to *Tuariki* and *Porouhorea*. The chant then mentions two scared places *Ngāpunarua* and *Te kautuku* both of which have defining roles in the history of the east coast of the *Te ika a Māui*, the North Island of New Zealand. Equally important is the advice given to the child thus: *Whakaangi i runga rā he kauwhau ariki e, Koi tata iho koe ki ngā wahi noa.* She is exhorted not to waste her time visiting common places or mixing with common folk but to visit sacred places such as *Ngāpunarua* and *Te kautuku*, places that were associated with the Chief *Tikitikiorangi*. Other persons mentioned in the passage above are *Hinemakaho* and *Hinerautu* are associated with *ariki whakapapa*.

Te Kautuku is also the name given to a range of mountains to which the chief *Tikitikiorangi* was closely associated with. This range is a known navigation point for both fishermen and travellers (Beckwith 2007).

Figure 6. 4: Biographical Sketch of Hinekitawhiti oriori
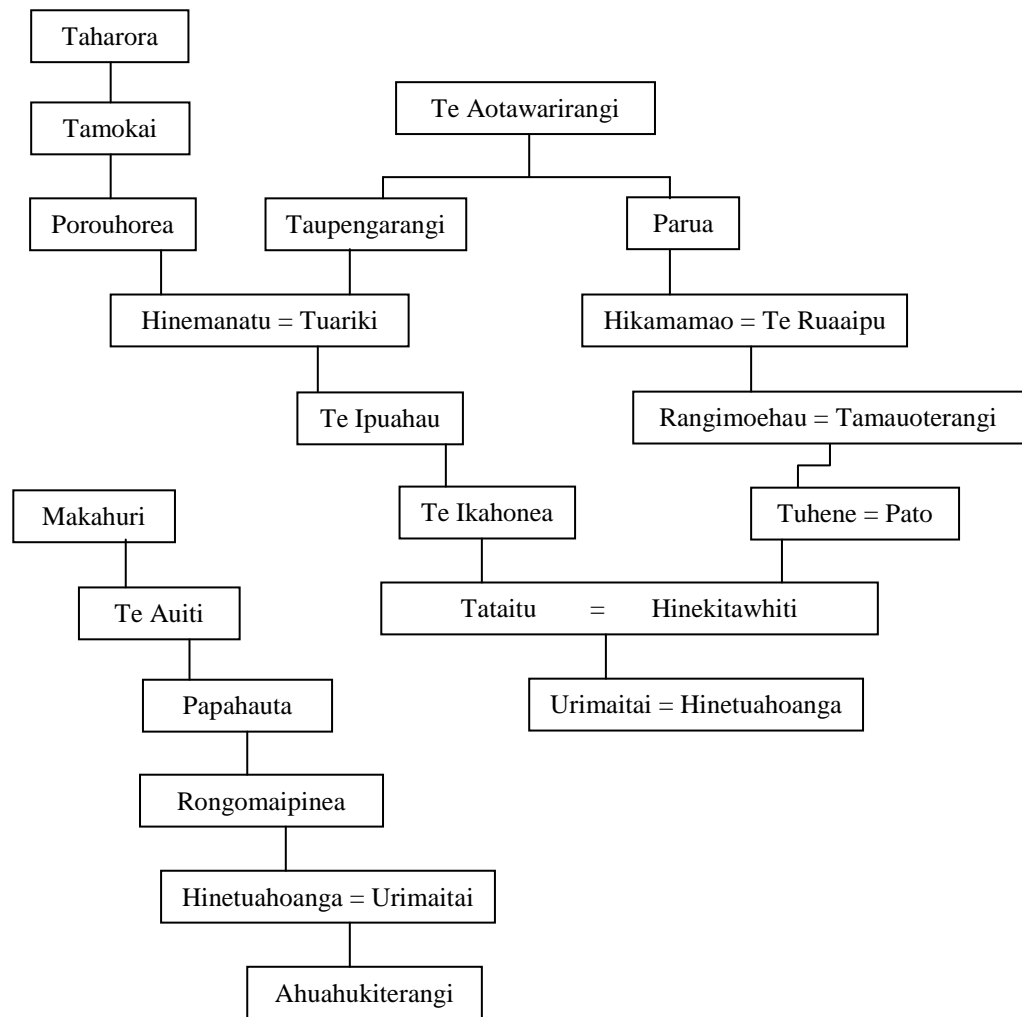
Figure 6.5: Whakapapa of Ahuahu ki te Rangi[145]

The following verse contains instructions regarding food; not food from the common oven, but food reserved for her as an *ariki* (of chiefly status). In this respect, *Punaruku* is one significant place mentioned in this verse along with *Te Rangitumoana* the ancestor who resided there (Ngata & Jones 2006, part 1:4). (Emphasis added)

Āna, e koro! Auaka e whāngaia ki te umu nui,	Do not, O sir, give her food from the common earth-oven,
whāngaia iho rā ki te umu ki tahaki, hai	But feed her from the oven reserved for her kind,
Te pongi matapo hei katamu māhana,	With the dark-fleshed taro, that she may chew with relish,
Kia ora ai hine takawhaki atu ana ngā	And be sustained, when presently in her roaming
Moka one rā i roto o <u>Punaruku</u>, tē,	She comes to the small stretches of beach inside <u>PUNARUKU</u>.

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[145] *Whakapapa* source from Ngata & Jones 2006, part 1: 2.

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Mā Te Rangitumoana māna e whakapeka,
Moe rawa ki konā, ē!

There *TE RANGITUMOANA* will invite her
To turn aside and rest the night.

Punaruku is an underwater cave north of *Te Kawakawa* in *te Araroa* where *kutai* (mussels) were obtained. It was a place of residence of *Te Rangitumoana* a descendant of *Makahuri* to whom the child *Ahuahukiterangi* is descended from.

The third verse contains references to two significant places and two ancestors. *Te Huia* is a hill near the mouth of the *Whangaparaoa* River and was where *Ngarangikamaea* a descendant of *Makahuri* lived. The other significant place is *Tawhitinui* a *pā* site at *Raukokore*.   The other person mentioned is *Kakahu* who is of chiefly lineage and descended from *Makahuri* (Ngata & Jones 2006, part 1:4). (Emphasis added)

Māu e kī atu, "arahina ake au ki
Runga o Te Huia ki a Ngarangikamaea,
kia mārama au ki roto Tawhitinui,
Tēnā rā Kakahu māna e ui mai
"Nā Wai rā tēnei tamaiti, ē?"

Say to him, "Lead me
 To lofty *TE HUIA*, to *NGARANGIKAMAEA*,
Whence I may see clearly into *TAWHITINUI*.
KAKAHU will be there to ask,
'Whose child may this be?'

The final verse in this *oriori* follows a similar pattern to the previous verses referring to *ariki whakapapa* and ancestral places. Towards the end, it mentions symbols or *taonga* of chiefly lineage (Ngata & Jones 2006, part 1:4). (Emphasis added)

Māu e kī atu. "Nā Te Au o Mawake, "

kia tangi mai ai ō tuākana kōkā,
"I Haramai rā koe ngā kauanga i Kaituri,
nā!
I haramai rā koe ngā uru karaka i te Ariuru,
nā
Hau te mau mai i ngā taonga o Wharawhara,
hai
Tohu rā mōhou, koi hēngia koe,
Ko Te Paekura ki tō taringa, ko Waikanae ki
tō ringa, hai
Taputapu mōhou, e hine!"

You will tell her, you are of *TE AU O MAWAKE*;
So that your relatives may greet you and cry
"Ah! you have come from the crossings at *KAITURI*,
You have come indeed from the karaka groves at *TE ARIURU*.
You are bedecked with the ornaments of *WHARAWHARA*
To signify, that no one may mistake you,
TE PAEKURA pendent from your ear,
WAIKANAE in your hand—
Precious things for you, little maid".

Te au o Mawake is the son of *Makahuri* from whom most of the chiefly lines of the East Coast trace descent. *Kaituri* is a crossing at the creek south of *Te Ariuru*, called

Waitakeo. *Te Ariuru* is a settlement nestled within *Tokomaru* and is north of the *Waitakeo* stream.

Paekura and *Waikanae*, are two notable *taonga* or treasured articles. *Paekura* is a *tautau* or a *whakakai taringa* (an ear pendant) whilst *Waikanae* has been described as a *patu pounamu* although some have described it as a *toki pounamu*.

Mōteatea IV: The Journey of Puhiwahine

One of many *waiata* composed by *Rihi Puhiwahine Te Rangihirawea* of *Ngāti Tūwharetoa* and *Ngāti Maniapoto* descent, *Ka Eke ki Wairaka* is a short song about forbidden love that contains significant historical events, key landmarks and eminent ancestors (Ngata & Jones 2006, part 1:198-201). *Puhiwahine* becomes romantically involved with a close kin of hers *Te Toko*, otherwise known as *Mahutu*, a chief of Waikato and Maniapoto descent. The relationship is frowned upon by her immediate family who, when they found out about the affair, came and took her back home to the Taupō region. She becomes distraught at this. Another version of this account has *Puhiwahine* leaving the region distraught because *Te Toko*, with whom she had fallen in love with, had taken another woman for his wife.[146]

Both versions however have her leaving her hill-top village of *Hikurangi* on the slopes of *Pirongia* Mountain heading east across the *Waipā* valley towards *Ōwairaka* via *Kihikihi, Orākau*, and *Parawera*. Following a brief stopover at *Owairaka*, *Puhiwahine* ascends to *Aratītaha* which is situated on the slopes of *Maungatautari*, from where she looks longingly back (*ka tāhuri whakamuri*) towards the peaks of *Kakepuku* and beyond to *Pirongia*; it is at *Aratītaha* that she composes her famous song of farewell, her *waiata aroha*, her love song for *Te Toko* her former lover. She then descends the southern slopes from *Aratitaha* towards the *Waikato* River where her view of those

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mountains are hidden from her; from there she travels back to the Taupō region in the south. [147]

This is the only part of her journey back to the Taupō region that we can conclude directly from the body of this *waiata*. The *waiata* then refers to a significant historical incident that led to geothermal activity in the Taupō region and the union of *Pihanga* and *Tongariro*; a marriage that was consecrated by *Ranginui* the sky father himself. She also cites *Hawaiiki* the ancient homelands in reference to an important *Tūwharetoa* ancestor *Ngātoroirangi* who is connected to the stories of how geothermal activity came to Aotearoa. This song also refers to significant places in the Taupō region such as the sacred mountains *Tongariro* and *Pihanga*.

In the following passage of the *waiata*, *Puhiwahine* refers to *Wairaka,* short for *Ōwairaka, Kakepuku,* which is short for *Kakepuku-te-aroaro-o-Kahu,* and *Pirongia* otherwise known as *Pirongia-te-aroaro-o-Kahu*, all prominent places of her former home. *Ōwairaka* is a village near the stream *Ōwairaka* in the *Maungatautari* region whilst *Kakepuku* and *Pirongia* are prominent mountains.

Ka eke ki Wairaka, ka tāhuri whakamuri	From the heights of <u>WAIRAKA</u>, as I backward gaze,
Kāti ko te aroha te tiapu i kakepuku	An outpouring of love leaps o'er <u>KAKEPUKU</u>
Kia rere arorangi te tihi ki Pirongia	Soaring heavenwards to the peak of <u>PIRONGIA</u>
Kei raro koe, e Toko, taku hoa tungane.	Below there is you, O <u>TOKO,</u> my cousin lover.
Nāku anō koe i huri ake ki muri,	It was I who forsook you,
Mōkai te ngākau te whakatau iho	Slave heart mine not to seek a lingering farewell;
Kia pōruatia e awhi-a-kiri ana.	With two nights more in close embrace.
Ko tāku tau whanaunga nō Toa i te tonga,	You are the one I cherish dearly;
Nō Mania i te uru, ka pea tāua.	
I ngākau nui ai he mutunga mahi koe	My kinsman by <u>TOA</u> from the south,
	And Mania in the west, so 'paired' off are we.

[147] New Zealand Electronic Text Centre *Legends of the Māori: The last look back –Puhiwahine's love song* http://www.nzetc.org/tm/scholarly/tei-Pom01Lege-t1-body3-d4-d3.html accessed March 2010.

Figure 6.6: Biographical Sketch of Puhiwahine's waiata

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In the next passage *Puhiwahine* refers to her *whenua tipu,* the place where she was reared, describing it as *te wai koropupū,* the boiling pools which are widespread in the Taupō region. These are connected to the ancestor *Ngātoroirangi* who is credited with bringing the *wai koropupū* to Aotearoa and for the incident from which *Tongariro* derives its name.[148] In the *waiata* above it is the fire gods *Te Pupu* and *Te Hoata* who come to his aid leaving a trail of fire in their wake from *Hawaiki* through to *Tongariro.* They travelled under sea and land and whenever they paused and rose to the surface to get their bearings and to take a breath they left part of the fire they carried at all these places, thus creating the geothermal system that Aotearoa New Zealand is widely known for today.

Kāti au ka hoki ki taku <u>whenua tipu</u>	But now I return to my native land
Ki te <u>wai koropupū</u> I heria mai nei	To the boiling pools there, which were bought
I <u>Hawaiiki</u> rā anō e <u>Ngātoroirangi</u>	from distant <u>HAWAIKI</u> by <u>NGĀTOROIRANGI</u>
E ōna tuāhine <u>Te Hoata- u- Te Pupu</u>	And his sisters <u>TE HOATA</u> and <u>TE PUPU</u>;
E hū rā i <u>Tongariro</u> ka mahana i taku kiri	To fume up there on <u>TONGARIRO</u>, giving warmth to my body
Nā <u>rangi</u> mai anō, nāna i mārena	It was <u>RANGI</u> who did join him in wedlock
Ko <u>Pihanga</u> te wahine, ai ua, ai hau,	With <u>PIHANGA</u> as the bride, hence the rain, wind,
Ai marangai ki te muri ē, kōkiri	And the storms in the west; leap forth (my love)!

In the above passage*, Te Hoata* and *Te Pupu* are referred to as the sisters of *Ngātoroirangi*; what we do know is these two were instrumental in bringing the fire to Aotearoa. *Tongariro* the sacred mountain of *Tūwharetoa* derives its name from this incident *"ka riro au i te tonga"*; to be overcome or seized with cold.

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[148] See Chapter one for the full story of *Ngātoroirangi* and the incident with *Tongariro*

PUHIWAHINE'S DESCENT FROM ARAWA CANOE

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TUAMATUA = Waiheketua        = Karika              = Taura
            (1st wife)         (2nd wife,            (3rd wife)

                                                    Ihenga
Tangaroa           Houmaitawhiti                    Tia
Tupai              TAMATEKAPUA
                   (Commander of Te Arawa canoe)    Tapuika              Apa
                                                    Makahae        (See Table 6)
Irawhitiki         Kahumatamomoe                    Pongare
Kiwi               Tawakemoetahanga                 Tawakeihi
Kakeroa            Uenukumairarotonga               Tauatawake
Rongomainui        Rangitihi                        Manukohaki = Mawaketaupo
Rongomairoa        Tuhourangi
Rongomaiapehu      Uenukukopako                        TUWHARETOA
                                                    (Traced on left-hand line)
Apehumatua         Waitapu
Mawakenui          Hinerehua
Mawakeroa          Te Kahureremoa
Mawaketaupo        Waitapu II = Te Rangiita (1)
TUWHARETOA (1)            Parekawa
Rakeihopukia       (Traced on left-hand line)
Taringa
Tutetawha (1) = Hinemihi (1)

Te Rangiita (1)    Tuarakino         Paraparaahika (1)    Turumakina
Parekawa           Ngarangiatekou
Hinepare           Hikataupo
Te Momo            Rurupuku = Wairakei

Te Umutarehu = Tenga

Te Rangikaiamokura

Te Umutarehu II    Waipoporo              Rawiri         Tarei
Pine (2)           Te Rangikaiamokura II  PUHIWAHINE     Tahuri
Ngapera            Makiwhara (2)                         Te Heuheu
Rakeipoho                                                Hoani
                                                         Hepi
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Figure 6.7: Whakapapa of Puhiwahine: Tūwharetoa lines

Puhiwahine and *Te Mahutu Te Toko* first met at *Whatiwhatihoe* a small village situated at the foot of *Pirongia* Mountain. Huge tribal gatherings were held at *Whatiwhatihoe* that often attracted hundreds of people (Jones, 1960, 29:18). When they were separated, it would be at least fifty years before they were to meet again.

Mōteatea V: Puhiwahine's oriori for her mokopuna

The following *oriori* is one composed by *Puhiwahine* for her *mokopuna*, grandchild, who had not as yet been born (Jones, 1960, 31:17-19). It comprises of four verses and is filled with places and *whakapapa* native to her homelands of *Tūwharetoa* in the Taupō region. The first verse opens with *'e hine rānei, e tama rānei',* without knowing whether the unborn child would be a girl (*hine*) or boy (*tama*) (Jones, 1960, 31:18). (Emphasis added)

E hine rānei, e tama rānei!	If maid you be, or if son you be!
Puta noa kē korua te awa i 'Tikei.	You two will emerge unawares by the river at '*TIKEI*.
He whenua tautohe nā ō mata waka	The quarrelling ground of your full-manned canoes.
Mooku ia rā e nunumi ake nei;	Alas, I doubt you two will be deserving heirs
E kore pea korua e rite hei riiwhi	Of mine, after I am gone.
Kua kore tēnei, kua iti noa iho;	I am really nothing, a wasted thing,
Kua ngaro te tangata, ē.	And men (who were men) have passed away

'*Tikei* is an abbreviated form for *Rangitikei* the region which is also the name of the river in that part of the country.

The second verse below contains references to Motutere and Motuoapa on the east side of Lake Taupō; Whareroa and Pukawa on the west side of the lake; and Rangipō and Patea in the southern parts of the *Ngāti Tūwharetoa rohe*. Patea is the name of the region in and around Taihape. *Pine* was a chief of *Ngāti Whiti – Tama* of the Patea region. *'Tiuka Ienepara'* is the name *Puhiwahine* gave to the brooch presented to her by the then Duke of Edinburgh (Jones, 1960, 31:17). (Emphasis added)

Hohoro te korikori, tū ake ka haere!	Hasten to move, arise and be on the way!
Hapaitia atu te Tiuka Ienepara.	Take up the *TIUKA IENEPARA*;
Kaati anō rā, he mana pounamu tonu—	A worthy trophy, 'tis consecrated greenstone,
Hei taonga hokinga atu ki te kāinga rā.	To take back to our home o'er yonder.
Kei Patea anō rā a Pine e noho ana,	At *PATEA* still abides *PINE*,
Hei arataki atu ki te wi i Rangipō.	To guide us to the tussock (uplands) of *RANGIPO*.
Tītiro korua ki ngā kurae rā!	Look now you two at those headlands yonder!
Ki Motutere mai rā, ki Motuoapa;	At *MOTUTERE* and others there, at *MOTUOAPA*;
Ki waho o Whareroa, ki roto o Pūkawa;	Offshore from *WHAREROA*, and within *PUKAWA*,
He tanumitanga waka nō te iwi kua ngaro, ī, ī	The busy canoe inlet of departed tribes, ah me

The third verse refers to two of the sacred mountain of *Tūwharetoa*; *Tongariro* and *Pihanga.* They are referred to in *Puhiwahine's* song '*Ka Eke ki Wairaka'* and in the stories about the battle between all the mountains of the central plateau over the hand of *Pihanga*. All the mountains were in that region including *Taranaki, Tauhara, Putauaki,* and *Tongariro.* The mountain warriors fought for her hand and after a lengthy battle *Tongariro* emerged the victor. The defeated mountains left the region travelling during

the dark until day break when they were fixed in their current positions. Other versions include *Moutohora, Whakaari* and *Te Paepae o Aotea* in the battle.

Ancestors are mentioned in verse three including: *Tūwharetoa* the eponymous ancestor of the tribe *Ngāti Tūwharetoa, Tūtetawha* and his wife *Hinemihi* and two of their children *Te Rangiita* and *Parapara-a-hika. Orākau and Rangiaohia* are both significant sites in *Maniapoto* territory. *Orākau* is the site of a famous land-war battle whilst *Rangiaohia* is a battle site and a former village of *Ngāti Apakura* (Jones, 1960, 31:19).

Tūtetawha is also associated with a place called *Ōruaiwi*, the final resting place of *Puhiwahine*. A peace pact was formed between *Tūtetawha* and *Te Kanawa* of the *Maniapoto* tribe; the site of that *rongo taketake* (peace pact) is called *Ō-rua-iwi* meaning 'of two peoples' (Jones, 1960, 31:18). (Emphasis added)

Ko maunga kau te tū ki te uru!	A lonely mountain stands there in the west!
Arohirohi ana te tihi ki Tongariro	See now the shimmering summit of <u>TONGARIRO</u>.
Tītaha te haere i te take o Pihanga,	Onward we go by the foothills of <u>PIHANGA</u>,
E tua takahi ana te papa ki te puia.	Trudging on across flat lands to the thermal pools.
Ka kitea mai korua e ō korua kuia—	You two will soon be seen by your grandsires and grandams.
"Nā wai ēnei tamariki e haere nei?"	"Whose children are these coming here?" (they will ask.)
Kiia atu anō, "Kei te raunatia	Say to them, "We are travelling around
"Ki Orākau rā, ki Rangiaohia rā.	"To <u>ORĀKAU</u> and on to <u>RANGIAOHIA</u> over yonder.
"He koata-kaihe nā te Pākehā	"We are quarter-castes begotten of a Pakeha,
"Nāna nei i huna iho ka ngaro te motu nei.	"He who has overrun and lost (us) this land.
	(Tell them) "By <u>TŪTETAWHA</u>, by <u>TE RANGIITA.</u>
"Nā Tūtetawha, nā Te Rangiita,	"By <u>PARAPARA-A-HIKA</u>, by <u>TŪWHARETOA</u>, and by <u>HINEMIHI</u>
"Nā Paraparahika, nā Tūwharetoa, nā Hinemihi	"Are we two, indeed"
"Māua nei, ē"	"Only now have we returned to our native land,
"Kātahi ka hoki mai te ewe ki te rauru,	"To the cradle to sleep and suckle a mother's breast."
"Ki te rua i moe ai, ki te u kai-po."	
Ka matauria korua, nā, ī	You two will now be recognised, and all will be well.

In the final verse are references to several places and some ancestors: Waihī is the centre of the *Turumakina*, the *hapū* or sub-tribe of *Te Heuheu*; *Te Piata* was of

Turumakina sub-tribe and *Te Rohu* was her relative. *Ngamotu*, *Te Makiwhara* and *Rewi* are *Puhiwahine's* relatives. *Rewi* is the famous chief *Rewi Maniapoto* who fought at the Orākau engagement against Crown forces. Taupō refers to the region surrounding the lake and to the lake itself; the full name is Taupōnui-a-Tia. Taupō is considered the hub of the *Ngāti Tūwharetoa* tribe (Jones, 1960, 31:18). (Emphasis added)

Hoki atu ki roto rā te koko ki Waihī,	Come back here and let us go into the cove at <u>*WAIHĪ*</u>,
Ka pā mai te karanga	Where the welcome call will come
A Te Piata, a Te Rohu.	From <u>*TE PIATA*</u> and <u>*TE ROHU.*</u>
Kia matau atu he whaea ēnā	Know you now they are your aunts
Taupiripiri ana, ka rite koutou.	Closely linked as kinsmen are you all.
Mā māua anō ko taku hoa muringa,	Now of my companion of these latter days
Uia atu anō, "Kei whea a Ngāmotu?	I shall ask, "Where is <u>*NGĀMOTU*</u>?
"Kei whea a Te Makiwhara?"	"And where is <u>*TE MAKIWHARA*</u>?"
Ōku nei tungaane kei raro noa atu.	My cousins, alas, are both far in the north;
Kei a Rewi mā, kei tōna nuinga, ē,	They are with <u>*REWI*</u> and his many tribes.
Me tuhituhi atu ki te reta pukapuka	Let a letter be written on writing paper
Kia hoki mai ana ka noho koutou	That, on your return. you all will abide
Te Riu ki Taupō, nā, ī	Upon the shores of <u>*TAUPŌ,*</u> ah me

Mōteatea VI: Te Arakau te Umu

The following is a *waiata tangi* or lament composed by *Te Rangi-kaua-riro* for *Te Arakau* a warrior killed in battle by *Ngāti Whakaue* of *Te Arawa* at a place called *Te Whakarua*[149] just out from *Ohinemutu* in Rotorua (Ngata & Jones 2006, part 3:360-367). As indicated in section two, this particular lament was selected to illustrate the ease at which the early Māori were able to navigate their territories using oral narratives. The song is filled with references to pathways: verse three refers to a track used to travel from Rotorua through to Tauranga; verse four refers to a southerly track through Tarawera whilst verse five refers to the pathway of *Tawhao*. However, it is verse six, the last verse in this composition that describes a northerly trail from Rotorua towards Whakatāne.

Verse three below refers to the trail to Tauranga that was used by *Te Arakau*. He would travel by way of *Mangorewa* a rock-bottom crossing. Along the way he would be

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[149] The last line of verse one mentions *Te Whakarua*: *"ngā hurihuri manuka raro Te Whakarua"*.

guided by *Tau*, his close relative, to the 'many inlets', *ngā whanga e rau*, of Tauranga where he would 'feast' or *haukai* with his relative *Pare-Titi*. This is the same trail that his relative, Pare-Titi from Tauranga would use when visiting Rotorua.

E tiu rā ki te muri, ē	Swoop onwards then to the north,
ngā haupapa kowhatu, i raro <u>Mangorewa</u>,	Onwards o'er the rocky reef below <u>MANGOREWA</u>,
Ki te huaanga nui, kei a tama nā Tau,	To the presence of a noble kinsman, the son of <u>TAU</u>.
Māna pea koe e whakahaereere atu,	Peradventure, he will escort you round about,
ngā whanga e rau o Tauranga,	And within the hundred inlets of <u>TAURANGA</u>,
Hei utuutu haukai, kei a Pu, a Pare, rā , ī	To the reciprocal feasts of Pu', son of <u>PARE</u> yonder

Verse four below also refers to another trail; this one in a southerly direction through *Tarawera*, the territory of some of *Te Arakau's* rivals *Riri-wai*, *Tuku* and *Hika*, towards *Heretaunga*.

E haere rā, ki te tonga, ē	In your travels to the distant south, ah me,
ngā wai pōuri i tua o Tarawera,	By the dark waters beyond <u>TARAWERA</u>,
Kei tūtuki tō waewae, i a Ririwai,	You were wary lest your feet stumble upon <u>RIRI-WAI</u>;
He hautaonga nui, kai a Tuku a hika, ē ī.	And the treasure trove of <u>TUKU</u> of <u>HIKA</u>, ah me.

Verse five below, refers to the pathway of *Tawhao*, a mountain trail from Rotorua heading in a southerly direction towards *Heretaunga*.

E ahu rā, ki runga rā, ē	Proceed onwards then to the uplands,
Kei pikitia ai e koe,	Where you had a mind to ascend
te hiwi ki te <u>Ranga a Tawhao</u>;	The <u>hill on the Pathway of TAWHAO</u>;
Puta rawa i Heretaunga,	And then to emerge at <u>HERETAUNGA</u>,
i tō huanga, i a Te Rangi-koianake,	Together with your kinsmen <u>TE RANGIKOIANAKE</u>.
Hoki kau ana mai, ki te kāinga,	Empty-handed you returned home
kaore he taonga.	Bereft of any worth trophy.

Verse six below contains geographic references. Like the previous verses, it refers to a trail and mentions places along that trail. This trail runs from Rotorua across to *Kohi* point in Whakatāne. Tumutara is first of those places; Tumutara is a crossing on the *Tarawera* River. *Ihoweka* is another part of the pathway that connects to Tumutara.

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Tauaki is an abbreviation for *Putauaki* a prominent mountain in the region. Rangitaiki and Whakatāne are well known places; *Kohi* is a headland on the eastern side of Whakatāne River.

E tiu rā, ki te muri, ē	Swoop onwards then to the north,
Ngā hurihuri mānuka, i raro o Tumutara,	To the *mānuka* scrub-lands below *TUMUTARA*,
Ngā rakau tū iho, i runga Ihoweka,	To the trees standing on the summit of *IHOWEKA*,
Ngā wai e rere, i raro Rangitaiki;	To the waters flowing below there at *RANGITAIKI*,
Ngā puke tu iho, i runga o 'Tauaki, *Kia mārama koe, ko te whakamau atu,*	And to the hills rising up on to '*TAUAKI*. Clear then is the view as you gaze afar off To the river's mouth down there at
Ngā kongutu awa, i raro Whakatāne,	*WHAKATĀNE*, And the headlands thrusting out beyond *KOHI*,
Ngā rae ka rou, i waho Kohi, *Ki ō irāmutu, Ki a Te Umatu-ura,* *Māna e hōmai, te muri aroha ki a tāua nā, ī.*	Where your nephews abide with *TE UMU-TU-URA;* Verily he will as of yore tender us a loving greeting.

The final stage of mapping *mōteatea* has two components: one is to create a series of maps portraying the geographical information contained in each of the *mōteatea* interrogated above; the other, is to blend geographical space with cultural space on the same map using the concept of the *paepae*. The aim in compiling the maps is to represent the cultural landscape as closely as possible to the intention of the *mōteatea* whilst representing the non-spatial cultural elements on the same map. To translate the *mōteatea* into a map without the use of audio or a narrator as such, will require more elements to give the map an indigenous feel; elements such as *whakapapa*, *kōrero* or information about each point, and appropriate images. The idea is to blend the cultural information with modern mapping technologies just like the *Lienzo;* hence the need to introduce the concept of the *paepae* into map space to merge cultural space with geographic space.

The *Lienzo,* discussed in Chapter Four, provides an excellent model of blending cultural knowledge with modern mapping technology; where the role of the narrator was replaced with a timeline. The idea is to adopt the concept of the timeline in the *Lienzo* and apply it or replace it with the *paepae*.

As discussed in Chapter Two, the *paepae* is a transitional zone that defines the line of negotiation between two co-existing, juxtaposed spaces: one representing geographic space and the other cultural space. The *paepae* is the boundary between geographic space and cultural space. In other words, the *paepae* or boundary between distinct cultures can exist as a discrete well defined line or as a well-defined spatial domain that encompasses elements of both cultures by negotiation between both cultures.

Section Four: *Mōteatea* Maps

He waiata tangi mō Te Waikari: Mōteatea II

This map illustrates the lament of a father for a son; an only son. *Te Kani-a-Takirau,* one of the most respected chiefs of his era, refers to his only heir as *Te Kairangatira* and *Te Rau o Titapu*: both are expressions of great love and respect. The *waiata* is very short and has very little cultural information. Despite that, this map illustrates three significant places in the *Uawa -Tokomaru* region on the East Coast of the North Island and the location of one boundary marker; *Te Pou a Te Kani*. According to the *waiata*, *Waihoro* is nestled on the side of *Titirangi* Mountain. This is the location of the *ahi manawa* ceremony where the hearts of the two captives were roasted and eaten; hence *ahi* and *manawa*; fire and heart. The *paepae* is the link between cultural space and geographical space interpreting the cultural information depicted on the map. The other map elements in the map are the initial cultural sketch, *whakapapa*, and words of the *waiata*

Figure 6.8: He Tangi mō te Waikari[150]

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[150] See Appendices for full size copies of all the *mōteatea* maps

Map Elements

He Tangi mo Te Waikari

Kia mate koe e Wai e
Mo Mahuika, mo Te Rerehorua
Mo aku ahi manawa
Ki roto o Tokomaru
Mo taku kauika kopuni
E pae i te takutai one
Tauware te waka
Ki te kopua nei, e
Tu tonu mai ra, e Wai
Te rau o Titapu, e
Ka hinga kai raro
Taku kohuru totara
Ehara i te tangata
Taku kuru hauhunga
Taku whakateitei
Ki nga whenua, na, e

The four map important elements for this *mōteatea* are: the words of the *waiata tangi* (fig 6.8.1), the *paepae* (fig 6.8.2), the geographical component (fig 6.8.3 on the following page) and the biographical sketch. [151]

The *waiata tangi* provides the context for exploring the makeup of the cultural landscape as depicted by this lament. The cultural elements are extracted and sketched onto a blank canvas in the order in which the cultural information unfolds in the *waiata tangi*. These are then transferred to the *paepae* (featured below) and translated. The cultural elements are then digitised producing the *mōteatea* map displayed on the following page.

Figure 6.8 1 The words of the waiata tangi for Te Waikari (Cultural Information)

Paepae

TE WAIKARI	Son of Te Kani
TE KAIRANGATIRA	Noble or annointed one
MAHUIKA & TE REREHORUA	Killed at Tautini pa site
AHI MANAWA	Name of Ceremony
WAIHORO	Place on the side of Titirangi
TITIRANGI	Mountain in Uawa
TE POU A TE KANI	Boundary marker with severed hands
TE MAWHAI	Headland with boundary post
TOKOMARU	Sea-side town
TE RAU O TITAPU	Expression of respect
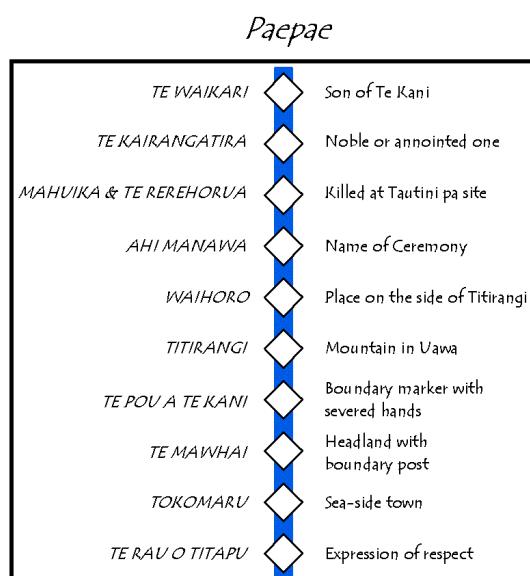
Figure 6.8 2The Paepae or link between the Cultural & Geographical Information

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[151] See section 3, *mōteatea II*: *waiata tangi* for *Te Waikari* for the hand drawn biographical sketch

The significant places depicted below reflect the information in the *waiata tangi* and include *Te Mawhai* point where *Te Pou a Te Kani* was established and *Titirangi* a significant mountain of *Te Aitanga a Hauiti* the tribe of the area. *Waihoro* is located on the side of *Titirangi*.
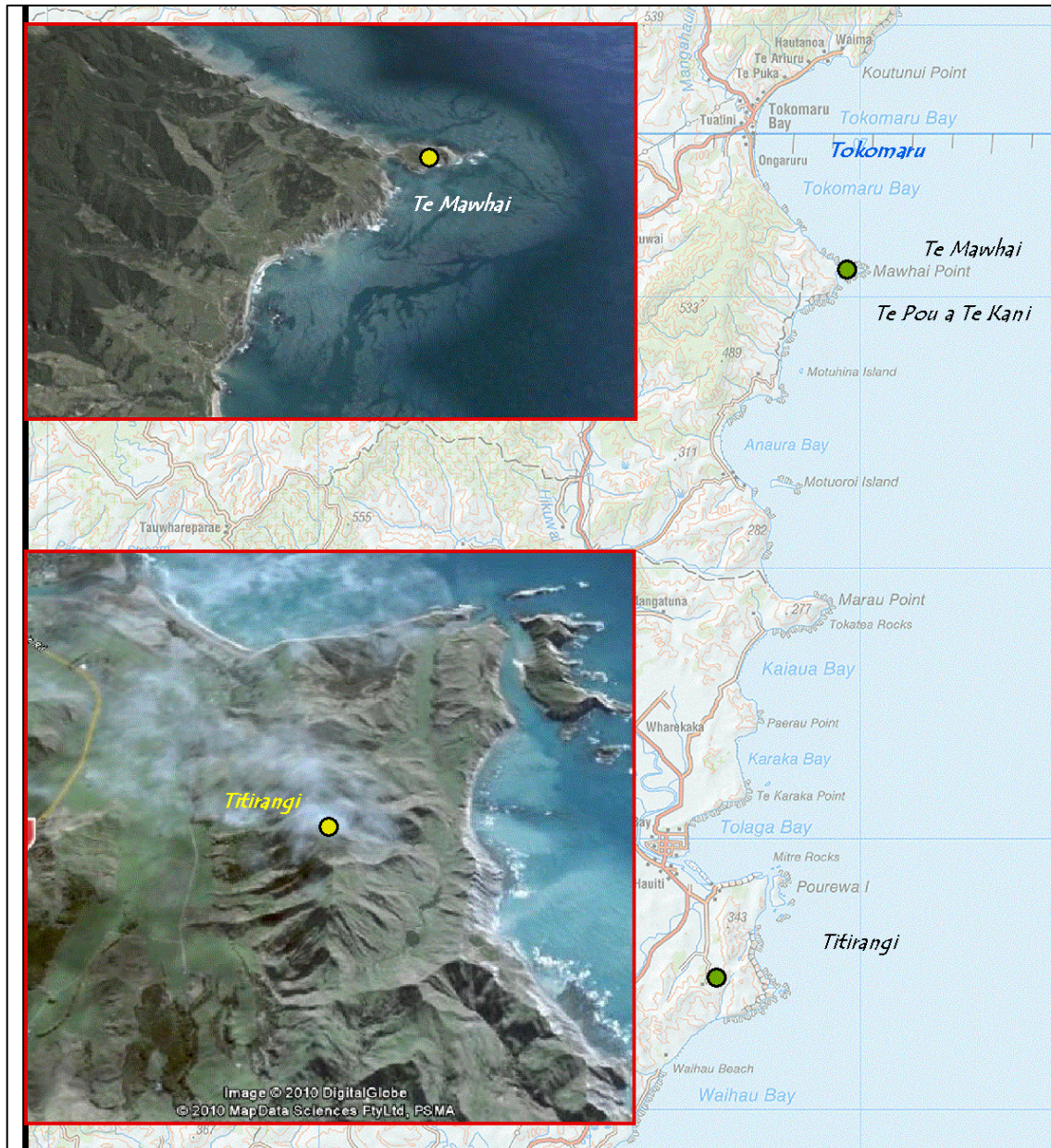
Figure 6.8 3 Geographical Component of the waiata tangi

The journey of Puhiwahine: Mōteatea IV

Puhiwahine's journey back to her homelands is depicted in the following series of maps. The contents of her *waiata* are reflected in the following figures and trace her journey from the Maniapoto region back to the Taupō region. The other maps presented in this section contain insights to part of her life's journey over a period of fifty years.

