



Libraries and Learning Services

University of Auckland Research Repository, ResearchSpace

Copyright Statement

The digital copy of this thesis is protected by the Copyright Act 1994 (New Zealand).

This thesis may be consulted by you, provided you comply with the provisions of the Act and the following conditions of use:

- Any use you make of these documents or images must be for research or private study purposes only, and you may not make them available to any other person.
- Authors control the copyright of their thesis. You will recognize the author's right to be identified as the author of this thesis, and due acknowledgement will be made to the author where appropriate.
- You will obtain the author's permission before publishing any material from their thesis.

General copyright and disclaimer

In addition to the above conditions, authors give their consent for the digital copy of their work to be used subject to the conditions specified on the [Library Thesis Consent Form](#) and [Deposit Licence](#).

Agricultural Development & Indigenous Ways-of-Knowing

Māori & Quechuan

Experiences

of

Participatory Development

Robert Kenneth Whitbourne

Nō Te Whānau-ā-Apanui me Ahitereiria

*A thesis submitted in partial fulfilment of the requirements for the degree of Doctor of
Philosophy in Business and Economics, The University of Auckland, 2017*

Abstract

This research explores the promotion of Indigenous Knowledges (IKs) within participatory agricultural Development. Since the mid-1980s IKs have been promoted within participatory Development for political, technical, ethical and socio-cultural reasons. This promotion has however proved problematic, with questions regarding development assumptions, power differentials, cultural diversity and cross-cultural practice remaining open. This research has taken a novel approach to investigating these issues, centering Indigenous ontologies and methodologies, while integrating Indigenous and organizational literatures. The research findings are based on ethnographic fieldwork with two participatory agricultural Development projects in Peru and Aotearoa, with fieldwork occurring between 2008-2010.

The research found that IK promotion was influenced by complex interacting factors across multiple organizational levels (macro, organizational and project practice) and domains (context, power, practice and meaning). The Aotearoa case demonstrated that as a state research institute led project, institutional and ideological elements acted to compartmentalize and misrepresent IK (mātauranga Māori), thereby limiting its promotion. In contrast, the Peruvian case demonstrated that by using an indigenous place-centred action framework (Indigenous Biocultural Heritage modelling (IBCH)), Quechuan conceptual and normative models could be centred, while integrating mainstream organizational and scientific approaches to Development. This approach allowed issues of context, power, meaning and practice to be addressed concurrently, providing a platform for successful IK promotion and engagement with other knowledge traditions.

Overall the research demonstrated that Indigenous and organizational perspectives provide distinct and beneficial conceptualizations of IK promotion within participatory Development. This thesis argues that Indigenous-centred approaches which consider context, power, meaning and practice concurrently and at multiple organizational levels can decolonize Development biases, facilitate IK promotion and engagement between diverse knowledge traditions, and create processes and outcomes of local value. An Indigenous Centred Development Model is presented which integrates the research findings.

Acknowledgements

I would like to express my thanks to my whānau, and especially my parents, Parekōwhai Helmbright and Robert Whitbourne, and grandparents, Harold Helmbright, Tepora Koopu, Marjorie Allen and Ken Whitbourne. To my partner who has done so much to support me through the final stages of this thesis, he aroha mutunga kore ki a koe taku tau.

The doctoral support staff within the Department of Management and International Business at the University of Auckland deserve a special thanks, particularly my supervisors, Mānuka Henare, Hugh Whittaker and the other members of staff who took it upon themselves to push me through to complete this work; ka nui te mihi ki a koutou, Nigel Haworth, Chellie Spiller, Rachel Wolfgramm and Susan Sum.

I would also like to thank the University of Auckland for its financial assistance through the early stages of my PhD with a doctoral scholarship, and the New Zealand Postgraduate Study Abroad Awards (NZPSAA) for supporting field work in South America.

To my fellow PhD students, our friendship and the culture of open inquiry we've cultivated together have been wonderful to be part of. A special thanks to Ben Fath and Antje Fiedler, friends and academic peers from the start to the finish.

Finally, to the people of the communities within which the two Development projects took place, to the tangata whenua of the Tai-Rāwhiti and Pisca regions, ka nui te mihi ki a koutou.

Table of Contents

Chapter 1. INTRODUCTION	1
1.1. He Mihi: A Welcome	1
1.2. Research Background: Development in Context	2
1.3. Research Objectives & Guiding Questions.....	5
1.4. Research Foundation & Orientation	6
1.5. Research Methodology	7
1.6. Research Origins	7
1.7. Development Projects & Participating Communities.	9
Aotearoa Project	10
Peruvian Project.....	13
1.8. Thesis Outline.....	15
Chapter 2. AGRICULTURAL DEVELOPMENT & INDIGENOUS WAYS-OF-KNOWING	17
2.1. Introduction	17
2.2. Agricultural Development.....	17
Development History	17
Development Actors	25
Development Paradigms.....	31
Post-Development Critiques & Enduring Participatory Challenges.....	42
2.3. Indigenous Ways-of-knowing	47
Introduction	47
Theme 1: Defining Indigenous Knowledges & Science	48
Theme 2: Interacting Knowledges	57
Indigenous Ways-of-Knowing Summary	64
2.4. Participatory Development & Indigenous Ways-of-knowing	65
2.5. Organizational Perspectives on Indigenous Knowledge Promotion.....	71
Introduction	71
Localizing Research	71
Institutionalism	75
Proximity & Group Interaction.....	78
Organizational Perspectives Summary	82
Chapter 3. MĀORI & QUECHUAN AGRICULTURE & INDIGENOUS WAYS-OF-KNOWING.....	83
3.1. Introduction	83
3.2. Crops & Culture – Potato & Kūmara	83
People, Plants & Kinship	83
3.3. Agriculture & Te Ao Māori	85
An Historic Overview.....	85
Participatory Agricultural Development with Māori	89
3.4. Māori Principles & Practices	92
Whakapapa	93
Mana	98
Aroha.....	98
Tapu - Noa.....	99
Mauri.....	101
Te Ngākau	102
3.5. Patterns of Māori Social Interaction.....	104
Complementarity	105
Symmetrical Exchange	106
3.6. Mātauranga Māori – Māori Ways of Knowing.....	108
3.6.1 Mātauranga, Mōhiotanga & Māramatanga.....	108
Whakapapa & Ways of Knowing - An Ontology of Knowledge	110

Whakapapa of Being, Knowing & Living Well	112
Oral Traditions: Pūrākau & Ways of Knowing.....	116
3.7. Kūmara & Te Ao Māori.....	120
Oral Representations of Agricultural Mātauranga.....	120
The Maramataka Māori – Integrating Ecological, Lunar & Human Cycles	124
3.8. Developing a Mātauranga Māori Knowledge Framework	125
3.9. Pacha – the Quechan World	127
Agricultural History	127
3.10. Quechan Principles & Practices	132
Pacha.....	132
Apu.....	135
Ayllu	137
Runa	138
Yachay: Andean Ways-of-Knowing	139
Ayninakuy & Yanantin – Reciprocity & Duality.....	141
Sami.....	145
Sumaq Qausay/Kausay – Living Well	146
3.11. Quechuan Principles & Practices in Context.....	147
The Annual Cycle of Potato – Plants, Birds & Stars in Dialogue.....	147
3.12. Chapter Summary	153
Chapter 4. METHODOLOGY	154
4.1. Introduction	154
4.2. Philosophical Foundation.....	155
Matemate-ā-one – Orientating the Methodology.....	157
4.3. Research Design	160
Strategy & Methods.....	160
4.4. Fieldwork – Responsive Ethnography.....	168
Research Timeline.....	168
Aotearoa	168
Peru	170
4.5. Chapter Summary	172
Chapter 5. CASE STUDY: AOTEAROA PROJECT.....	173
5.1. Aotearoa Project	173
Community Context & IK Vitality	173
Project Summary.....	174
Project IK Capacity: Whose Bi-lingual Here?.....	178
5.2. Organizational Level: Institutional Context & Organizational Practice.....	182
Organizational Culture: Context, Practice, Meaning & Power	182
5.3. Indigenous Knowledge in Practice	188
Agricultural & Environmental IK	188
Interacting Knowledges: Mātauranga Māori, Eurocentric Sciences & Agricultural Paradigms..	193
5.4. Organizing & IK.....	194
Chapter 6. CASE STUDY: PERUVIAN PROJECT	198
6.1. Peruvian Project.....	198
Community Context & IK Vitality	198
6.2. Macro Level: Institutional Context & Networks of Development	199
From State Sponsored to International Allies.....	199
6.2.1 External Orientation & Connecting Outward.....	202
6.3. Organizational Level: Participatory Organizing.....	205
Centring the Local	205
Las Papas Nativas – Local Understandings of Native Potatoes.....	217

Organizational Structure, Practice & Capacity.....	218
6.4. Indigenous Knowledge in Practice	221
Diverse Projects & Multiple Knowledges	221
6.5. Development Benefits – Delivering on the Development Promise	241
Chapter 7. FINDINGS	245
7.1. Introduction	245
7.2. Aotearoa Case	246
Development & Indigenous Knowledge Literature	246
Community Context & IK Vitality	249
Māori Perspectives of IK & Organizational Dynamics.....	251
Organizational Perspectives.....	255
7.3. Peruvian Case.....	259
Development Literature.....	259
Organizational Literature	260
Quechuan Perspectives.....	263
7.4. Research Findings Summary	267
7.5. An Indigenous Centred Development Model – IK as ‘first-principle’	270
Chapter 8. CONCLUSION	277
8.1. Introduction	277
8.2. Summary of Research Findings: Practical & Theoretical Contributions	277
8.3. Future Research & Development Directions	280
Development Training.....	280
State Policy & Agency Recommendations	282
Future Research Directions.....	285
8.4. Poroporaki.....	287
REFERENCES	289

List of Figures

Figure 1. Te Tai-Rāwhiti region.	10
Figure 2. Location of Parque de la Papa, southern Peruvian Andes.	13
Figure 3. Arnstein's Ladder of Citizen Participation (Arnstein, 1969).	36
Figure 4. Degrees of research contextualization (Tsui, 2004).	73
Figure 5. Proximity dimensions (Knoben & Oerlemans, 2006).	80
Figure 6. Māori land loss from 1860 to 1890 (Orange, 2001).	87
Figure 7. Selection of dimensions of Whakapapa and narrative functions.	95
Figure 8. Complementarity within traditional Māori narratives (Hanson & Hanson, 1983).	106
Figure 9. Symmetry within traditional Māori narratives (Hanson & Hanson, 1983).	107
Figure 10. Ngāti Porou whakapapa featuring kūmara (Mohi Ruatapu in Reedy, 1993).	121
Figure 11. Mātauranga Māori Knowledge Framework (developed from Hanson & Hanson (1983; Marsden in Royal (2003), Royal (2003; 2008), Lambert, 2007); Smith (2009) and Maffie (2009)). ...	126
Figure 12. Altitudinal zones and agricultural systems of the Peruvian Andes. Potato Park is located between 3500 and 4500m.	128
Figure 13. Adapted Whakapapa of Knowledge Framework (see Ch. 3 for full description).	156
Figure 14. Organic kūmara production calendar.	197
Figure 15. Selection of native potatoes (image supplied by ANDES).	218
Figure 16. ANDES organizational structure.	220
Figure 17. Communal knowledge process integrating traditional and digital technologies.	228
Figure 18. In situ - Ex situ co-management of native potato cycle.	230
Figure 19. Mātauranga Māori Knowledge Framework.	252

List of Tables

Table 1. Participation typology (Agarwal, 2001).	37
Table 2. Typology of Māori involvement in research (Cunningham, 2000).	38
Table 3. Forms of knowledge from Antweiler (1998).	55
Table 4. Development paradigms and implications for local/indigenous knowledge promotion (adapted from Blaikie et al., 2000).	70
Table 5. Whakapapa representing layers of consciousness (Royal, 2003; 2008).	113
Table 6. Integrative Mātauranga Process (adapted from Analytic Hierarchy (Ritchie & Lewis, 2003)).	166
Table 7. Development context & relationship overview - local and international.	200
Table 8. Development projects and donor organizations (Argumedo & Stenner, 2006).	201
Table 9. Potato Park communities and formal inter-community instruments.	210
Table 10. Re-framing Development notions of scale and complexity.	268
Table 11. Participatory Development as multi-scale practice.	269
Table 12. Indigenous Centred Development Model based on interdependent populations and levels of action.	271
Table 13. Main theoretical contributions of research.	278

Glossary

“Tōku reo, tōku ohooho”
“My language, my awakening”

Acronyms

ANDES – Association for Nature and Sustainable Development.

CGIAR - Consultative Group on International Agricultural Research.

CIP – International Potato Centre, Lima, Peru.

CFR – Crop and Food Research.

ECOPT – East Coast Organic Producers Trust.

FAO – Food and Agriculture Organization, a division of the United Nations.

IOR – interorganizational relations

NZ – New Zealand.

SGGES - University of Auckland – School of Geography, Geology and Environmental Science.

UN – United Nations.

Quechuan Terms

Apu – revered mountains, places of spiritual veneration.

Ayllu – a kinship based community.

Ayninakuy or Ayni – a principle of interdependence and reciprocity between all things.

Chakra – the cultivated field; the heart of Andean cultures and the central focus of communal and family activities (Apffel-Marglin, 1998).

Chaninchay – a principle of dynamic balance within social relations.

Lo Andino – the Andean world and the people that inhabit that world. A cultural and geographic construct that integrates people and place.

Pacha – cosmos, universe, world.

Pachamama – Mother Earth, the female earthly expression of Pacha.

Quechua – a family of languages in the South American Andes spoken from Colombia and Ecuador in the north, through Peru, Bolivia and in to northern Chile and Argentine by approximately 10 million speakers.

Rakunawi – a principle for distribution within kinship groups based on need and contribution to work.

Runa – kin based community.

Sami – an animating life-essence which gives vitality to things.

Sumaq Qausay – ‘good-living’ refers to a state of balance/equilibrium between humans and their social and natural environments (Argumedo & Yun Loong Wong, 2011).