Her journey began in the Pirongia region where she first met *Te Toko*, down to Taupō, across to Meringa where she met and married John Gotty, down to the Whanganui district and back up to Oparure where she meets up with *Te Toko* once again. Figure 6.9 provides an overview of her journey and features several elements: the original sketch of the *mōteatea*, the *paepae* portraying a timeline of events, three insets, and two *whakapapa* tables illustrating her *Tuwharetoa* and *Maniapoto* links, a topographic base map highlighting significant places, a location diagram and the words of the *mōteatea*. The *paepae* has a dual function: as a timeline tracking the flow of events from the beginning to the end; each point in the timeline contains a package of information related to the *mōteatea* and the overall story. The other function of the *paepae* is a link between cultural space and geographical space; interpreting the cultural information.

Figure 6.10 illustrates the places in the Pirongia region including Oparure where she met *Te Toko* for the second time. Figure 6.11 features the Taupō region including Taringamotu, where she was born and Oruaiwi where she was finally laid to rest. This map also depicts the pathway of fire that flows from Hawaiki through to Tongariro Mountain. This is attributed to *Ngātoroirangi* and his two sisters. Figure 6.12 features the Wanganui River region. The elements on all the maps are the same; all of them contain the timeline and the words to the *mōteatea*.

Te Hikoi a Puhiwahine

Ka eke ki Wairaka ka tahuri whakamuri
kaati ko te aroha te tapu i Kakepuku
kia rere aioiangi te tihi ki Pirongia
kei iaro koe e Toko taku hoa tungane
Naku ano koe i huri ake ki muri
mokai te ngakau te whakatau iho
kia po ruatia e awhi a kini ana
kotahi koa koe i mihia iho ai
ko taku tau whanaunga no toa i te tonga
No Mania i te uru ka pea taua
I ngakaunui ai he mutunga mahi koe
Kaati au, ka hoki ki taku whenua tipu
ki te waikoropupu i heria mai nei
i Hawaiki ra ano e Ngatoroirangi
me ona tuahine Te Hoata-u-Te Pupu
E hura i Tongariro ka mahana ai taku kiri
Na Rangi mai ano, nana i marena
Ko Pihanga ai te wahine ai ua ai hau
Ai maiangi ki te muri e
Kokiri

Pirongia

Taupo

Wanganui

Pirongia — Kakepuku — Owairaka — Oparure — Ongarue — Taringamotu — Onaiwi — Meringa — Pihanga — Tongariro — Matahiwi — Wanganui

I Whanau 1840s — Tutaki i a Te Toko — 1890s — Tutaki ano — Tapuketia

Tona Hikoi

Paepae: Taringamotu, Whatiwhatihoe, Hikurangi, Oakau, Kihikihi, Parawera, Owairaka, Arataha, Taupo, Meringa, Wanganui, Matahiwi, Meringa, Oparure, Ongarue, Onaiwi

PUHIWAHINE'S DESCENT FRO[M]

Figure 6.9: An overview of Puhiwahine's journey

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Te Hikoi a Puhiwahine: Pirongia

Ka eke ki Wairaka ka tahuri whakamuri
kaati ko te aroha te tapu i Kakepuku
kia rere aroirangi te tihi ki Pirongia
kei raro koe e Toko taku hoa tungane
Naku ano koe i huri ake ki muri
mokai te ngakau te whakatau iho
kia po ruatia e awhi a kiri ana
kotahi koa koe i miha iho ai
ko taku tau whananunga no toa i te tonga
No Mania i te uru ka pea taua
I ngakaunui ai he mutunga mahi koe
Kaati au, ka hoki ki taku whenua tipu
ki te waikoropupu i heria mai nei
i Hawaiki ra ano e Ngatoroirangi
me ona tuahine Te Hoata-u-Te Pupu
E hu ra i Tongariro ka mahana ai taku kiri
Na Rangi mai ano, nana i marena
Ka Pihanga ai te wahine ai ua ai hau
Ai maaanga ki te muri e
Kokiri

Paepae

I Whanau	Taringamotu
Tutaki i a Te Toko	Whatiwhatihoe 1840s
I wehe mai i konei	Hikurangi
	Kihikihi
	Orakau
	Parawera
	Owairaka
Ka tahuri whakamuri	Arataha
Whenua Tipu	Taupo Rohe
Tutaki i a Gotty	Meringa
Ka noho	Wanganui
Ka noho	Matahiwi
Ka hoki	Meringa
Tutaki ano – Te Toko	Oparure 1890s
Ka noho/mate	Ongarue
Tapuketia	

Data Sources
Topographic Information:
Land Information NZ
Whenua Korero:
Ngata & Te Hurinui (2004) Nga Moteatea I, pp198–201
Image: NZETC www.nzetc.org
Date: April 2009

Kakepuka

Pirongia

From Meringa

To Taupo

Waikato River

Waipa River

Maungatautari
Arataha
Owairaka
Parawera
Orakau
Kihikihi
Whatiwhatihoe
Hikurangi
Oparure

Figure 6.10: Pirongia Region of Puhiwahine waiata

Figure 6.11: Taupō region of Puhiwahine waiata

The *Pironga* inset contains places not mentioned in the *mōteatea* but form part of the overall journey and story. These include *Whatiwhatihoe* where she first met *Te Toko*; *Hikurangi* where she was living when she departed for the Taupō region; *Kihikihi*, *Orākau* and *Parawera* places along the journey back to the Taupō region. *Orākau* is remembered for the battle, often referred to as *Rewi's last stand* that took place between the Colonial forces and Waikato in the 1860s. Of course a static map cannot display that sort of information without cluttering up the face of the map; but a web-based map could.

Owairaka is where she and her brothers tarried awhile and *Aratitaha* is on the southern side of *Maungatautari* where she glanced back towards *Kakepuku* Mountain and *Pirongia* Mountain; it is likely that this is where she composed her song. The only place that stands apart is *Oparure*, south of the *Pirongia* region, near *Te Kuiti;* this is where she met up with *Te Toko;* the occasion being the *kawe mate*[152] of her husband John Gotty. From *Pirongia*, the journey heads south to the Taupō region, to her ancestral places.[153]

The Taupō inset features *Ngātoroirangi, Tongariro* and *Pihanga* Mountains; all of which are important to the history of the *Ngāti Tūwharetoa* tribal people. The red line depicts the pathway of the *ahi tipua* who were summoned to *Tongariro* by *Ngātoroirangi* to warm his freezing body.[154] *Taringamotu, Meringa, Oruaiwi* and *Ongarue* are all places associated with *Puhiwahine* at some stage during her lifetime. *Taringamotu* was where she was born, *Ongarue* was where she passed away, and *Oruaiwi* was where she was finally laid to rest.

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[152] *Kawe mate* literally translated means to "carry death'. It is a customary practice whereby the spirit of the deceased person is "carried" to their tribal homelands. This often occurs if the deceased is buried in a place other than their original homeland. A *kawe mate* usually occurs for very well-known people or great leaders. The *kawe mate* is performed out of respect for the people of the original homelands and other places where the deceased was well known.

[153] Details of *Puhiwahine* journey can be found in *Te Ao Hou:* volumes 28-33, 1959-1960, http://teaohou.natlib.govt.nz/journals/teaohou/allthumbnails.html accessed March 2010.

[154] See Chapter One for details of *Ngātoroirangi* and *Tongariro*

PUHIWAHINE'S DESCENT FROM TAINUI CANOE ON FATHER'S SIDE

HOTUROA (Commander of Tainui Canoe)
Hotuope
Hotumatapu
Hotunui
Motai
Ue
Raka
Kakati

Tawhao — Tuhianga
Turongo — Poutama
Raukawa — Mango

Rereahu — Kaihamu
Maniapoto — Te Urutira

Te Kawairirangi I — Tupahau (See Table 2)
Kinapaterangi
Uruhina
Te Kawairirangi II
Te Kanawa (1)

Takihiku
Tamaahura

Tutakamoana
Tuhua (See Table 2)

Huitao
Hari
Ngatokowaru
Huia
Korouaputa

Parekawa (See Table 3)
Wairuakei
Tenga
Te Rangikauniokura

Parewhawaha (2)
Tuoi
Aperahama

Purekohatu
Te Rauparaha (3)
Tamehana
(No issue)

Tahuri

Te Oti — Te Waata

Riria — Hone Kati
(Traced on left)

Te Heuheu (Tureiti) — Te Rerehau
Hepi Heuni Te Heuheu
Houni Te Heuheu

Rawiri — Hinekiore

PUHIWAHINE

Hone Kati — Ani Te Raumatia
├ Te Kune Ema
├ Te Oti (George)
├ Te Kohi
└ Mepara

├ Thomas Maraku
└ John Rangimatiti

PUHIWAHINE'S DESCENT FROM TAINUI CANOE ON MOTHER'S SIDE : THE NGATI TOA RANGATIRA LINE

TUPAHAU (See Table 1)

Ahitumaki — Tutakamoana (See Table 1)
Tuhua — Te Akamapuhia (See below)

Korokino
Toainagatira
Maranganiparoa (2)

Maunu (3) (See below)

Te Akamapuhia — Tuhua (See below)

Kimihia
Weduwera — Parekohatu

Te Mahutu I
Urenuku

Te Rawahirua

Te Rangiharata (1) Topeora (1)
Waitohi
Te Rauparaha

Te Mahutu II

Te Hurinui

Hinewai
Poutama II
Parekorae
Pei Te Hurinui

Matene
Heni
Wirihana

Tutari
Ria Te Uira
Wi Neera
Hohepa

Hinekiore
PUHIWAHINE
(See Table 1)

Continued — See Above:—

Waikawhiu — MAUNU — Kahutaiki
Te Rakaherea — Waitohi

Te Mahutu 1 (See above)

Pikauterangi
Te Rangiharuru (1)
(See above)

Topeora(1)
Te Rau-o-te-rangi
Mere
Sir Maui Pomare
Te Rakaherea

Maui

Toiroa
Te Rangihiroa
Waipouahau
Wi Parata
Hira Parata
Tohururu

Te Hikoi a Puhiwahine: Wanganui

Ka eke ki Wainaka ka tahuri whakamuri
kaati ko te aroha te tiapu i Kakepuku
kia rere aroangi te tihi ki Pirongia
kei raro koe e Toko taku hoa tungane
Naku ano koe i huri ake ki muri
ko taku lau whanaunga no toa i te tonga
mokai te ngakau te whakatau iho
kia po ruatia e awhi a kiri ana
kotahi koa koe i miha iho ai
No Mania i te uru ka pea taua
I ngakaunui ai he mutunga mahi koe
Kaati au, ka hoki ki taku whenua tipu
ki te waikonopupu i heria mai nei
i Hawaiki ra ano e Ngatoroiangi
me ona tuahine Te Hoata-u-Te Pupu
E hu ra i Tongario ka mahana ai taku kiri
Na Rangi mai ano, nana i marena
Ko Pihanga ai te wahine ai ua ai hau
Ai marangai ki te muri e
Kokiri

Tona hikoi ki Taupo

I Whanau — Taingamotu
Tutaki i a Te Toko — Whatiwhatihoe 1840s
I welere mai i konei — Hikurangi
— Kihikihi
— Orakau
Ka tahuri whakamuri — Paiawea
— Owairaka
— Arattaha
Whenua Tipu — Taupo Rohe
Tutaki i a Gotty — Meringa
Ka noho — Wanganui
Ka noho — Matahiwi
Ka hoki — Meringa
Tutaki ano — Oparure 1890s
— Te Toko — Ongarue
Ka noho/mate — Ouaiwi
Tapuketia

Data Sources:
Topographica Information:
Land Information NZ
Image: NZETC
Date: April 2009

Figure 6. 12: Whanganui Region of Puhiwahine journey

The *Whanganui* inset features two tables of *whakapapa*: one of Puhiwahine's *Ngāti Toa* connections and the other of her *Tainui* connections through her father. Places featured on this map besides *Whanganui* is *Matahiwi* where she and John Gotty lived for a while. From here the story heads north to figure 6.10, to a place called *Oparure* where she finally meets up with *Te Toko* fifty years after composing her *waiata* at the *kawe mate* of her husband John Gotty. Thus ends the fifty year journey of *Puhiwahine*. The *whakapapa* tables are sourced from: *Te Ao Hou*, No. 34, March 1961.[155]

He Oriori o Puhiwahine: Mōteatea V

This map is based on the *oriori* composed by *Puhiwahine* for her *mokopuna*, grandchild.[156] In this map, the *paepae* portrays the information derived from *mōteatea* in the form of a timeline depicting the places, people and events in the order they unfolded in the *mōteatea*.

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[155] http://teaohou.natlib.govt.nz/journals/teaohou/issue/Mao34TeA/c8.html Accessed March 2010

[156] Source*: Te Ao Hou*, No. 31, June 1960: 18 Accessed March 2010
http://teaohou.natlib.govt.nz/journals/teaohou/issue/Mao31TeA/c11.html

He Oriori o Puhiwahine mo tona mokopuna

Paepae

Iwhanau mai te mokopuna	Rangitikei
Home of Pine	Patea
Associated with Ngatoroirangi	Rangipo
Akau	Motutere
Akau	Motuoapa
West	Whaieroa
Birth Kingitanga	Pukawa
Sacred Maunga	Tongariro
Wife of Tongariro	Pihanga
Battle Site, Rewi	Onaku
Battle Site	Rangiaohia
Father of Te Rangiita	Tutetawha
Turumakina	
Relatives	Waihi
Relatives	Te Piata & Te Rohu
	Ngamotu & Te Makiwhara
Ngati Tuwharetoa	Taupo

TUWHARETOA
(Traced on left-hand line)

Apehumatua
Mawakenui
Mawakeroa
Mawaketaupo

TUWHARETOA (1)
Rakeihopukia
Taringa
Tuetuawha (1) = Hinemihi (1)

Te Rangiita (1)
Parekawa
Hinepare
Te Momo

Te Umutarehu = Tenga

Te Rangikaiamokura

Te Umutarehu II
Pine (2)
Ngapera
Rakeipoho

Waitapu
Hinerehua
Te Kahureremoa
Waitapu II = Te Rangiita (1)

Parekawa
(Traced on left-hand line)

Tuarakino
Ngarangiatekou
Hikataupo
Rurupuku = Wairakei

Paraparaahika (1)   Turumakina

Waipoporo
Te Rangikaiamokura II
Makiwhara (2)

Rawiri
PUHIWAHINE

Tarei
Tahuri
Te Heuheu
Hoani
Hepi

E hine ranei, e tama ranei!
Puta noa ke korua te awa i Tikei.
He whenua tautohe na o mata waka
Mooku ia ra e nunumi ake nei;
E kore pea korua e rite hei riiwhi
Kua kore tenei, kua iti noa iho,
Kua ngaro te tangata, e.

Hohono te korikori, tu ake ka haere!
Hapatia atu te Tiuka Tenepaia.
Kaati ano ra, he mana pounamu tonu—
Hei taonga hokinga atu ki te kainga ra.
Kei Patea ano ra a Pine e noho ana.
Hei aataki atu ki te wi i Rangipo.
Titiro konua ki nga kunae ra!
Ki Motutere ma ra, ki Motuoapa;
Ki waiho o Whaieroa, ki roto o Pukawa.
He tanumitanga waka no te iwi kua ngaro,
i, i . . .

Ko maunga kau te tu ki te uru!
Aiohiohi ana te tihi ki Tongariro
Titaha te haere i te take o Pihanga.
E tua takahi ana te papa ki te pua.
Ka kitea mai konua e o konua kuia—
"Na wai enei tamariki e haere nei?"
Kiia atu ano, "Kei te raunatia
"Ki Onakau ra, ki Rangiaohia ra,
"He koata-kaihe na te Pakeha
"Nana nei i huna iho ka ngaro te motu nei.
"Na Tutetawha, na Te Rangiita,
"Na Paraparahika, na Tuwharetoa, na
Hinemihi
"Maua nei, e.
"Katahi ka hoki mai te ewe ki te rauru.
"Ki te rua i moe ai, ki te u kai-po."
Ka matauna konua, na, i . . . .

Hoki atu ki roto ia te koko ki Waihi,
Ka pa mai te kananga
A Te Piata, a Te Rohu.
Kia matau atu he whaea ena—
Taupiripiri ana, ka rite koutou.
Ma maua ano ko taku hoa muringa.
Uia atu ano, "Kei whea a Ngamotu?
"Kei whea a Te Makiwhaa?"
Oku nei tungaane kei raro noa atu.

Figure 6.13: Oriori mo te mokopuna a Puhiwahine

Te Arakau te Umu pathway: Mōteatea VI

Verse six outlines generally a pathway that was used by *Te Arakau* when travelling from Rotorua to Whakatāne. There are six places mentioned in the extract in the previous section that form the signposts for the pathway *Te Arakau* used to navigate from Rotorua to Whakatāne: *Tumutara, Ihoweka, Rangitaiki, 'Tauaki or Putauaki, Whakatāne* and *Kohi.*

Map 6.14 depicts the journey of *Te Arakau* as portrayed in verse six. The main elements in this map are: the three map insets; the location diagram; the base maps containing the geographic information; the *paepae*, and map one inset. The overview map contains three map insets and a general idea of the direction taken by *Te Arakau* when travelling from Rotorua to Whakatāne. The *paepae* interprets the six place names contained in the verse thus linking cultural space with geographic space. The map one inset illustrates the best-guess trail or pathway that *Te Arakau* may have taken in the first leg from Rotorua to Tarawera.

Map insets two and three contain legs two and three of Te Arakau journey. Leg two featured in map inset two starts at the tip of Lake *Tarawera* and ends at *Putauaki* a prominent mountain in the region. According to the *mōteatea*, at some point along the *Tarawera* River Te Arakau crosses to the other side; the best-guess for the location of *Tumutara* has been mapped. Map three inset features leg three of his journey from *Putauaki* to *Kohi*, the headland at *Whakatāne*.

At some point in this leg of this journey *Te Arakau* crosses the Rangitaiki River; again, this is the best-guess position of *Ihoweka*. With careful *wānanga* and research it is possible to refine the positions of *Tumutara* and *Ihoweka* as well as the other places mentioned in the other verses of the *mōteatea*.
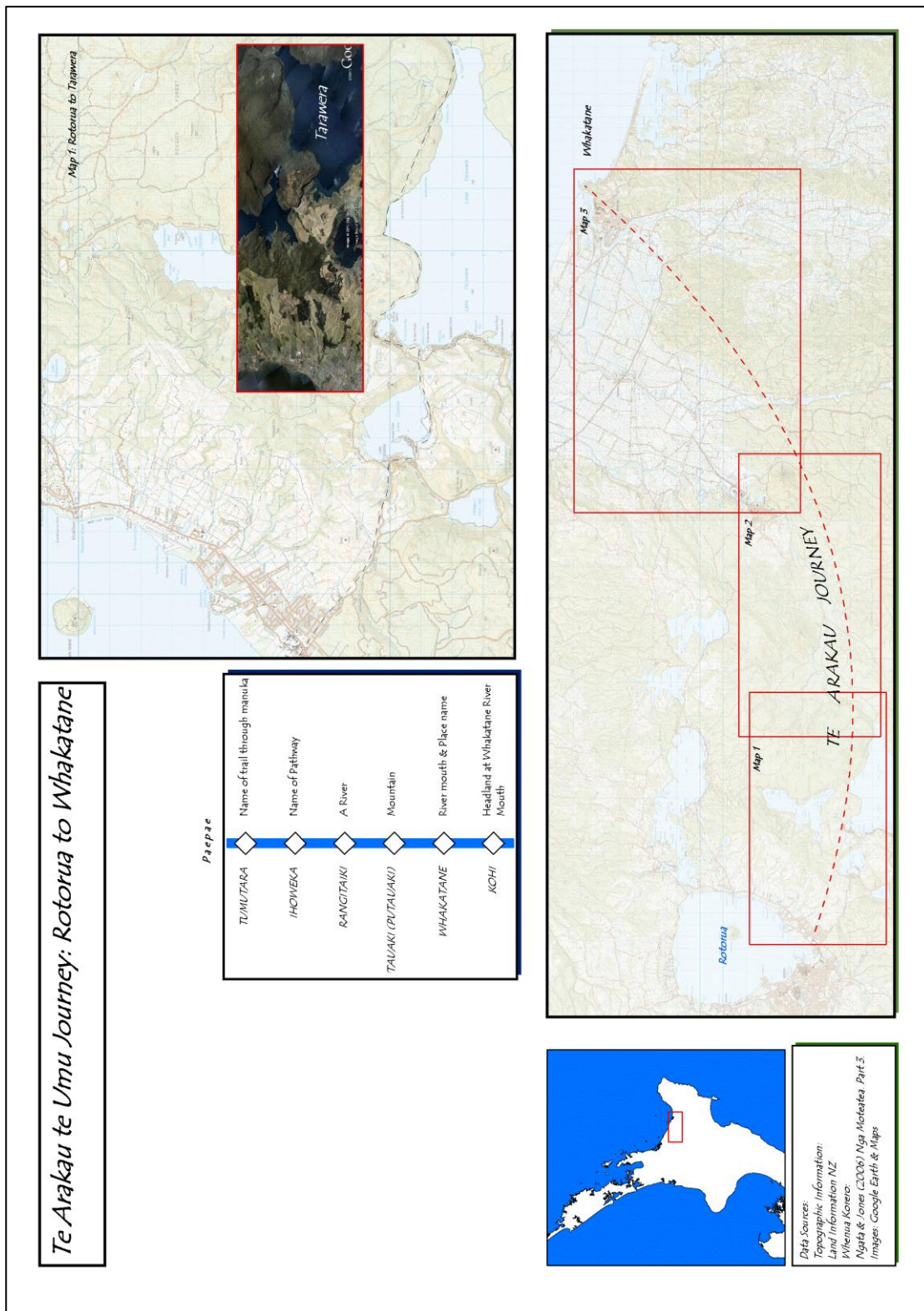
Figure 6.14: Te Arakau's Journey - Overview

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Te Arakau te Umu Journey

Verse 6
E tiu ra ki te muri, e
Nga hurihuri manuka i raro o Tumatara,
Nga rakau to iho i runga Ihoweka
Nga wai e rere i raro o Rangitaiki,
Nga puke tu iho runga o 'Tauaki,
Kia marama koe ko te whakamau atu,
Nga kongutu awa i raro Whakatane,
Nga rae ka rou i waho Kohi
Ki o iramutu, ki a Te Umu-tu-ura;
Mana e homai te muri aroha ki a taua na, i

Paepae

TUMUTARA	◇	Name of trail through manuka
IHOWEKA	◇	Name of Pathway
RANGITAIKI	◇	A River
TAUAKI (PUTAUAKI)	◇	Mountain
WHAKATANE	◇	River mouth & Place name
KOHI	◇	Headland at Whakatane River Mouth

Map 3: Putauaki to Kohi

Map 2: Tarawera to Putauaki

Data Sources:
Topographic Information:
Land Information NZ
Whenua Korero:
Ngata & Jones (2006) Nga Moteatea. Part 3
Images: Google Earth & Maps

Figure 6. 15: Te Arakau's Journey: inset maps 2 and 3

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He oriori mō Wharau Rangi: Mōteatea VII

This *oriori* was composed by *Rangi takoru* of *Ngāti Apa* for *Wharaurangi*. It explains how the rivers down the lower part of the west coast of the North Island from *Whenuakura* to *Waikanae* were named. The *mōteatea* map contains a few key features: the right hand side displays the geographic content of the fourteen place names; whilst the left hand side displays all the elements of the *mōteatea* including the words and a biographical sketch of the information. In the middle is the *paepae* depicting all the named rivers down the left hand side and a short explanation in Māori of the meaning of those names. The *paepae* also features conversation boxes for each item giving the English equivalent of each name. The *paepae* has a dual role in this instance: to link the naming-events as they unfold in the *mōteatea* to their position in geographical space; and to provide a description of the meaning of each place name and how those names were arrived at.

He Oriori mo Wharau-rangi

Paepae

Map callout labels:
- Great River
- River of Cloudy water
- River crossing on a felled tree
- River crossed by striding
- Stumbling
- The hearing of a buzzing sound
- River of Hau
- The holding out of a staff
- Water lost in the sand
- Water of staring in amazement
- Water of a flashing glance
- Lifting of the clouds on high
- Kumara planted here & Kanaka flourished
- Rangi Tawhi is the house here

Place	Phrase
Whenuakura	Ka u a te waka o Aotea
Whanganui	Ka nui a Hau
Whangaehu	Tiehua te wai
Turakina	Ka hinga te rakau
Rangitikei	Tiketia te waenae
Manawatu	Ka tatu
Hokio	Ka rorowhio nga taringa
O Hau	Hei ingoa mona
Otaki	Takina te tokotoko
Waimeha	Ka mehameha
Waikanae	Ka ngahae nga pi
Wairaka	Kua tae mai ia
Wainapa	Ka raapa nga kanohi
Te Pae A Whaitiri	Ka mohiki te ao

Kimikimi noa ana ahau, e hine,
I te kunenga mai i Hawaiki
I te whakaringaringa, i te whakawaenae,
Te whakakanohitanga.
Ka manu, e hine, te waka i a Rua-tea,
Ko Kurahaupo.
Ka iri mai taua i runga i Aotea,
Te waka i a Turi.
Ka u mai taua te ngutu Whenuakura;
Huaina te whare, Rangitawhi;
Tiria mai te kumara;
Ka ruia mai te kanaka ki te taiao nei.
Kenia iho e Hauk o te punga tama wahine,
Ka riro I nga tuahine, i a Nonoko-uri i a Nonoko-tea

Ko te here i runga ko te konohunga
Kapua mai e Hau ko te one ki tona ringa
Ko te Tokotoko-o-Taroa;
Ka whiti i te ana,
Ka nui ia, ko Whanganui;
Tiehua te wai, ko Whangaehu;
Ka hinga te rakau, ko Turakina;
Tiketia te waenae ko Tikei;
Ka tatu, e hine, ko Manawatu;
Ka rorowhio nga taringa, ko Hokio.
Waiho te awa iti hei ingoa mona ko Ohau:
Takina te tokotoko, ko Otaki
Ka mehameha, e hine, ko Waimeha;
Ka ngahae nga pi, ko Waikanae;
Ka tangi ko te mapu, e.
E tae hoki ki a Wairaka,
Matapoutia poua ki runga, poua ki raro
Ka raau e hine!
Ka raapa nga kanohi, ko Wainapa
Te raapatanga o to tipuna, e.
Ka mohiki te ao, ko Te Pae-a-Whaitiri;
Kumea, kia warea Kai-tangata
Ki waho ki te moana
Hanga te paepae, poua iho;
Te pou Whakamaro-o-te-rangi,
Ko Meremere.
Waiho te whanau, ko te punga o tona waka
Ko Te Hau-mea, ko Te Awhe-ma;
Kati, ka whakamutu, e hine!

Figure 6. 16: He taunahatanga: the naming mōteatea

He oriori mō Tamaunga o te rangi: Mōteatea I

The following maps (Figures 6.17-6.18) have been prepared a little differently. Figure 6.17 is a map of part of the *oriori* for *Tamaunga o te rangi*. The most important feature is the *paepae* which is the key to deciphering the depth of knowledge contained in the body of the *mōteatea*. This *mōteatea* contains significant *whenua kōrero* and *whakapapa* detail. All the *whenua kōrero* has been omitted on the base map except for the three items in the map which identifies the approximate location of the fishing ground at *Taumutu*. The *whenua kōrero* was not available at the time of mapping. Other elements in both *Tamaunga* maps include: the initial biographical sketch of the *mōteatea;* relevant *whakapapa;* words of the *mōteatea*; and a base map illustrating the region described by the *mōteatea*.

Figure 6.18 is the second of the *Tamaunga* maps. The most significant part of this map is the *paepae* which again, is the key to understanding the depth of the knowledge contained in the *mōteatea*. The *paepae* provides the link between the geographical components and the *whenua kōrero* contained within the *mōteatea.* All the *whenua kōrero* has been omitted on the base map except for the approximate location of the fishing ground at *Taumutu,* the ancient place name *Kawakawa mai tawhito*, *te Matai* and *Te Araroa* River. Again, the *whenua kōrero* was not available at the time of mapping.

He oriori mo Tamaunga o te rangi

Kia whakarongo koe te mahia waha,
No to tuahine, no Ruakapanganui.
Whaia atu a kai te Kahika e,
Kai te Rapaapa e,
Ka hikoi te haere,
Me koe e mau i a koe.
Kuhu atu e koe nga rauaruhe kino
I roto Karangaroa, kia ui e roto,
"Ko hea tenei whenua?" Heke atu e koe
I roto o te Houi, kia kau ra koe
I nga wai ratarata i roto Mangaowira,
Kia whakaeke koe te Nihootekione,
E whawhai atu ana te Mata o Rangaranga;
Ka puta, ka tae koe kai te kainga na,
Ma Pala ra mana e ki mai.
"Haramai ia, e, ka haere taua,
Kei tomo noa koe ki roto te whare kino.
Noho tonu i waho ra, na Takurangi koe!
Apakura ko te ata!"

E tama e! He tangi aha to tangi!
He tangi ano ra, he whakaahuru kore,
He tu no to kiri te tara rauaruhe.
Taku kore rawa nei ki te rau kiekie,
Taku noho tonu nei ki te rau harakeke.
Tena ano ra to taua kahu.
Na to matua ra nana i waihanga,
Na Ruatepupuke, na Ruatemahaia,
Hei kahu ra mo taua ki te po.

Piki atu e koe nga pikitanga kino
I roto o te Tawai, hangai te titiro
Ki te waka heke mai i waho o Taumutu,
Koe waka haupa no tena pahi.
Kauaka e koe hai haere i raro ra;
Whakaangi i runga ra, kia tae atu ana
Omarumapere, hei a te Paremamaku.
Mana ra koe e pohiri tu mai
Ki te awe o te maro, "Nau mai, e hika!"
Kia oha to ringa, kia parea atu;
Ka puta kai waho.

Paepae

TE TAWAI — A hill above Waione

TAUMUTU — Canoe passage—nay Calm pool of water taunga ika

OMARUMAPERE — Hill

PAREMAMAKU — Chiefly female ancestor

RUAKAPAPANUI — Reference to large numbers of birds

TE KAHIKA
TE RAPARAPA
TE KARANGAROA — These 3 places are used to locate harvesting region of birds

TE HOUI
MANGA-O-WIRA
NIHO-O-TE-KIORE — Harvesting area: Kiore & fish

TE MATA RANGARANGA — Village & terraced hill

Tauna ika found by aligning Te Tawai & Omarumapere with the Sun at noon

Omarumapere is a hill in the valley of Manga-o-wira near Karangaroa

Te manu-nui a Ruakapanga – kumara – Parimultena

Harvesting site bounded by: Te Kahika (Stream & hill) Te Raparapa (Stream & hill & Te Karangaroa

Harvesting area bounded by: Te Houi Manga-o-wira (large river) & Te Niho-o-te-kiore – (a village with Hinau trees)

Te Mata o Rangaranga is a village in Omaika. It is also a terraced hillside for growing kumara

Omarumapere
Taumutu
Te Tawai

EAST CAPE

Data Sources:
Waiata Ngata & Jones (2006) Nga Moteatea Part 3, pp 33-55
Whakapapa- JPS, Nga Moteatea
Base Data Google

Figure 6.17: oriori mō Tamaunga o te rangi Part I

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Paepae (left diagram)

- UMUKURI / TE WEKA A UMUTAPU — Harvesting areas
- MAIRENUI
- WHATIUA / WAIAUA — Ancestors
- WHARERATA / TAPAPAHAPU — Kainga - villages
- TOTARA / TE MATAI / TE KAWAKAWA — Harvesting Region
- MATOKERAU — Spring
- MANUKA — Fighting unit

Callouts (left):

Fern-root Te Umukuri & Mairenui
Old clearing Te Weka a Umutapu

Kainga of:
Te Ha-mai-waho & Hine-i-horahia

Kainga of:
Te Kohia & Rangi-Whakaratoa

Totara above Te Araroa
Te Matai a crossing near the mouth of Awatere
Kawakawa sacred place near Waihopokopoko

Matokerau: Spring near Awatere

Manuka weapons
Fighting on the beach

Paepae (right diagram)

- TE KAWEKA — Stream, water
- WAI PUIA — Water
- TE PEKA A HAUMIA — High Point
- WAI WEHERUA — Two branches of Awatere River
- WAROWARO — Cultivation
- MATE TE RANGI / HAPU POIA / POROURANGI — Ancestors

Callouts (right):

Te Kaweka:
Close to te Nitho o te kiore
Cultivation

A Ridge and Trail
Totaranui to Te Kaweka
to Wapua to Kohipu to
Kopuapounamu / Tauranga...tuku

The Tihi-o-manono region

Kopuapounamu &
Tauranga...tuku Rivers

Pakihikura block
- growth of Harakeke plants

Waiata text:

E tapu to tira e ngere i a koe
Akahina atu ra hai te Umukuri,
Te Weka a Umutapu, hai Mairenui, e;
Ka tawhi to ringa, kaati ka hoki mai;
Ka o koe kai roto kai te tapui, na

I a Whatiua, e, i a Waiaua
Ka haere tatau i te ranga mano
He kura taka puni, he tukutahi te tohu:
Waitohungia a!
Ki roto te Wharerata ko te Hamaineho
Ko Hineiboahia; ki Tapapahapu
Ko te Kohia, e, ko Ranginiwakaratoa
Ka tika ko te hono!
Takitakina a!