Yachay – knowing, knowledge; an inherent quality of the world.

Yanantin – principle of dynamic internal and external relational duality i.e. all things have a dual internal nature, and all things have a complementary (external) partner.

Māori Terms

Aotearoa – Māori name for the country New Zealand. Translated as ‘land of the long white cloud’.

Aroha – to align (aro) with the essence of life (ha).

Atua - elemental forces which ignite and drive the cosmos.

Hapū – localized kinship group.

Iwi – an extended kinship group comprising multiple hapū.

Kūmara – sweet potato (*Ipomoea batatas*); a taonga whose atua and kaitiaki are Rongomaraeroa (male) and Pani (female).

Mahinga Kai – garden or cultivated area, also known as māra.

Mana – the expression of natural, elemental power and potency (tapu).

Māori – two common meanings; a state of naturalness (e.g. freshwater is wai (water) māori (natural)); a reference to the indigenous peoples of Aotearoa.

Marama – the moon and its 29-day cycle.

Mārama – understanding, clarity, to ‘shed light’ on a subject.

Maramataka – marama (moon) taka (a cycle of time) i.e. the lunar month and the activities associated with each night-day period.

Māramatanga – wisdom, māramatanga is a form of deep knowledge, one of Royal’s (2007; 2008) three modes of Māori knowing (see Mātauranga and Māramatanga).

Mātauranga – The term has two meanings within this thesis; i) as a generic term referring to Māori ways of knowing or Māori knowledge, ii) as a specific type of knowledge/knowing described by Royal (2007; 2008) as being declarative or explicit in nature.

Matemate-ā-one – a deep and profound affection for one's land and people and the actions associated with that affection.

Mauri – a life force.

Mōhio – embodied, tacit knowing; a mode of knowing that exist in complement to mātauranga and māramatanga.

Ngākau – the seat of human intersubjective experience/consciousness which integrates the elements of consciousness (Smith, 2009).

Noa – to be in a state of balance, ease, without restriction. A contrasting state to tapu.

Pākehā – New Zealanders of European descent.

Papa-tū-ā-nuku – the earth as mother, source and sustenance of all things. One aspect of the fundamental duality, the other being the masculine Rangi-e-tū-iho-nei.

Rangi-e-tū-iho-nei – the sky as father. The cosmos exists as a complementary duality, Rangi and Papa-tū-ā-nuku.

Rīwai – generic term for potato.

Rongo-maraeroa – one of the children of Papa-tū-ā-nuku and Rangi-e-tū-iho-nei. The atua and kaitiaki of cultivated crops. Also known as Rongo-mā-Tane and Rongo-Hīrea. Pani is the female atua who partners Rongo.

Tangata Whenua – literally people (tangata) of the land (whenua).

Tāpapa – a seed bed for sprouting kūmara.

Tapu – Often translated as sacred or holy, the term applies to a potential to act upon, and restrictions and rules governing actions in relation to that potency.

Te Ao Māori - ‘the world of Māori’.

Te Ao Pākehā – ‘the world of European descent New Zealanders (Pākehā)’.

Tikanga – correct or appropriate behaviour.

Tīpuna/Tūpuna – ancestors.

Utu – reciprocity within social interactions.

Wairua – a spiritual element which resides within the body.

Whakapapa – represents a fundamental assumption that all things are interconnected, interdependent kin. Commonly used to refer to family relationships.

Whānau – one of the primary social groupings within Māori society. An extended family unit.

Chapter 1. INTRODUCTION

1.1. He Mihi: A Welcome

To commence this thesis a greeting and introduction is offered.

He Tauparapara

Tihe uriuri!

Tihe nakonako!

Ka tau ha, ka tau ha te Papa i raro nei

Ka tau ha te Rangī e tū iho nei

Ka tau ha te Matuku mai i Rarotonga

Koia i rukuhia Manawa o Pou-roto

Koia i rukuhia Manawa o Pou-waho

Whakatina kia tina te More i Hawaiki

E pupū ana hoki, e wāwau ana hoki

Awa tāwera, tū ki te Rangī

Kia eke eke Tangaroa, eke panuku

Haumi ē, Hui ē, Tāiki ē!

The first breath, from the darkness!

The first breath, from the depth!

The earth below us rests, rests

The sky standing above us rests

The great bird of Hawaiki rests

The heart of the Inner-Post was dived for

The heart of the Outer-Post was dived for

Make it firm, the taproot from Hawaiki

They are surging up, they are heard abroad

The floating plumes stand in the sky

Rise Tangaroa, rise and rise on!

We have joined, we have gathered, we are
as one!

He Pepeha

Ko Whanokao te Maunga

Ko Mōtū te Awa

Ko Whakaari te Puia

Ko Apanui te Tangata

Ko Te Whānau-ā-Apanui te Iwi

Ko Robert Whitbourne tōku ingoa

Whanokao is the mountain

Mōtū is the river

Whakaari is the volcano

Apanui is the ancestor

Te Whānau-ā-Apanui are my people

Robert Whitbourne is my name

He Mihi

Ki a koutou, ngā hapū o te Tai-Rāwhiti,

ngā hapū o te riu tapu o ngā Inca, ka nui te

mihi ki a koutou, ki ōu koutou tīpuna, ki ōu

koutou maunga, ōu koutou awa, ki ngā uri

kei te haere mai ... mauri ora!

To those communities in which this research
was conducted,

To your ancestors, your mountains, your
rivers and your descendants yet to be born,
this greeting is offered

The tauparapara that commences this mihi is from the Tai-Rāwhiti (East Cape) and Te Moana-a-Toi (Bay of Plenty) regions of Te Ika-a-Māui (New Zealand's North Island). The tauparapara recalls the depths and darkness from which the first human breath emerged ("Tihe uriuri, Tihe nakonako!"). It positions us between a sky and earth at rest, our first parents Rangī-e-tū-iho-nei and Papa-tū-ā-nuku, the fundamental duality of which all things are an expression of. The tauparapara affirms our connection to our original home, Hawaiki, as the tap root from that

homeland is “made firm” (“Whakatina kia tina te more i Hawaiki”). As ocean people our journeys across turbulent seas are recounted with the words, “Kia eke eke Tangaroa, eke panuku” (“rise to Tangaroa, rise and move forward”). And finally, the tauparapara culminates with a declaration of unity (“Haumi ē, Hui ē, Tāiki ē!”).

This tauparapara has been spoken for hundreds of years on marae and amongst the people of Te Tai-Rāwhiti and Te Moana-a-Toi. To speak it is to speak in chorus with those who have lived by all it holds, to speak in chorus with my tīpuna (ancestors).

This tauparapara, in expressing the nature of this world, the origin of human life, ancestral connections, and our fundamental unity articulates a specific ontological, epistemological and geo-cultural position. As someone of Māori and Pākehā descent this position is one in which the threads of two cultures are woven.

The pepeha which concludes the mihi describes the Pou (supporting pillars), the core elements of the iwi (tribe) to which I belong. Whanokao is the mountain we look to, one of many amongst the Raukūmara ranges. The Mōtū is the river that sustains us and Whakaari (White Island) is our volcano, sentinel and the pathway to and from Hawaiki.