E Hona, te hu o te puono, kia wikai a koe
Te tira te roreka, kia mau ko te ha
Ki runga o Totara, Aka Taonehina,
Mana e ki mai; "Haramai ia, e,
Ka haere tatau i te ara nganari,"
Kia ui e roto ki te mainga tipua,
Na Paoa na, e!
Ka haruru, ka tae koutou kai te Kawakawa, na

Tena na Matokerau, he wai no te po,
Haipuru mo o koutou waha, ka noa
Ka hoki mai o tuakana,
Ka noho ra koe,
Kia wakakorongo koe te huhu o te whiu;
Kia wakakorongo koe te keke pohatu;

Whakapapa:

Kuranaoa = Tautuhi
Hineunu
Whakarongomanao
Rurupongi / Te Aruhuka = Te Whakangiangi / Tiheihei / Te Kakahuwhaia
Te Mawhera, Te Kokiri / Kauae / Te Kairae
Tahau / Kaimatai / Hakoraia Waiaua / Whatiua
Ruakapa-nganui / Tamaunga-ote-rangi / Riria Takahua / Te Katene Ngatoko
Heni Kamoa

He oriori mo Tamaunga o te rangi

Map labels: EAST CAPE · Taumutu · Te Kawakawa-mai-tawhiti · Te Matai

Figure 6. 18: oriori mo Tamaunga o te rangi Part II

He Oriori mō Ahuahu ki te rangi: Mōteatea III

Figure 6.19: Oriori mō Ahuahu ki te rangi

The final map (figure 6.19, previous page) is the *oriori* for *Ahuahu ki te rangi* a child born of high rank. There are several elements in this map: the initial biographical sketch of the *mōteatea;* relevant *whakapapa;* words of the *mōteatea*; the location diagram; and a base map illustrating the region described by the *mōteatea*. The *paepae* is the most significant part of the map deciphering the *mōteatea* and linking the *mōteatea* to the geographical part of the map. The *whenua kōrero* was not available at the time of mapping, therefore does not appear on the geographical part of the map with three exceptions; *Te Kautuku* range, *Te Ariuru* and *Punaruku* the cave.

The role of the Paepae

The function of the *paepae* in these map examples of *mōteatea* is to provide an interpretation of the cultural information contained in the *mōteatea* and to link that information to geographic space. The interpretation of the cultural information is a relatively simple process requiring *wānanga* with knowledge-holders and access to relevant archival information that will shed light on the cultural information. The link is the most difficult and yet innovative part of the oral-mapping-process; in a static series of maps, such as those depicted above, the *paepae* is merely a key or legend that interprets the cultural elements. The spatial information, provided by *mōteatea*, can be easily located in geographical space. Rather than clutter geographic space with the detail of each cultural element, the *paepae* serves that role.

If instead the map was a dynamic web-based map containing all the cultural and geographical elements, the *paepae* would be the dynamic link between cultural space and geographical space; or rather the information contained in cultural space and the cultural-spatial data contained in geographical space. For example, in the *paepae* depicted on the following page, the blue line with the diamond shaped icons is the link between the cultural information on the left-hand side with its geographical components on the right-hand side. The link to the geographical map would be accessed by depressing any of the *paepae*-icons which would open up that part of the map that relates to that specific cultural information and provide a zoomed-in view.
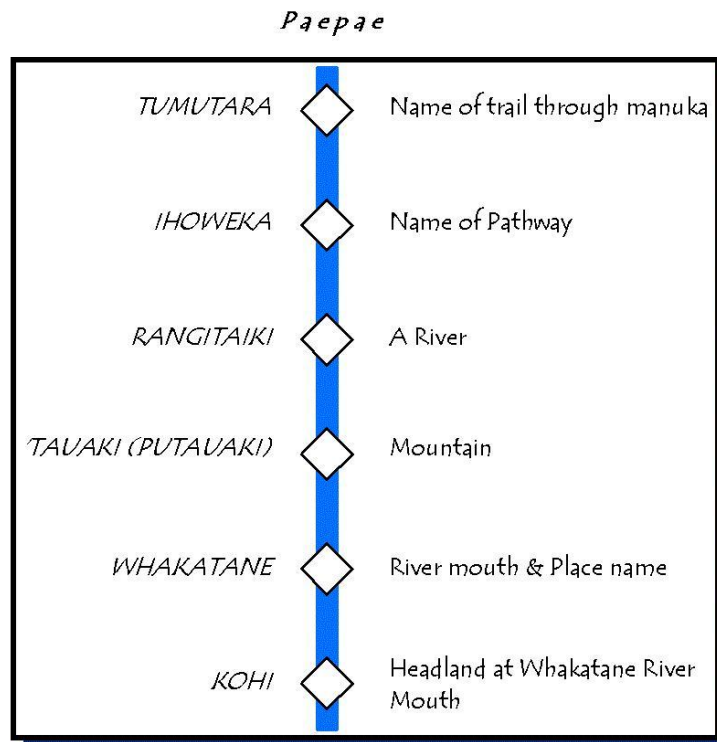
Figure 6.20: The paepae

For example, depressing the *KOHI* button above would result in this view on the geographical map:
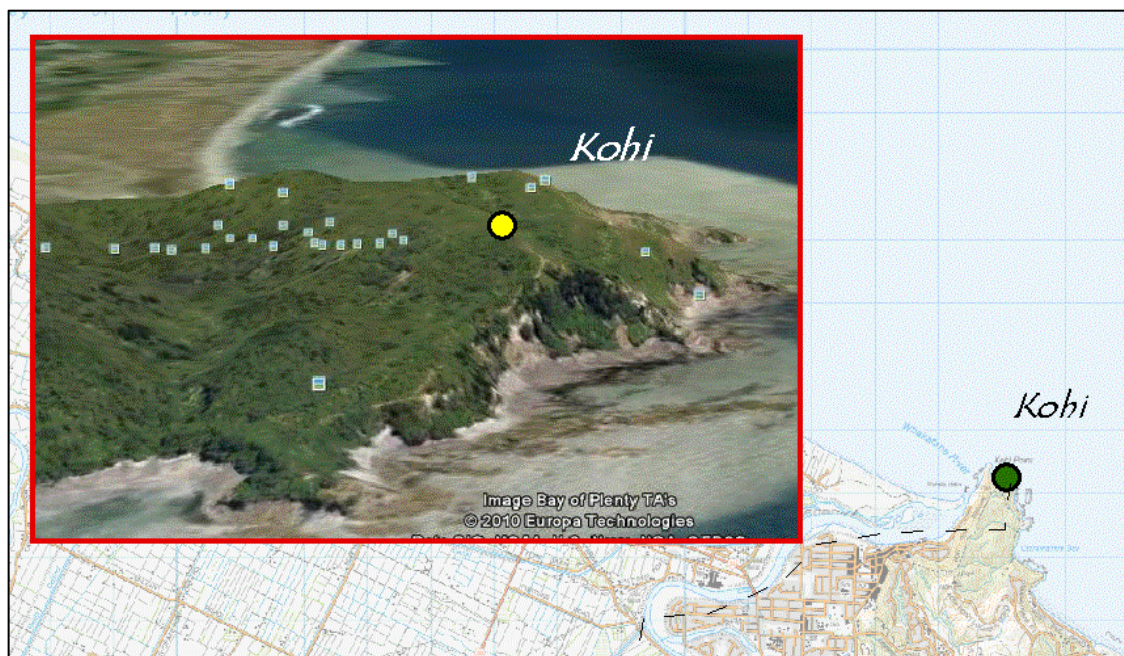

Figure 6. 21: KOHI point ZOOM inset

In another example, by depressing the *Putauaki* button, the following view will result:
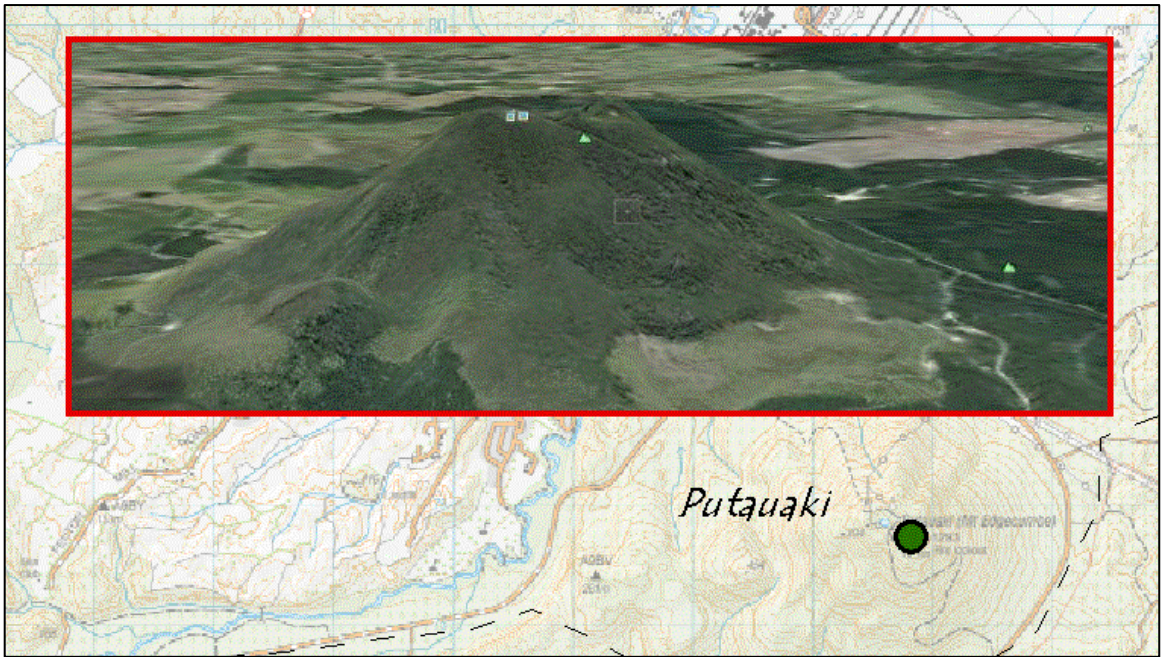
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Figure 6. 22: Putauaki ZOOM inset

The dynamic web-based map can be further enhanced by including audio files of the *waiata* and videolinks to footage of *kaumatua* providing background information on any aspect of the cultural information; or archival information can be included. In these instances, the *paepae* could provide the link to the audio and video files.

An alternative method for creating a dynamic web-based map would be to link the audio of the *mōteatea* to Google Earth. The *paepae* would again be the link. In this instance depressing a button on the *paepae* would result in two things occurring: one, the audio of the *mōteatea* would start and two, a narrated journey using Google Earth would begin at the same time. In effect, the *mōteatea* could be sung whilst flying over the landscape depicted by Google Earth visiting all the places mentioned in the body of the song.

The *paepae* has an important dual role in deciphering the cultural information and in linking that information with geographical space. The maps portrayed in this section are an example of how that would occur. The real power lies in using other technologies to create a powerful web-based map solution such as the *Lienzo* to display the oral narratives in a manner that enhances its *mana* whilst retaining its *tapu*.

Transferring the mōteatea to the mapped landscape

The *paepae* is depicted on the maps as a legend however its function is more than just a legend or key to understanding the embedded *whenua kōrero* on the map. The *paepae* has two narrow roles: one, it translates *whenua kōrero* into land information; and two, the icons in the *paepae* provide a link to the geographical location of the *whenua kōrero* thus transferring the *mōteatea* to the mapped landscape. However, the *paepae* makes use of the function of spatial information systems in a uniquely Indigenous way.

A powerful function of a GIS is in its ability to display geographically referenced information (*whenua kōrero* and *mōteatea*) and provide immediate access to the requisite attribute information or in this case, the description, the translation, and the in-depth stories behind each reference; the *paepae* is the key to performing these functions. The *paepae* icons simultaneously represents a distinct barrier or line between two epistemologies, and a convergence of the two worldviews while providing links to all the attribute information including the biographical sketches, the embedded *mōteatea*, the *whakapapa* of the land and people, and the geographical locations of the *whenua kōrero*. In some of the maps it has an additional function; it acts as a timeline that tracks the unfolding sequence of important historical activities and events. This is how the *paepae* icons transfer the *whenua kōrero* embedded in the *mōteatea* to the mapped landscape.

Mapping Mōteatea

Mapping *mōteatea* is a complex social construction which requires knowledge of cultural conventions before they can be interpreted. It requires drawing together stories, *whakapapa*, *whenua kōrero* or knowledge about the land, an understanding of the ancestral language, the histories and the spiritual connections the people have to the land. This will give depth of meaning to the simple biographical sketches constructed about each *mōteatea*. It will also ensure that the *mana* and *tapu* of the knowledge is acknowledged and respected. Although the simple biographical sketch may well be a just a few lines, symbols and text on a piece of paper, they are imbued with *mana* and *tapu* made possible by a huge body of cultural knowledge collected and carefully maintained over many generations.

A certain amount of flexibility and fluidity of thinking is required in translating this biographical sketch of cultural knowledge into geographical space. Flexibility to think outside and around the box in applying the spatial information technologies to create the maps; fluidity to ensure the 'song' is not permanently 'fixed' in meaning by the maps, but is informed by the culture that nurtures it.

These maps are a unique expression of Māori understanding of the world and reflect the tangible and visual expressions of their cultural knowledge, their values, and spiritual connections to the heavens and the earth. Let the culture inform the map, not the map inform the culture. Then it might be a worthy medium to use for passing on this knowledge to the next generation.

Results

The aim of this thesis was to apply modern and emerging spatial information technologies to a cultural narrative (in this case *mōteatea*) from a uniquely Māori cultural perspective to produce a model depicting ancestral landscapes. The results were illustrated in a series of maps denoting instances of this landscape. An important consideration in the creation of these maps was to acknowledge that early Māori had a different way of connecting with their landscapes; this sense of connection was often embedded in song and other oral narratives important to their culture. With that in mind, *mōteatea* were chosen to explore the notion of ancestral landscapes with the express purpose of merging this oral narrative with spatial information technology. The underlying principle was to maintain the *mana* of both cultural space and geographical space in the process; in effect they would remain unchanged.

The step by step process depicting how this theory evolved is illustrated in Figure 6.23 at the end of this section. *Mōteatea* were selected for the task because they contain significant cultural data including *whakapapa*, significant events and activities, important places and ancestors associated with those places; these are all significant components that portray the Māori world view and are an expression of ancestral landscapes. The critical part was not the cultural data in the *mōteatea* per se but rather how that cultural data was merged with geographical space without diminishing it.

The data collection method was deliberate; it portrayed a conscious decision to begin with nothing or rather no space or shape within which to capture or sketch the cultural data. In this respect, it is similar to the cosmogonic creative phase of *te kore*,[157] sometimes referred to as a state of nothing from which all things in the heavens and the earth were manifested; hence it is unique in that it is a phase of unlimited potential. The cultural data was collected in the order in which it unfolded in the *mōteatea*; to this was added supporting cultural data to give fullness to the biographical sketch. Through several iterations the biographical sketch emerged from *te kore* to embody a comprehensive collection of cultural data representing an ancestral view of the landscape as portrayed in each *mōteatea*.

The next step was to merge cultural space with geographical space. Although this was performed using GIS, the simplest and least technical way to achieve this step is to use a topographical base map with a transparent overlay. Rather than plot each cultural reference directly to the topographical map, the cultural references of each *mōteatea* could be plotted directly to a transparent sheet overlaid on top of the topographical map.[158] This would preserve the cultural data of each *mōteatea* in its unique space and the topographical map could be used again and again as required to locate a different set of oral narratives in geographical space. Conceivably the transparent sheet containing the cultural references could be overlaid on top of any type of image representing the same geographical space such as an aerial photograph of similar scale, a satellite image, a survey map or a district planning map. Thus cultural space can be inserted into geographical space easily using any type of geographical space. This is where GIS becomes useful as it possesses the ability to merge any of these geographical data types with the cultural data to locate the cultural data within geographical space and produce a series of maps at any scale and for any purpose.

To prepare each of the above maps, geo-tiffs of topographical maps were used as base maps in GIS. Layers representing different types of cultural data were created in GIS and then all the cultural references from each biographical sketch were committed to the

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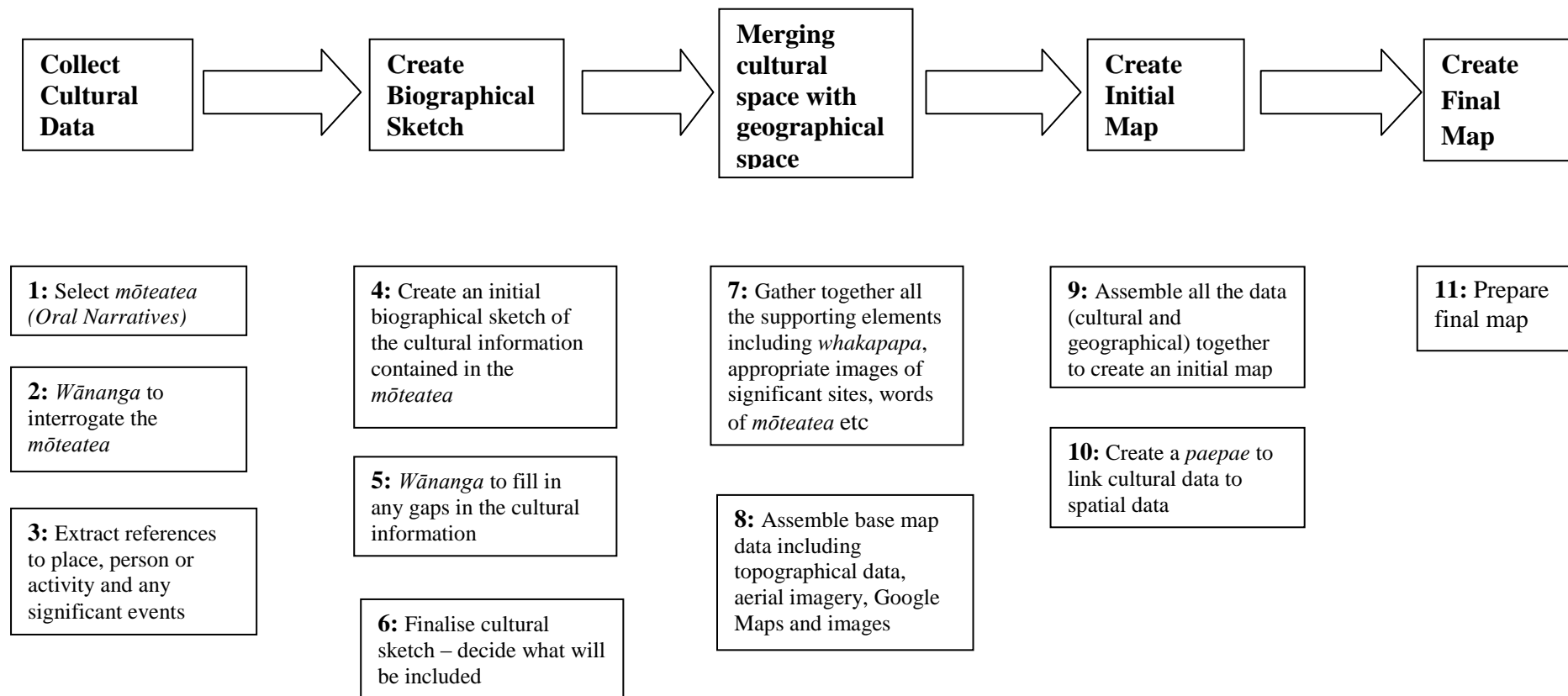[157] See Chapter Two for a full description.
[158] Figure 7.2, Chapter Seven illustrates this step. The transparent overlay contains the cultural data; the underlying topographical map locates the cultural data in geographical space

requisite layer within GIS from which maps were then created; hence the merging of cultural space with geographic space without changing either of them. The *paepae* provided the key to understanding the link between cultural space and geographical space.

The *paepae* has a unique function in the Māori world; it is the barrier between the hosts and the visitors to the *marae* that binds them together through a series of protocols. In this thesis the *paepae* provides the link that draws together two groups of ideas or in this case cultural space and geographical space through a series of steps so that one (cultural) could be understood in the space (geographical) of the other.

Hence, this chapter has demonstrated that it is possible to merge cultural space with geographical space using oral narratives to represent cultural space without changing either of them; in this instance both retain their own innate *mana*. Thus ancestral space remains ancestral space and geographical space remains geographical space.

Figure 6.23: Tasks associated with creating maps of cultural information

| **Collect Cultural Data** | → | **Create Biographical Sketch** | → | **Merging cultural space with geographical space** | → | **Create Initial Map** | → | **Create Final Map** |

1: Select *mōteatea (Oral Narratives)*

2: *Wānanga* to interrogate the *mōteatea*

3: Extract references to place, person or activity and any significant events

4: Create an initial biographical sketch of the cultural information contained in the *mōteatea*

5: *Wānanga* to fill in any gaps in the cultural information

6: Finalise cultural sketch – decide what will be included

7: Gather together all the supporting elements including *whakapapa*, appropriate images of significant sites, words of *mōteatea* etc

8: Assemble base map data including topographical data, aerial imagery, Google Maps and images

9: Assemble all the data (cultural and geographical) together to create an initial map

10: Create a *paepae* to link cultural data to spatial data

11: Prepare final map

Conclusion

This chapter set out to create maps based one of the enduring oral narratives of the Māori world; namely *mōteatea,* the classical Māori chant or song. What followed was a description of how this was done: first by creating a simple biographical sketch of the cultural information; second, by projecting that cultural space into geographical space; and third, by merging cultural space with geographical space and linking them together using the concept of the *paepae*.

Several different types of *mōteatea* were explored from which key cultural data was extracted such as: ancestral *whakapapa*, key themes, cultural landmarks, specific activities and significant events, and any geographical or spatial references. That data was then examined for any historical content and cultural value. After all, what makes the Māori ancestral landscape unique in Aotearoa New Zealand is its ability to tell stories that connect its people to that landscape. Once all this data was extracted from each *mōteatea*, all the elements were gathered together to form an initial biographical sketch. The biographical sketch depicted the events in the *mōteatea* as they unfolded line after line.

The next step was to explore how this data could be represented using more modern spatial information technologies such as GIS. A similar approach to that employed by the *Lienzo* project would be considered as a potential method. That is, juxtaposing the initial biographical sketch of all the cultural elements with a geographical map representing the same area portrayed by the cultural data. As with the *Lienzo*, a 'timeline' or *paepae* was employed to illustrate the flow of events as they unfolded in the *mōteatea* and to connect cultural space with geographic space. Other elements such as relevant *whakapapa* and important images such as *maunga* were added as cultural icons or markers often referred to as *pou*. This entire process of creating maps of oral information is illustrated in Figure 6.23 on the previous page.

In effect we were able to translate an oral tradition into a spatial tradition by simply projecting cultural space into geographical space using a blend of traditional techniques and spatial information technologies. Nothing changed in either space; cultural space remains cultural space; geographical space remains unchanged. A simple biographical

sketch of cultural space as defined by the cultural elements in the *mōteatea* was held up in neutral space while a projector placed behind it beamed a light at and through the sketch thus projecting those cultural elements onto or into geographical space represented in these maps by a topographic map. The key was in understanding both worlds: the spatial information technologies and the cultural world; then applying the concept of the *paepae* to link them together.

Indigenous peoples including Māori occupy a unique position where they are able to move between two worlds: the Māori world view and the spatial world view as interpreted by spatial information technologies. This chapter illustrated how both worlds could be brought closer together and sit side by side; and not as one world view imposed upon the other, but side by side linked together using the *paepae*. Clearly this is a huge leap forward.

As a Māori, born and bred in the Taupōnui-a-Tia region of the *Tūwharetoa* tribe; and as an academic engaged in research involving elements of the culture and spatial information I claim the right to speak of and protect our traditional knowledge and, I also claim to be proficient enough to demonstrate that it is possible to blend some aspects of cultural knowledge with spatial information technologies without changing either.

There are the usual limitations of research imposed by time constraints and financial means to explore fully how this method could work. However, sufficient has been done to offer a glimpse at the potential for blending cultural elements with spatial information technologies. The potential for future generation has yet to be measured.

Thus, in the words of one of the chiefs of *Tūwharetoa* from an era where there was but one world view (Grace 1959:166-167):

> *E Tuwharetoa e!*   *Tuwharetoa, be careful when*
> *Kia ata whakatere i te waka nei,*   *launching your waka,*
> *kei pariparia e te tai,*   *Lest it be overcome by the*
> *ka monehunehu te kura.*   *tide*
> *Ka whakamarotia atu ano,*   *And its plumes drenched.*
> *ka whakahokia mai ki te kapua*   *It is well to advance and to*
> *whakapipi*   *stretch out,*

Tamamutu the paramount chief of the Taupō tribes in his time uttered these words referring to *te kapua whakapipi* as the guardian clouds of the tribe and to unity as the foundation of their strength in times of great need. This *whakataukī* is used here in a similar fashion as a signal not only to carry the ancestors in moving into the future of two worldviews but as a signal that one can co-exist with and strengthen the other; with this approach both retain their *mana*.

The process of creating maps illustrating ancestral landscapes was conducted in a controlled environment; the real test would be to introduce the methodology in an uncontrolled environment to see how the theory behaves in practice. Chapter Seven tests this notion implementing the theory with slight variation into a *mana whenua* research program.

The following chapter is a record of how the process described in this chapter was implemented in a *mana whenua* research program from September 2009 through to February 2010. This exercise involved the creation of maps that illustrated the historical and cultural connections of people (*tangata*) with their ancestral landscapes (*whenua*); in effect delineating the footsteps or cultural footprint of their eponymous ancestor to whom they claim *mana whenua* status. These historical footprints were captured in their oral narratives comprising stories, significant events, place names, ancestors, *whakapapa*, *tauparapara* and *mōteatea* that defined their *mana whenua, mana moana* and *mana tangata;* all passed down through successive generations to the present day.

Chapter Seven: Mapping the mana of the whenua

Introduction

Chapter Six illustrated how oral narratives can be committed to maps and mapping technologies. This chapter is a record of how the process described in Chapter Six was implemented in a *mana whenua* research program for a North Island *iwi* in Aotearoa New Zealand over a period of six months during the latter part of 2009 and the first part of 2010.[159] In effect, this is the test case for applying the theory detailed in Chapter Six, in an uncontrolled environment. A *mana whenua* report is an oral and traditional history report that details the *mana* or land-use and occupation rights that an *iwi* exercised over a well-defined tract of land or *whenua* from the time of the eponymous ancestor down to the present; hence *mana whenua*. This report was commissioned to address two key themes: one of *mana whenua* and the other was to address any Crown breaches of the principles of the Treaty of Waitangi. The *mana whenua* theme included the identification of the claimant group, their *rohe* or the extent of their geographical boundaries, identifying the resources within their *rohe* and mapping the location of their sites of significance. The second theme included the collection of oral traditions and evidence relating to any Crown breaches of the Treaty of Waitangi and oral traditions or evidence relating to Māori response to those Crown breaches. The *mana whenua* report involved creating a series of maps depicting the historical and cultural connections the *iwi* had with their ancestral landscapes; in essence proving *mana whenua* by recording their oral histories on maps.

Oral and traditional history is the basis for *iwi* to establish their *mana whenua* over a particular *rohe* or region. The oral history programme consisted of collecting history that has been handed down from generation to generation and retained by a number of living repositories or key informants who trace descent to the *iwi* that reside within the *rohe*. This evidence was used to complement the preparation of a traditional history or *mana whenua* report to address the key issue of *mana* or rights of use and occupation over a defined *rohe*. The rights of use and occupation relate to traditional cultivation areas, fishing, hunting, the collection of resources, and the establishment of settlements and so on; use and occupation relates to how the *iwi* used and occupied the land for

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[159] The *iwi* concerned is still in the process of finalising the research report which is yet to be submitted to the Waitangi Tribunal for consideration and eventual publication. Therefore the report and accompanying maps are not public information and remain the property of the *iwi*; thus it is deemed inappropriate to name the *iwi* in this thesis at this juncture (dated at 26 July 2010).

their on-going needs and survival. Part of the *mana whenua* report involved the preparation of a series of maps to support the oral and traditional history evidence. In effect, the mapping programme would identify and create maps detailing how *iwi* used and occupied the land and sea. Moreover, the mapping would attempt to record the *mana* of the *whenua* using oral histories handed down from generation to generation some of which were recorded in the form of *mōteatea* or traditional chants; hence the practical implementation of the process described in Chapter Six.[160]

The *mana whenua* mapping project involved several discrete but integral components: first, the preparation of a mapping proposal and brief outlining the focus of project, the methodology employed, the resources required, the milestones and expected outcomes, and the proposed timeline; second, the presentation of the mapping proposal to the *iwi* claimants for perusal, comment, changes and final ratification; third, conducting mapping interviews or workshops to gather oral data; fourth, designing and preparing the geodatabase for the project, processing the oral data in preparation for digitising into GIS, preparing a series of maps to complement the oral history report, and presentation of draft and final maps to *iwi* for ratification; and fifth, empowering *iwi* to manage their cultural assets by implementing GIS training for their tribal members. This acts as the practical test for the theory and development laid out in the earlier chapters of the thesis.

Section One: Mapping Proposal

The mapping proposal outlines the content and extent of the proposed *mana whenua* mapping project. It gives a brief description of the project, describes the methodology for gathering the oral data, lists the types of maps required, discusses the mapping themes and categories, identifies the resources required for the project, provides a description of the personnel involved, and outlines the milestones and the outputs of the project.

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[160] See Figure 6.23 on page 231 in Chapter Six.

Focus of Project

This project covers the mapping components required for the *mana whenua* research project for the *iwi* claimants. The *mana whenua* research report included a series of maps that represented the way in which the *iwi* claimants occupied and used their land and sea assets. These maps were compiled from information gathered through oral interviews and workshops using an adapted version of the map biography method pioneered in Canada in the 1970s. In some cases archival data in the form of old maps were used to support the map biography data. The aim of the mapping component of the research project was to capture geographical locations of significant sites that reflected *mana whenua, mana moana,* and *mana tangata* in a format that could easily transfer into GIS at a later stage in the project. The final maps were used as a *kinaki* or support to the *mana whenua* research report.

The *mana whenua* report provided a vehicle for negotiating *iwi* status with the Crown and in so doing support claims to resource control and use in the region. The final maps could eventually form the infrastructure for developing an environmental plan. The entire document could also be used as a basis for cultural and traditional knowledge curriculum for the benefit of future generations.

 Since the actual purpose of this report was to identify *mana whenua* and *mana moana* over a large and distinctive area to which the *iwi* claimants laid claim, it was important for the *iwi* claimants to identify and clarify the extent of cultural information to commit to a map.

Deciding what to map

Deciding what to map is an important consideration. A *mana whenua* report when published will eventually become a public document, which means that everyone outside of the *iwi* will become privy to the information contained in the report. Thus it was important prior to commencing the mapping to come to terms with the idea that significant sites will become public. Once consent was reached, *iwi* was able to define exactly what was required to meet the objectives of the report; then set out a plan to achieve that result.

Consultation with the *iwi* claimants was vital to deciding what types of cultural knowledge should be captured and displayed on a map within a public document. A scoping report was commissioned and conducted over the course of three months. The findings of that report set out the parameters for the wider more detailed *mana whenua* report.

Research Team

A research team of four was assembled to tackle the task comprising two writers, one oral history interviewer and one map coordinator. The overall approach to the report was carefully considered in terms of the requirements of the *mana whenua* report and in wide consultation with the *iwi* claimants. This set the groundwork for defining the scope of the mapping requirements. Initially, it was decided that the *mana whenua* mapping project would consist of the following types of maps: *rohe whenua* maps, *rohe moana* maps, the conquest battles over *whenua* and *mana*, a map showing the actual division of the *whenua* following the *mana whenua* battles, customary use and occupation maps covering the region, maps conveying the distinctive landscape features and distinctive place names, and maps that reflect the distinctiveness of the *iwi* claimants. However, once the first draft of the *mana whenua* report was reviewed, the type of maps changed slightly.[161]

Critical Decisions

There were a number of key decisions that impacted on the final mapping product that *iwi* considered. In mapping significant cultural information it was important to consider goals beyond the end of the mapping project; the maps were the end product as far as the research was concerned but the management and ownership of those maps and indeed the electronic copy were of future concern for *iwi*. For example, this collection of cultural information could be used to imbue future generations with a sense of *iwi* identity and pride and it could also reinforce cultural values. Furthermore, it could be used to maintain *iwi mana*, *whenua mana*, and *ahi kā roa* (occupation). Moreover, this

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[161] Discussed in milestone ten

type of information could also be a focal point for developing a traditional curriculum for *iwi* education.

It is conceivable that this cultural information could be used to maintain control over ancestral domains and to communicate effectively and efficiently by establishing peer to peer dialogue with decision makers, policy makers and with *rāwaho,* government and external agencies. Hence, the goals beyond the mapping project will inform the current mapping project. Once the end result is known it will determine the accuracy used to gather the oral information and the types of cultural information required to meet that end. For example if *iwi* use the information to communicate with local and regional government agencies for development within or close to the *rohe*, then the information would need to be accurate enough to determine the proximity of development to sacred sites. Furthermore, if the amount of cultural information collected for this project is significant, it will need to be managed and used to benefit *iwi* rather than stored or archived. Potentially, this could form the basis for an explicit, purpose-built *iwi* information system rather than just a GIS.

Biographical Sketch versus Map Biography

The data collection method described in Chapter Six, referred to as biographical sketches, was used to capture cultural information from *mōteatea*. An A3 size blank artist pad was used for that exercise and was found adequate for the volume of data contained in a single *mōteatea*. As most *mōteatea* are geographically localised this size paper was sufficient. This data collection method was refined and adapted to suit the needs of the much larger *mana whenua* research project for several reasons. However the underlying principles described in previous chapters remained the same; the only element that changed was the reorganisation of the data collection method and the type of medium used to capture that data.

The extensive size of the *mana whenua* research project region and the sheer volume of data that was collected required an adaptation to and reorganisation of the original data collection method. These two major concerns were addressed in two ways: first, larger sized A2 and A1 transparencies were selected over A3 size white artist paper to capture the cultural data; and second, topographic base maps were used to position or project

the cultural data from the transparencies directly onto or into geographical space. This was achieved by overlaying the transparency on top of the topographic base map. The creation of a separate hard copy biographical sketch representing cultural space was sacrificed deliberately for several reasons: one, a very tight time frame with limited funding restricted the creation of a separate cultural space for the cultural data; two, the sheer volume of cultural data required efficiency and speed to complete the research within a specific time period; and three, the use of layering in GIS permitted the development of a set of cultural layers depicting various types of cultural data thus preserving cultural space, albeit electronically.

The variety of data collected was also a major concern as was the need to layer the raw data for digitising into GIS and the eventual production of maps to support the *mana whenua* research report. To address this, the map biography method used extensively in Canada was adapted to meet the needs of the data collection phase whereby transparent sheets overlaid over a topographic base map were used to capture the cultural information directly into geographical space. Coding systems matching the variety of cultural data were designed to meet local needs; in some cases data types such as *wānanga* sites, significant place names and *maara kai* were kept on separate transparent sheets thus reflecting different layers of information; and *mōteatea* were interrogated using the original data collection method described in Chapter Six. All other aspects of the original data collection and preparation of data for mapping described in Figure 6.23 remained intact. Figure 7.5 (towards the end of the chapter) reflects the adjustment in the approach used.

The oral information was collected via workshop, interview or *wānanga*; a face-to-face meeting with several living repositories. The primary focus of each mapping workshop was to collect oral information about how the land and water was used and occupied by the claimant's ancestors relevant to the objectives of the *mana whenua* mapping project. Several key knowledge holders were identified and selected to supply the information for this task. Each workshop was centred on a set of 1:50 000 topographical maps of the region under claim spliced together and laminated. The topographical maps were used to focus the attention of each repository and to generate discussion about land and water use and occupation in the region. The topographical

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maps depicting the ancestral territory were overlaid with a transparent sheet of film of similar size. The living repositories[162] supplied cultural information specific to their category of knowledge and or the areas within the *rohe* they were most familiar with. Oral information supplied by each person was drawn directly onto transparencies using a selection of fine nib pens locating their cultural information directly in geographical space.

The information drawn onto the transparencies[163] formed a record of oral information or a map biography of each person's knowledge of the area. Information was gathered in two ways: first by theme, category, and area of expertise or knowledge and second by region or area. Some of the mapping informants were comfortable with locating certain sites or category of data such as *urupā*, *maara kai*, *wānanga* sites, old trails, *mātaitai* areas, *pā* sites, and battle sites and so on across a wide area within the *rohe*. Other informants confined themselves to specific regions or areas covering the same types of land use and occupation information. The information recorded on the transparencies referred to the location and names of significant sites; in some instances, activities were noted along with ancestors associated with those places or activities. Furthermore, ancient place names bought from the pre-Aotearoa homelands were recorded along with their approximate location.