Apanui-Ringamutu is the ancestor we are descendants of, and consequently, we are known as his family, Te Whānau-ā-Apanui. Our land reaches from Te Taumata-ō-Apanui (between Tōrere and Hāwai, east of Ōpōtiki in the Bay of Plenty) to Pōtaka, into the Raukūmara ranges and out into Te Moana-a-Toi.

The final section acknowledges and thanks those who participated in this research, their (our) lands, mountains and rivers, their ancestors and descendants, with a final salutation to our collective well-being (mauri ora!).

1.2. Research Background: Development in Context

After 400 years of colonization, 200 years of industrialization and 60 years of post-World War Two ‘development’, Indigenous peoples in general find ourselves collectively on the political, economic and cultural peripheries of the countries created on our homelands. Through the 20th century’s development era agricultural development has emerged as a significant mode of interaction between ‘undeveloped’ Indigenous farmers and professionals of the ‘developed’ world (e.g. agricultural scientists, academics, engineers, administrators). Across

the fertile poverty of the Global South's farming communities a global agricultural development industry sprouted involving government agencies, international donor groups, research institutes and a range of non-governmental organizations (NGOs). The professionals of this industry have diagnosed the ills of Indigenous communities, prescribed cures, and demonstrated to Indigenous communities the wonders of Western science, industrial agriculture and capitalist markets. After centuries of colonization, imperialism and economic subjugation, after the loss of territories and near extinction due to war and disease, a startlingly simple solution was offered by the proponents of development "Think like us, do what we say, grow food like this, sell it for money and you'll be on your way, you'll be developed, the misery will be over, your salvation is at hand".

Since the 1950s this path to salvation has been dominated by top-down, science and market-centric approaches. The failings of these approaches were evident by the late 1970s, with critiques of the assumptions, practices, effects and purported benefits of development gaining in strength. Development appeared to be more a mirage than a promise fulfilled, with the benefits of development projects occurring inconsistently at best. Perhaps more concerningly, development practice was increasingly seen as complicit in processes of cultural loss and colonial power relations. It is quite possible the failings and limitations of development were clear to farmers and community members themselves well before the late 1970s, but pointedly, their voice is silent within the literature on that matter.

With the mounting critique of conventional development, the development industry turned to the revolutionary idea that communities themselves could, and perhaps should, articulate their own problems while participating in the creation and implementation of solutions to those problems (Chambers, 1983). This 'turn to the people' marked a change in development, it became 'participatory'. The goals of this new approach were for agricultural scientists and farmers of the Global South to work together, to collaborate, with the cultural and political differences between the two groups bridged by the goodwill of participatory scientists and the emerging suite of 'participatory tools'. Participation seemed to tick all the boxes for a new ethical approach to development. Practitioners embraced it, funders demanded it, and by the early 1990's it had become almost impossible to find a development project that was not participatory, by name, if not by nature. At the same time a peripheral yet influential group of writers were calling for the complete abandonment of development at all levels, from the

'structural adjustments' of nation states advocated by the International Monetary Fund to the conducting of development projects in thousands of communities across the Global South (Sachs, 1992; Escobar, 1995). Unsurprisingly, the development industry has not heeded the call to dismantle itself and today, 30 years after its appearance, participation as an espoused methodology, ethical position, development means and end, and as a key term in any worthwhile funding application, remains an industry standard.

Knowledge has always been central to development, and the participatory 'turn to the people' meant a turn to the knowledge of the people, referred to as Indigenous Knowledge (IK), Local Knowledge (LK), Traditional Knowledge (TK), Traditional Ecological Knowledge (TEK) and many other names. Where externally generated technical 'solutions' had delivered inconsistent benefits for Indigenous communities, it was thought that the knowledge of community members could be utilized, under the watchful eye of technical and social scientists, to improve development results.

The promotion of IK through the participatory development era has however provoked an array of complex and enduring questions, questions such as how might local understandings, beliefs, practices and processes, and those of agricultural scientists interact? How could groups and organizations meet and learn when significant differences in location (urban vs rural), cultures, languages, and political relationships (e.g. colonization) exist? The questions IK promotion raises, and their enduring prominence, highlights the complexity of development work, and the need to address issues of social, cultural, linguistic, economic and geographic difference.

From an Indigenous perspective the challenge of IK promotion can be viewed with cautious optimism as it offers potential to reconfigure the spatial, political, economic and epistemological assumptions of development discourse, moving from linear unidirectional models of the core acting upon a passive 'periphery' (i.e. indigenous communities) to approaches which centre indigenous communities and involve circular mutually beneficial exchanges of knowledge, skills and solidarity between indigenous peoples and other 'centres' i.e. between development actor groups and organizations (Garrett-Graddy, 2014). The optimism of reconfiguring the colonial logic of Development discourse occurs with caution, as a more visible practicing of IKs involves engaging with 'non-local' knowledge and economic systems (e.g. interaction with global capitalism and its legal mechanisms) with demonstrated

histories of Indigenous exploitation. The challenge of IK promotion should therefore involve a politicizing of knowledge and economy as central dimensions of Development where diversity is valued (e.g. polycentric global epistemologies (Maffie, 2009) and diverse economies (Gibson-Graham, 2002)) and understood as spatially and historically centred (Garrett-Graddy, 2014).

1.3. Research Objectives & Guiding Questions

From this context of evolving development ideologies, both embedded within and articulating colonial relations, a range of theoretical and practical issues have been identified. From these issues a set of research objectives were developed to orientate the enquiry.

Research Objectives

- To explore the relationship between IK and organizational dynamics within participatory agricultural development.
- To understand the ways in which Indigenous communities can/could express our ways-of-knowing more freely, creatively and in concert with other knowledge traditions.
- To use Indigenous and organizational methodologies and conceptual frameworks to conduct the research.
- To develop insight that is of practical use to Indigenous communities, development workers and the academic community.

As the research was exploratory, developing focus through engagement with the communities and Development practitioners of each case over time, these research objectives evolved into more specific guiding research questions;

Guiding Questions

- How was IK practiced within the projects?
- What was the relationship between the projects' formal organizational elements and the enactment of IK?

1.4. Research Foundation & Orientation

This research is framed within a set of Indigenous community orientated aspirations which provided an ethical foundation and set of guiding principles to the research. The research objectives and guiding questions described previously are therefore addressed from within this framework. These principles include;

- ***Matemate-a-one*** – aroha for one’s people and homelands.
- ***Mana-aki*** – enhancing the mana of people.
- ***Whakawhanaungatanga*** – cultivating familial relationships with research participants, their communities and organizations.
- ***Māramatanga*** – developing insight and understanding which is culturally and ethically grounded.