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[162] The living repositories are sometimes referred to as mapping contributors, mapping informants or custodians.
[163] See Figure 7.1, following page.
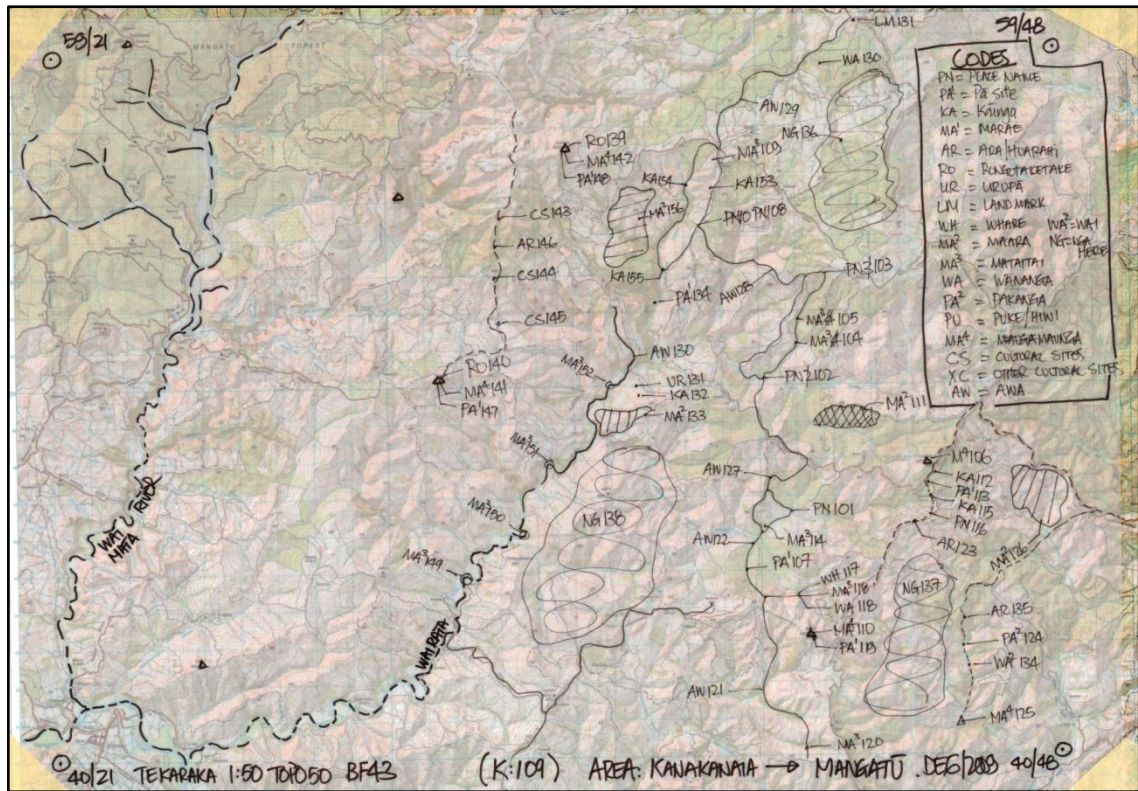
Figure7.1: Map Biography Sample with transparent sheet overlaid onto a topographical map

Resources Required

The objective was to aim for a simple, low cost and low technical approach to gathering oral information. To achieve this, the resources consisted of a set of base maps, sheets of transparencies to record the oral information, soft leaded pencils and black felt-tipped pens, a magnifying sheet, and a hard cover journal to record any site detail.

The base maps consisted of the most recent topographical maps (2009 September) supplied by Land Information NZ at a scale of 1:50000. Some of the topographical maps were spliced and laminated together to provide a more complete and seamless view of the claimant area.

Figure7. 2: Topographic Base Map Sample, 1:50,000 scale (LINZ)

Hindsight revealed that the workshops should have been recorded either by audio or video to capture the detail provided by several of the mapping informants. The detail related to significant stories that occurred in places, ancestors involved and in some cases techniques in fishing or descriptions of sites. Unfortunately, budget constraints did not permit this approach at the time.

Milestones

The following milestones are an adaption of the method described by Terry Tobias (2000:4-10) in his volume *Chief Kerry's Moose* which he refers to as tasks.[164] There were ten milestones for the *mana whenua* mapping project. Milestone one: obtain a list of mapping contributors. Milestone two: set out methodology and conduct a mini-workshop with *iwi* claimants and facilitator. Milestone three: review oral history interview tapes and transcripts. Milestone four: mapping workshops and creation of map biographies. Milestone five: replicate and store raw data. Milestone six: review workshop journals and map biographies. Milestone seven: enter oral data into database. Milestone eight: digitise data and produce map composites for checking purposes. Milestone nine: verify draft maps. Milestone ten: production of final maps and report.

Milestone One: obtain a list mapping contributors

The mapping project was reliant on the good will of the *iwi kāinga* (home people), especially those who *whakapapa* to the land under enquiry and held *whenua* knowledge; hence the need to engage a facilitator from the *rohe*. As a *rāwaho,* or outsider, the mapping project required a facilitator to initiate contact with the *iwi kāinga* and to prepare the way for the mapping to proceed. The facilitator needed to be someone who was familiar with the overall goals and *kaupapa* of the project, someone who knew the *rohe* reasonably well and who was familiar with the people in the *rohe* who had knowledge to contribute. They also needed to be a *marae* person, someone who was involved intimately in the politics of the *hapū* and *iwi*. Furthermore, it was important that the facilitator had a good grasp of the *whenua kōrero* to guide the mapping project towards the goals and *kaupapa* of the project.

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[164]Task 1: Development of Community Consensus, Task 2: Hiring and Training of Personnel, Task 3: Development of Research Design & testing interview guide, Task 4: Interview Participants & Collect Map Biographies, Task 5:Replication & Storage of Data, Task 6: Translation of Indigenous Language Tapes, Task 7: Transcription of Audiocassettes, Task 8:Review of Transcripts & Map Biographies, Task 9:Digitizing Data on Map Biographies & Producing Digital Composites, Task 10: Elimination of Redundant Data, Task 11: Entry of Descriptive Data into a Database, Task 12: Verification of Community Maps, and Task 13: Report Writing (Tobias 2000:4-10).

+Milestone two: workshop the methodology with the facilitator and iwi claimants

The overall aim of this workshop was to demonstrate the map biography data collection method to the *iwi* claimants. As the facilitator was required to lay the ground work between the mapping coordinator and the *whenua* custodians or holders of *whenua* knowledge it was important to give some idea to the facilitator how the data collection would be conducted. A mini workshop was conducted with this in mind for the facilitator and representatives of the *iwi* claimants. An overview of the methodology was presented and the mini workshop demonstrated how each workshop would proceed and what would be required of each mapping contributor.

Milestone three: review of oral history tapes and transcripts

An oral history program was conducted as part of the *mana whenua* research report. This program recorded interviews with a large group of 50 living repositories who held the history and traditions of the *rohe*. Copies of the tapes' transcriptions and the DVDs were made available to the entire research team including the mapping coordinator. Part of the preparation for the mapping workshops was to review the tapes and transcriptions of those map contributors selected to give key information for the mapping part of the research program. Hindsight revealed that it would have been more productive to include the mapping coordinator in the oral history review process to conduct mapping with the living repositories in the same session.

The oral interviews contained key *whenua* information relevant to the mapping project. The information from these interviews was used to focus each mapping workshop with each individual mapping informant and each group of informants. The way was now prepared for the mapping workshops to proceed.

Milestone four: mapping workshops and creation of map biographies

The map biography method described in previous sections was used to capture oral information in a series of workshops and interviews with mapping contributors. Workshops were time consuming and required focus and meticulous attention to detail. They were physically and mentally draining. The living repositories are generally in the older *kuia* and *koroua* age bracket; thus at a practical level a reasonably large room that

was at ground level was required; one that had good seating, sufficient table space and adequate lighting. As part of the *tikanga* process the first rule is *manaaki tāngata* meaning to look after the people.

Since the aim of the maps was to reflect *mana whenua* in a graphical form, the focus of each workshop was primarily to collect information about how the land was used and occupied. For example, the location of *maara kai* (cultivation sites) and *mātaitai* (sea food and resources) sites was indicative of *whenua* and *moana* use. The location of *pā sites, marae* and *kāinga* indicated occupation. Use and occupation is indicative of *mana whenua*. Information regarding prominent landmarks, ancestral place names and *pouwhenua* or boundary markers were required to establish the geographical extent of the ancestral regions.

This *mana whenua* project had three separate but cohesive components: the oral history project, the collection, collation and write up of historical documents with the oral history and the mapping project. Oral data was discovered in all three components thus it was important to liaise with all the researchers throughout the entire mapping process and to add new data to map biographies as it became available.

Milestone five: replicate and store raw data
Replication and storage of the raw data is an essential practice before processing the data in GIS. The transparent map biographies were scanned following the workshops. Ideally, a white sheet should be used as a backing so that the biographical map data will show through on the scans. In a few instances, information about some sites were recorded in the minute book along with a NZMG[165] reference. The minute books were replicated as well.

Milestone six: review workshop journals and map biographies.
Workshop journal entries were essential for each interview or workshop. Journal entries permitted checks to ascertain that the map biography data and the workshop journal transcript data were consistent prior to digitising the raw data into GIS. Notes of any

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[165] NZMG is a New Zealand Map Grid Reference used by the 1:50 000 Topography maps

inconsistencies for clarification by the *iwi* claimants or mapping informants were included in this process.
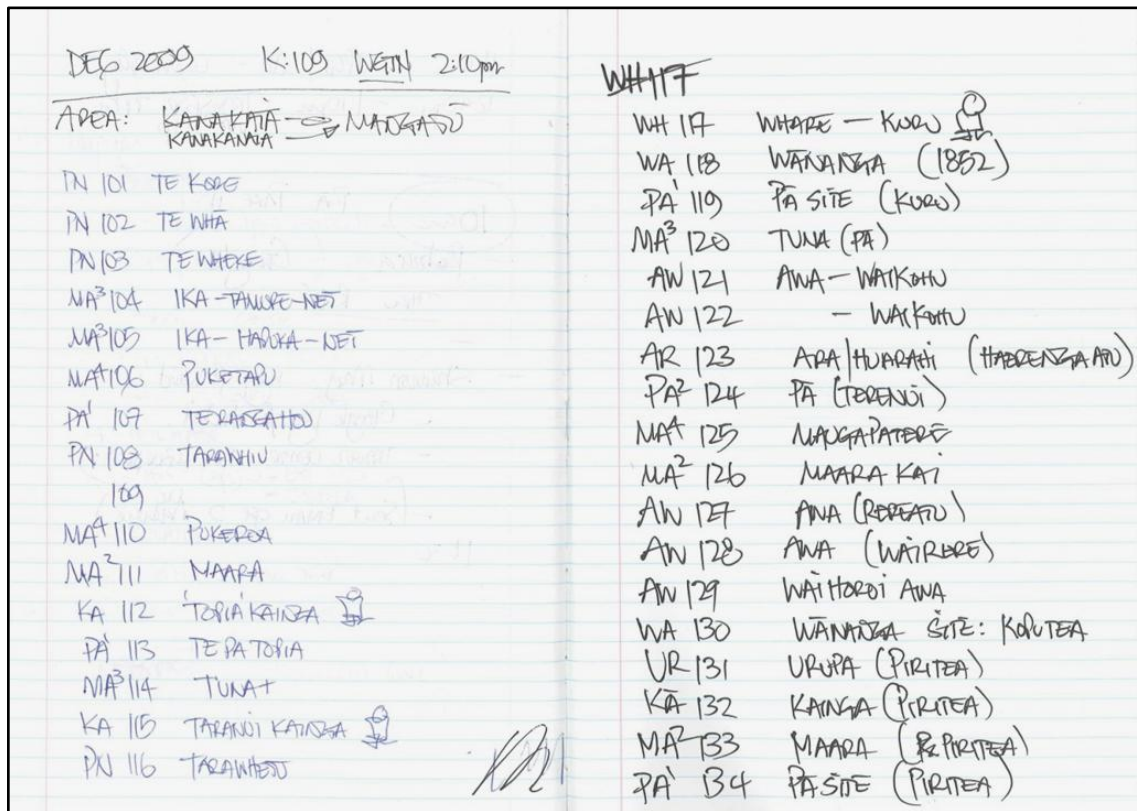

Figure7.3: Journal Entry Sample

Milestone seven: enter oral data into database

The amount of data captured during the mapping process was enormous; most of which did not form part of the GIS or recorded on any subsequent maps. A simple flat database was constructed using an excel spreadsheet to manage the amount of data collected during the mapping workshops. This was a huge job but absolutely essential to managing the data and passing it on to the next generation. The database[166] formed a record of the metadata that detailed the description about the data that was captured and included: location, the name, person submitting data, and feature type, description of the feature, ancestor, activity, written historical sources, topographical map reference, GIS layer, and any notes of explanation or comments. Furthermore, the database proved useful in providing information about mapped features for the final report.

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[166] See Tables 7.3 and 7.4 in section 4 of this chapter.

Milestone eight: digitise map biographies and produce map composites
The aim was to convert all oral data into an electronic format for inclusion into GIS in preparation for producing a set of draft maps for checking purposes.

The map biographies of each mapping contributor were reviewed and evaluated for the type content provided. This information was compared with the original mapping themes that formed part of the mapping proposal. The mapping themes were altered slightly to reflect the outcomes of the initial *mana whenua* report. The *iwi* claimants decided after reviewing the outline of the research report that the mapping should be aligned with the content of the report. The types of maps required included: a map illustrating landing sites of the original *waka* to reflect the beginning of the *mana whenua*; a map depicting the conquest battles of the eponymous ancestor thus establishing the *mana whenua* and *mana tangata*; the division of that *mana whenua* and the establishment of the boundaries; the inclusion of maps of significant *mōteatea* depicting the uniqueness of the *iwi* and their relationships with adjoining *iwi*; maps depicting ancient place names brought from *Hawaiki*; maps depicting *wānanga* or learning institution sites, *rongotaketake* (peace-making) sites, and ritual sites; maps depicting *mana moana* or *mātaitai* comprising ocean and inland fishing grounds and spots; maps of *pā kāinga*, old trails, *rongoa*, *urupā*, *marae* and significant landmarks; and maps depicting the *maara* sites.

An initial geodatabase was created prior to the commencement of the mapping workshops in accordance of the requirements of the Crown Forestry Rental Trust (CFRT) the funding agency. However, once the map biographies were reviewed for content it was decided that separate feature datasets would be created to reflect the volume and content of the oral information provided by a few key mapping contributors. As a result, separate maps were produced for each of these key mapping contributors. Map composites were produced for most of the other map biographies based on regions and themes or types of information.

Digitise raw cultural data
The map biography data was converted via digitising into an electronic format for manipulation using GIS software. Once all the data from all the custodians was

digitised into electronic form it was checked against the original map biographies and the minute book entries to ensure all the data was captured.

With GIS, data in electronic format can be stored, manipulated and combined in many ways to form a variety of maps from a composite of all the cultural information to theme-specific maps that show the location of specific sites such as: fishing grounds, food gathering sites, battle sites, *wānanga* sites and so on. A huge advantage in using GIS for mapping oral information is that a digital composite of all the data gathered from the custodians can be compiled. Maps can then be produced at any stage during the gathering phase, as was the case with this project. New data can be added to GIS at any stage and combined with existing data to produce more detailed maps.

Redundant Data

Redundant data is inevitable in projects of this nature. The most common differences were in the spelling and meaning behind place name, history of place and the exact map location of those places. In some instances there were discrepancies about which ancestor was involved or occupied that place. To reduce redundant information, it was important that the *iwi* claimants reviewed the drafts as a group to make any necessary corrections thus ensuring control over the format of the final maps.

There were some instances where three different names were entered on the map for the same feature or landmark. The reason behind this was to maintain the *mana* of the ancestor who passed down that information to the current generation and the *mana* of the place itself. Each person who contributed to this mapping project preserves the *mana* of his or her oral histories. The redundant information usually referred to several locations for one place name. This was solved initially by creating separate map biographies and separate GIS layers for mapping informants who had significant volumes of data or specialised information; this preserved the *mana* of each person and the cultural data they submitted for mapping. It was for the *iwi* to decide what data will be represented on the final composite maps thus maintaining control of their cultural data.

To be fair, not everyone can read a topographical map with any degree of confidence. The more accurate method for capturing oral information about *whenua* is actual site visits or ground truthing. All the map contributors indicated that if they could visit the site, they would be able to point out where each site was precisely located. In some cases where site visits were encouraged or rather insisted on by mapping contributors, the onsite visits stirred up stories of significant events embedded in their memories; in these cases, the *mana* of the *whenua* was keenly felt. In fact, if ground truthing of significant sites was conducted with groups of participants present, it would empower each member of the *iwi* and consolidate their cultural identity. Hence ground truthing is important for more than verifying the **x, y** location for mapping purposes but also for restoring and embedding cultural memory and identity. However, this project was constricted by a tight time-frame and limited financial resources thus ground truthing was not a priority at that point in time.

Draft Maps

A series of draft maps totaling forty-six were produced in JPEG, PNG and PDF format and presented to the *iwi* claimants for checking purposes. A spreadsheet inventory was prepared to accompany the maps. The inventory recorded the details of each map: map title, renamed title, *kaupapa*, mapping contributor, region covered, PDF title, ArcGIS mxd, date, and comments.

MAP INVENTORY				
Map Title	*Renamed: title*	*kaupapa*	*Contributor*	*Region*
PDF	*ArcGIS mxd*	*Date*	*Comments*	

Table 7. 1: Mapping Inventory Spreadsheet

Milestone nine: verify draft maps.

The overall aim was to verify the overall quality, presentation and completeness of the mapped information before final printing. This is an obvious point but vital to the integrity of the project and, more importantly, the integrity of the oral data; once the maps are published they will forever be under scrutiny.

A meeting with the *iwi* claimants and the funding agency was convened to review the draft *mana whenua* research report and to appraise the first set of draft maps in conjunction with the report. Issues such as paper size and orientation, mapping elements, title of maps, symbology and presentation were evaluated. Also discussed was how the maps would be referenced within the report proper.

The draft maps were presented, for an initial perusal, in both hard copy format and a Power Point presentation to the *iwi* claimants and the funding agency. Feedback consisted of appropriate titles for each map, verifying place names, location of features, spelling corrections, changes in the representation of some data: for example, use a polygon instead of a series of dots and so on. All comments from this meeting were recorded either directly onto the draft maps on in the mapping workshop journal for corrections in GIS at a later date. The *iwi* claimants retained the draft copies for further discussion and comment. The entire process took about 30 days because of the volume of information on the maps.

Milestone ten: production of final maps and report.
Draft maps were checked and marked up by the *iwi* claimants and returned for final processing. All the corrections to the maps were processed in GIS and a final set of maps were produced, accompanied with a report. The report detailed the purpose of the project, the methodology employed for collecting the data, insights pertaining to the methodology for consideration, the accuracy of the data collected, a description and breakdown of the GIS processing and production of the maps. It also included a short summary of the material collected and a list of the final maps produced, accompanied with detail of each map as per the map inventory described above in the previous page.

Review and evaluation of mapping

Evaluating costs
The methodology, mapping workshop planning and budgetary considerations needed to be reviewed and evaluated in terms of the way it met the outcomes of the mapping proposal. A review and evaluation of the time allocations were conducted for each part of the project: mapping workshops for twenty plus participants; workshop logistics

including travel and accommodation arrangements, venue costs, allocation of *koha*, and mapping resources; time allocation for database entry; preparation of the geodatabase and preparation of base layers and data; digitising data for GIS and preparation of first set of draft maps; checking and transcribing journal entries; costs associated with meetings with claimants and funding agencies; ensure better allowance for time associated with claimants checking draft maps and making corrections once draft maps are returned; insist corrections are maked up directly to the draft maps for ease of editing and to resolve any errors; costs associated with initial printing of draft maps; and an allowance for presentation of drafts and final maps to *iwi* claimants.

Audio / Video Recording

It is imperative to video or audio record the mapping workshops. The purpose is to record the *kōrero*, the stories, the information about places and features the mapping custodians would point out on the maps. It would also record the emphasis given by each mapping custodian about significant places, ancestors and stories.

Allowances in the budget need to be made for recording equipment, personnel required to operate equipment, time for transcribing the tapes, replication and storage of tapes, producing DVDs of each interview/workshop, checking the transcripts and entry of oral data into database. Consideration must also be given to adjusting the data collection method to accommodate the use of video and/or audio recordings.

Coding System

After the second mapping workshop it was evident that a coding system was necessary. One was created on the fly and proved adequate but required refining for consistency. The coding system organised the collected data better and reduced the clutter of the information on the map biography thus making it easier to read the information. Moreover, the map biographies were easier to review and saved time at the digitising stage. Tobias (2009) offers an efficient coding system in his book *Living Proof*. Furthermore, it details a data collection system worth exploring and adopting for use in *mana whenua* mapping projects.

Forward Planning

The mapping workshops and interviews were a vital component of *mana whenua* mapping and required careful planning and preparation. However, it would be prudent to engage in reconnaissance with a facilitator from the region to gauge the types of information, the depth of the *whenua kōrero* and the region covered. This will help with future preparation (for example of coding required and use of audio and video equipment) and set up of the workshops prior to the workshop sessions.

Mapping Icons

It is important to create distinctive icons that represent features for each project such as: *marae*, *pā kāinga, maara kai, urupā, mātaitai* sites, *taunga waka*, *rongotaketake*, *waahi tapu* and *waahi taonga*, ritual sites, *wānanga* sites, *parekura* or battle sites, *rongoa, maunga*, landmark symbols, *pouwhenua* and so on. Every effort was made in the project to engage with the *iwi* claimants to provide some ideas for icons that reflect their identity.

Section 2: Ratification and Presentation to iwi

Once the mapping proposal for the *mana whenua* report was completed, it required ratification by the *iwi* claimants. The most important consideration was the acceptance of mapping coordinator by the *iwi* claimants followed by acceptance of the mapping service. Whilst the contract to map was with the CFRT, in terms of Māori protocol, it was important to meet the needs and requirements of the *iwi* claimant as well as the terms of the mapping contract; this is a very fine balancing act requiring diplomacy, finely attuned negotiating skills, an understanding and acceptance of *tikanga* or customs, an appreciation for how Māori work, infinite patience, a measure of insight and vision, a great degree of flexibility in your approach and an adherence to exacting mapping standards. After all, this is the *mana* of the *iwi* that you, the mapping coordinator, are working to preserve and protect. Thus, the process is just as important as the product; and what you do and how you do it needs to be in accordance with acceptable protocol standards and within the domain of *tikanga*.

Pōwhiri / Pōhiri

A *pōwhiri*[167] was convened on the *iwi marae* where the entire research team and members of the funding agency were welcomed formally by the *iwi* claimants. The purpose of the *hui* was the open and transparent ratification of the research team by the *iwi* claimants in a public forum. The research team consisted of: a principal writer whose primary role was to prepare the *mana whenua* report; a principal researcher whose primary function was to track down all the archival documentation held in National Archives, the Alexander Turnbull, museums and so on; a principal interviewer whose primary function was to gather oral and traditional information by conducting oral interviews with selected *iwi* claimants; and a mapping coordinator whose primary role was to prepare a series of maps to support the preparation of the *mana whenua* report.

Once the formal proceedings of the *pōwhiri* were completed, the *hui* convened inside the *tipuna whare*[168] where the research team presented their proposals. The purpose behind the presentations was threefold: one, acceptance and ratification of each individual team member in the research team by the *iwi* claimants; two, acceptance and ratification of each proposal by the *iwi* claimants; and three, clarification of the function and role of each team member. Given that the entire research team were *rāwaho* to the *iwi*, and that the *iwi* claimants' *mana whenua, mana moana* and *mana tangata* rested on the strength of the *mana whenua* report, this was a lengthy process stretching from mid-afternoon right into the night concluding around midnight. Presentations, in general, highlighted all the salient points with particular emphasis on the methodology and outputs aligned with the objectives of the *mana whenua* research project. Intellectual property rights to all *whenua kōrero* collected was emphasised.

Once the *iwi* claimants were satisfied with the team and their individual and collective roles and the proposals, a resolution to accept the research team and their respective roles was proposed, voted on and accepted by the *iwi* claimants.

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[167] A *Pōwhiri* or *Pōhiri* is a formal welcome onto the *Marae* hosted by the home *iwi*. A *pōwhiri* takes place outside the *tipuna (tupuna) whare.*
[168] The *tipuna (tupuna) whare* is the ancestral house which is part of the Marae complex. Once the formal part of the welcome has concluded, the following discussions always take place inside the ancestral house.

Initial Training Session

Following the formal ratification *hui* an initial training session was convened to prepare the *iwi* claimants for the oral history project and the mapping workshops. Facilitators were selected and given formal training in preparation for the oral history project. The role of the facilitators was to prepare the interviewees prior to the actual interviews: making initial contact with potential interviewees, explaining the interview process and clarifying any questions that might arise; obtaining consent to record information during the interview process and to use the information in the report proper; organising facilities in preparation for the interview, follow-up contact with the interviewees immediately prior to the interview and ensuring they had transport to and from the interview venue.

Interviewees for the oral history project were selected based on the nominations in the Oral and Traditional Scoping Report conducted several months earlier. Interviewees were selected via *whānau* nomination at a cluster or research *hui*, they were then prioritised according to age, health and known level of information. Consideration was given to balancing coverage across the *rohe* with wide participation within the limitations of resources and timetable for the project with a view to maximising *iwi* knowledge base. The other considerations were the availability of *whānau* and the contribution and participation of senior *whānau* within the *iwi* and across the *rohe*. The same selection process was applied in selecting mapping contributors.

The *iwi* claimants were then introduced to the map biography data collection method that was used in the mapping workshops. A mini workshop was conducted with the entire group using a set of 1:50,000 topographical base maps and mylar overlays to demonstrate the map biography method and how the cultural data would be collected. This was followed by an explanation of how the cultural data would be digitised into ArcGIS in preparation for creating maps.

The overall key to the mapping project was wrapped up succinctly in Mac Chapin's (2006) remarks:

> Indigenous mapping projects should not be seen as technical exercises, but
> rather as social-organizational events that happen to have a technical

component. They can be, if handled correctly, much more than undertakings to produce maps. The process is as important as, if not more important than, the product that rolls off the conveyor belt at the end. (Chapin 2006: 1)

Leading into the mapping workshops, the theme adopted for collecting cultural information was based on this ancestral utterance:

Nā tōu Rourou   *With my basket*
Nā taku Rourou   *and your basket*
Ka ora ai te iwi   *Our people will survive*

Section Three: Mapping Workshops

The aim of each mapping interview was to gather traditional information that demonstrated *iwi mana whenua* and in this case, *mana moana*. This would inform the types of maps required to meet the objectives of the *mana whenua* report. The objectives of the report were to address the traditional history and *mana whenua* of *iwi* who claim usage and occupational rights within their prescribed ancestral territories. For this to occur, it was essential to focus on gathering traditional information to support the *mana* of the *iwi* in regard to their rights to the *whenua*. The maps were intended to portray that *mana* as a reflection of the unique identity that *iwi* carved into the landscape by continuous and undisturbed use and occupation of that *rohe* from the time of their eponymous ancestor.

It seemed logical at the outset that the first set of *mana whenua* maps should identify clearly the location and extent of the *rohe* or region under enquiry. Strong evidence that these boundaries remained intact, were vigorously protected from neighbouring tribes and maintained from the time of their eponymous ancestor to the present was paramount to claiming *mana* as an *iwi* and *mana* over the *whenua* and *moana*. Thus the first set of maps described the spatial extent of the ancestral territories and became known as the *rohe whenua* maps.

Maps depicting the spatial extent of *rohe whenua* can be addressed in two ways: first by using the existing survey or cadastral boundary data that delineate the ancestral

territories; and second, by using traditional evidence and landmarks that illustrated how *iwi* used and occupied their ancestral territories. Since the *mana whenua* report is first and foremost about establishing *mana whenua* by *iwi*, it was essential to determine *rohe* boundaries in two ways: one, using oral and traditional information that depicted customary use and occupation of their ancestral landscapes; and two, examining the extent of the place names embedded into the landscape by their ancestors.

Customary usage of an area implies knowledge and the prior existence of *maara kai*, *rua kumara* (storage pits for *kumara*), knowledge of fishing grounds and coastal resources as well as associated practices, location and knowledge of traditional resources such as plants used for weaving, wood for carving and *rongoā* (medicines), knowledge of ancient travelling routes and sites significant to the identity of *iwi*. Occupation of an area refers to areas of continuous use, habitation, settlement, naming, knowledge and control over such areas. It can also include stories and legends about places, ecological knowledge of the regions, and place names indigenous to the area, whilst habitation sites include *kāinga*, *pā* sites or fortified settlements, *wānanga* sites, battle sites, *urupā* or burial grounds, *tauranga waka*, tribal landmarks, sacred sites and sites of rituals, *marae*, and so on. The toponyms or place names is a distinct and major consideration as it defines the ancestral *mana* embedded into the landscape. Furthermore, place names are the ancestral footprints woven into the landscape.

This storehouse of customary knowledge and practices forms part of the unique identity of *iwi* woven into the landscape leaving footprints that can be interpreted by those custodians or keepers of this knowledge. Knitting all this information together are the genealogies, stories and songs epitomising the deeds that occurred in these places, the ancestors who breathed and bled their very lives into the landscape, and the oral traditions that preserved this type of knowledge to the present day. Thus, identifying the custodians of this knowledge was essential to the process of creating the maps. Once the custodians of the storehouses were identified, the next task was to set out the mapping themes that would inform and guide the mapping interviews.

Mapping themes

Whilst the types of maps required for the *mana whenua* mapping project were influenced largely by the findings of the scoping report, the objectives of the *mana whenua* report and the input of the *iwi* claimants, the critical factors in refining the first set of draft maps were the findings of the draft *mana whenua* report and the actual data collected during the workshops. The findings of the draft report reinforced the selection of data required for the mapping project; it also dictated the types of maps required for the report proper. The type and significant quantity of data collected during the mapping workshops led to a rethink of the geodatabase content and design as well as the types of maps required showcasing that data.

The first set of draft maps consisted of: the landing sites of the ancestral *waka*; the conquest battles fought by the eponymous ancestors; the division of land among the descendants and the establishment of the original *mana whenua* boundaries; a series of maps illustrating *whenua* and *moana* use and occupation in the northern, central and southern regions of the *rohe*; a selection of *mōteatea* depicting places, ancestors and relationships with contiguous tribes; a series of maps that portray place names brought from the ancient homelands; and special sites such as *wānanga*, *rongotaketake* and ritual sites. These layers of information impacted on the final design and content of the geodatabase and the cartographic symbology used in the draft maps.

Several key mapping informants shared a huge amount of information. In order to manage and maintain the integrity of the quantity of data, separate feature datasets were created for these select few within which separate feature sets were created for each item of discrete data. For example, one informant shared data on several key sites including *wānanga* sites, *rongotaketake*, ritual sites, ancient place names, and *mātaitai* sites including the location and names of ocean currents. A feature dataset was set up in their name, and separate feature sets were created reflecting the types of data collected. The oral data was digitised into the geodatabase from which a series of draft maps were created.

The data collected also dictated the symbology used to represent types of oral information gathered. For example: *maara kai* was represented by a grass-green filled-

in polygon; an ancestor was represented by a *tiki*; a *waka* landing site symbol was a *puka*, while the travel direction of a waka was depicted using a *tauihu*; *mātaitai* or *kai moana* sites were represented by a fish symbol; *pā* sites, *wānanga* sites, *rongotaketake* sites, *kāinga* and *marae* all had distinctive symbols.

The second set of maps was designed to demonstrate the *mana moana* or knowledge and use of the resources provided by the ocean, rivers, streams and lakes within the ancestral *rohe*. This type of information included knowledge of fishing grounds, ocean currents, location of shell foods, *parengo* (seaweed), *kōura* (crayfish*)*, *tauranga waka* (canoe landing places), names given to streams, rivers and other bodies of water, islands, landmarks used for navigation and off shore ocean travel, knowledge of *kaitiaki* or guardians that protect sacred areas, reefs, rocks, undersea springs, and sources of fresh water in the ocean.

The third set of maps described the location of the major conquest battles that established the *mana* or authority of their eponymous ancestor within the region. This map represented a turning point in the history of this *iwi* and the undisputed right their ancestor established over the region.

The fourth set of maps portrayed how their eponymous ancestor set about strengthening and protecting the boundaries of their ancestral territory. It is very similar to the first set of maps depicting the *rohe whenua* in that it described the tribal boundaries and those people responsible for protecting and maintaining those boundaries.

The fifth set of maps focussed on customary use and occupation of the region; use and occupation are ancestral footprints left in the landscape. These footprints were represented by *whare, kāinga, wānanga* sites as well as *maara kai, rua kumara*, sites where resources are harvested and so on; they represented evidence of a place that was well used and well known.

The sixth set of maps were intended to gather information about distinctive landscape features such as *maunga*, *puke*, *awa*, rocks, as well as traditional place names given to the landscape by ancestors.

The final set of maps was centred on describing the distinctive nature and identity of the *iwi*. This would be achieved by looking at their *mōteatea*, the distinctive learning institutions, the *waka* traditions that carried their ancestor to these islands and their *whaihanga* traditions.

Codes

A series of codes were devised after the second map interview and refined after much thought. The coding system was adapted from Tobias (2009:224-236) and (Tobias 2009:376, 377). The simplest approach was the alphanumeric coding system consisting of a pair of letters followed by a number. The letter represented the category of cultural information; the number represented the order in which the cultural sites are mapped. For example: **PS103**, **PS** is *pā* site and **103** is the sequence. Tobias (2009:226) refers to the pair of letters as the code category and the number as the code sequence.

The coding system evolved over several iterations and was largely set up in an ad hoc fashion. In earlier versions, at the beginning of the mapping project, the code for *pā* site was **PA**; it changed in subsequent workshops and interviews to accommodate other types of cultural data. **PA** then became known as the code for *pakanga* and finally *pakanga* became **PK** whilst **PS** became the code for *pā* site. **MA** was another often used code for *maara, mātaitai* and *marae*. On one of the map biographies (see Figure 7.1) these were differentiated with a superscript number; for example **MA**[1] the code for *marae*, **MA**[2] the code for *maara* and **MA**[3] the code for *mātaitai*. These were eventually standardised as per Table 7.2 below.

The following is a sample of codes:

BIRDS	PLANT	OFTEN USED
KU – *Kereru*	**AK -** *Aka*	**AR** - *Ara/Huarahi*
PR – *Parera*	**HK** - *Harakeke*	**AW** - *Awa*
KI – Kiwi	**KK** - *Kiekie*	**CS** - *Cultural Site*
TT - Titi	**PN** - *Pingao*	**BM** - Boundary Mark
	KH - *Kumarahou*	**BS** – Burial site
		FR – *Whare*
KAIMOANA	**TREES**	**KG** - *Kainga*
KT - *Kutai*	**HE** - *Horoeka*	**LM** - Landmark
KG - *Karengo*	**TT** - *Totara*	**NH** - *Ngāhere*
PG - *Parengo*	**MT**- *Matai*	**MA -** *Mātaitai*
KN - *Kina*	**KN** - *Kanuka*	**MR** - *Maara*
PW - *Pāua*	**RM** – *Rimu*	**ME -** *Marae*
TN - *Tuna*	**KR** – *Kauri*	**MG**- *Maunga*
IN - *Inanga*	**MN** – *Manuka*	**NP** –*Navigation Point*
	PH - *Pohutukawa*	**OC** – *au – ocean current*
		PF - *Pouwhenua*
	IKA	**PK** - *Pakanga site*
	PT - *Patiki*	**PS** - *Pa site*
	WH - *Whai*	**PN** - *Place name*
	TM - *Tamure*	**RS** – Ritual site
	HP - *Hapuku*	**RT** - *Rongotaketake*
		TK - *Toka*
		UP - *Urupa*
		WN – *Wānanga site*
		TW – *Tauranga waka*

Table 7. 2: CODE system for cultural data collection

Workshop preparation

The primary purpose of the mapping workshops was to gather cultural-geographical information from selected sources and create a series of maps to support the presentation of the *mana whenua* report. It was necessary to engage with and involve the *iwi* claimants in all aspects of the research program especially the mapping workshops. Since this project was about preserving *mana whenua,* it was important that the *iwi* claimants were in control and maintained their *mana* over the entire project and process. This rendered down to consultation at all levels of the research program and mapping process. It also meant keeping all the key players informed and up to date with all aspects of the progress no matter how minute each issue seemed at the time. To get off-side with *iwi* is to lose your foothold and stake as a *rāwaho* within the inner sanctum of another *iwi*.

That said, before engaging in the workshops a number of issues needed to be addressed; first and foremost, the selection of potential mapping workshop candidates. Once the potential candidates were selected, a facilitator was selected from the *iwi* claimants. Their primary role was to arrange and coordinate each mapping workshop with each contributor or groups of contributors.

Apart from that, the relevant Topo50/NZMS 260 topographical maps both digital and hardcopy were sourced. The hardcopies were laminated in preparation for mark up and then arrangements were made with each mapping contributor to map their *whenua kōrero*.

Consent forms were required for each candidate. These were used to secure permission from each candidate to use their information for the *mana whenua* report which would eventually become a public document. Part of the consent form allowed for culturally sensitive information to be omitted in the report.

Mapping the *mana* of the *whenua*

Tikanga/methods

There is no single clear-cut method to conduct an interview with *iwi* Māori; there are as many approaches as there are people. There are however, some guiding principles that proved to be useful. It was important at the outset of the mapping workshop to articulate clearly and concisely the *kaupapa* (purpose) of the workshop and to adhere to the *kaupapa* as closely as possible*;* then to establish how each person can contribute to this purpose. Since all the contributors were *kaumatua* (elders) and *pakeke* (adults) it was important to maintain the requisite level of respect at all times. In terms of respect for the *iwi* knowledge holders, it was important to engage and connect with the contributor, and not interrupt them when they were speaking; it was equally important to listen and be guided by their approach rather than promote a research based agenda. Furthermore, ensure that enough time is set aside for each person as they will stop speaking when they are completed not when you are.

There will be an appropriate time to ask questions to clarify the information especially place names, spelling, type of place, associated activity, ancestors involved and so on. Moreover, in the workshop keep the approach simple and flexible and always be mindful that you are a *rāwaho* and you are not in charge. Finally, obtain consent to publish their information or ensure that each candidate identifies the sensitive information that cannot be published.

Guiding maxim

Although there was no single clear cut method for gathering information, there was, however, a maxim that became a guiding principle for the mapping process which was often used when work shopping with mapping informants; it also became the backbone behind driving the *mana whenua* research and mapping part of the project:

> *Na tōu rourou,*
> *Na taku rourou,*
> *Ka ora ai te iwi*

Rourou or baskets are key symbols representing knowledge; the maxim above refers to the nature of collaboration to aid in community survival. The task of collecting oral information from *iwi* members scattered across the *motu* (country) was approached with the above tenet in mind: "your basket of knowledge combined with my basket of knowledge will ensure the survival of our tribe". In this case, it would meet the requirements of the *mana whenua* report. Furthermore, with this guiding principle in mind the mapping proceeded to gather the individual baskets of knowledge together from *iwi* members spread out around the *motu*.

Collecting Cultural Information

Some very special people participated in the mapping process from around the *motu*. Each person had their own unique sense of who they were, how they were connected to their land and how important that connection to land was to them. Who they were referred to whom they traced descent from; how they were connected to the land was through those ancestors who inhabited those special places and imbued their *mauri* or

life-force into the landscape leaving a footprint for them to follow; and how important the connection to land was to them was reflected in the stories they, the *iwi* custodians, shared about the places that were mapped.

Each person had a different approach to the project and each had his or her own distinct way of beginning. Once they started the approach unfolded. For example, a *koroua* began by reciting a *tauparapara* containing what he considered the foremost landmarks of the *rohe* that defined the identity of the *iwi*. He began at a significant mountain, jumped from landmark to landmark returning to the place where he started, thus defining his *rohe* (traditional area). This is a common technique used widely by *iwi* Māori throughout the country to convey who they are and where they come from. This approach establishes their ancestral and *whenua* connections; it also establishes the boundaries of their *tūrangawaewae* as a safe place to start. This *koroua* was fluent in the speaking arts of his *iwi* and gave significant place names and the meaning of each name. He said that it was important to understand the language in order to understand the meaning behind the names left by the ancestors. This *koroua* was imbued with *mana*.

Another began by telling a story of a serious battle that swept through his part of the *rohe*, and alluded to the *pā* sites involved in the battles. The story was detailed with important ancestors, associated *pā* sites and details of the location of these *pā* sites. It was important to let him talk uninterrupted until he completed his story. Following his story, the *pā* sites were marked up on transparency. This was followed up by a *hikoi* or journey to each of these sites where we were able to experience each place and get a feel for the stories associated with each place and some cases understand the names behind each place. Although he was not conversant with *te reo* he was fluent with the *whakapapa* or connections that bind people to each other and link people to land. His was the ability to feel and sense the *wairua* or spirit and *mauri* or life force of each place which connected him to the ancestors who occupied those places. This was one of the instances of ground truthing that took place over the entire mapping process; and it was how I was able to feel the *mauri* of the sites and *wairua* of his *kōrero*.

In another workshop, one person recited the names of blocks of land in his area, the ancestors and families associated with each block of land and the stories connected to these ancestors. This workshop was different in that we were able to ask questions throughout the workshop without fear of being offensive or insensitive. He was able to show on a map places he had visited, *kaimoana* places, old trails, *marae*, *pā* sites, fishing rocks, special haircutting places and places where the *pito* of babies were kept.

Two people feeding off each other exchanged stories of their upbringing in their hometown and from this discourse were able to recall certain ancestors, their deeds and significant places. One of these two related stories associated with *maara kai* or food gardens and the places he was taken to by his elders; the other recalled the names of significant *pā* sites and the meaning associated with each name. Although the *koroua* who shared his stories of *maara kai* recalled seeing the entire region covered in *maara*, he was only comfortable with indicating the *maara kai* he actually visited personally during his lifetime.

One person merely asked what cultural information was required for the mapping. The approach with this person was totally different as he was very well informed and fluent in *te reo.* A list of the types of sites and information required for the mapping was discussed; then in the workshop each item was approached one at a time. For example: sites of ritual, *wānanga* sites, fishing sites, place names attached to the landscape, significant landmarks, *rongotaketake* or sites of peace-making, significant sites and people within selected *mōteatea* and harvesting sites. His was a four-day all-day and all-night workshop covering the location and detail of significant places, meaning of names and ancestral stories. *He mana anō tō tēnei tangata.*

One particular *kuia* was well prepared; she had a collection of maps and a vast storehouse of knowledge of her region held in her memory. She had an intimate knowledge of the land and sea, of the ancestors that had occupied that land and the stories associated with these ancestors. She was imbued with *te reo* and steeped in the *tikanga* of the region and once she began pointing out places on the topographical maps she was difficult to keep pace with. Her interview was a well-paced 8-hour workshop that detailed *pā tūwatawata* or fortresses, *tohunga* ancestors, special resource and

harvesting areas, old traveling routes, old *kāinga* or homesteads and the ancestors who lived there, significant landmarks and *pouwhenua* or boundary markers, *kai moana* areas and ancient place names. *Anō rā e kui, kei te mihi.*

One *pakeke* held a lot of oral information regarding ancient place names associated with one of the significant ancestors of the region. He would give a list, a brief description of the place and then he would point each place out on the map.

Another *pakeke* had extensive knowledge of fishing methods, fishing grounds, fishing *tikanga*, and knowledge of the behaviour of the oceans. He spoke about fishing when the tide came in and when the tide was going out; he spoke about fishing with a net and the behaviour of the waves. The stories shared by each of the mapping informants were just as valuable as the location of each site. Therein lies the essence of the land and sea, whereby the land and the sea were a reflection of the footprints of the ancestors.

All of the mapping participants stuck to the regions they were familiar with and the activities, ancestors and stories associated with those regions. This is because all of the participants were claimants, owners or shareholders in these specific regions and were well-versed in the history and lore of their regions.

With one exception, all the participants provided information about the land that they belonged to, or had *whakapapa* to. Only one person was able to provide information about events or categories of information across several land blocks within the entire region.

One *wahine* (woman) *pakeke* well-versed in the lore of her area gave a very strong *kōrero* about *pā* sites and stories that covered the landscape in her region. With some measure of pride she told the story of an imposing *pā* site on the coastline that had never been taken by invasion from an outside *iwi*. A site visit confirmed her story; the *pā* was an imposing sight. Often she would emphasize with the tone of her voice and with hand gestures the absolute importance of some sites. In this case, there was no mistaking the placement and information of such sites.

Survey plans were used by three tribal members to indicate the location of significant places. In one interview one *pakeke* produced photocopies of old survey maps, which he had taped together, laid them out on the table and proceeded to identify the places he had visited in the course of his life. The survey plans reflected the old names in the vicinity and it was a simple process to match the survey plans with the topographical maps and then add the names and places to the overlays. The other person, a *kuia*, had full-sized copies of survey plans

One *wahine* came to her workshop, took a look at the topographical maps and began talking. She spoke at length about places; special places that were emphasized by the tone of her voice and her actions. She would point out where the place was, give the name then she proceeded to tell the story about these special places in order to give the place name its due *mana*. It really is about *mana*; the *mana* of the ancestors, the *mana* they imbued into the special places they inhabited and the *mana tuku iho*, that which they passed down to their descendants. All places and names are tied to ancestors; this is where *tīpuna* lived; this is where this battle took place, where the *kai* grew, where the special resources were and so on.

One story concerned the wife of a prominent chief who was abused by a group of people who resided at an inland *pā* site. She had gone there to collect the *tipu kumara* and was rudely abused by the men of that *pā* site. She returned to her home and informed her husband of the incident. He formed a war party and laid siege to the *pā* eventually routing the inhabitants. The site of this *pā* and battle were mapped. Then she would cast her eye over the topographical map and spot areas that sparked another story, then another until she had finished. This is how this workshop proceeded without prompting.

Section 4: Geodatabase Design

The post-workshop phase was primarily concerned with processing the raw data and creating a series of maps. This involved replicating and storing the raw data, reviewing the map biographies, entering the oral data into the *iwi* database and producing draft

maps for checking purposes as per milestones four through to seven as outlined in section one.

Iwi Database

Iwi are sensitive about their oral traditions and cultural information; this is characteristic of what define them as unique *iwi* or people in Aotearoa New Zealand. To respect this notion, it was important to design a database that *iwi* could easily maintain and have a firm control over their own information. In terms of the database, this meant having full access to and control of the data which *iwi* provided for the project. With this in mind, it was important to use software that was widely available, relatively cheap, and reasonably easy to use and did not require specialist training or personnel to operate and maintain.

For this task a simple flat database using a spreadsheet was designed to store metadata derived from the oral mapping process; entitled place names information system, Table 7.3. The function of this database was to collect and store the detail or *kōrero* about each place-name marked-up on the map biographies. The information from this database can effectively be used to locate the place on a topographical map and reproduce a simplified version of the map showing the oral information. Moreover, *iwi* will retain all the database information, which can form part of a cultural information management system comprising all this cultural data enhanced with the GIS information, video and audio footage of *whenua kōrero*. Table 7.4 is the *mōteatea* information system database that was used to record information of each *mōteatea* that formed part of the mapping project.

Place names Information System

Ko Hea	Ko Hea	Ko Hea	Kukakuka	Rāwaho	Taunga Whenua
(Name)	*(Name)*	*(Name)*	*(Literal translation)*	*(English equivalent)*	*(NZMG reference)*
Pirongia	*Pirongia-te-aroaro-o-kahu?*		*The fragrant presence of Kahu*	*none*	
Taumutu				*none*	*5793000N / 1782000E NZTopo50 BE33*

Takenga	Momo whenua	Mata Whenua	Tau-whainga	Tapiri	Mahue
(What sources are used to locate this place name? e.g. Google, Topo maps, kaumatua?)	*(Feature type)*	*(Description of feature)*	*(Activity Type)*	*(Notes of explanation)*	*(Other notes)*
Google maps & topo maps	*Maunga /mountain*		*Pā sites, pā kainga*	*Puhiwahine lived at Hikurangi on the side of Pirongia*	*Name derived from ancestor Kahu, wife of Rakataura*
Ngā Mōteatea III:pp38-55	*Water feature*	*Passage way for canoes, a calm pool of water, taunga ika*	*Fishing ground & canoe landing site*		

Table 7. 3: Place names Information System

Mōteatea Information System

Mōteatea	Kaitito	Takenga	kaupapa	Rohe	Whakapapa	Tapiri
(Mōteatea Title)	*(Composer)*	*(Sources)*	*(Summary of mōteatea)*	*(Region)*	*(Tribal affiliations)*	*(Notes of explanation)*
Ka eke ki Wairaka	*Puhiwahine*	*Ngā Mōteatea I: pp198-201*	*Waiata Aroha*	*Maniapoto/Tūwharetoa*	*Maniapoto/Tūwharetoa*	*Puhiwahine involved romantically with TeToko - cousin*
Oriori for Tamaunga o te rangi	*Maperetahi*	*Ngā Mōteatea III:pp38-55*	*Instruction, guidance*	*Te Araroa, Te Ika a Māui*		*Whakapapa, landmarks*

Table 7. 4: Mōteatea Information System

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Geodatabase design and implementation

Part of the process of producing draft maps requires the design and implementation of a geodatabase in ArcGIS to manage the spatial data. This is a primary concern of any mapping project. The overall database design linked back to the initial mapping themes decided at the outset of the mapping project; these themes influenced the type of information collected in the mapping workshops. This in turn governed the layers required in ArcGIS and ultimately the initial geodatabase design.

The initial design featured seven feature datasets, one standalone annotation feature class, two standalone feature classes, and two separate raster datasets. All the feature datasets contained a number of feature sets relevant to the mapping themes, the standalone annotation feature class hosted all the ancient place names without a specific location point, the two standalone feature classes consisted of the New Zealand coastline; the other the block data of the *iwi rohe*. Both raster datasets contained the base data; one the 1:50,000 topographic data, the other covering the same area produced by Geographx.[169] The initial design is described below.

Feature Dataset	Features
Harvesting	*Maara kai, rua kumara, ngāhere, rongoa*, plant resources
Habitation	*Kāinga, marae*, *pā* site, *wānanga* sites, haircutting sites
Moana	*Taunga waka, mātaitai*, *awa* - streams and rivers, inland fishing grounds, reefs, rocks, currents, springs
Spiritual	Ritual sites, ceremonial sites – associated with *tūpāpaku* and *urupā*
Landmarks	*Pouwhenua, huarahi, ara, maunga, hiwi, paemaunga*
Place names	Ancient pre-Aotearoa names
Sacred Sites	*Waahi tapu, waahi taonga*

Table 7.5: Feature dataset design

The geodatabase did not alter significantly from the initial design although new feature datasets were added to reflect the volume of oral information collected from several key mapping informants. Feature classes were created based on the type of information contained on the map biographies. This course of action was implemented to ensure that the integrity of the raw data remained intact. Moreover, it was easier to track the data during GIS processing stage, in preparation of the maps and during the draft map checking process.

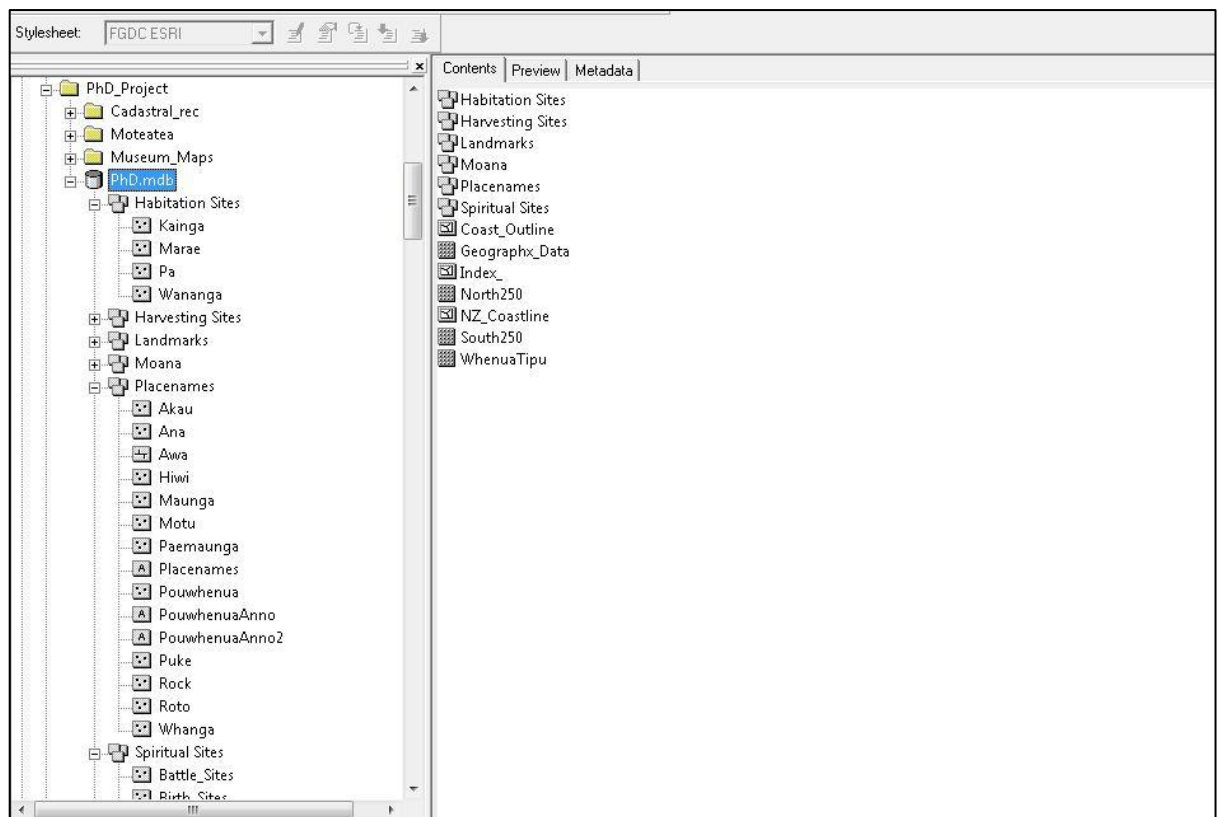[169] http://www.geographx.co.nz/ URL for Geographx

Figure7.4: Geodatabase Design for mapping project

Section 5: Analysis of Methodology

The aim of this thesis was to convert an oral tradition into a spatial tradition from a uniquely Māori perspective. Chapter Six illustrated how this was done in a controlled environment by applying modern and emerging spatial information technologies to a cultural narrative (namely *mōteatea*) to produce a series of maps depicting ancestral landscapes. A process involving several steps was devised, revisited, refined and documented in Chapter Six resulting in a methodology summarised in Figure 6.23. This methodology was then taken into the field and tested in an uncontrolled environment to see how it would stand up; this chapter records the results of that test which are summarised in Figure 75.

Comparison

Data Collection
The original method documented the cultural data from *mōteatea* directly to an A3 blank pad before committing that data to geographical space using a topographic base map in the form of a geo-tiff. The revised method, used in the *mana whenua* research

project, documented the cultural data from oral interviews and workshops directly to transparent sheets of A2 and A1 size overlaid on top of a topographic base map. The major differences was in the choice of medium to record the cultural data, the size of the sheets used and the production of separate transparent documents depicting cultural data set in geographical space in the revised method.

The use of an A3 blank sheet of paper in the original method was a purely intuitive decision initially. Only after documenting the cultural data from the first and second *mōteatea* did the actual methodology for recording the data in a logical manner unfold into a series of steps. This process was revised and refined several times resulting in a biographical sketch of the cultural data. Hindsight reveals that the next step should have been to commit the contents of the biographical sketch to a transparent overlay taped to a topographic base map thus documenting cultural data into geographical space before committing the data to GIS for the creation of maps. This was not realised until the end of the testing phase described in this chapter.

The use of A2 and A1 transparent sheets overlaid over topographic base maps was a deliberate decision in terms of the sheer volume and type of data collected in the *mana whenua* research project and the need for efficiency and speed due to tight time frames. This decision effectively skipped the initial collection to blank sheets of paper step and moved straight to committing the cultural data to geographical space using a transparent medium.

The data collection phase in both methods was the most important part of the process because it involved sifting through culturally significant data, interrogating the data to derive meaning and sense and organising that data, in terms of the original method, into a meaningful biographical sketch. In the revised method, it also involved collecting data relative to place and location from diverse and divers sources and committing that raw data directly to transparent overlays. The major difference in these two methods is the purpose; and it is the purpose that determined to a large degree the data collection method.

Since this thesis set out to devise a method to convert an oral tradition, in the form of oral narratives, into a spatial tradition using spatial information technologies, the A3 sheets were the perfect medium for the initial documentation process. It was quickly realised that the *mōteatea* contained cultural references that did not have any shape; furthermore, that data would need to be interrogated to give it shape before committing it to geographical space. The purpose of this thesis was to devise a method for merging geographical space with cultural space; to create a set of unique maps portraying this new space from a Māori perspective. Thus the A3 blank sheet was perfect for this purpose.

The application of the data collection method towards creating maps for the *mana whenua* research project required a re-think and a revision of the original method to ensure that it was adequate for the requirements of the project. The purpose of the *mana whenua* research project was the creation of maps portraying *mana whenua*. Thus the data collected would be location or place-based albeit collected from oral sources. Since the cultural data was already fixed in geographical space it merely required the appropriate medium to capture the data directly into geographical space; hence the use of the transparent overlays.

Therefore, the use of the A3 blank sheet of paper to collect and organise cultural data into a biographical sketch was a viable method that should form part of any strategy for collecting traditional oral information. Clearly, it has been demonstrated that this data collection method can be adapted into an uncontrolled environment to meet the objectives of a *mana whenua* research project provided there are adequate timeframes.

Biographical Sketch versus the Map Biography

The second part of the process involved the creation of a biographical sketch, as per the original method, and the creation of map biographies as per the revised and tested method. It has been demonstrated that the biographical sketch was appropriate to the purpose for which it was used; likewise the underlying principle of the map biography was used for the *mana whenua* research because it represented the collection of cultural data from living repositories and mirrored the function described by Tobias (2000 & 2009) in his two volumes. Each transparent sheet represented a biographical sketch of each living repository's intimate knowledge of their ancestral landscape; hence the

adoption of the term and adaption of the method prescribed by Tobias (2000 & 2009) into what has been used in this chapter. Thus, the term biographical sketch is an appropriate label for the method used to collect the cultural data for the *mana whenua* research project.
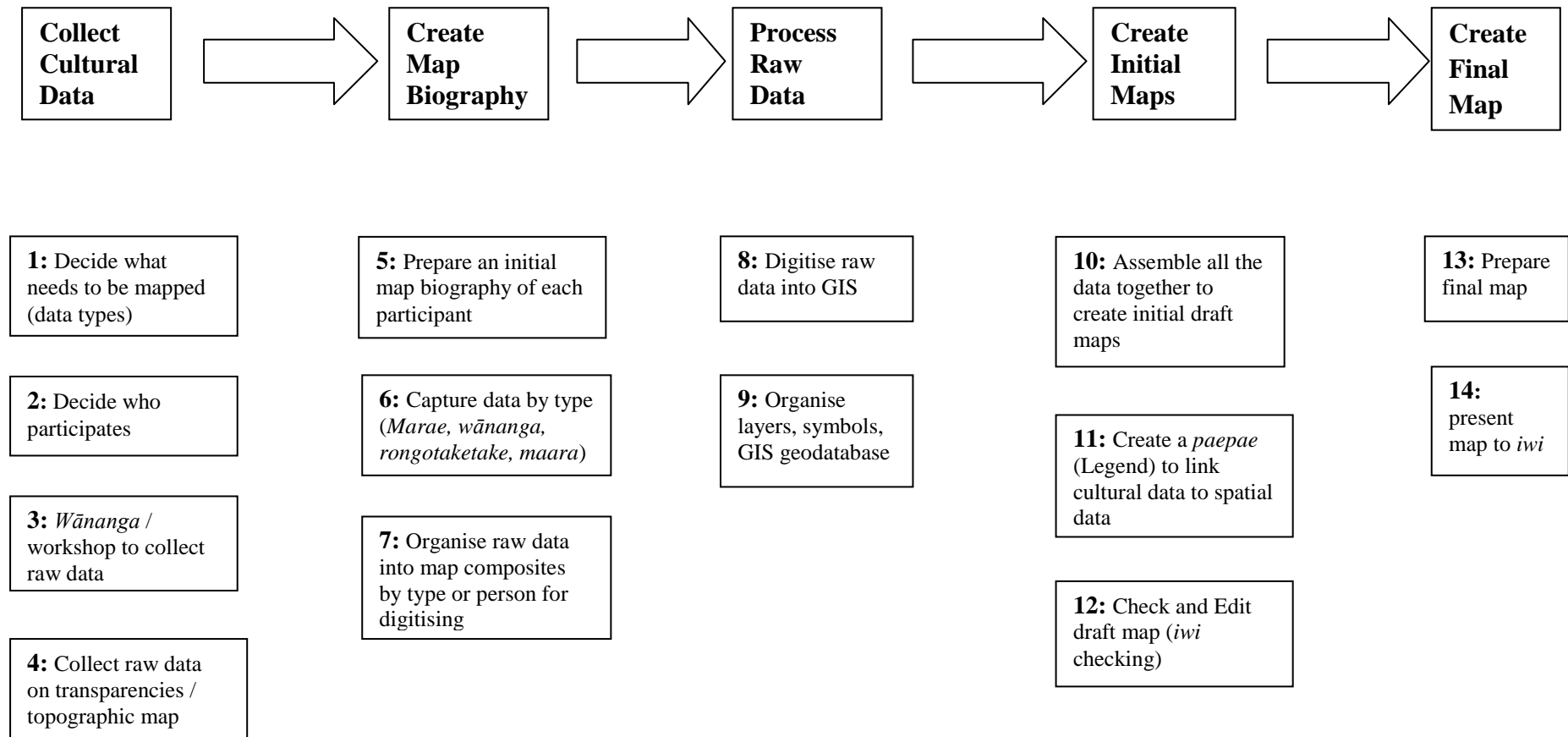
Merging Cultural Space with Geographical Space

The third step in the process was merging cultural space with geographical space. This was easily achieved with the *mana whenua* research project using the map biography / biographical sketch method. Since the cultural data was documented directly to transparent overlays on top of topographic base maps it only required digitising into a prepared geodatabase organised into logical layers in GIS to prepare the maps. Moreover, the process of merging the biographical sketch with geographical space, as per the original method, required an extra step. All the supporting elements including *whakapapa* and base map data in the form of geo-tiffs and aerial images were collated and organised; the biographical sketch data was digitised directly into GIS. Finally, all the elements were assembled and manipulated to create a series of maps depicting the cultural references of each *mōteatea*.

Final Stages

The final stages in both the original and revised methods were the creation of draft and final maps. Both sets of maps illustrated traditional oral information; one procured from a set of oral narratives, the other extracted from living repositories and holders of traditional oral histories. Both sets of maps are a reflection of the ancestral *mana* embedded in the *whenua;* they are a reflection of ancestral landscapes as expressed by traditional oral histories converted into a spatial tradition and have thus become visible to the outside world. Therefore the original method devised for this thesis was tested in an uncontrolled environment and produced the predicted outcome.

This demonstrates clearly a unique and new contribution to academic knowledge using spatial information technologies to blend cultural knowledge with geographical space to produce a series of maps based on a Māori perspective without changing either, thus preserving the *mana* of both the spatial system the cultural system.

Figure 7.5: Tasks involved in the preparation of maps for mana whenua project

Collect Cultural Data	→	Create Map Biography	→	Process Raw Data	→	Create Initial Maps	→	Create Final Map

1: Decide what needs to be mapped (data types)

5: Prepare an initial map biography of each participant

8: Digitise raw data into GIS

10: Assemble all the data together to create initial draft maps

13: Prepare final map

2: Decide who participates

6: Capture data by type (*Marae, wānanga, rongotaketake, maara*)

9: Organise layers, symbols, GIS geodatabase

11: Create a *paepae* (Legend) to link cultural data to spatial data

14: present map to *iwi*

3: *Wānanga* / workshop to collect raw data

7: Organise raw data into map composites by type or person for digitising

12: Check and Edit draft map (*iwi* checking)

4: Collect raw data on transparencies / topographic map

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Section 6: Final Comments

One final comment regarding *mana whenua* mapping projects is related to the *mana* of the *iwi* claimants. In order for *iwi* to benefit fully from a data collection mapping project of this nature is for them to have full access and control over the raw and processed data. This requires specific skills and training in at least two areas: one, data collection methods and two, GIS training and the creation of maps. The data collection method used in Chapter Six, and summarised in Figure 6.23, was an intuitive process that evolved out of years of training in surveying, GIS and Māori thinking. The data collection method used for the *mana whenua* research project in this chapter was a combination of the map biography method and the biographical sketch method. It is possible for *iwi* to be trained in both data collection methods. This would ensure full access to and control over the raw data process for *iwi*. However, processing the raw data using modern technology such as GIS for the express purpose of managing large datasets, for conducting spatial analysis and for the production of purpose-built maps is not an intuitive process and would require specialised training. This is not beyond the ability of *iwi*, but would take an ongoing investment of time and capital.

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The following is a discussion on the use of GIS to process cultural data. No effort is made to discuss the other concerns associated with the set up of GIS such as software packages, hardware set up, or base data collection and so on. This section is about enabling Māori to control and own their cultural data.

The three most popular GIS software packages are relatively expensive, require technical training and on-going technical support for new users, and are not intuitive until you have been using it for awhile. Pacey (2005) sounds this warning:

> This tool [GIS] is reliant on expensive technology and involves a process that can consume vast amounts of time and energy. It uses a paper visual stimuli to communicate its information and it is limited in its cartographic re-presentation of our [Māori] epistemology. It may be recreated within a sterile environmental vacuum. We [Māori] need to consider the impact this tool can have on our traditional methods of transmitting and retaining indigenous knowledge. (Pacey 2005:31)

Despite this, GIS can be useful for Māori if they are in control of the tools; to implement this requires highly technical and specialised training.

Data Processing and GIS training

Consideration must be given to how raw data is processed. GIS offers a suite of tools that can manage large groups of disparate datasets, integrate and organise that data into meaningful discrete layers, host all the metadata into a purpose-built geodatabase, handle all the images including aerial photography, satellite imagery, digital topographical maps, and simple sketches; and, GIS can create maps from the data.

ArcGIS training, for example, is a complex and involved topic that could consume a great deal of time and energy. In order to create maps of cultural data, at the introductory level for ArcView the following is necessary. First, an overview of basic GIS concepts and standard ArcGIS functions and tools including Arc map, Arc Catalog, and Arc Toolbox. Second, working with and understanding how symbols and labels work. Third, learn how coordinate systems and map projections work in integrating data. Fourth, learn how to design, build and get data into a geodatabase. This requires a working knowledge of geographic models, coverages, shapefiles, raster and vector data formats. Fifth, learn how to edit data including features, attributes, labels and annotation. Sixth, learn how to produce maps.

If the goals are to collect, store, organise and manage cultural data with the expectation of creating maps, then data collection methods and GIS training is worth considering for *iwi* who wish to maintain the *mana* and *tapu* of their cultural information.

Cultural Information System

The nature of cultural information

The one-on-one interviews, conducted in the *mana whenua* project, with well-informed key individuals demonstrated a depth of *mana*, a firm grasp of the language, not just the Māori language but the nuances of their own dialect which sets them apart as a unique *iwi* within Aotearoa. It was in the language that a deep and abiding understanding of the

makeup of ancestral notions of land rests. More than once, in a one-on-one mapping interview, a person would give their *whenua kōrero* in this manner: *"this place here* (point to a map) *is called . . ."* (they would give the name). The next question would be, *"Why was it called that?"* to which they gave a reply, *"well, it was named after this event*", (an explanation would be given). Or another, *"You see this place here?"* (pointing to a site on the topographical map) *It used to be a pā site* (name of *pā* site given) *of this iwi* (*iwi* name given as well as some history about how they came to be there) *until our ancestors wiped them out. One day one of our prominent chiefs* (name is given) *of this coastal pā kāinga* (pointing to the area and giving the name) *sent his wife* (name and some genealogy given) *inland to this pā site to get the tipu for the kumara. When she got to the pā site, she told them what she wanted, to which the men of the pā replied, 'you can have this kumara!'*(Lifting up their *maro* and showing her their genitals in a rude and suggestive manner). *She went back to her husband and told him what they had said and did. He gathered a war party, went inland and wiped them out!"* The location of the coastal and inland *pā* sites were mapped; two dots on the map with their names to represent part of the history and connection of this people to the land.

Clearly, maps or GIS technologies by themselves cannot represent fully the *mana* of the cultural information. This is not a question this thesis can answer fully; however, part of the solution is found in the *Lienzo* project of Guatemala.

Part of the solution
The *Lienzo* discussed in Chapter Four provided part of the solution for merging cultural information with geographical information in a way that would not detract from the *mana* and *tapu* of the cultural information. The idea of the *Lienzo* as a web-based GIS application is an innovative way of looking at how the *mana* and *tapu* of cultural information can be displayed. Given that a significant body of information is collected in the process of proving *mana whenua*, and given that that cultural data is converted into spatial data using GIS, it behoves *iwi* to look at alternative ways of managing that data. Perhaps a convergence of GIS mapping technologies and other technologies that permits audio and video footage as part of the collection of geographic and cultural media to create a unique Cultural Information System may be the answer.

Methodologies: an Indigenous Perspective

Indigenous perspectives of a western paradigm

In her seminal book, *Decolonizing Methodologies*, Linda Smith introduces her work by stating that "the term 'research' is inextricably linked to European imperialism and colonialism" referring to the word research as "one of the dirtiest words in the indigenous world's vocabulary" implicating the notion of scientific research "in the worst excesses of colonialism" building up a "collective memory of imperialism" in the histories of "many of the world's colonized peoples" wherein "knowledge about indigenous peoples was collected, classified and then represented in various ways back to the West, and then, through the eyes of the West, back to those who have been colonized" (Smith 1999:1,2). Denzin and Lincoln add to this argument that "qualitative research . . . serves as a metaphor for colonial knowledge, for power and for truth" with the way in which research provides an avenue for reporting on or about and representing the "Other", referring to Indigenous peoples, wherein "research becomes an objective way of representing the dark - skinned other to the white world" (Denzin & Lincoln 2000:1). Yet Martin and Mirraboopa do not resist or oppose "western research frameworks and ideologies" but deliberately conduct their "research from the strength and position of being Aboriginal and [view] anything western as 'other', alongside and among western worldviews and realities" (Martin & Mirraboopa 2009:205). However, academic knowledge is seen by many as grounded in "western ways of knowing", and "organized according to disciplines and fields of knowledge" that adhere to "western ways of knowing" therefore they are seen as "inherently culturally insensitive" wherein "Western research simply interprets indigenous knowledge from a Western framework, effectively distorting reality" (Cochran, Marshall, Garcia-Downing, Kendall, Cook, McCubbin, & Gover 2008: 23). While this thesis acknowledges that worldviews and perceptions of reality are not homogenous but differ from one culture to another, Roxanne Struthers contends that what is "naturally known or constitutes proof in one culture may not be understood or considered relevant in another culture" (Struthers 2001:125). Furthermore, she draws the conclusion that "there are different ways of gathering, understanding, and/or applying information" which can invariably "influence researchers of diverse cultures to conduct and guide the research process in a fashion atypical to the linear, quantitative research" methodology (Struthers 2001:125).