From this Māori centred foundation, the research was further guided by the following research principles;

- ***Sensitivity to position*** – the research required a high level of reflexivity and sensitivity to relational dynamics with politically, culturally and geographically diverse communities and organizations e.g. being Māori amongst Māori, being an Indigenous visitor amongst Quechuan peoples, an academic in the (potato/kūmara) field, and an activist in the academy.
- ***Integrating multiple approaches to knowing*** – the centring of Indigenous ways of knowing reflected a positioning of knowledges, akin to Maffie’s (2009) notion of a polycentric global epistemology which advocates for diverse Indigenous and non-Indigenous knowledges interacting creatively, critically and ethically.
- ***Multidisciplinary*** – the research used multiple disciplines to allow the interplay between disciplines and paradigms to inform the generation of novel insights (Lewis & Grimes, 1999).
- ***Gentle knowing*** – an approach was taken that applied conceptual and theoretical models in a way that allowed provisional and contextual knowing to emerge. From a Māori perspective I term this approach a ngākau centred expression of knowing (he

ngākau māhaki), what Miller (2011) and Gibson-Graham (2006b) might term a beginner's mind approach to knowing i.e. an open and hospitable orientation towards that which engages our curiosity, a seeing of the world anew, while refusing to know too much.

1.5. Research Methodology

The research involved an ethnographic multiple-case study approach. This approach allowed relationship building, observation and focused discussion to occur, with insight generated through in situ and ex situ approaches. This approach meant in situ conversation was not limited to 'gathering data', but instead involved conversation relating to the research topics of IK promotion and the relationship between IK and development organizing. Qualitative analytic methods were used to reveal themes and relationships within recorded data (field notes) and secondary sources (e.g. project publications, project reports). The approach taken was not a linear one of data collection being a discrete phased followed by data analysis, that rather emerging insights occurred iteratively through repeated in situ interactions, ex situ data interpretation, and consideration against the literature.

Working with indigenous peoples in Spanish colonized Peru and English colonized Aotearoa meant there was no lingua franca (common language), either colonial or indigenous, between the case study communities. The lack of a lingua franca had significant implications for conducting fieldwork and accessing literature which are discussed in detail in the Methodology chapter.

1.6. Research Origins

In this section the participating development projects and communities are introduced. However, before proceeding to this introduction an overview of the genesis of the research is presented. Central to the research has been the concept and experience of *matemate-ā-one*, loosely translated as a deep and enduring love for one's people and homelands. *Matemate-ā-one* is discussed in detail in Chapters 3 (Māori and Indigenous Knowledge) and 5 (Methodology). The description of the genesis of the research is autobiographical and reflects *matemate-ā-one* as a lived experience which shaped this academic enquiry.

Matemate-ā-one – Research Origins

The origins of the research lie in the experiences of myself and my whānau over many generations, our whakapapa. I am of Māori and Pākehā descent, I grew up on a farm in the Watagan Mountains of Eastern Australia and it is there and the Tai-Rāwhiti (East Cape, North Island) region of Aotearoa that I call home. My Pākehā and Māori grandparents were farmers, both of my parents were farmers, and my siblings and I were raised on a farm. These farms were not large industrialized farms, rather they were the types of farms were cows, horses, goats, sheep, beehives, mountains, rivers, paddocks and bush, derelict sheds, constant work and huge gardens combined to create a home. This type of life has shaped my whānau experiences of for many generations, it has shaped my sense of self, my relationships, my values and my understanding of people and the world.

Such a life does not of course invariably lead to conducting research involving Māori and Quechuan agriculture, but it does create a disposition, both intellectual and physical, towards agricultural life, what Bourdieu (1986) might term a *farmer's habitus*. My sense of self has been shaped to orientate towards farms, to mountains and rivers, and the people that inhabit them. This habitus forming farm life constituted my life until my late teens. By the late 1990s I had returned to Aotearoa from Australia, I was living in Auckland and had immersed myself in elements of Latin American culture practiced in Aotearoa. I played percussion in samba and maracatu bands, I enjoyed capoeira, friends organized Latin American festivals, and I had many friends from South America. Through this period I was also learning mau rākau (Māori martial arts), rongoā Māori (Māori healing), te reo Māori, and spending time with my whānau near Ōpōtiki and within the Te Whānau-ā-Apanui rohe. Through this period of the early 2000s I studied for a Degree in psychology and then a Masters in organizational psychology. The earliest stages of my life had been that of a farm kid, living within both Māori and Pākehā worlds. Later a mix of Māori, academic and Latin American interests had dominated. Given these experiences it was natural to be drawn to the cultural connections between Māori and indigenous peoples of South America. Kūmara (*Ipomoea batatas*) the taonga crop of Māori, a staple of rural Māori life had arrived in Aotearoa from South America before European arrival in the Pacific, and was the clearest indigenous-to-indigenous link between Aotearoa and South America (Ballard, Brown, Burke & Harwood, 2005).

In 2006 a plan was hatched to visit South America, to purposefully search out the home of kūmara and to experience agricultural life across the countries I would visit. In June 2006, I left for Peru with a backpack, a guitar and not much else. After arriving in Lima I made my way to Cusco, where kūmara is not grown (due to altitude), but where an indigenous NGO called ANDES conducted agricultural development work with Quechan communities for whom la papa (potato) was the main crop and a central part of community life. Although kūmara was not grown amongst the villages there were similarities between the traditional practices and meanings of kūmara, and those of la papa (potato) amongst these communities. During this visit I saw what seemed like a unique form of development practice, were an indigenous NGO, an international research centre (the International Potato Centre (CIP)) and Quechan communities collaborated in ways that appeared to benefit each group. One of ANDES directors, Alejandro Argumedo, had visited Whakatāne in 1993, attending the *First International Conference on the Cultural & Intellectual Property Rights of Indigenous Peoples*. Alejandro was active in international indigenous networks and he saw benefit in developing further the relationship between Quechuan and Māori peoples. Alejandro extended an invitation to work with ANDES and strengthen this relationship.

From this invitation a decision was made to develop a PhD project which strengthened relationships between Quechan and Māori peoples, supported the mana of both, and developed insight into how Māori and Quechan peoples might work with agricultural research institutes in beneficial ways. Having already been invited to work with ANDES, a search began for a development initiative involving the taonga crop of Māori, kūmara, and a research institute from which a doctoral thesis could be conducted. In January 2007 a participatory agricultural development project involving Māori communities, traditional cropping and the adaption of organic cropping principles to the needs of those communities was found in the Tai-Rāwhiti region (adjacent to my own iwi). A request was made to conduct research with the project, which was accepted. In February 2007 a doctoral supervisor had been confirmed, Manuka Henare, at the University of Auckland's Business School.

1.7. Development Projects & Participating Communities.

The following section introduces the two case studies, providing an overview of each project, the place of IK in each, the networks of organizations involved and the organizational models

used. Fieldwork commenced with the Aotearoa project in June 2007, continuing to 2010, while fieldwork in Peru occurred from April to October 2009.

Aotearoa Project

Communities

The project occurred within the iwi rohe of Ngāti Porou, in the Tai-Rāwhiti (East Cape) region of Aotearoa. Ngāti Porou is one of the country's largest iwi, with the 2006 New Zealand census recording 72,000 iwi members living in Aotearoa, of which approx. 6% (4,500) lived within the iwi rohe. Geologically the Tai-Rāwhiti region is relatively young, dominated by steep mountainous country inland, with rolling hills near the coast. The region's climate is one of moderate winters and long dry summers. Agriculturally the area has a long history of crop cultivation with local oral tradition recounting the arrival of kūmara to the region aboard Horouta waka around the 1400s. With the arrival of Europeans in the 1800s crops including maize, wheat, potato, kamokamo, and stone and citrus fruits were adopted creating a diverse horticultural economic base. By the early 1900s the iwi had developed significant pasture based farming and participated in national and international sheep, beef and dairy markets, while maintaining localized horticultural systems. Economic



Figure 1. Te Tai-Rāwhiti region.

changes through the early and mid-20th century (e.g. the Great Depression, a reduction in beef, sheep and dairy supply to England) and accelerating outward migration post-World War Two combined to create significant social, cultural and economic impacts within the iwi homelands. In terms of communal kūmara cultivation, iwi members recount the 1960s as a turning point as demographic changes (ageing and reduced population) meant communities were unable to maintain the practice. Kūmara growing by traditional methods and based on traditional knowledge systems was maintained from the 1970s onwards by a small and ever decreasing number of whānau. By the time of the project in the early 2000s communal kūmara growing had ceased, with only small numbers of hapū elders maintaining traditional practices. For many of the project's participants communal agriculture was therefore a

childhood memory, to be recounted, with snippets of knowledge recalled and brought back to life through efforts to 'return to the whenua'. Project participants' motivations to engage in organic horticulture and kūmara growing were described by Bruges (2006) as centred around themes relating to the perceived health benefits of organic production for people and the land, a desire to effect positive change in their communities and whānau, a desire to be self-reliant and to have food security, and a desire to revive and revitalize traditional practices.

Development Initiative

The Development initiative involved two concurrent and integrated state-led development projects, referred to as the Aotearoa Project throughout the thesis. The two projects ran from 2003 to 2008, with the science team involved in post-project activities with project growers through 2009. The initial funding application had included eight related projects, but only two of these secured funding. Crop and Food Research (CFR), a state-owned Crown Research Institute (CRI) and the East Coast Organic Producers Trust (ECOPT) jointly developed the initial project proposal, with CFR managing the projects.

ECOPT was a collective of organic famers/producers in the Tai-Rāwhiti region. ECOPT membership was predominately Māori. The collective states their guiding principles are kaitiakitanga, whanaungatanga and tino rangatiratanga i.e. guardianship, relationship and self-determination. At the start of the Aotearoa project ECOPT was an organization in its infancy. The organization comprised a small number of enthusiastic members who were tasked with supporting the growth of a new approach to agriculture within the region. At the time agriculture across the region was dominated by industrial farming models (i.e. high capital input, low worker numbers, conducted through private organizations). ECOPT did not emerge from an established organic sector in the region, rather, it was an organization tasked with leading the establishment of an alternate (organic) horticultural approach in the region.

Participating Organizations

The Aotearoa Project involved ECOPT, CFR and three other science providers; AgResearch (a Crown Research Institute), the University of Auckland's School of Geography, Geology and Environmental Science (SGGES) and Page Bloomer Associates. Except for Auckland based SGGES, the science providers were all based in the Hasting-Napier region. Auckland and

Hastings-Napier are approx. 7-8hrs and 5 hrs driving time respectively from the project communities.

Participating Growers

Bruges (2006) reports that in the first years of the project (2003-2005) there were approx. 5-10 active core members of ECOPT from the areas of Tikitiki, Tikapa, Keikei-Waipiro and Ūawa (Tologa Bay). There were another 5-10 'peripheral' project participants.

When field work was carried out between 2007-2010 this number had reduced to three growers participating in the project, and three 'peripheral' participants. Larger numbers did attend specific events, particularly community focused events, but these event attendees were not active project participants/growers. The active growers were each from distinct hapū/communities, meaning horticultural practice occurred in relative social and geographic isolation. These project participants were Ngāti Porou, but they were not closely related.

Project Aims and Administration

Bruges (2006, p.78) reports the aims of the two projects as being determined by CFR scientists and ECOPT members at a hui in Ruatōria in September 2003, these aims were;

1. to help East Cape Māori make the transition from extensive agriculture to intensive organic horticulture
2. to provide scientific, education and extension services to assist the ECOPT to develop and implement best organic vegetable farming practice
3. to design research methods to promote beneficial change in rural Māori communities and production systems (in collaboration with the wider Māori community).

A fourth aim that was not stated by Bruges but was featured in Project publications and described by the project manager and project scientists was;

4. To engage with and encourage Mātauranga Māori as it related to Māori agriculture.

To address the first two of these aims, the science providers utilized a knowledge transfer approach where field activities would demonstrate scientific approaches to organic and intensive horticulture. Field activities did allow Māori growers to demonstrate and share elements of Māori horticultural practice and knowledge (i.e. Mātauranga Māori) with other growers and the science team and there were formal sessions within project activities for this activity. Mātauranga Māori expertise was not rewarded formally in the way that scientific

expertise was through contracted services i.e. Māori growers shared mātauranga freely, while scientific experts were contracted to share knowledge from within their fields of expertise.

Project Funding

Project funding was approx. NZ \$700,000 per annum, totalling \$3.5 million over 5 years (2003-2008). Project management provided annual project reviews of project progress.

Peruvian Project

ANDES – an Indigenous NGO

The Association for Nature and Sustainable Development, abbreviated to ANDES, is an Indigenous, Cusco-based, non-governmental organization (NGO) which began in 1995. ANDES began as a volunteer organization working in development and conservation projects amongst Indigenous communities in the southern Peruvian Andes. Between 1995 and 2009 ANDES worked with 39 Quechuan communities in the area and approx. 20 international development co-operation institutions (IDCIs) and research institutes on a broad range of projects. During this period four groups of communities established Indigenous Biocultural Territories (IBCTs) to focus community political, economic and cultural aspirations. The focus of this thesis is the work in one of those IBCTs, El Parque de la Papa.



Figure 2. Location of Parque de la Papa, southern Peruvian Andes.

El Parque de la Papa - The Potato Park

El Parque de la Papa, the Potato Park in English, involves six ayllu (communities) who formed an Indigenous Biocultural Heritage Territory (IBCHT) in 1998 to promote a range of endogenous development goals, including the repatriation of potato varieties from the International Potato Centre (CIP) in Lima to the communities of the Park, and improving household livelihoods, (Argumedo, 2011). The six ayllu comprised approx. 7000 inhabitants, with 1% of that population being non-Indigenous (i.e. community members are almost completely of Quechuan ethnicity (Argumedo, 2011)). The ayllu are located on ancestral lands

at the head of El Valle Sagrado de Los Incas, the Sacred Valley of the Inca. Quechuan is the dominant language of the ayllu. The Park is a one-hour drive from Cusco, it covers approx. 10,000 hectares and is between 3,400 and 4,500 meters above sea-level. The ayllu which formed the Park were Sacaca, Kuyo Grande, Pampallaqta, Peru Peru, Amaru and Chawaytire with each ayllu practicing high levels of communal subsistence agriculture. The Park area is recognized as one of the original areas of potato domestication. Approximately 900 potato varieties of potatoes are thought to have been grown amongst the six communities up unto the early 1900s, with approx. 400 varieties being grown at the time of the Park's formation. The level of domesticated and wild potato diversity in the area ranks at the highest level through the Andes with other crops including olluco, beans, maize, quinoa, wheat, tarwi, mashua and oca grown across the communities (Alejandro, 2011).