An essential part of the methodology for this dissertation particularly in the data collection phase was largely intuitive; referred to as testing the theory in an uncontrolled environment. Royal (2002), Louis (2007), Tobias (2000 & 2009), Smith (1999), Bishop (1996), Oliveira (2006), Pihama (2002), Basso (1996), Cram (2001), Ka'ai (1995 & 2005), Bender (1999), Salmond (1985), Smith (2003), Kawagley (1995), Telfer and Garde (2006), Struthers (2001), Becvar and Srinivasan (2009) and Martin and Mirraboopa (2009) all describe similar encounters which, upon reflection in terms of this thesis, is in fact intuitive to being Māori or Indigenous. At a more personal level, I intuitively knew how to act, how to engage and how to insert myself into what Royal (2002) refers to as the conversation because of the way I was raised and the environment I was raised in. I absorbed key values and principles that influenced my behaviour and strengthened by belief systems; all this, guided my doctoral journey. Yet research in the western academy is not intuitive or circular, nor is it uncontrolled or metaphysical; it is largely a linear process.

Roxanne Struthers made a similar observation, that most Indigenous researchers confront in the western academy, while negotiating her doctoral dissertation that "the research process is customarily designed to occur in a linear fashion" which includes "selecting a research topic, reviewing literature related to the subject, formulating a research question, choosing a research design, conducting the research, analyzing data, forming a conclusion and implications, plus potentially publishing the research results" (Struthers 2001:125); steps taken by researchers in the academy, whether they are Indigenous or non-indigenous, in a linear fashion. Furthermore, the structure of the actual report follows a similar linear pattern with "an introduction, a literature review, a section on methodology, research findings, and conclusions, discussions, and implications" (Struthers 2001:125). Indigenous perspectives are very different from the linear approach fostered by the Western academy.

Indigenous perspectives of research

What are Indigenous notions of research? Louis describes Indigenous methodologies as "alternative ways of thinking about [the] research process" (Louis 2007:133) reflecting the cultural worldviews of the participants and researchers (Struthers 2001). Cochran,

and her colleagues, add that since knowledge "reflects the values and interests of those who generate it, and it is these values that then determine the methods that are used and the conclusions that are drawn" thus Indigenous knowledge is gained by adhering to Indigenous sets of "values and worldviews" (Cochran, Marshall, Garcia-Downing, Kendall, Cook, McCubbin, & Gover 2008: 24). Struthers adds that she, along with many other Indigenous scholars and researchers, discovered that "conducting research on or about Native peoples in a culturally sensitive manner can be extremely rewarding to the researcher and the participants, especially if done by another Native" (Struthers 2001:125,126). Smith emphasizes that research requires a special set of skills "related to being culturally sensitive" that permit entry into the "community being studied" and secures the "confidence of the informants"; she also endorses the concepts of trust, obligation and respect for the information shared during the research process (Smith 1999:197). Paul Reynolds (2004) and Charlotte Loppie (2007) simply positioned themselves within an Indigenous epistemology grounding themselves in who they were and how they view the world thus influencing their approach to research. Louis calls it a spiritual journey, noting that there is no "singular answer to this question", but there are "fluid and dynamic approaches that emphasise circular and cyclical perspectives" whose "main aim is to ensure that research on Indigenous issues is accomplished in a more sympathetic, respectful, and ethically correct fashion from an Indigenous perspective" (Louis 2007:132,133). Furthermore, if research is conducted from an Indigenous perspective reflecting Indigenous worldviews then research can be thought of as "instinctively natural, fluid, sacred, holistic, circular, [which unfolds] in an intuitive manner" (Struthers 2001:132). Thus, there are as many perspectives about Indigenous research as there are worldviews and cultures; but there are similar principles that Indigenous scholars refer to that are common among Indigenous communities worldwide; these form the basis for a culturally safe and rich environment to study Indigenous knowledge and ways of knowing that would benefit both Indigenous and non-Indigenous researchers.

Reframing Indigenous methodologies

The (re)framing of Indigenous methodologies for research in the cultural space created by this dissertation is an important consideration for both Indigenous and non-Indigenous researchers alike. Collecting traditional oral histories, described in this

thesis as conducted in an uncontrolled environment, is an important feature of the methodology that is experienced in various forms by other Indigenous scholars. Struthers, for example, described her data collection as "multiple, separate, uncontrolled, informal, free-flowing, uninterrupted, open-ended participant interviews, lasting from one to three hours, to allow every opportunity for each participant to tell her story" (Struthers 2001:131). Tobias refers to collecting traditional land use and occupancy information as taking on a "life of their own, going off in this direction today, then pulling you off in a different one tomorrow" (Tobias 2000:38). Telfer and Garde describe their approach in a similar manner conducting "unstructured interviews . . . in an open discussion format" where "questions are presented in the context of discussion rather than a formal question and answer session" allowing for a "more 'natural' conversation to occur and unanticipated insights to emerge" (Telfer & Garde 2006:384). While Kahakalau uses "Hawaiian ways of communication and data collection, such as observation and talk story" (Kahakalau 2004:19), Royal (2002:10) merely conducted a series of conversations, while Loppie used "storytelling as a vehicle of teaching, learning, and sharing" to glean knowledge from the "elder women" (Loppie 2007:277). Clearly, an unstructured, uncontrolled, open-ended, natural conversation, storytelling, learning and sharing environment that permits participants to continue until they "had nothing left to say or describe" is an effective and respectful approach with Indigenous communities (Struthers 2001:131). This describes in a circular, fluid and dynamic fashion an Indigenous approach that when linked to a set of principles underpin an intuitively Indigenous research methodology that will keep you grounded and ensure "you [stay] on track and guarantee that your [research] stays manageable" (Tobias 2000:38).

A broad look at Principles and guidelines

Some of the interviews conducted for the *mana whenua* mapping project at times took on a life of its own with informants telling their own stories in a circular, fluid and dynamic fashion; Tobias describes similar encounters yet refers to a set of guidelines in the form of principles to keep the research grounded and on track. In his first volume of land use and occupancy mapping he describes twelve principles that proved to be effective on numerous occasions and formed "the basis for good social science" (Tobias 2000:48). They are: be respectful at all times for those sharing their intimate

and sacred knowledge; honour confidentiality agreements pertaining to the knowledge shared; obtaining informed consent; a realistic and workable focus; flexibility to achieve the primary aim; consistency in the methodology; good organization; caution with respect to recording of data; a preference for self reporting as opposed to information being reported second-hand; integrity of data collection and record keeping; concentrating land use and occupancy data collection on who, what, where and when; and finally celebration and fun (Tobias 2000:38-48).

Renée Louis, who describes herself as a "Hawaiian woman by birth, a cartographer by training, and an academic by choice", writes specifically about the application of Indigenous methodologies in geographic research (Louis 2001:130). She noted that "research in Indigenous communities [needs to] be conducted *respectfully*, from an *Indigenous point of view* and that the research has *meaning* that *contributes to the community*" (Louis 2007: 131, emphasis added). She adds that "if research does not benefit the community by extending the quality of life for those in the community, it should not be done" (Louis 2007:131). She also adds that "geographers need to start building *ethical research relationships* with Indigenous communities" which will "contribute to the body of knowledge about Indigenous peoples and their relationship to the places where they live, those cultural landscapes infused with meaning" (Louis 2007:131, emphasis added). Furthermore, she concurs with the notion of "commonalities in the literature on Indigenous methodologies and Indigenous research agendas" and adds what she refers to as "four unwavering principles": "relational accountability [which] describes the concept that Indigenous peoples share about their dependence on everything"; "respectful (re)presentation [which] requires the researcher to consider how you represent yourself, your research and the people, events, phenomena you are researching"; "reciprocal appropriation [which is used as a] metaphor . . . that describes the attitudes of Native Americans to the environment"; "and rights and regulation [which] refers to research that is driven by Indigenous protocols, contains explicitly outlined goals, and considers the impacts of the proposed research" (Louis 2007:133).

Katherine Becvar and Ramesh Srinivasan emphasize "cultural sensitivity" with "active participation in decision making . . . in every phase of [the] research (Becvar and Srinivasan 2009:432). They advocate research that is "done with people, rather than on or about them" and developed their own set of principles that reflected their notion of collaborative methodology that emphasized "direct Indigenous involvement" at "all levels and phases of the research" and data collection methods that were appropriate for handling "sensitive information gathered" during the research (Becvar and Srinivasan 2009:432,433). Furthermore, the "issue of ownership of the research products" including any field-notes, published works and online access systems were clarified and finally, they emphasize the need for the right kind of research partnership that works well with all partners (Becvar and Srinivasan 2009:432).

Karen Martin and Booran Mirraboopa are more specific in their theoretical framework for Indigenous research choosing to position themselves in a "proactive, progressive and visionary" manner that "both [structured] and [guided their] research (Martin and Mirraboopa 2009:205). They outline a set of four principles: first, "recognition of [their] worldviews, [their] knowledges and [their] realities as distinctive and vital to [their] existence and survival"; second, "honouring [their] social mores [through which they] situate [themselves] as Aboriginal people in [their] own lands"; third, "emphasis of social, historical and political contexts which shape our experiences, lives, positions and futures"; and fourth, "privileging the voices, experiences and lives of Aboriginal people and Aboriginal lands" (Martin and Mirraboopa 2009:205).

Charlotte Loppie advocates a participatory research approach which she describes as "intimately linked to many Indigenous philosophies" that emphasize "the value of local participation, learning through action, collective decision making, and empowerment through group activity" (Loppie 2007:278). The philosophy underpinning a participatory approach "also embraces the participation of diverse senses and capacities, including the physical, emotional, psychological, spiritual, and social" (Loppie 2007:278). This approach promotes "self determination of Aboriginal peoples", a notion regarded widely around the world by most if not all Indigenous

peoples and reflected a "deep respect for the intellectual and intuitive capacities of Aboriginal women" (Loppie 2007:278).

The five examples explored above reveal how Indigenous principles can be inserted into the research framework to guide the research in a more respectful manner that reflects an Indigenous notion of worldview. Furthermore, the examples offer an alternative way of thinking about research and how appropriate methodologies can be constructed that will benefit Indigenous communities, create appropriate working relationships with all parties, set up guidelines for conducting collaborative research with external organisations and bodies in keeping with Indigenous values while engendering trust, confidentiality and cultural sensitivity.

Kaupapa Māori comparison

Māori scholars and researchers, and indeed communities, align themselves along similar lines with their Indigenous colleagues in terms of their cultural perspectives and views of research methodology. As Smith articulates, Māori "have a different epistemological tradition which frames the way [Māori] see the world, the way [Māori] organise [themselves] in it, the questions [they] ask and the solutions which [they] seek" (Smith 1999:187,188). Thus Māori often refer to methodology as "*kaupapa Māori* research" shifting from the paradigm of collaborative research to "Māori-centred research" where the focus is grounded on "indigenous values, attitudes and practices" (Smith 1999:125). The *Kaupapa Māori* framework for research has been described as grounded in worldview (Smith 1999:184, 187), framed within the Treaty of Waitangi, located within the wider struggle for self-determination (Smith 1999:185), connected to Māori philosophies and principles, rooted in identity (Smith 1999:186), involves the mentorship of elders, is culturally safe and organised around the concept of *whānau*.

Smith argues that the *whānau* plays a vital role in underpinning the methodology of research as it is a natural social grouping around which the research group can be organised. This has a practical role wherein *whānau* incorporate their own form of "ethical procedures" reporting back to the community and giving a voice to the

different sections of the community. In addition, the *whānau* provides a direct avenue for debating the "ideas and issues" relevant to the research (Smith 1999:187). This was clearly evident in the mapping project presented in this thesis, as the *whānau* opened up doors to people with specialised knowledge and expertise.

Principles also play a large role in *kaupapa Māori* research. Smith argues that cultural ground rules for any research approach must be set in place and should include respect, how to work with communities, the process of sharing and knowledge; (Smith 1999:191) familiar concepts with Indigenous peoples. Furthermore, she asserts that many "communities have a strong sense of what counts as ethical research" which includes "research involving the environment, archival research and any research which examines ancestors, either as physical remains, or using their photographs, diaries or archival records" (Smith 1999:191). Hence the concept of respecting the *mana* and *tapu* of both the informants and information described in this thesis.

In his comparative study of Indigenous worldviews in face to face interviews with Indigenous scholars, Charles Te Ahukaramu Royal (2002:10, 11) briefly describes how he inserts himself into the conversation. His intention at the outset was to gain some insight of Indigenous methodologies with a view to contrasting and comparing them with the *kaupapa Māori* research methodology. He describes his initial approach to this task in simple terms such as visiting their traditional homelands and significant sites, swimming in their waters, breathing in their air, and conducting "conversations rather than interviews to foster exchange"; essentially orienting himself into their traditional landscapes and within their view of the world. The idea of engaging in conversations as opposed to a series of interview questions is an important consideration with Indigenous peoples especially Māori.

Kaupapa Māori and Indigenous methodologies
Royal noted that a "key aspiration of all indigenous peoples is cultural survival [which requires] the perpetuation of [Indigenous] knowledge, [Indigenous] traditions, [Indigenous] worldviews, [and Indigenous] philosophies" if it is to continue (Royal

2002:12). Furthermore, he advocates research into the principles of traditional knowledge and "its fundamental views on reality and the creative application of those principles and views in the contemporary context" as opposed to simply using the traditional knowledge, to avoid that body of knowledge being confined to being viewed merely as "historical phenomena" with "little relevance to the contemporary experience of indigenous peoples" (Royal 2002:12, 13).

Initiating conversations

At a personal level, my experience with a *mana whenua* research project has, in some small way, offered a number of insights into appropriate research methodologies and being a researcher than any course, lecture(er) or book could have provided. Yet while I grew up with Māori parents and grandparents, within a small community of largely Māori families, and instilled with values native to a Māori community, in terms of research and being a researcher, I was still viewed as *rāwaho* or outsider. Perhaps this was largely because of my specific role and position as a researcher with expert status as a GIS consultant attached to an outside organisation. However, as a member of a Māori community (tribe) I can position myself easily in terms of my mountain, body of water, tribal ancestor and tribe. These cultural symbols instantly ground me geographically, politically, historically, culturally and genealogically relative to every other Māori community around Aotearoa. Furthermore, it (re)establishes connections with other Māori communities along similar genealogical lines, familiar stories, shared histories or related struggles which allow me to initiate and insert myself into the conversation in a uniquely Indigenous fashion. While I can locate myself within a Māori community, as *rāwaho* engaging in research with another Māori community to which I have no *whakapapa* links, the critical issues that underpin research is that it needs to be ethical, respectful, reflexive, critical and approached with a degree of humility at all times (Smith 1999).

Smith discusses in detail some of the issues confronting Indigenous researchers based in the academy working with Indigenous communities. She refers to gaining "access to knowledge when working with elders", employing "protocols of respect and practices of reciprocity", the process of "gaining informed consent", where consent is often

granted for the person and their credibility as opposed to consent for a research project, negotiating the grounds for reciprocation and developing the right amount of trust, developing the "quality of the interaction" with the community, "building and having relationships with elders", and accepting "extended conversations" as they "tell stories, tease, question, think, observe, tell riddles, test and give trick answers" (Smith 1999:136). Sometimes you may feel that you are on an elliptical treadmill, yet this is part of the process of developing respect and humility and could be the test of your credibility; it could lead to you being welcomed into the inner sanctum of an *iwi*. This is all part of the methodology and approach I experienced in my research; it should also form part of any set of guidelines for engaging in collaborative research with *iwi* around Aotearoa for Māori and non-Māori researchers.

Research in the academy undertaken by Indigenous or non-Indigenous researchers into the Māori world with deference to the principles and issues outlined above will encounter a rich cultural experience if they first position themselves in their worldview and their system of values. Thus grounded, be prepared for a circular, fluid, dynamic, uncontrolled, unstructured, instinctively natural, sacred, holistic and spiritual journey; it will be extremely rewarding.

Conclusion

Māori mapping projects are a social organisational event that just happens to contain a technical component. The mapping workshops demonstrated that Māori are still comfortable engaging in small clusters of people, reminiscing and sharing stories about their homelands in their youth, arguing about which ancestor lived where and what they did, and connecting with the events, histories, place names and ancestors that link them to their *tūrangawaewae,* the Māori concept of 'place to stand'. To define the contents of that 'place to stand' is crucial to preserving the *mana* and identity of that *iwi*. Thus, when they said, "this place was a *maara* that belonged to this ancestor" and "this is where our ancestors fought their battles with" and "we were told to catch fish on this side of the river near this rock" and "these places were the best for *kūtai*, *pāua* and *kina; karengo* is all down this part of the coast line" and "this ridge here, this is where

this ancestor had his main *pā* site". All this *whenua kōrero* or land information was accompanied by a story; there was always a story.

One person shared this story: "You see this ridge here? (pointing to a topographical map of the area) *"All along here were a series of pā sites"* (drawing a pencil along the ridgeline) *"you see how they (pā sites) all run in a line in a southerly direction down the coast?"* (this is where I nod in understanding) *"There was a path that connected all these pā sites together"* (sweeping movement with the hand over the area) *"so, when they were attacked from the north, they could fight a running retreat from this pā site back along the ridge to this, then this pā site. But this pā site here* (said with heavy emphasis and gesticulation) *is where this ancestor lived; it was a very important place!"* This is when I would acknowledge the emphasis, pause to let the moment sink in, and then draw the *whenua kōrero* up on the transparency.

Māori still map their land in a similar manner as those early ancestors such as *Reko*, *Huruhuru*, *Tuki* and *Te Heuheu*.[170] This is how they relate to their lands. This is how they contribute to a Māori mapping project; by telling their stories. This is the makeup of their *tūrangawaewae*, their *mana whenua, mana moana* and *mana tangata*. How do we portray these instances of *mana*? Clearly, maps are an incomplete method.

Imagine a system that could represent the stories behind each spatial component; a system that could expand each dot, line, polygon and image and give the full meaning, associated history and origin of each place name. The challenge is to find a way to portray the *mana*; the *mana* contained in the *kōrero*, the *whenua kōrero*, and the stories as fully as possible. In this manner the *mana* and *tapu* is maintained.

The methodology used in the *mana whenua* mapping project to engage Māori in mapping their ancestral lands was simple in concept; yet it was complex in actual practice. Short-comings were recognised in the initial proposal to allow for video and audio recording of the mapping workshops. However, contractual arrangements with the funding agency did not acknowledge the need to record either by video or audio any

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[170] See Chapter 5 for a discussion on early Māori maps

of the mapping workshops at any stage; thus the proposal was amended to reflect that. Hindsight meetings with the funding agency revealed that these workshops should have been recorded for more than just the maps.

A certain amount of vision and understanding is required in undertaking a project such as this. Given the nature of a mapping project, as a social organisational event, a crucial component of any mapping proposal is to capture all the stories that reflect the sentiment, the connection and the *mana* of the *whenua kōrero* given by those who participate and share their knowledge.

The milestones of this project reflected the initial approach and thrust of the mapping project at the beginning; ostensibly to capture geographic locations of significant sites along with their place names for the purpose of creating a series of maps that reflected how *iwi* used and occupied the land. Yet on the ground when working with the people in a workshop or one-on-one interview, a measure of flexibility and fluidity was required to change and adapt to what was appropriate and important at a specific instance in time to meet the objectives.

The lessons learned from engaging in a mapping programme that articulated the *mana whenua, mana moana* and *mana tangata* are invaluable in terms of understanding the sense and depth of connection Māori still have with their ancestral places. It was equally invaluable in learning how to work with people on the ground engaging with the living repositories, drawing out the information in a meaningful way, whilst thinking about how to engage the technical aspects of the actual mapping itself. It is useful or rather mandatory to have a good grasp of *te reo Māori* and of the *tikanga* associated with being Māori. If the mapping coordinator does not have the language, it becomes a technical process; and mapping instances of *mana* is not a technical process, it is a *tikanga* process. To observe this process of *tikanga* is to be proficient in the Māori world and the spatial information technology world.

Indigenous peoples, including Māori, around the world face unique challenges pertaining to their ancestral territories in planning for and protecting their notions about those ancestral territories. For Māori, issues related to *mana whenua*, the protection and

maintenance of cultural assets, their language, their histories and their stories will benefit from the creation of maps that reflect their notions of *mana*. Conceding this, mapping technologies such as GIS offers a unique suite of tools that will go a long way in moving toward this objective. The key to getting it right is to ensure the *mana* and *tapu* of all the *whenua kōrero* remains intact during any part of the process; this requires an understanding of cultural conventions.

This chapter reflects the application of the theoretical process, developed in Chapter Six in a controlled environment, to an uncontrolled environment in the form of a *mana whenua* mapping project for an *iwi* or tribe in Aotearoa New Zealand over a period of six months. The objective of the theoretical process was to devise a way to convert an oral tradition using *mōteatea*, into spatial tradition using spatial information technologies, from a Māori perspective. This chapter is a record of that testing phase. The biographical sketch was adapted with the map biography method to meet the needs and requirements of the *mana whenua* research project and was found adequate to the task. The findings of this chapter indicate that it is possible to merge cultural space with geographical space without changing the state or *mana* of either space. What occurs is the development of a new space predicated on the protocols of both the cultural and geographical space where both retain their innate *mana* and where both are connected using the concept of the *paepae*. This chapter clearly demonstrates a contribution to new academic knowledge.

Nāku noa ēnei kupu i tāngia pepa nei. Ko tāku e mihi atu ki a rātou mā, kei tua o te ārai, ki tērā whare o Tāwhirirangi, i te pūmotomoto o Tikitiki-o-rangi – e okioki ai! E aku nui, aku rahi!

Anō rā tāku e mihi ake ki a koutou; koutou i para te huarahi teitei, uaua rānei, māku e whai ake nei i ō waewae tapu, i ngā maramara i waiho ake rā! Māku e mau tonu atu i te aka matua i te wā e kimi rapa haere i te wānanga! Nō reira e hika mā, tēnā nō koutou.

Tēnei hoki tāku e tuku mihi atu ki a koutou i kōrerohia ō kōrero, i huatia mai ō hua, i patua nei rā te taringa o te hianga nei kia pupuketia te māhara! ki a koutou ngā wānanga - tēnā te mauri te mauri kei runga!! Kei a Ranginui e tū iho rā, kei te kāhui

tipua, kei te kāhui tawhito, kei te kāhui tohunga, kei a koutou – he putanga ariki ki te whai ao ki te ao mārama e! te manawanui o Rangi ki a koutou!

Tēnā, ka tāhuri kē ki tēnei taha o te rapu wānanga, otirā, ki ngā pūkenga matua o te whare wānanga – otirā ki a koe Lachy. Nāu ahau i whai tikanga, i whai huarahi, kia oti atu tēnei momo. Heoi anō e hoa, tēnā rawa atu koe!

Heoi anō, ki tērā o ngā tino tīpua o te whare wānanga, ki a GLB. E te titapu mārōrō! E te kaiwetewete whakaaro! E te arero tawhito – kua pau kē te kōrero ki a koe, heoi anō, ki te kore koe, kahore ahau! Atu anō ki a koe Lachlan, anei tāku (te kumara) e mihi atu rā ki a koe, mō tō mahi tautako. Heoi ano, ki a kōrua nei - tēnā kōrua, tēnā kōrua, ā, tēnā korua!

Chapter Eight: *Hokai Nuku* – Leap forward

Introduction

The critical question that underpins this thesis is: how can spatial information technologies be merged with the geography of narratives without diminishing its *mana* or *tapu*? This thesis set out to find a way to blend the unique ancestral relationship Māori have to the *whenua* with GIS mapping technologies without any of the narratives losing any of its uniqueness or the *whenua* losing any of its integrity. This was achieved by creating a new space between two different world views using the concept of the *paepae* to merge the divergent views of the same landscape: one a derivative of spatial reference systems that reduces the landscape down to a set of *x, y* and *z* coordinates; the other, a cultural landscape woven from a rich tapestry of oral narratives that breathe *mauri* or life-force into the land and record the footprints of human connection with their sacred landscapes.

Kaupapa Māori Rangahau: Opening the window

When *Tūwharetoa*[171] the tribe were contemplating their next move against an enemy that had just trespassed into their tribal territory and sacked one of their *pā* sites at *Waitahanui,*[172] some chiefs urged immediate pursuit to avenge the deaths of some of the *ariki* who had been killed in the attack. Following a lengthy discussion *Tamamutu*, who was the paramount chief following in his father's footsteps, uttered these famous words to the assembled war party (Grace 1959:166-167): (capitalisation and underlining added for emphasis)

> *E Tuwharetoa e!*
> *Kia ata whakatere i te waka nei,*
> *kei pariparia e te tai,*
>
> *ka monehunehu te kura.*
> *Ka whakamarotia atu ano,*
> *ka whakahoki mai ki TE KAPUA WHAKAPIPI*
> *ka mate kainga tahi*
> *ka ora kainga rua*

> *Tuwharetoa*, be careful when launching your waka,
> Lest it be overcome by the tide
> And its plumes drenched.
> It is well to advance and to stretch out,
> But in the event of reverses, return to those left behind where strength is reserved

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[171] The *Tūwharetoa* tribe inhabit the region surrounding Lake *Taupō* in the centre of *Te Ika a Māui,* the North Island of Aotearoa, New Zealand. Their boundary heads north near the *Mihi* bridge south of *Reporoa*; West to *Titiraupenga*, and the *Hauhungaroa* Ranges and south-west to *Taumarunui*; east to the *Kaimanawa* Ranges; and South to the *Tongariro* National Park.

[172] *Waitahanui* was a *pā* site at the southern end of Lake *Taupō*

Te kapua whakapipi are known as the guardian clouds of *Tūwharetoa* that hover around the *Kaimanawa* ranges in the east of Taupō *Moana*[173] and often move around the region always returning to the east as a sign to the people of the region that their strength lies in their unity when contemplating important decisions concerning their future. Even today this *whakataukī* is often quoted when *Tūwharetoa* are considering their next move in matters that concern the future of their tribe. In the same manner the underlying principle behind this *whakataukī* from my tribal domain has been used as a signal to always consider the ancestors when pondering important issues; for that was one of the lessons often taught to the youth of this tribal area. This thesis is one of those pivotal moments; so too is the concept of merging two world views.

This dissertation may influence, in some small way, future generations of Māori who engage in thesis study by first positioning themselves in context of who they are and where they come from; not only geographically and academically but also what has shaped the way they think and what has shaped the way they are as Māori. Then, they engage in research and write from that perspective always with the view of pondering what the ancestors would do and in so doing, making sure they get it right. This is the position that this thesis takes; looking to the past towards the ancestors for guidance in the future.

This thesis contains some sacred utterances in the form of *karakia* or classical ritual incantations and invocations, and *mōteatea* or classical chants and songs, and stories that belong to the Māori world; they come from the early ancestors of the Māori. These have been used judiciously with some measure of restraint akin to reverence because they are sacred and as such it is hoped that they receive the right treatment and respect. However, there are several reasons why these oral narratives were selected for this thesis: one, they are the right medium that characterise the Māori world view; two, they contain insight to how the early Māori ancestors connected with their land; three, they are a rich corpus of cultural knowledge unique to this country that is yet to be fully explored in terms of mapping ancestral territories; and four, the *mōteatea,* in particular, are ideal for exploring whether Māori ancestral landscapes can be blended with modern and emerging spatial information technologies without any loss of cultural integrity.

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[173] *Moana* is lake in this instance

Most of these *mōteatea* and *karakia* were collated from *wānanga*; special learning sessions set aside for a specific *kaupapa* or theme, over a number of years where participants would be acculturated with a unique style of learning; a Māori style of learning based on the spoken word without script. *Wānanga* styles of learning are challenging for students of all levels; but it is a style of learning where you need to earn what you learn.

The appropriate context for these sacred texts is in the Māori world, for they are best understood by those who understand the cultural conventions that underpin the Māori world view; else they are often misunderstood. Not only are they best understood from a Māori perspective, they are best interpreted from a Māori perspective. Therein lays the crux of this thesis: applying modern and emerging spatial information technologies to a cultural narrative from a largely Māori cultural perspective to produce a model representing ancestral landscapes.

This thesis has endeavoured to explore this theory in the following manner: first, by examining the necessary rules of engagement incidental to the Māori world whilst advocating an understanding of world view, both Indigenous and Māori and how they contrast with western approaches; second, establishing the Indigenous and Māori sense and depth of regard for their sacred places and exploring the concept of the *paepae* to create a new space based on the perspective of two different world views; third, looking at Indigenous approaches to mapping and mapping technologies and exploring how these have been implemented; fourth, exploring Māori attempts at mapping and implementation of mapping technologies and how this technology can be used for mapping cultural narratives; fifth, developing a process in a controlled environment involving spatial information technologies for mapping oral narratives; and sixth, testing the process in an uncontrolled environment by mapping *mana whenua* and *mana moana* in a *mana whenua* mapping project.

Ka pū te ruha, Ka hao te rangatahi

Māori are part of a wider group of Indigenous peoples around the world that share similar challenges and concerns pertaining to their ancestral territories. They often find the need to create maps to articulate their concerns and to communicate those concerns to external organisations and government agencies. With this in mind, maps become the lens by which both parties can view the landscape through their own lenses or world view.

To aid in this process, spatial information technologies such as GIS offers a unique suite of tools for land use management, collection and storage of spatial assets and the articulation of *mana whenua* and *mana moana* through the creation of maps. GIS is a useful tool for Māori if they are used with their own set of lenses rather than ones that originate from another world view.

GIS mapping technology is used widely around the world by Indigenous and Non-Indigenous peoples to manage and manipulate large amounts of geographical or spatially organised information. GIS applications are known to render down the real world into a series of coordinates within a well-defined geographical framework. This concept is useful as it permits data from disparate and diverse sources to be integrated into a series of layers within a single geographical framework for storage, manipulation and the creation of maps based on the combination of any number of layers of spatial information. In contrast, Indigenous peoples tend to describe their ancestral landscapes in ways that are remarkably different to Western perspectives. The overarching themes that draw together Indigenous notions of world view are balance in nature and the interconnectedness of all things that define the world. Indigenous people's perceptions of the world stem from their interpretation of how the world began and their relationship to everything in that world. Their world view was their window to understanding everything that happened in the world. It also influenced and dominated their behaviour and shaped their societies.

The Role of Narratives

Traditional forms of narratives are often used to describe sense and depth of place; these include stories, songs and legends forming cultural geography. Despite the obvious

differences in world views, GIS technology has enormous implications and application for Indigenous peoples around the world looking at managing their ancestral landscapes based on their world view. Indigenous notions of geography based on cultural narratives offers unique challenges for the integration and use of GIS. The aim of this thesis was concerned with how GIS can be used to capture the geography of these narratives or the geography of a traditional oral culture without changing the nature or integrity of that culture.

A large part of the traditional view of the Māori world has been expressed in this thesis using oral narratives; especially *mōteatea* and *karakia*. All oral narratives were a crucial part of the traditional world of Māori and were memorised carefully and passed on through the generations. They are still employed today in modern New Zealand society. These *mōteatea* and *karakia* were chosen purposely because: one, these oral narratives capture the essence of the Māori world view in a uniquely Māori way; second, the *mōteatea* in particularly, contain the right elements that form part of the solution for blending Māori notions of space with geographic space.

Merging Two World Views

The impetus that drives this thesis is the assertion that western world views simply cannot translate the meaning and function of a traditional world view without diluting the integrity of the cultural information that informs that view. The only sensible course is to use an Indigenous world view or lens to interpret the landscape and the same lens to apply the concepts offered by modern spatial information technologies to create a model that reflects the geography of Indigenous narratives.

Two tenets underpin this thesis: one, the Indigenous world view is vastly different from the Western world view often resulting in misunderstanding when trying to make sense of the other's world view using their own set of lenses. Likewise, spatial information systems capture and display data based on a mathematical portrayal of the surface of the earth, whereas Indigenous societies see that same space in terms of the relationships that exist between them and their environment. The second tenet is that mapping is a reflection of the ontological and epistemological structures of a culture and when one

society expresses the spatial concepts of another society using their own set of lenses significant meaning is lost in translation. These fundamental tenets are crucial to understanding how Indigenous knowledge about their sacred places can be integrated with spatial information technologies.

Indigenous World View

The Indigenous world view shapes the Indigenous view of land. Likewise, the Māori world view underpins the Māori view of land. In the Māori world view the concept of the *pae* or *paepae* offers a viable starting point for articulating the shape of the space between two worlds, each with different sets of lenses and for merging ancestral landscapes, as expressed by the Māori world view, with modern spatial information technologies. The concept of the *paepae* or boundary between distinct cultures acts as a metaphor for blending the two worlds. In this way, the *paepae* can exist as either a distinct line or as a well-defined spatial domain that encompasses elements of both cultures by negotiation and articulation between and by both cultures.

Māori interpretation of place is in some ways very similar to other Indigenous peoples around the world; their interpretation is based on their world view. And just like other Indigenous peoples, Māori notions and concepts about land and ancestral landscapes were held in their heads; this gave them the facility to navigate easily through their territories.

Indigenous spatial information technologies

Indigenous peoples are known to have endured a long and difficult history of widespread dispossession of their native lands at the hands of their colonisers using maps to alienate Indigenous peoples from their territories.

Although maps, initially, were used primarily to alienate Indigenous peoples from their natural environments, the new maps could not erase the history etched into the landscape by the generations that had inhabited those areas. Nor could those maps erase the memories and passion their Indigenous inhabitants felt for their homelands. Neither could those maps encapsulate the mental maps carried around in the memories of the

Indigenous mind. However, without maps in the modern world, Indigenous peoples have found it increasingly difficult to defend their ancestral territories from annexation and appropriation of its natural resources.

Indigenous mapping is largely an interpretation of place, of history, of identity, of culture, of relationships. As Indigenous peoples create maps of their ancestral domains the exercise for them is more than technical; it is primarily a social exercise as they engage their own people in mapping their stories. Since Indigenous peoples carry 'maps in their heads', Indigenous mapping is largely a reflection of how they see and interpret their places, their history, their identity, and their relationships with their lands. It has been demonstrated that maps can represent Indigenous world views and illustrate the historical and cultural connections between people and their ancestral landscapes if the lenses are Indigenous; the *Lienzo* project of Nicaragua is one of many projects that reflect Indigenous connections to land.

The Solution

The Lienzo

The innovative approach of the *Lienzo* in blending their historical cartography with spatial information technologies formed part of the solution for this thesis in finding an appropriate way to merge modern spatial information technologies with instances of Māori oral narratives. Examining this project led to adopting and adapting the *Lienzo* notion of using a timeline to represent their cultural equivalent of a narrator to convey their histories. In terms of this thesis, this means using the concept of the *paepae* to convey the depth of Māori stories. Hence a collaboration of cultural conventions was conceived; using the *Lienzo* to convey cultural context and the *paepae* to create a new space; then projecting that new space into geographic space.

The role of the Paepae in the Māori World

In the Māori world view, whenever Māori bring a host onto their cultural complexes or *marae*, the ritual of encounter or *hui* takes place with the *paepae* as a key player in the encounter. The *paepae* plays a key role in bringing two groups of people together. To merge cultural information of the Māori world with spatial information technologies is

a ritual; a ritual of encounter just like on the *marae* of merging or bringing two diverse concepts together. Hence the function of the *paepae,* as described in this thesis, is to merge cultural space with geographic space.

The primary aim of this thesis was to find a way to merge spatial information technologies with the culture of narratives. In this thesis cultural space is represented by *mōteatea*. Conversely, geographic space is depicted by the way in which spatial information technologies represent geographic information broken down into coordinates or raster formats within a spatial framework.

The Biographical Sketch and the Map Biography

The innovation of the biographical sketch permitted the collection of cultural data without knowing, initially, how it would be fixed into a spatial framework. With hindsight, it would have been prudent to locate the cultural data of each *mōteatea* within geographical space by transferring the data to a transparent sheet overlaid on to a topographic base map. This is where the map biography data collection method pioneered in Canada in the 1970s coupled with the biographical sketch formed an essential part of the solution to this thesis. In terms of the solution, the biographical sketch was used to create the initial maps of the *mōteatea*. These initial maps of cultural space drawn up from the cultural information contained in *mōteatea* were then projected into geographic space; both spaces were then linked together using the concept of the *paepae*. This method was refined and tested in an uncontrolled environment detailed in Chapter Seven adapting the map biography method to create a more efficient data collection method to produce maps for a *mana whenua* research project.