The communities' relative proximity to Cusco, a major Andean urban centre and one of South America's largest tourist attractions, means that along with Spanish colonial society influence, the communities have exposure to Anglo and European cultures. This exposure has increased in recent decades as many young villagers seek work in Cusco and other urban centres as labourers, maids, taxi drivers, street vendors and trekking porters. The southern Peruvian – Northern Bolivian area of the Andes, with Cusco, Machu Pichu and Lake Titicaca in close proximity, has been an area popular with tourists, researchers and development promoters alike since the 1960s.

Within the communities, social activity and organization is centred on the agricultural year, the festivals that punctuate the year, and family and community participation in these activities. Social institutions are described by Argumedo (2011) as occurring through both traditional communal and formal (state sanctioned) means. Argumedo describes traditional communal institutions occurring at three scales; the **Landscape scale** which includes the Apu (sacred mountains) of the area; the **Ayllu (community) scale** where recognized community elders guide communal activities, and the **Family scale** at which most day-to-day decision making occurs. Formal institutions include three elected community bodies; i) the **Asamblea General** (General Assembly) which is the highest body, ii) the **Directiva Comunal** (Community Board) and iii) **specialized committees** that coordinate with the Community Board. Argumedo describes a central element of ANDES working with both traditional communal and formal institutions, engaging these institutions in projects and within ANDES organizational

structures and inter-community arrangements (e.g. the Inter-Community Access and Benefit Sharing Agreement).

Project Aims and Administration

Across the Potato Park ANDES staff described their work as focused on four thematic areas;

- i. promoting the use and rights associated with traditional crops.
- ii. improving the management of activities across the landscapes of the communities.
- iii. developing and implementing strategies for food security, health, economic well-being.
- iv. providing education and training opportunities.

Project administration was conducted by ANDES, and through models that integrated community governance structures and ANDES organizational structures (e.g. the Inter-Community Agreement for Equitable Access and Benefit Sharing). These integrated organization-community structures allow community centred governance, with ANDES and community based teams providing operational and administrative functions for projects.

Project Funding

Between 2001 and 2006, ANDES received an average of just over US \$200,000 funding per year from charities and international organisations (Argumedo & Stenner, 2008). Funded, projects addressed issues of network building, skills and capacity development, IK support, collaborative agrobiodiversity (potato) management and infrastructure development (e.g. construction of buildings), with funds also used for administrative, personnel and travel costs.

1.8. Thesis Outline

The thesis is structured as follows. Chapter 1 welcomes the reader and introduces the research background, objectives, methodology and participants. Chapter 2 provides an overview of development, focusing on participatory development and IK promotion. Key trends in the IK–development literature are discussed, including the emergence of IK, how IK has been conceptualized and contrasted with other knowledge traditions (e.g. ‘Western Science’), the dynamics of interaction between IK and other knowledge traditions, and how institutional and cultural contexts affect interactions between knowledge traditions. After

surveying the IK-development literature the chapter offers a sample of organizational perspectives on the issues identified.

Chapters 3 provides an overview of Māori and Quechuan IK, focusing on each peoples' agricultural traditions. Chapter 4 outlines the research methodology, methods and the processes of developing insight. The chapter begins with an outline of the philosophical and ethical orientation of the research, followed by a discussion of the ontological and epistemological assumptions of the research, the research design and process. The chapter also presents reflections on the challenge of working across multiple cultural contexts.

Chapters 5 and 6 present the two case studies focusing on the relationship between IK and organizational dynamics at macro (institutional and inter-organizational), organizational, and organization – community levels. Chapter 7 presents the findings of the research and discusses and interprets them in relation to the literature. Each case is discussed from multiple perspectives, including Māori, Quechuan, organizational and development perspectives. An Indigenous Centred Development Model is presented as a representation of the research findings. Finally, Chapter 8 summarizes the research, presents practical and theoretical recommendations, finishing with closing thoughts and a poroporoaki.

Chapter 2. AGRICULTURAL DEVELOPMENT & INDIGENOUS WAYS-OF-KNOWING

2.1. Introduction

The aim of this chapter is to develop a set of conceptual and theoretical understandings from which to consider participatory Development and IK promotion. The current literature displays a range of levels of analysis and divergent conclusions regarding Development, ranging from arguments for refining and improving Development, to calls to abandon Development completely. Development literature is notable in that indigenous methodologies, frameworks and concepts approaches are almost completely absent beyond macro-level critiques of Development as discourse. Organizational studies perspectives of Development and IK promotion studies, are more common, but still limited in the scope of their application, being largely confined to issues of NGO management, organizational culture in Development (Lewis et al., 2003), congruence of organizational text (rhetoric) and practice (Cornwall & Eade, 2010), and the relationship between knowledge and power within Development projects (Goldman, 2001).

The chapter is structured in four sections. The first section provides an overview of the history and construction of Development and its evolution post-World War Two. The second section discusses IKS in a general sense, with the third section focusing on IKS within Development. The final section explores the potential of organizational theory to provide insight into issues of IK promotion.

2.2. Agricultural Development

Development History

Development Origins

With the fragmentation of colonial powers and the political and economic ascendancy of the USA post-World War Two, the world's nations were divided through the articulation of a grand socio-political and economic narrative of development (Rist, 2007; Sachs, 2010). Nations were categorized as "developed", the USA and its wealthy allies, and "undeveloped", the poor nations of Africa, Asia and Latin America. Central to this narrative is a binary and

hierarchical classification of nations and peoples which has its roots in centuries old Eurocentric assumptions of European cultural, political and economic supremacy and a homogenized 'other' as deficient in all aspects of life (Sachs, 1992; Rist, 1997, 2002; Engle, 2010). These assumptions have been described as representing a 'developmentalist' understanding of humanity where the global majority from outside of Europe has been constructed as an antecedent immature version of Europe, a version of European life which has yet to evolve or develop into the mature state exemplified by the nations of Europe, and particularly the Western European nations (Hindess, 2007; Helliwell & Hindess, 2011). Europe is cast as the mature parent to a family of childlike peoples across the globe. Developmentalist writers draw attention to two significant periods; i) the 17th – 18th century Enlightenment and European Imperialist period and ii) the post-World War Two period. These two periods are of significance as the first involved the initial period of large scale interaction between indigenous and European peoples, and the establishment of a hierarchical Eurocentric worldview amongst European peoples. The post-World War Two period is of significance as it marked a reframing of the civilized – uncivilized concept of 17th–19th century Europe, with the USA emerging as a superpower whose leaders redefined the global order politically, economically, militarily and ideologically.