Mōteatea Information System

Mōteatea are a rich oral tapestry woven by masterful composers in a language imbued with ancient imagery bringing together epic histories, unique customs and values from a vast body of oral knowledge which have been passed down through the generations. They grant the living generation special insight to the minds and lives of the ancestors and are clothed in metaphorical commentary common for folk of their ilk. *Mōteatea*

form works of epic poetry that use atypical tones and irregular tempos that facilitate memory retention. Coupled with moving themes, they evoke strong emotion and awaken bitter-sweet memories that transform into vivid images of ancestors, of past histories and of special places. Furthermore, *mōteatea* are a constant reminder of the familial *whakapapa*, the ancestral events, the old stories, and the historical landmarks thus restoring the enduring tradition of connecting people to their special places in a meaningful way.

Of all the oral narratives available from the Māori world, *mōteatea* were chosen because of the abundance of cultural information they contain. They are a unique collection comprising *whakapapa, karakia*, sacerdotal content, stories about battles and deeds of bravery, instructions, warnings as well as references to ancestors, places, landmarks, well-known geographical features and significant ancestral events; all the elements required to create an enduring connection to the ancestral territories. The poetic phrasing of the *mōteatea* imbued with cultural wisdom made it easy to memorise and recall. Whilst *mōteatea* were not composed to portray spatial relationships, prominent and important landscape features and people were often embedded in them making it possible to convert the cultural data easily into geographic space; they are also invaluable as a resource for instruction and acculturation. Thus, these narratives were the perfect cultural narrative for translating the cultural landscapes into a spatial landscape.

Mapping *Mōteatea*

Mapping *mōteatea* is largely a social process than it is technical requiring a good grasp of cultural conventions to interpret and understand the context of the piece. It requires a knowledge of stories, *whakapapa*, *whenua kōrero* or knowledge about the land, and an understanding of the ancestral language, the histories and the spiritual connections that people have to the land. To distinguish and interpret these fine distinctions will give depth of meaning to the *mōteatea* which can be transformed into simple sketches using the biographical sketch method. Moreover, it will ensure that the *mana* and *tapu* of the knowledge is acknowledged and respected. Although the simple sketch may well be a just a few lines, symbols and text on a piece of paper, they are imbued with *mana* and

tapu made possible by a huge body of cultural knowledge embedded in *mōteatea* that have been collected and carefully maintained over many generations.

These cultural narratives were interrogated with one theme in mind: to illustrate how Māori interpret their landscapes based on a selection of significant traditional oral narratives and how these interpretations could be used to map the spatial extent of their cultural space. Through *mōteatea* a sense of cultural space can be determined and what that cultural space may have looked like to the early Māori ancestors based on their knowledge embedded in the *mōteatea*. A simple biographical sketch was created from the oral information contained in the *mōteatea* representing the composer's view of their world at the time of composition. The spatial assets inherent in the oral traditions were extracted; then that cultural space was projected into cartographic space to create the spatial extent of those cultural assets. Cultural space remains cultural space; we merely project that space into cartographic or geographic space without changing either of them.Thus the *mōteatea* map is merely the portal for viewing the geographic representation of the cultural data; it is not the culture.

In the map depicting the *oriori* for *Wharau rangi* (Figure 6.16), the *paepae* displays the cultural information with English translation of the places along the lower-west coast of the North Island. The maps for *Puhiwahine's* (Figures 6.9 – 6.12) fifty-year journey depicts the *paepae* as a timeline that unfolds her journey from beginning to end. Whereas maps usually have legends, these maps have a *paepae* to represent both the cultural information and the geographic interpretation of that information.

These maps are a unique expression of Māori understanding of the world and reflect the tangible and visual expressions of their cultural knowledge, their values, and spiritual connections to the heavens and the earth. The *paepae* is the key to creating new space and unlocking the wealth of knowledge contained in each *mōteatea* by informed consent of the custodians of that knowledge. If the culture informs the map with their own set of lenses, and not the map inform the culture then it might be a worthy medium for passing on this cultural knowledge to the next generation.

Mapping the *mana* of the *whenua*

Toitū te whenua
Whatu ngarongaro te tāngata

The axiom above sheds light on the nature of the land and its temporary tenants: *toitū te whenua*, 'the land endures', *whatu ngarongaro te tāngata*, 'while people dwindle away'. Humankind's relationship with the land is tenuous at best, lasting no longer than the period for which humankind inhabits the earth. Māori recognise the *mana* the land possesses as the Mother of the godlike ancestors, from whom we as humans derived our birth and existence at *kura waka* when those ancestors created the first human. This concept underpins the notion of mapping the *mana* of the land.

Māori mapping projects are very much like the Indigenous mapping projects in that they are largely a social organisational event that just happens to contain a technical component; they are also concerned with mapping the *mana* of the *whenua*. The mapping workshops demonstrated that Māori still reminisce and share stories about their homelands in their youth, arguing about which ancestor lived where and what they did, and connecting with the events, histories, place names and ancestors that connect them to their *tūrangawaewae,* the Māori concept of 'place to stand'. This tradition of shared and treasured history embedded in the land adds *mana* to the *whenua* with every passing generation.

Oral and traditional history is the basis for *iwi* to establish their *mana whenua* over a particular *rohe*. The oral history programme detailed in Chapter Seven, consisted of collecting history that has been handed down from generation to generation and retained by a number of living key contributors who trace descent to the *iwi* that reside within the *rohe*. This evidence was used to complement the preparation of a traditional history or *mana whenua* report to address the key issue of *mana* or rights of use and occupation over a defined *whenua* or region. Part of the *mana whenua* report involved the preparation of a series of maps to support the oral and traditional history evidence. In effect, the mapping project created maps detailing how *iwi* used and occupied the land and sea. Moreover, the mapping recorded the *mana* of the *whenua* using oral

histories handed down from generation to generation some of which were recorded in the form of *mōteatea*.

Mapping the stories

The early maps drawn by *Tuki, Reko, Te Heuheu, Huruhuru* and others illustrated that the map was merely a storyboard used by these ancestors as a means to tell their stories. These maps were always accompanied by *kōrero;* usually significant *kōrero* drawn from the storehouse of knowledge held in their heads. *Mōteatea* was one of the methods Māori used to store significant bodies of cultural information which were carefully passed down through the generations.

That idea of telling stories to accompany the creation of maps or rather the mapping of *mana* is still extant today. Singing or chanting *mōteatea* is still a cultural convention observed today by Māori all over the country. Explicit in these oral narratives are the Māori concepts and notions of place, of connection to the ancestors and the land, of belonging to special places. To define place is to define what Māori refer to as *tūrangawaewae* a 'place to stand'; a concept that is crucial to preserving the *mana* and identity of that *iwi*. Thus when Māori engage in mapping there was always a story that connected them in familial ways to the places they were talking about.

When they said, "this place was a *maara* that belonged to this ancestor" and "this is where our ancestors fought their battles with" and "we were told to catch fish on this side of the river near this rock" and "these places were the best for *kūtai*, *pāua* and *kina;* and *karengo* is all down this part of the coast line" and "this ridge here, this is where this ancestor had his main *pā* site". All this *whenua kōrero* or land information was accompanied by a story; there was always a story. The stories have survived several centuries and still connect people to their lands.

Key lessons

There were many key lessons learnt in mapping Māori notions of place. One of these key lessons is the *mana* and *tapu* of the *whenua kōrero* especially when given in its native tongue. *Whenua kōrero* or information and stories about land demonstrates a depth of *mana*, an understanding of *tapu*, a firm grasp of the language, not just the

Māori language but the nuances of a particular dialect which sets people apart as a unique *iwi* within the Māori world.

Mapping the *mana* of the land is always accompanied with significant detail whether it is the name of an important ancestor, an event tied to that ancestor and the place at which that event occurred or where that ancestor lived. A person would give their *whenua kōrero* in this manner: *"This place here* (pointing to a place on the topographic map) *is called . . ."* (they would give the name). I would ask, *"Why was it called that?"* To which they would reply, *"well, it was named after this event"*, an explanation would be given. Chapter Seven provides many examples illustrating the way in which Māori refer to their land.

When *Te Heuheu* explained his drawing on the ground to Bishop Selwyn in 1843, it was accompanied with *kōrero*; likewise with *Tuki, Reko* and others. The drawings acted as a storyboard which was elaborated with *kōrero*. This is how Māori map and relate to their lands; they tell stories about the events that transpired with their ancestors. They explain the meaning behind each place name embedded into the landscape. This is the makeup of their *tūrangawaewae*, and their *mana whenua*. However, it is evident that maps are a poor representation of *mana,* of how the people connected to the land; the whole concept of *tāngata whenua* is missing. This can be addressed by using the *paepae* concept to blend geographic space with cultural space to give some sense of the *mana* that is woven into the ancestral landscapes by the *whakapapa*, the stories and the songs that are still living and breathing among Māori today. This notion is part of the contribution to new knowledge.

Mapping Cultural Space

For Indigenous peoples, land has an enduring nature about it that connects generations of inhabitants together in a seamless framework that binds one to the other in a symbiotic manner. Indigenous peoples around the world share this unique relationship with their ancestral landscapes.

Imagine a map that could represent the stories behind each spatial component; a map that could expand each dot, line, polygon and image and give the full meaning, associated history and origin of each place name. It is important for Māori to continue

maintaining the *mana* of the land. The *paepae* concept is one way to map the *mana*; the *mana* contained in the *kōrero*, the *whenua kōrero*, and the stories as fully as possible. In this manner the *mana* and *tapu* is maintained. The key to getting it right is to ensure the *mana* and *tapu* of all the *whenua kōrero* remains intact during any part of the process; this requires an understanding of cultural conventions.

A certain amount of vision and understanding is required in mapping cultural space. Given the nature of a mapping project, as a social organisational event, a crucial component of any mapping proposal is to capture all the stories that reflect the sentiment, the connection and the *mana* of the *whenua kōrero* given by those who participate and share their knowledge.

The lessons learned from engaging in a mapping project that articulated the *mana whenua, mana moana* and *mana tangata* are invaluable in terms of understanding the sense and depth of connection Māori still have with their ancestral places. It was equally invaluable in learning how to work with people on the ground engaging with the patrons, drawing out the information in a meaningful way, whilst thinking about how to engage the technical aspects of the actual mapping itself. It is useful, or rather mandatory, to have a good grasp of *te reo Māori* and of the *tikanga* associated with being Māori. If you as a mapping coordinator or a researcher do not have the language, it becomes a technical process; and mapping instances of *mana* is not a technical process, it is a *tikanga* process. To observe this process of *tikanga* is to be proficient in the Māori world and the spatial information technology world. Furthermore, to understand how this process works is a contribution to a new way of thinking; it is a contribution of new knowledge to those researching in the Māori world from a spatial information technologies perspective.

The creation of new knowledge

This thesis has advanced academic knowledge by providing a process to view the largely invisible Māori world using a series of techniques that included spatial information technologies. By merging cultural knowledge contained within oral narratives with spatial information systems based on a Māori perspective, some aspects

of cultural knowledge became visible to an audience unfamiliar with the Māori language or who lacked critical understanding of the importance of the culture. This is the beginning of a new space informed not by one view of the world but informed by two world views; cultural space as determined by the Māori view of the world, and geographical space. The creation of maps depicting this new space becomes the lens by which both parties can view the landscape through their own lenses or world view. The creation of new space is mediated by the principles underlying the *paepae*, a well-known cultural icon in the Māori world. Despite the use of a Māori icon to mediate the new space, this space is not dominated by any one view over the other, neither does this space rely on the other to exist; but rather it is created by the contribution each view makes to the space. In this way each view retains their innate *mana;* each retains their *rangatiratanga*. Hence in the future when the landscape of spatial technology changes, the ancestral landscape as depicted by oral narratives will still remain unchanged; but it will still be able to merge with the new spatial information technology.

Conclusion

There is an old maxim that is often used when one has need of cultural and spiritual renewal and nourishment:

> *Hoki atu ki tō maunga tapu*,
> *kia purea nei e te hau o Tawhirimatea.*

> Return to your sacred mountain
> And be purified by the winds of *Tāwhirimātea*

The pathway up to the summit of *Tongariro*, my sacred mountain, is challenging; but the view from the top is absolutely breathtaking. My ancestor *Ngātoroirangi* climbed *Tongariro*, and was seized by the wintery breath. He summoned the *ahi tipua*, the fire gods who came to his aid leaving their mark in special locations throughout Aotearoa; one of which is *Ketetahi* nestled on the side of *Tongariro*. This thesis has taken both the reader and writer on a challenging journey. Each chapter raised new concepts challenging the reader to navigate the tenuous pathway until arriving at the final destination; the summit of the mountain.

As a Māori born and bred in *Tūwharetoa*, raised by those blessed with a unique world view, and, by choice, chosen to pursue a doctoral journey I find myself at odds with both worlds; one foot in the Māori world, and one foot in the academic world. On the one hand my upbringing in the Māori world shaped my ideas in ways that are difficult to explain but are culturally relevant and appropriate to the way I choose to live. On the other hand, is the challenge of producing a piece of academic prose consistent with the academic rigor of the institution whilst contributing new knowledge to the academy. Thus having reached the summit of this mountain I find myself unwinding from the journey so that I can enjoy the view and succumb to the bite of *Tongariro,* the sacred mountain of the *Tūwharetoa* tribe. To unwind from this climb I acknowledge that as an academic I have absorbed several significant concepts and ideas in the field of spatial information systems. These concepts were blended with culturally significant data from the Māori world resulting in a series of maps depicting aspects of the ancestral landscapes thus making it visible to the outside world. This process was then tested in the field using spatial information technologies to ensure the voices of the landscape were heard; and yet I find myself strangely at odds with this, for although this dissertation marks a milestone in my academic career, in the Māori world I find myself still at the back of the *marae* helping out with the food preparations. From a Māori perspective cultural depth of knowledge and wisdom is a life-time pursuit.

As Māori scholars we have an obligation to our ancestors to grasp, observe and keep traditional ways of learning and knowing alive; it is what makes us unique as Māori. We must accept responsibility as guardians of ancestral knowledge for that which is passed on to us and ensure that it continues to be passed down to succeeding generations; for me that means using modern technology as appropriate to aid in this process. Now that I have reached the summit, and taken off my academic lenses, I see myself in a position to stand and speak knowing full well that I stand in both worlds with both feet firmly planted; my *tūrangawaewae*. It is with the greatest respect that I save these words for last:

Tēnei au
E aku nui, e aku rahi,
tēnei hoki te manawa ka ue,
tēnei hoki te manawa ka pore,
ko taku manawa ka hoatu,
te manawanui o Rangi!

Nāku ēnei kupu i tāngia nei
Nā Hauiti Hakopa

Bibliography

A

Andrade, C., (2009) *Ha'ena: Through the Eyes of the Ancestors.* University of Hawai'i Press: Honolulu.

Aporta, C., (2003) 'New Ways of Mapping: Using GPS Mapping Software to Plot Place Names and Trails in Igloolik (Nunavut)', *Arctic.* 56(4): 321-327, December 2003.

Arvelo-Jiménez, N., (2000) 'Three Crises in the History of Ye'kuana Cultural Continuity', *Ethnohistory* 47(3-4):731-746.

Arvelo- Jiménez, N. & Conn. K., (1995) 'The Ye'kuana Self-Demarcation Process', *Cultural Survival Quarterly* 18(4): 40-42.

Asher, G. & Naulls, D., (1987) *Māori Land.* Planning Paper No. 29, New Zealand Planning Council: Wellington.

Adams, C., (2010) 'GIS & Google Earth', *Indigenous Mapping Network – Google Tribal Geo Tech Workshop*, February 25 -26, 2010.

Allison, J., (1999) 'Self-determination in cultural resource management: indigenous peoples' interpretation of history and of places and landscapes', *in* P. Ucko and R. Layton (eds) *The Archaeology and Anthropology of Landscape: Shaping your Landscape*, pp. 264 - 283. London: Routledge.

Ayres, W. S. & Mauricio, R., (1999) 'Definition, ownership and conservation of indigenous landscapes at Salapwuk, Pohnpei, Micronesia', *in* P. Ucko and R. Layton (eds) *The Archaeology and Anthropology of Landscape: Shaping your Landscape*, pp. 298-321. London: Routledge.

B

Ballara, A., (2004) *Tribal Landscape Overview, c.1800-c.1900 in the Taupō, Rotorua, Kaingaroa and National Park Inquiry Districts*: An Overview Report Commissioned by the Crown Forestry Rental Trust.

Barlow, C., (1991) *Tikanga Whakaaro: Key Concepts in Māori Culture.* Oxford University Press: Auckland.

Barnhardt, R. & Kawagley, A. O., (2005) 'Indigenous Knowledge Systems and Alaska Native Ways of Knowing', *Anthropology and Education Quarterly*, University of California Press, 36(1): 8-23.

Barnhardt, R. & Kawagley, A. O., (1999) 'Education Indigenous to Place: Western Science Meets Indigenous Reality', *in Ecological Education in Action*. Gregory Smith and Dilafruz Williams, Eds., pp. 117-140. New York: SUNY Press.

Barton, P. L., (1998) 'Māori Cartography and the European Encounter', *in Cartography in the Traditional African, American, Arctic, Australian, and Pacific Societies.* David Woodward & G. Malcolm Lewis eds., The University of Chicago Press: Chicago pp 493-530.

Basso, K., (1988) 'Speaking with Names: Language and Landscape among the Western Apache', *Cultural Anthropology,* 3(2): 99-130 (May, 1988), American Anthropological Association. URL: http://www.jstor.org Accessed April 2007.

Basso, K. H., (1996) 'Wisdom Sits in Places: Notes on Western Apache Landscape', *in Senses of Place*, Feld, S., & Basso, K. H., Eds. New Mexico: School of American Research Press.

Beamer, K. & Duarte, T. K., (2006) 'Mapping the Hawaiian Kingdom: A Colonial Venture', *Hawaiian Journal of Law & Politics*: Vol. 2, (Summer 2006). pp. 34 – 52.

Beckwith, J., (2007) Tikapa: Archaeological and Ancestral Landscape. MAI Review, 2007, Article 3. URL: http://ojs.review.mai.ac.nz/info/ Accessed March 2010.

Bernhardsen, T., (1992) *Geographic Information Systems*, Viak IT, Longum Park, Norway.

Becvar, K. & Srinivasan, R., (2009) 'Indigenous Knowledge and Culturally Responsive Methods in Information Research', *The Library Quarterly*, 79(4):421-441,The University of Chicago Press.

Bender, B., (1999) 'Subverting the Western Gaze: Mapping Alternative Worlds', *in* P. Ucko and R. Layton (eds) *The Archaeology and Anthropology of Landscape: Shaping your Landscape*, pp. 31-45. London: Routledge.

Bennett, E. H. W., (2006) *Ngā Kapua Whakapipi a Tamamutu – Strength in Unity Nurturing Future Turangitukua Leaders*. A thesis submitted in partial fulfilment of the requirements for the degree of Master of Arts. AUT, Auckland.

Berkes, F., Hughes, A., George, P.J., Preston, R.J., Cummins, B.D. & Turner, J., (1995) 'The Persistence of Aboriginal Land Use: Fish and Wildlife Harvest Areas in the Hudson and James Bay Lowland, Ontario', *Arctic* 48(1): 81-93 (March 1995).

Bishop, R., (1996) *Whakawhanaungatanga: Collaborative Research Stories*. Dunmore Press: Palmerston North.

Bishop, R., (1998) 'Freeing Ourselves from Neo-colonial Domination in Research: a Maori Approach to Creating Knowledge', *Qualitative Studies in Education*, 3(2): 199-219.

Blick, G., (2007) *Where in the World are we? A Technical Guide to Datums and Projections in New Zealand*. Version 2, Land Information New Zealand: Wellington, New Zealand.

Bock, P., (1969) *Modern Anthropology*. Knopf: New York

Brazenor, C., (2000) *The Spatial Dimensions of Native Title.* A thesis submitted in fulfilment of the requirements for the degree of Masters of Geomatics Science. August 2000. The University of Melbourne, Australia.

Brazenor, C., Ogleby, C. & Williamson, I., (1999) 'The Spatial Dimension of Aboriginal Land Tenure', *Paper presented at the 6th South East Asian Surveyors Congress, incorporating the 40th Australian Surveyors Congress*, The Institution of Surveyors Australia, 1-6 November 1999, Fremantle, Western Australia.

Brodnig, G. & Mayer-Schonberger, V., (2000) Bridging the Gap: The Role of Spatial Information Technologies in the Integration of Traditional Environmental Knowledge and Western Science. *The Electronic Journal on Information Systems Developing Countries. (EJISDC)* (2000) 1(1): 1-15.

Brody, H., (1982) *Maps and Dreams: Indians and the British Columbia Frontier*. Jill Norman & Hobhouse Ltd: London

Brooke, L. & Kemp, W., (1995) 'Towards Information Self-Sufficiency: The Nunavik Inuit Gather Information on Ecology and Land Use', *Geomatics: Who Needs It?* Cultural Survival Quarterly, 18.4.

Buck, P. H., (1950) *The Coming of the Māori.* Second Edition. Māori Purposes Fund Board; Whitcombe & Tombs: Wellington, NZ.

C
Carter, L., (2005) 'Naming to Own: Place Names as Indicators of Human Interaction with the Environment', *AlterNative: An International Journal of Indigenous Peoples.* 1(1):6-25.

Chambers, K. J., Corbett, J., Keller, C. P. & Wood, C. J. B., (2004) 'Indigenous Knowledge, Mapping and GIS: A Diffusion of Innovation Perspective', *Cartographica* 39(3):19-31.

Chambers, R., (2006) 'Participatory Mapping and Geographical Information Systems: Whose Map? Who is Empowered and Who is Disempowered? Who Gains and Who Loses?', *The Electronic Journal on Information Systems in Developing Countries (EJISDC).* (2006) 25(2):1-11. URL: http://www.ejisdc.org Accessed September 2009.

Chandler, C., Oslson, R., DeRoy, S. & Broderick, K., (2006) 'PGIS as a Sustained (and Sustainable?) Practice: First Nation Experiences in Treaty 8 BC, Canada', *Participatory Learning and Action. Mapping for Change: Practice, Technologies and Communication.* (54): 51-57, April 2006. URL: www.iied.org/NR/agbioliv/pla_notes/ Accessed September 2009.

Chapin, M. & Threlkeld, B., (2001) *Indigenous Landscapes, a Study in Ethnocartography*. Center for the Support of Native Land: Arlington, Virginia, USA.

Chapin, M., (2006) *Mapping Indigenous Lands: Issues and Considerations.* Center for the Support of Native Lands.

Chapin, M., Lamb, Z. & Threlkeld, B., (2005) 'Mapping Indigenous Lands', *Annual Review of Anthropology*, Annual Reviews Inc. pp. 619-638.

Chinn, P. W. U., (2005) *Developing a Sense of Place and an Environmental Ethic: A Transformative Role for Hawaiian/Indigenous Science in Teacher Education?* Paper presented at the 2005 NARST Annual International Conference, April 4-7, Dallas, TX.

Christoffsen, G., (2009) 'Mapping is Important but it is only Part of the Solution', Presentation given at the Māori GIS Conference, *GIS: Progress and Protect what you value*, Christchurch, May 2009.

Clark, I., Sutherland, J. & Young, G., (1995) *Mapping Culture - A Guide for Cultural and Economic Development in Communities*. AGPS: Canberra. UNESCO website, URL: http://www.unescobkk.org/index.php?id=2536 Accessed March 2005.

Cochran, P., Marshall, C., Garcia-Downing, C., Kendall, E., Cook, D., McCubbin, L., Mariah, R. &Gover, S., (2008) 'Indigenous Knowledge of Rock Kangaroo Ecology in Western Arnhem Land, Australia', *American Journal of Public Health*, 98(1):22-27.

Cram, F., (2001) 'The Validity and Integrity of Maori research', *in* M. Tolich Ed. *Research Ethics in Aotearoa New Zealand* (pp. 35–51). Auckland: Pearson Education.

Crawhall, N., (2003) *Giving Voice to Endangered Cultures.* International Forum on Local Cultural Expression and Communication. Santo Domingo Republic.

Crawhall, N., (2003) *Giving New Voice to Endangered Cultures. UNESCO Working Paper* . URL: http://www.iapad.org/publications/ppgis/crawhall_nigel.pdf Accessed December 2009.

Crawhall, N., (2007)*The Role of Participatory Cultural Mapping in Promoting Intercultural Dialogue - 'We are not Hyenas'* Prepared by Dr. Nigel Crawhall For UNESCO, Division of Cultural Policies and Intercultural Dialogue, February 2007.

Crowley, T. C., (2003) 'Culture and Common Property: Indigenous Tenure Issues within Western Society', *Presented at SIRC 2003 The 15th Annual Colloquium of the Spatial Information Research Centre*, University of Otago, Dunedin, New Zealand.

Crowley, T. C. & Hunter, G. J., (1999) 'The Changing Face of Indigenous Mapping', *Proceedings of 19th International Cartographic Association Conference* (ICA '99), pp. 377-386, Ottawa.

D
Davis, Te A., (1990) *He Kōrero Pūrākau mō ngā Taunahanahatanga a ngā Tūpuna: Place Names of the Ancestors, A Māori Oral History Atlas*. New Zealand Geographic Board: Wellington, NZ.

Davis, Te A., O'Regan, T. & Wilson, J., (1990) *Ngā Tohu Pūmahara: The Survey Pegs of the Past, Understanding Māori Place Names*. New Zealand Geographic Board: Wellington, NZ.

Denzin, N. & Lincoln, Y., (Eds.) (2000) 'The discipline and practice of qualitative research' *Handbook of Qualitative Research*, Thousand Oaks: Sage.

DeRoy, S., (2009) 'Applications of Mapping and GIS technologies in a First Nations Environment', *Indigenous Mapping Network Conference: Plan Preserve Protect*, June 2009, Green Bay, Wisconsin.

Developing Spatial Data Infrastructures: The SDI Cookbook. Version 2.0, Ed. D. Nebert., (2004) Global Spatial Data Infrastructure

Dewes, W., (1985) **'**Māori Land in New Zealand', *The Journal of the NZIS: The New Zealand Surveyor*. 31(3): 248-259, Serial No. 267.

Duerden, F. & Keller, C. P., (1992) 'GIS and Land Selection for Native Claims', *La Geographie Appliqué,* 10:11-14.

Duerden, F. & Kuhn, R., (1996) 'The Application of Geographical Information Systems by First Nations and Government in Northern Canada', *Cartographica*, 22(2):49 – 63.

Dunn, C. E., (2007) 'Participatory GIS a People's GIS?', *Progress in Human Geography*. 2007. 31(5): 616-637. DOI: 10.1177/0309132507081493. URL: http://phg.sagepub.com/cgi/content/abstract/31/5/616 Accessed March 2009.

Dyson, L. E., (2003) 'Indigenous Australians in the Information Age: Exploring Issues of Neutrality in Information Technology', *in* Ciborra, C., Mercurio, R., De Marco, M., Martinez, M. & Carignani, A. eds. *New Paradigms in Organizations, Markets and Society: Proceedings of the 11th European Conference on Information Systems (ECIS), Naples, Italy, 19 – 21 June 2003*. URL: http://www-staff.it.uts.edu.au/~laurel Accessed March 2010.

Dyson, L. E. & Underwood, J., (2005) 'Indigenous People on the Web', *Collaborative Electronic Commerce Technology and Research Conference (CollECTeR LatAm 2005), 3-5 October, Talca, Chile*, pp. 1-11. URL: http://www-staff.it.uts.edu.au/~laurel Accessed March 2010.

E

Engle, S.T., (2001) Negotiating Technology – (Re)considering the Use of GIS by Indigenous Peoples. *New Zealand Geographer 57 (1) 2001*.

Easedale, N., (1988) *Kairuri: The Measurer of Land. The Life of the 19 Century Surveyor Pictured in his Art and Writing.* Highgate/Price Milburn Limited: Petone.

Ezigbalike, I. C., Rakai, M. T. & Williamson, I. P., (1995) *Cultural Issues in Land Information Systems,* Position paper commissioned by the UN Food and Agriculture Organisation, Rome, Italy, 26p, 1995.

F
Firth, R., (1973) *Economics of the New Zealand Māori.* Second Edition, Government Printer: Wellington

Forest, J., (2009) 'The Karen People of Eastern Burma: Building a GIS Network for Human Survival', *Indigenous Mapping Network Conference: Plan Preserve Protect*, June 2009, Green Bay, Wisconsin.

Fox, J., (1998) 'Mapping the Commons: The Social Context of Spatial Information Technologies', *The Common Property Resource Digest* (45):1-9.

Freeman, M., (1976) *Inuit Land-Use and Occupancy Project* Ottawa: Thorn Press Ltd.

G
Galati, S., (2006) *Geographic Information Systems Demystified.* Norwood: Artech House.

Geertz, C., (1975) *The Interpretation of Cultures.* Hutchinson and Co.: London.

Geisler, C., (2000) Estates of mind: Culture's Many Paths to Land. *Society & Natural Resources,* 13(1): 51-60.

Gonzalez, N., Herrera, E. & Chapin, M., (1995) 'Ethnocartography in the Darien', *Cultural Survival Quarterly* 18(4):31-33

Gonzalez, R., (1995) 'KBS, GIS and Documenting Indigenous Knowledge', *Indigenous Knowledge and Development Monitor,* 3(1): 5-7.

Goodchild, M. F., (2007) 'Citizens as Voluntary Sensors: Spatial Data Infrastructure in the World of Web 2.0', *International Journal of Spatial Data Infrastructures Research*, 2007, 2:24-32.

Gould, P. R., (1966) 'On Mental Maps', Discussion Paper Number 9, <u>in</u> Nystuen, John D., Ed., Discussion paper Series, Michigan Inter-University Community of Mathematical Geographers, Ann Arbour.

Grace, J. Te H., (1959) *Tūwharetoa: The History of the Maori People of the Taupo District.* A. H. & A. W. Reid: Wellington.

Green, B., (2009) 'Land Management Strategies for Tribal Government', *Indigenous Mapping Network Conference: Plan Preserve Protect*, June 2009, Green Bay, Wisconsin.

H
Hakopa, H., (1998). *Ka Pū te Ruha, Ka Hao te Rangatahi*. Unpublished Masters Thesis, University of Otago, Dunedin, New Zealand.

Harley, B. J., (1992) 'Rereading the Maps of the Columbian Encounter', *Annals of the Association of American Geographers*, 82(3): 522-536, The Americas Before and After 1492: Current Geographical Research (Sep., 1992), Taylor & Francis, Ltd, the Association of American Geographers. URL: http://www.jstor.org/stable/2563359 Accessed: April 2010.

Harmsworth, G. R., (1995) *Māori Values for Land-Use Planning*. Discussion Document, Unpublished Report: Manaaki Whenua – Landcare Research.

Harmsworth, G. R., (1996) 'Māori Values for Land-Use Planning', *Information In Formation*. Landcare Research Remote Sensing/Geographic, Information Systems Newsletter Issue 6, April, Manaaki Whenua Landcare Research New Zealand Ltd.

Harmsworth, G. R., (1997a) Maori Values for Land Use Planning. *New Zealand Association of Resource Management (NZARM) broadsheet, February 1997*. pp. 37-52.

Harmsworth, G. R., (1997b) 'Māori Values and GIS: The New Zealand Experience', in *GIS ASIA PACIFIC*. April, pp. 40-43.

Harmsworth, G. R., (1998) 'Indigenous Values and GIS: a Method and a Framework', *Indigenous Knowledge and Development Monitor*. (IKDM) 6(3), December 1998, pp1-7.

Harmsworth, G. R. & Taumata, D., (1995) *Geographic Information Systems and Other Databases: Planning Tools for Iwi and Hapū.* Unpublished Paper presented to the National Association of Māori Mathematicians, Scientists and Technologists. Auckland University. 20pp.

Harmsworth, G. R., (2002) 'Indigenous Concepts, Values and Knowledge for Sustainable Development: New Zealand Case Studies', 7th Joint Conference: *Preservation of Ancient Cultures and the Globalization Scenario.* School of Maori and Pacific Development & International Centre for Cultural Studies (ICCS), India, 22–24 November 2002. Te Whare Wananga o Waikato, University of Waikato, Hamilton, New Zealand.

Harmsworth, G., Park. M. & Walker, D., (2005) *Report on the Development and Use of GIS for Iwi and Hapu: Motueka Case Study, Aotearoa-New Zealand*. Auckland: Landcare Research NZ Ltd. (33p.) URL: http://www.landcareresearch.co.nz/sal/documents/ICM Accessed September 2009.

Harmsworth, G. & McDowell, C., (2009) 'Participatory and Interactive Visualisation Tools for Māori Futures', Presentation given at the Māori GIS Conference, *GIS: Progress and Protect what you value*, Christchurch, May 2009. URL: http://www.ngaitahu.iwi.nz/Events/2009/GIS-Maori-Conference/Presentations/ Accessed June 2009.

Harris, T. & Weiner, D., (1998) 'Empowerment, Marginalization, and 'Community-integrated' GIS', *Cartography & Geographic Information Systems* 25(2): 67. *Academic OneFile*. (July 2011).

Hay, R. B., (1990) 'Sense of Place: Cross-Cultural Perspectives from Banks Peninsula, New Zealand', (University of Canterbury, 1990).

Hay, R. B., (1998) 'A Rooted Sense of Place in Cross-cultural Perspective', *Canadian Geographer*, 42(3): 245-266, Academic Research Library.

Head, L., (2006) *Land, Authority and the Forgetting of being in Early Colonial Māori History*. PhD Thesis, University of Canterbury, New Zealand.

Henderson, K., (2009) 'GIS at CFRT: Its Role in Protecting and Progressing what we Value', Presentation given at the Māori GIS Conference, *GIS: Progress and Protect what you value*, Christchurch, May 2009. URL:http://www.ngaitahu.iwi.nz/Events/2009/GIS-Maori-Conference/Presentations/ Accessed June 2009.

Herlihy, P. H. & Knapp, G., (2003) 'Maps of, by, and for the Peoples of Latin America', *Human Organization*, Journal Society for Applied Anthropology.62(4): 303-314. Accessed April 25, 2010, from ABI/INFORM Global. (Document ID: 521705671).

Herlihy, P.H., (2003) 'Participatory Research Mapping of Indigenous Lands in Darién, Eastern Panama', *Human Organisation,* Journal Society for Applied Anthropology. 62(4):315–31.

Herlihy, P.H. & Leake A., (1997) Participatory Research Mapping of Indigenous Lands in the Honduran Mosquitia. In *Demographic Diversity and Change in the Central American Isthmus*, ed.AR Pebley, L Rosero-Bixby, pp. 707–36. Santa Monica, CA:Rand Books.

Herman, R.D.K., (1999) "The Aloha State: Place Names and the Anti-Conquest of Hawaiÿi." In *Annals of the Association of American Geographers*, 89.

He oriori o Puhiwahine, *Te Ao hou*, No. 31, June 1960. National Library of New Zealand. URL: http://teaohou.natlib.govt.nz/journals/teaohou/issue/Mao31TeA/c11.html#fn22-Mao31TeA Accessed March 2010.

Harley, J. B. & Woodward, D., (1987) *The History of Cartography*. University of Chicago Press: Chicago.

Herlihy, P. H., (2003) 'Participatory Research Mapping of Indigenous Lands in Darién, Panama', *Human Organization*, 62(4): 315- 331, 0018-7259/03/040315-17, The Society for Applied Anthropology.

Herlihy, P. H. & Knapp, G., (2003) 'Maps of, by and for the People of Latin America', *Human Organization*; 62(4): 303-314, Retrieved April 25, 2010ABI/INFORM Global (Document ID: 521705671).

Higgins, R., (2004) *He Tānga Ngutu, He Tūhoetanga – Te Mana Motuhake o te Tā Moko Wahine: The Identity Politics of Moko Kauae,* PhD Thesis, University of Otago.

Hogan, H. M., (1994) *Renata's Journey: Ko te Haerenga o Renata* Cambridge University Press: New Zealand.

Huff, L. A., (2006) 'Sacred Sustenance: Maize, Storytelling, and a Maya Sense of Place', in *Journal of Latin American Geography*, 5(1): 79-96, University of Texas Press, DOI: 10.1353/lag.2006.0006.

Hughes, B., (2009) 'Ngāti Awa Database', Presentation given at the Māori GIS Conference, *GIS: Progress and Protect what you value*, Christchurch, May 2009. URL: http://www.ngaitahu.iwi.nz/Events/2009/GIS-Maori-Conference/Presentations/ Accessed June 2009.

Ibárgüen, G., (2009) 'The Lienzo de Quauhquechollan: A Map that Tells a Story', *ESRI International User Conference,* July 13 – 17, 2009, San Diego, CA. URL: http://proceedings.esri.com/dvd/uc/2009/uc-presentations.html Accessed May 2010.

'Indigenous Knowledge for Development: A framework for action', November 4, 1998. *Knowledge and Learning Center*. Africa Region, World Bank.

J
Jacobs, H. M. & Hirsch, B. H., (1998) 'Indigenous Land Tenure and Land Use in Alaska: Community Impacts of the Alaska Native Claims Settlement Act', Working paper, No. 16, North American Series. *Land Tenure Centre*, University of Wisconsin-Madison, August 1998.

Jahnke, R., (1999) 'Voices Beyond the Pae', in N. Thomas and D. Losche (Eds.). *Double Vision: Art Histories and Colonial Histories in the Pacific.* Cambridge University Press: Cambridge. pp. 193-209.

Jahnke, R., (1999) *He Tataitanga Ahua Toi The House that Riwai built: a Continuum of Maori Art*, A thesis presented in partial fulfilment of the requirements for the degree of Doctor of Philosophy in Maori Studies at Massey University, Palmerston North, NZ.

Jefferies, R. & Kennedy, N., (2007) *The PUCM Kaupapa Māori Environmental Outcomes and Indicators Model.* PUCM RMA Māori Report 4. The International Global Change Institute (IGCI): University of Waikato.

Jefferies, R. & Kennedy, N., (2008) *A Kaupapa Māori Outcomes and Indicators Framework – Planning Under a Cooperative Mandate (PUCM)*. A Presentation paper to WINFO – Mātauranga, Māori Knowledge, Information and Indicators June 6th 2008.

Johnson, B. D., (1997) *The Use of Geographic Information Systems (GIS) by First Nations*. North Vancouver: The Aboriginal Mapping Network. URL: www.nativemaps.org/abstracts/ben.html Accessed March 2010.

Johnson, J.T., Louis, R. P. & Pramono, A. H., (2006) 'Facing the Future: Encouraging Critical Cartographic Literacies in Indigenous Communities', *ACME: An International E-Journal for Critical Geographies,* 4 (1): 80-98.

Johnson, L. M., (2000?) *Traditional Tenure among the Gitksan and Wet'suwet'en: its Relationship to Common Property, and Resource Allocation.* North Vancouver: The Aboriginal Mapping Network. UR: www.nativemaps.org Accessed March 2010.

Jones, P. Te H., (1959) 'Puhiwahine – Māori Poetess', *Te Ao hou*, No. 29, December, 1959. National Library of New Zealand. URL: http://teaohou.natlib.govt.nz/journals/teaohou/issue/Mao29TeA/c13.html Accessed March 2010.

Jones, P. Te H., (1960) 'He oriori o Puhiwahine', *Te Ao hou*, No. 31, June 1960. National Library of New Zealand. URL: http://teaohou.natlib.govt.nz/journals/teaohou/issue/Mao31TeA/c11.html#fn22-Mao31TeA Accessed March 2010.

K

Ka'ai, T. M., (1995)*Te Tātari i te Kaupapa. PhD Thesis.* The University of Waikato.

Ka'ai, T. M., (2005) 'Indigenising the Academy: Indigenous Scholars as Agents of Change', *World Indigenous Peoples' Conference on Education,* Hamilton, Aotearoa/New Zealand, 2005.

Kahakalau, K., (2004) 'Indigenous Heuristic Action Research: Bridging Western and Indigenous Research Methodologies', *Hülili: Multidisplinary Research on Hawaiian Well-Being,* 1(1).

Kahotea, D., (2009) 'Measurement of Papamoa/TeAkau/Mangatawa/Rangataua Landscape as a Significant Cultural Landscape in Aotearoa Using GPS Survey and GIS Maps for Heritage Management of Archaeological Sites for Protection and Preservation', Presentation given at the Māori GIS Conference, *GIS: Progress and Protect what you value*, Christchurch, May 2009. URL: http://www.ngaitahu.iwi.nz/Events/2009/GIS-Maori-Conference/Presentations/ Accessed June 2009.

Kasiannan, S., (2006) 'Mapping Traditional Belief Systems and Establishing Contemporary Connections in a Historical Landscape', *XXI International CIPA Symposium*, 01-06 October, Athens, Greece.

Kamira, R., (2002) 'Te Mata o te tai – The edge of the tide: Rising Capacity in Information Technology of Maori in Aotearoa', *Conference presentation for Information Technology in Regional Areas Rockhampton* 27 - 29 August 2002. URL: www.pauainterface.com Accessed May 28 2010.

Kamira, R., (2003 approx) *Kaitiakitanga: Introducing Useful Indigenous Concepts of Governance.* URL: www.pauainterface.com Accessed May 28 2010.

Kawagley, A.O., (1995) *A Yupiaq Worldview: A Pathway to Ecology and Spirit.* Waveland Press, Inc: Illinois.

Kawagley, A.O. & Barnhardt, R., (no date) *Education Indigenous to Place: Western Science meets Native Reality.* Alaska Native Knowledge Network. URL: http://ankn.uaf.edu/Curriculum/Articles/BarnhardtKawagley/EIP.html Accessed February 2010.

Kawagley, A. O., Norris-Tull, D. & Norris-Tull, R. A., *The Indigenous Worldview of Yupiaq Culture: Its Scientific Nature and Relevance to the Practice and Teaching of Science.* Alaska Native Knowledge Network. URL: http://ankn.uaf.edu/Curriculum/Articles/KawagleyNorrisTull/YupiaqCulture.html Accessed February 2010.

Kawharu, I H., (1977) *Māori Land Tenure: Studies of a Changing Institution*. Oxford University Press: Oxford.

Kelly, J., (1999) *Māori Maps.* Cartographica, Volume 36:2, Summer 1999.

Kemp, W. B. & Brooke, L. F., (1995) 'Towards Information Self-sufficiency. The Nunavik Inuit Gather Information on Ecology and Land Use', *Cultural Survival Quarterly* 18 (4) 25-28.

Kennedy, N., (2009) 'Cultural Mapping: Mapping Tangata Whenua Values', Presentation given at the Māori GIS Conference, *GIS: Progress and Protect what you value*, Christchurch, May 2009. URL: http://www.ngaitahu.iwi.nz/Events/2009/GIS-Maori-Conference/Presentations/ Accessed June 2010.

Kerehi, J., (2005) 'Ngā Wāhi Tapu o Ngāti Hamua: Sacred sites of Ngāti Hamua – Paramount hapū of Rangitāne o Wairarapa', *Indigenous Knowledge Conference* 22-25 June, 2005 – Victoria University of Wellington.

Knapp, G. & Herlihy, P., (2002) Mapping the Landscape of Identity. pp. 251-268 <u>in</u> G. Knapp (ed.) (2002) *Latin America in the 21st Century*. Austin, TX: University of Texas UP.

Knudtson, P. & Suzuki, D., (1997) *Wisdom of the Elders*. Allen & Unwin Pty Ltd: Australia.

L

Laituri, M., (1995) Indigenous Knowledge and Databases, How can Traditional Local Knowledge be Used in a Geographic Information Systems. *in NZ Science Monthly 6 (5)*, June 1995.

Laituri, M., (1998) *Marginal Societies and Geographic Information Systems.* Empowerment, Marginalization, and Public Participation GIS Meeting Santa Barbara, California 14-17October 1998. URL: http://www.ncgia.ucsb.edu/varenius/ppgis/papers/laituri.html Accessed March 2010.

Langham, P., (2009) 'Maori Land Information Base', Presentation given at the Māori GIS Conference, *GIS: Progress and Protect what you value*, Christchurch, May 2009.

Langton, M., (1994). *Valuing Cultures: Recognising Indigenous Cultures as a Valued Part of Australian heritage*. Council for Aboriginal Reconciliation. Canberra : Australian Govt. Pub. Service.

Latu, S. T., (1994) *Culture, Customary Land Tenure and Land Information Systems.* Unpublished Paper. RMIT: Melbourne, Australia.

Latu, S. T., Benwell, G. L. & Davies, P., (1996) 'User involvement: the Tongan Land Information System Part 2: Participatory System Design: The Tongan approach to Land Information System Development', *The Australian Surveyor,* 41(3)204-213.

Lauer, M. T., (2005) *Fertility in Amazonia: Indigenous Concepts of the Human Reproductive Process Among the Ye'kwana of Southern Venezuela,* PhD Thesis, University of California: Santa Barbara.

Lawas, C. M. & Luning H. A., (1996) 'Farmers' Knowledge and GIS', *Indigenous Knowledge Monitor,* 4 (1) April 1996.

Lee, J., (2005) 'Māori Cultural Regeneration: Pūrākau as pedagogy', Paper presented as part of a symposium *'Indigenous (Māori) pedagogies: Towards Community and Cultural Regeneration'* with Te Kawehau Hoskins and Wiremu Doherty. Centre for Research in Lifelong learning International Conference, Stirling, Scotland. June 24, 2005.

Loppie, C., (2007) 'Learning From the Grandmothers: Incorporating Indigenous Principles Into Qualitative Research', *Qualitative Health Research*, 17(2) Sage Publications.

Louis, R. P., (2004) Indigenous Hawaiian Cartographer: in Search of Common Ground. *in Cartographic Perspectives* 48:7-23.

Louis, R. P., (2007) 'Can You Hear us Now? Voices from the Margin: Using Indigenous Methodologies in Geographic Research', *Geographical Research* June 2007 45(2):130–139 doi: 10.1111/j.1745-5871.2007.00443.x.

M

Madsen, W., (1994) 'Protecting Indigenous Peoples' Privacy from Eyes in the Sky', <u>in</u> H.J. Onsrud (ed*.), Proceedings of the Conference on Law and Information Policy for Spatial Databases.* pp.223-231, Tempe, Arizona: Centre for the Study of Law, Science, and Technology, Arizona State University College of Law. URL: http://www.spatial.maine.edu/tempe/madsen.html Accessed March 2010.

Maori GIS conference Wellington (1996) *GIS Maori: Mapping Maori Land and Resource Aspirations*, 28th June, 1996, Wellington. Hosted by Critchlow Associates Limited, New Zealand. URL: http://www.ngaitahu.iwi.nz/Events/2009/GIS-Maori-Conference/Presentations/ Accessed June 1996.

Mapping for Change: Practice, Technologies and Communication. International Institute for Environment and Development. Participatory learning and action. (PLA) (54): April 2006.,(Eds.). Giacomo Rambaldi, Jon Corbett, Mike McCall, Rachel Olson, Julius Muchemi, Peter Kwaku Kyem, Daniel Wiener, Robert Chambers. URL: http://www.iied.org/pubs/display.php?o=14507IIED&n=9&l=63&s=PLA Accessed March 2010.

Martin, K. & Mirraboopa , B., (2009) 'Ways of knowing, being and doing: A theoretical framework and methods for indigenous and indigenist re-search', *Journal of Australian Studies*, Lecture at Indigenous studies, James Cook University.

McCall M., (2004) PPGIS, PSP, ITK, (CB)NRM: On-going Annotated Bibliography on PGIS and P-Mapping Applications for Natural Resource Management and Rural Contexts. URL: http://ppgis.iapad.org/bibliography.html Accessed March 2009.

Marozas, B.A., (1991) 'The Role of Geographic Information Systems in American Indian Land and Water Rights Litigation', *American Indian Culture and Research Journal* 15 (3): 77-93.

Marks, M. & Adams, C., (2010) 'GIS and Technical Track', *Indigenous Mapping Network – Google Tribal Geo Tech Workshop*, February 25 -26, 2010.

Marsden, M., (1992) God, Man and Universe: A Māori View. <u>in</u> *Te Ao Hurihuri: Aspects of Māoritanga*. M. King. (ed.). Reed Books: Auckland, pp. 117-137.

Marsden, M. & Henare, T., (1992) *Kaitiakitanga: A Definitive Introduction to the Holistic World View of the Māori*. National Library of New Zealand.

Marsden, M., (2003) *The Woven Universe: Selected Readings of Rev. Māori Marsden,* Otaki, NZ: The Estate of Rev. Māori Marsden.

Marshall, B., (2005) 'From Sextants to Satellites: A Cartographic Time Line for New Zealand', *New Zealand Map Society Journal No. 18,* New Zealand Map Society: Auckland,

Mead, H. M. & Grove, N., (2003) *Ngā Pepeha a ngā Tīpuna*. Victoria University Press: Wellington.

Millard, A. R., (1987) 'Cartography in the Ancient Near East', <u>*in*</u> *The History of Cartography, Volume One, Cartography in Prehistoric, Ancient, and Medieval Europe and the Mediterranean.* J. B. Harley & D. Woodward (Eds.). pp. 107-116.

Milligan, R. R. D., (1964) *The Map Drawn by the Chief Tuki-Tahua in 1793*. ed., John Dunmore: Mangonui.

Ministry of Justice., (2001) *He Hīnātore ki te ao Māori: A Glimpse into the Māori World. Māori Perspectives on Justice.* Ministry of Justice: Wellington, NZ.

Mizrach, S., (1999) *Natives On The Electronic Frontier: Technology And Cultural Change On The Cheyenne River Sioux Reservation.* A Dissertation Presented To The Graduate School Of The University Of Florida In Partial Fulfilment Of The Requirements For The Degree Of Doctor Of Philosophy, University Of Florida, 1999.

Mohamed, M. & Ventura, S., (2000) 'Use of Geomatics for Mapping and Documenting Indigenous Tenure Systems', *Society & Natural Resources*, vol. 13, pp. 223 - 235.

N
Neate, G., (1999) 'Mapping Landscapes of the Mind: a Cadastral Conundrum in the Native Title Era', *Proceedings of the International Conference on Land Tenure and Cadastral Infrastructures for Sustainable Development*, Melbourne, Australia 25-27 October 1999.

Nietschmann, B., (1972) 'Hunting and Fishing Focus Among the Miskito Indians, Eastern Nicaragua', *Human Ecology* Vol.1, No.1 1972, pp41-67.

Nietschmann, B., (1995) 'Defending the Miskito Reefs with Maps and GPS. Mapping with Sail, Scuba, and Satellite', *Cultural Survival Quarterly* 18 (4) 34-37.

Ngata, A. T. & Jones, P. Te H., (2006) *Ngā Mōteatea: The Songs.* Part 1., Auckland University Press: Auckland.

Ngata, A. T. & Jones, P. Te H., (2006) *Ngā Mōteatea: The Songs*. Part 2., Auckland University Press, Auckland, NZ.

Ngata, A. T. & Jones, P. Te H., (2006) *Ngā Mōteatea: The Songs*. Part 3., Auckland University Press, Auckland, NZ.

Ngāti Tūwharetoa WAI 575 Briefs of Evidence, Otukou, October 2006.

Norton, T., (2009) 'Ngāi Tahu Cultural Heritage Mapping Project', Presentation given at the Māori GIS Conference, *GIS: Progress and Protect what you value*, Christchurch, May 2009. URL: http://www.ngaitahu.iwi.nz/Events/2009/GIS-Maori-Conference/Presentations/ Accessed June 2009.

NZETC: New Zealand Electronic Text Centre – *Legends of the Māori: The last look back –Puhiwahine's love song.* URL: http://www.nzetc.org/tm/scholarly/tei-Pom01Lege-t1-body3-d4-d3.html Accessed March 2010.

O
Oliveira, K., (2006) *Ke Alanui Kīke'Eke'EO Maui: Na Wai Ho'I Ka 'Ole O Ke Akamai, He Alanui I Ma'a I Ka Hele 'Ia EO'U Mau Mākua* PhD Dissertation, University of Hawai'i, Mānoa.

Offen, K. H., (2003) 'Narrating Place and Identity, or Mapping Miskitu Land Claims in North-eastern Nicaragua', *Human Organization*, 62(4): 382-392. Accessed April 25, 2010, from ABI/INFORM Global. (Document ID: 521705641).

Obermeyer, Nancy J., (1998) 'The Evolution of Public Participation GIS', *Cartography and Geographic Information Systems* 25 (2):65-66.

Openshaw, S. & Goddard, J., (1987) 'Some implications of the commodification of information and the emerging information economy for applied geographical analysis in the United Kingdom', *Environment and Planning,* 19 (11): 1423 – 1439.

Orange, C., (1987) *The Treaty Of Waitangi*. Allen & Unwin & Port Nicholson Press.

O'Regan, G., (2009) 'Taonga Pounamu: An Experiment in Researching the Movement of Māori Artefacts with GIS', Presentation given at the Māori GIS Conference, *GIS: Progress and Protect what you value*, Christchurch, May 2009. URL: http://www.ngaitahu.iwi.nz/Events/2009/GIS-Maori-Conference/Presentations/ Accessed March 2010.

Overdorf, C., (2009) 'Using Watersheds to Protect Cultural Resources: How to Map What Should Not Be Mapped', *Indigenous Mapping Network Conference: Plan Preserve Protect*, June 2009, Green Bay, Wisconsin.

Open Data Kit: A set of open source tools to help organiza3ons collect, aggregate and visualize their rich data. URL: http://code.google.com/p/open-data-kit Accessed March 2010.

P
Pacey, H., (2005) *The Benefits and Barriers to GIS for Māori.* A thesis submitted in partial fulfilment of the requirements for the Degree of Master of Indigenous Planning and Development, at Lincoln University, 2005.

Papa, B., (2009) 'Tamaki Makaurau: Ngā wāhi Whakahirahira o Tamaki', Presentation given at the Māori GIS Conference, *GIS: Progress and Protect what you value*, Christchurch, May 2009. URL: http://www.ngaitahu.iwi.nz/Events/2009/GIS-Maori-Conference/Presentations/ Accessed July 2010.

Pauling, C., (2009) 'State of the Takiwa: Using GIS to Communicate the Cultural Health of Waterways', Presentation given at the Māori GIS Conference, *GIS: Progress*

and Protect what you value, Christchurch, May 2009. URL: http://www.ngaitahu.iwi.nz/Events/2009/GIS-Maori-Conference/Presentations/ Accessed March 2010.

Pearce, M.W. & Louis. R.P., (2008) *Mapping Indigenous Depth of Place.* American Indian Culture and Research Journal 32:3 pp. 107-126.

Peluso, N. L., (2005) 'Whose woods are these? Counter-mapping Forest Territories in Kalimantan, Indonesia', *in The Anthropology of Development and Globalization: From classical political economy to contemporary neoliberalism.* Marc Edelman & Angelique Haugerud, Eds., Blackwell Publishing Lyd: USA, pp. 273-281.

Pihama, L., Cram, F. & Walker, S., (2002) 'Creating Methodological Space: a Literature Review of Kaupapa Māori Research', *Canadian Journal of Native Education, 26,* 30–43.

Poole, P., (1995) *Indigenous Peoples, Mapping and Biodiversity Conservation: An Analysis of Current Activities and Opportunities for Applying Geomatics Technologies.* Peoples and Forests Program Discussion Paper, Biodiversity Support Program, World Wildlife Fund, Washington, D.C.

Poole, P., (ed.) (1995a) 'Geomatics: Who needs it?', *Cultural Survival Quarterly.* 18(4):1-77.

Poole, P., (1995b) Land-Based Communities, Geomatics and Biodiversity Conservation. *Cultural Survival Quarterly*, Issue (18):4.

Poole, P., (2003) *Cultural Mapping and Indigenous Peoples: A report for UNESCO.* March 2003.

Proctor, J., Harmsworth, G., McDowell, C., Heke, H., Dymond, J. & Harris, D., (2009) 'Towards Developing an Iwi/Hapū based GIS', Presentation given at the Māori GIS Conference, *GIS: Progress and Protect what you value*, Christchurch, May 2009. URL: http://www.ngaitahu.iwi.nz/Events/2009/GIS-Maori-Conference/Presentations/ Accessed March 2010.

R

Rakai, M. E. T., (1994a) 'Incorporating Traditional Concepts of Customary 6 Land Tenure into the Globally Innovative Concepts of LIS', *in The Proceedings of the: Sixth Colloquium of the Spatial Information Research Centre*, University of Otago, pp 189-202.
Rakai, M. E. T., (1994b) 'Land Information and Traditional Societies', *GIS User* No. 8, August.

Rakai, M. E. T. & Williamson, I. P., (1995) 'Implications of Incorporating Customary Land Tenure Data into a Land Information System', *in Trans Tasman Surveyor,* 1:1, pp. 29-38.

Rakai, M. & Nichols, S., (1998) 'Using GIS and Traditional Ecological Knowledge for Native Title Claims', *paper presented at "Who own America"*, Madison, Wisconsin, USA.

Rambaldi, G., Ramirez, F. & Mendoza, M. M., (2000) 'Adding the Fourth Dimension to Participatory 3-D Modelling', *PLA Notes 39*, pp19-24.

Rambaldi, G., (2004) 'Who owns the Map Legend?', Paper presented at the 7th International Conference on GIS for Developing Countries (GISDECO 2004), 10–12 May 2004, University Technology Malaysia, Johor Malaysia. *Journal of the Urban and Regional Information Systems Association*, 17(1):5-13, 2005. URL: http://www.urisa.org/Journal/JrnlContents17-1.htm Accessed March 2010.

Rambaldi, G., Chambers, R., McCall, M. & Fox, J., (2006) Practical Ethics for PGIS Practitioners, Facilitators, Technology Intermediaries and Researchers. *PLA Notes (54)*: 106-113.

Rambaldi, G., Muchemi, J., Crawhall, N. & Monaci, L., (2007) 'Through the Eyes of Hunter-Gatherers: participatory 3D modelling among Ogiek Indigenous Peoples in Kenya', *Information Development* 2007, 23(2/3):113- 128. DOI: 10.1177/0266666907078592.

Rambaldi, G. & Callosa-Tarr, J., (2002) *Participatory 3-Dimensional Modelling: Guiding Principles and Applications*, ASEAN Regional Centre for Biodiversity Conservation (ARCBC): Los Baños, Philippines.

Rangihau, J., (1981) 'Being Māori', <u>in</u> M. King. Ed., *Te Ao Hurihuri: The World Moves on* (Third Edition) Longman Paul: Auckland pp 165 – 175.

Reid, J., (2009) 'Using GIS to Realize Commercial Development Opportunities on Maori Land', Presentation given at the Māori GIS Conference, *GIS: Progress and Protect what you value*, Christchurch, May 2009. URL: http://www.ngaitahu.iwi.nz/Events/2009/GIS-Maori-Conference/Presentations/ Accessed March 2010.

Reynolds, P., (2004) *Ngā Puni Whakapiri: Indigenous Struggle and Genetic Engineering*. Thesis submitted in partial fulfilment of the requirements for the degree of Doctor of Philosophy. Simon Fraser University.

Ridges, M., (2009) 'VIP Mapping: Values, Interests & Priorities', *Indigenous Mapping Network Conference: Plan Preserve Protect*, June 2009, Green Bay, Wisconsin

Roberts, M., Haami, B., Benton, R., Satterfield, T., Finucane, M. & Henare, M., (2004) 'Whakapapa as a Māori Mental Construct: Some Implications for the Debate over Genetic Modification of Organisms', *The Contemporary Pacific*, 16 (1): 1– 28, 2004, University of Hawai'i Press.

Robins, S., (2001) 'NGOs, 'Bushmen' and Double Vision: The ≠Khomani San Land Claim and the Cultural Politics of 'Community' and 'Development' in the Kalahari', *Journal of Southern African Studies*, 27(4):833-853, Taylor & Francis, Ltd. URL: http://www.jstor.org/stable/823416 Accessed May 2010.

Royal, T. C., (1997) *Moteatea and the Transmission of History*, A Paper delivered by Te Ahukaramu Charles Royal to the Otaki Historical Society, 4 February 1997.

Royal, T. C., (1998a) *Te Whare Tapere: Towards a Model for Māori Performance Art*. A Thesis written in partial fulfilment of the requirement for the degree of Doctor of Philosophy. Victoria University, Wellington.

Royal, T. C., (1998b) 'Te Ao Marama – a Research Paradigm', *Te Oru Rangahau, Māori Research & Development Conference*. Massey University, Palmerston North.

Royal, T. C., (2002) *Indigenous Worldviews: A Comparative Study*. A Report on Research in progress by *Te Ahukaramū Charles Royal* for Ngāti Kikopiri Te Wānanga-o-Raukawa, Te Puni Kōkiri-Ministry for Māori Development, Fullbright New Zealand. Winston Churchill Memorial Trust.

Rundstrom, R. A., (1990) *A Cultural Interpretation of Inuit Map Accuracy.* Geographical Review, Vol. 80, No. 2 (Apr., 1990), pp. 155-168, American Geographical Society. URL: http://www.jstor.org/stable/215479 Accessed July 2009.

Rundstrom, R.A., (1995) 'GIS, Indigenous Peoples and Epistemological Diversity', *Cartography and Geographic Information Systems* 22:45–57.

Rundstrom, R. A., (1998) 'Mapping, The White Man's Burden', *The Common Property Resource Digest* (45):1-9.

S

Salmond, A., (1975) *Hui: a Study of Māori Ceremonial Gatherings.* Reed: Auckland

Salmond, A., (1985) *Eruera Stirling: Teachings of a Māori Elder. Eruera Stirling as told to Anne Salmond.* Oxford University Press: Auckland.

Salmond, A., (1991) *Two Worlds First Meetings Between Māori and Europeans 1642 – 1772.* Viking: Auckland.

Salmond, A., (1993) 'Kidnapped: Tuki and Huri's Involuntary Visit to Norfolk Island in1793', *in From Maps to Metaphors: The Pacific World of George Vancouver*, Ed. Robin Fisher and Hugh Johnston, Vancouver: UBC Press, pp. 191-226.

Sappington, N. (Ed) with Gadsden, D., Taylor, A. & Thomas, C., (2008) *Tribal GIS: Supporting Native American Policies with GIS.* ESRI: Redlands, California.

Semken, S., (2005) 'Sense of Place and Place-Based Introductory Geoscience Teaching for American Indian and Alaska Native Undergraduates', *Journal of Geoscience Education*, 53(2): 149-157.

Sinclair, D., (1992) 'Land: Maori View and European Response', *in Te Ao Hurihuri: Aspects of Maoritanga*. M. King (Ed.). Reed Books: Auckland.

Sirait, M., Prasodjo, S., Podger, N., Flavelle, N. & Fox, J., (1994) Mapping Customary Land in East Kalimantan, Indonesia: a Tool for Forest Management. *Ambio,* 23:7, pp. 411-417.

Smith, A. L., (2001) *Taranaki Waiata Tangi and Feelings for Place*: a thesis submitted in fulfilment of the requirements for the degree of Doctor of Philosophy at Lincoln University.

Smith, C., (1999) 'Ancestors, place and people social landscapes in Aboriginal Australia', *in* P. Ucko and R. Layton (eds) *The Archaeology and Anthropology of Landscape: Shaping your Landscape*, pp. 189 - 205. London: Routledge.

Smith, G. H., (2003) 'Kaupapa Māori Theory: Theorizing Indigenous Transformation of Education & Schooling', *Kaupapa Māori Symposium NZARE / AARE Joint Conference,* Hyatt Hotel, Auckland, N.Z December 2003.

Smith, L. T., (1999a) *Decolonizing Methodologies Research and Indigenous Peoples* London/New York: Zed Books Limited. Dunedin: University of Otago Press.

Smith, L., T., (1999b) *Kaupapa Māori Methodology: Our Power to Define Ourselves,* A seminar presentation to the School of Education, University of British Columbia, Vancouver, Canada.

Smith, R. C., Pariona, M., Tuesta, E. & Benavides, M., (2003) 'Mapping the Past and the Future: Geomatics and Indigenous Territories in the Peruvian Amazon', *Human Organization* 62(4): 357-368.

Smith, S. P., (1913) *The Lore of the Wharewananga: Part 1. – The Kauwae-runga.* Thomas Avery: New Plymouth.

Sowell, T., (1994) *Race and Culture: A World View*. Basic Books: New York.

Sparke, M., (1998) A Map that Roared and an Original Atlas: Canada, Cartography, and the Narration of Nation. *Annals of the Association of American Geographers* 88 (3):463-495.

Stadnyk, N., (2009) 'Helping Tribal Government with GIS Needs', *Indigenous Mapping Network Conference: Plan Preserve Protect*, June 2009, Green Bay, Wisconsin.

Stocks, A., (2003) '**Mapping Dreams in Nicaragua's Bosawas Reserve', *Human Organization,* 62(4):344-356, ABI/INFORM Global.

Strang, V., (1999) 'Competing perceptions of landscape in Kowanyama, North Queensland', *in* P. Ucko and R. Layton (eds) *The Archaeology and Anthropology of Landscape: Shaping your Landscape*, pp. 206 -218. London: Routledge.

Struthers, R., (2001) 'Conducting Sacred Research: An Indigenous Experience', *Native American Health in the 21st Century*, 16(1):125-133, University of Minnesota Press.

Sutton, P., (1998) 'Aboriginal Maps and Plans', <u>*in*</u> *The History of Cartography*, (eds.). D. Woodward & M. Lewis, The University of Chicago: Chicago.

Swann, D., (2009) 'Enterprise GIS – Enabling Indigenous Populations', Presentation given at the Māori GIS Conference, *GIS: Progress and Protect what you value*, May 2009.URL: http://www.ngaitahu.iwi.nz/Events/2009/GIS-Maori-Conference/Presentations/ Accessed March 2010.

T
Tabor, J.A. & Hutchinson, C., (1994) 'Using Indigenous Knowledge, Remote Sensing and GIS for sustainable Development', *Indigenous Knowledge and Development Monitor* 2(1) .

Telfer, W. & Garde, M., (2006) 'Indigenous Knowledge of Rock Kangaroo Ecology in Western Arnhem Land, Australia', *Human Ecology*, 34(3): 379-406, Springer.

Temm, P., (QC) (1990) *The Waitangi Tribunal: The Conscience of the Nation*. Random Century New Zealand Limited.

Te Taura Whiri i te reo: Māori Language Commission., (2008) *He Pātaka Kupu: Te Kai a te Rangatira,* Penguin Books: NZ.

Tobias, T.N., (2000) *Chief Kerry's Moose, a Guidebook to Land Use and Occupancy Mapping, Research Design and Data Collection.* Vancouver, Canada: Union of BC Indian Chiefs and Ecotrust Canada joint publication.

Tobias. T. N., (2009) *Living Proof*: *The Essential Data Collection Guide for Indigenous Use and Occupancy Map Surveys.* Union of BC Indian Chiefs and Ecotrust Canada.

Tripathi , M. & Bhattarya , S., (2004) 'Integrating Indigenous Knowledge and GIS for Participatory Natural Resource Management: State-of-the-Practice'*, The Electronic Journal on Information Systems in Developing Countries*, (EJISDC) (2004) 17(3):1-13.

Tuan, Y., (1989) 'Cultural Pluralism and Technology', *The Geographical Review*. 79(3): 269- 279, July 1989.

Tulloch, D., Epstein, E., Moyer, D., Niemann, B., Ventura, S. & Chenoweth, R., (1998) *GIS Society*. A Working Paper. Presented at the 1998 UCGIS annual conference.

Turnbull, D., (1989) *Maps Are Territories: Science Is An Atlas*. Deakin University Press: Geelong, Australia.

Turnbull, D., (1990) *Mapping the World in the Mind: a Case Study of the Unwritten Knowledge of the Micronesian Navigators.* Deakin University: Victoria, Australia.

Tuxen-Bettman, K., (2010) 'Creating Maps with Rich Content about your Indigenous Community', *Indigenous Mapping Network – Google Tribal Geo Tech Workshop*, February 25 -26, 2010.

Tribal GIS: Supporting Native American Policies with GIS. (2009) Sappington, N., Gadsden, D., Taylor, A., & Thomas, C. (eds.). ESRI: California.

W

Waitai, F., (2009) 'Working with GIS: a Hauraki Iwi Perspective', Presentation given at the Māori GIS Conference, *GIS: Progress and Protect what you value*, Christchurch, May 2009. URL: http://www.ngaitahu.iwi.nz/Events/2009/GIS-Maori-Conference/Presentations/ Accessed March 2010

Waitangi Tribunal., (1988) *Report of the Waitangi Tribunal on the Muriwhenua Fishing Claim (Wai 22).* The Waitangi Tribunal: Wellington.

Walker, D., (2009) **'**Cultural Health Indicators and GIS', Presentation given at the Māori GIS Conference, *GIS: Progress and Protect what you value*, Christchurch, May 2009. URL: http://www.ngaitahu.iwi.nz/Events/2009/GIS-Maori-Conference/Presentations/ Accessed March 2010.

Walker, R., (1977) 'Marae: a Place to Stand', in *Te Ao Hurihuri: The World Moves On, Aspects of Maoritanga.* King, M., (Ed.). Hicks Smith, Methuen New Zealand: Wellington. pp. 21-30.

Walker, R., (1978) 'The Relevance Of Maori Myth And Tradition', *in Tihe Mauri Ora: Aspects of Maoritanga.* King, M., Ed., Methuen Publications (N.Z) Ltd: New Zealand.

Walker, S., Eketone, A. & Gibbs, A., (2006) 'An Exploration of Kaupapa Māori Research, its Principles, Processes and Applications', *International Journal of Social Research Methodology*, 9: 4, 331 — 344. URL: http://dx.doi.org/10.1080/13645570600916049 Accessed March 2010.

Weiner, D., Harris, T. M. & Craig, W.J., (2002) 'Community Participation and Geographic Information Systems', A position paper compiled for Spoleto Workshop Organisers, produced from *Community Participation and Geographic Information Systems*. (Eds.). Craig, Harris & Weiner, 2002.

White, J., (2001) The Ancient History of the Māori, His Mythology and Traditions, 6 vols, University of Waikato, Hamilton: NZ (5):124-125.

White, L. A., (1975) *The Concept of Cultural Systems: A Key to Understanding Tribes and Nations.* Columbia University Press: New York.

Williams, D. R., (1995) *Mapping Place Meanings for Ecosystem Management,* A Technical Report Submitted to the Interior Columbia River Basin Ecosystem

Management Project Social Science Assessment Team USDA Forest Service, Walla Walla, Washington.

Williams, H.W., (1985) *A Dictionary of the Māori Language*, Seventh edition, Government Printer: Wellington, New Zealand.

Williams, J., (2004) *'E päkihi Hakinga a Kai: An Examination of Pre-contact Resource Management Practice in Southern Te Wäi Pounamu*, A thesis submitted for the degree of Doctor of Philosophy of the University of Otago (Te Whare Wänanga o Otägo), Dunedin, New Zealand.

Alaska Native Science Commission Website: Accessed March 2010
URL: http://www.nativescience.org/index.htm
URL: http://www.nativescience.org/html/traditional_knowledge.html

Wood, D., (1993) *The Power of Maps*. London: Routledge.

Woodward, D. & Lewis, G. M., (1998) *The History of Cartography: Cartography in the Traditional African, American, Arctic, Australian, and Pacific Societies*. Vol. 2. 6 vols. Chicago: University of Chicago Press, 1998.

Wright, D., Goodchild, M. & Proctor, J., (1997) 'GIS: Tool or Science? Demystifying the persistent ambiguity of GIS as "Tool" versus "Science", *Annals of the Association of American Geographers*, 87(l 2):346-362.

Y

Yoon, Hong-Key., (1986) *Māori Mind, Māori Land: Essays on the Cultural Geography of the Māori people from an Outsider's Perspective*. Berne: P. Lang.

Young, G., (2003) **'**Cultural Mapping in a Global World', A keynote speech at the *ASEAN Committee on Culture and Information* (COCI).Adelaide, South Australian: Cultural Mapping Symposium & Workshop.

Zingapan, K. &.De Vera, D., (1999) 'Mapping the Ancestral Lands and Waters of the Calamian Tagbanwa of Coron, Northern Palawan', *Philippine Association for Intercultural Development*, 10 March 1999.

Appendices

Appendix A: Mōteatea Maps

Appendix B: Typical Biographical Sketch of Mōteatea

Appendix C: Tuki's Map

Appendix A: Mōteatea Maps

Appendix B: Typical Biographical Sketch of Mōteatea

Appendix C: Tuki's Map