Enlightenment, Imperialism and the New 'Other'

From the 17th century scientific discoveries, internal political and ideological changes within Europe, and interactions with previously unknown peoples of the Americas, Africa, Asia and the Pacific shaped European understandings of itself and other peoples. In the early 17th century development was a concept grounded in the physical, representing an unfolding of potential, "the coming into reality of something that has potentially been there from the beginning." (Six, 2009, p. 1104). Through the period of the French Revolution, with the overthrowing of the monarchy and the emergence of a form of government based on democratic ideals, the notion of development was applied to social contexts. Central to this application were the ideas that societies developed into more mature forms (e.g. from absolute monarchy to democracies) and that state intervention was necessary in this process of social maturing (Rist, 1997). By the late 1800s Darwin's Theory of Evolution was being applied to understanding social and cultural dynamics and difference (i.e. Social Darwinism). Changes within societies were then described as involving a movement from less to more

evolved or developed states, for example the French Revolution's movement from monarchy to democracy represented a social and cultural development from a less to more mature political and cultural form.

When considering difference between societies and cultures, Engle (2010) argues an ideology emerged through the 1800s which centred European societies as geographically, culturally, economically and politically 'developed' and 'evolved' while non-European societies were seen as less developed and less evolved. This construction provided justification for relationships ranging from benign paternalism to authoritarian dominance i.e. the centre (Europe) was a mature adult whose paternalism was applied benevolently, and with disciplinary force if necessary, to the immature 'other'. Within this context grew a narrative of the centre as a global exemplar, civilized, refined, enlightened, Christian and rational, and for whom there was a moral obligation to intervene in the lives of the uncivilized, barbaric and superstitious peoples of the rest of the world. This narrative varied in form, with non-Europeans considered variously to be noble savages, as an intermediary between 'evolved humans' (Europeans) and primates, and as degenerate humans in need of salvation by others (During, 2005).

In exploring the moral imperative of the 'centre' to act upon the 'other', Rist (1997) presents a case for considering salvationist and missionary elements within the Christian tradition as central to the structured relationships of the development narrative (i.e. 'Christian-heathen other' replicated as 'developed-underdeveloped') and its interventionist ethic (i.e. the developed are morally obliged to convert and save the undeveloped). In discussing the role of NGOs, Anderson and Reiff (2005) suggest Development NGOs can be understood as a contemporary secular post-religious missionary movement;

"It is simply the analogue of the Western missionary movements of the past, which carried the gospel to the rest of the world and sought in this way to promote truth, salvation, and goodness. It is a movement with a transcendental goals and beliefs. It is self-sacrificing and altruistic"

Anderson and Reiff (2005, p. 31) cited in Lewis and Opoku-Mensah (2006, p.668).

Since the beginning of European colonial expansion Christian groups have been at the forefront of colonization, often promoting conversion to Christianity and adoption of Western

models of agriculture, economics, education and politics concurrently to newly 'discovered' peoples (Lewis, 2001). In the post-World War Two period where US President Truman declares the world as divided between the developed and the undeveloped, and that the undeveloped must enter on a path to development as defined by the USA, a parallel can be seen between the missionary call to conversion and salvation, and Development rhetoric. For Rist (1997) the widespread acceptance by Westerners of interventionist Development is in part due to it reflecting an older religious (Christian) ideology and practice of heathen conversion that has been part of Western consciousness for millennia.

Turning to the post-World War Two period Development narrative, many of the markings of the older Eurocentric civilized - uncivilized construction that emerged through the periods of European Enlightenment and colonial expansion can be seen (Pottier, Bicker, & Sillitoe, 2003). Although there is a continuity reflected in both the classification of nations and the structuring of their relationships, Sachs (2010) and Engle (2010) describe the contemporary developed-developing narrative and its practices as involving significant changes to the earlier civilized-uncivilized narrative. First, it is argued the USA's political and economic ascendancy post-World War Two as resulted in the 'global centre' moving from Europe to the USA. Given the continued political and economic power of the European countries, particularly the European Union block, and the strength of the BRIC nations (Brazil, Russia, India, China) it may be more accurate to describe the Development narrative as evolving into one which encompasses multiple 'Developed nation' centres.

Second, the capitalist economy is given far greater prominence, presented as a defining feature of the developed-undeveloped narrative, with integration into the global capitalist economy as producer and (mass) consumer defining a 'developed society' and therefore being a goal of development. Thirdly, the Christian religion plays a lesser role than in the earlier narrative where the notion of civilizing non-Europeans through conversion to Christianity was central. Within the new development narrative there remains a conversion drive but it is framed in modernist rather than religious terms.

Development Post-World War Two

Post-World War Two interventionist Development emerged within a context of global political and economic upheaval as the industrialized nations had been the centre of a global

war lasting 5 years (1939-45) and these nations were both economically re-building and politically re-aligning along geopolitical lines as 'developed' and 'undeveloped', and capitalist and communist (USA and USSR aligned) nations. Processes of de-colonization had also gained momentum through the first half of the 20th century, accelerating mid-century as large numbers of colonial states in Africa, Asia and Latin America gained formal political independence.

US President Harry S. Truman's inauguration speech in 1947 and the Four Point Plan he articulated as a pathway to global prosperity, happiness and freedom, represent a significant point in the history of Development. Within the Four Point Plan, it is the fourth and final point that articulates a picture of the majority of the world being underdeveloped and suffering from misery, starvation and disease. In this address it is stated that for the first time in history an answer exists to this state of misery, and that answer is in the form of US led science, technology, industry and democracy. Within Truman's speech the USA is presented as the exemplar that all nations should aspire to. Fortunately for the nations of the world, USA scientific, political and economic development is matched by its moral and ethical superiority, and in what is clearly an act of globally defining generosity, the USA extends a kind hand of paternalist benevolence to assist nations of the world to overcome their miserable underdeveloped ways, and for the first time, enter into a brave new world of prosperity. Towards the end of Truman's speech, he states;

"The old imperialism—exploitation for foreign profit—has no place in our plans. What we envisage is a program of development based on the concepts of democratic fair-dealing. All countries, including our own, will greatly benefit from a constructive program for the better use of the world's human and natural resources. Experience shows that our commerce with other countries expands as they progress industrially and economically. Greater production is the key to prosperity and peace. And the key to greater production is a wider and more vigorous application of modern scientific and technical knowledge."

Within the context of post-World War Two USA-USSR 'Cold War' relations and decolonization across Africa and Asia, Truman's call to join the developed nations reflects a new political alignment. The developed – developing nation ideology provided a means of collectivising the

countries of multiple European colonies under a single banner, as developing nations, and directing their political and economic alliances towards the USA.

In considering the historic course of development, Cowan and Shenton (1996) and Hart (2001) have argued a distinction be made between different meanings associated with the term development. Although each has slightly different historic emphasis, both Cowan and Shenton, and Hart describe two meanings associated with development. Cowan and Shenton describe one meaning as referring to development as an unintentional and immanent process, such as 'the development of capitalism'. The second meaning refers to intentional actions and interventions directed towards marginalized peoples, and ranging in scale from the macro (e.g. economic structural adjustments) to the micro (e.g. agricultural projects). Hart covers similar conceptual territory, differentiating between 'big D' and 'little d' development; big D Development referring to "... a post-second World War II project of intervention in the 'third world' that emerged in the context of decolonization and the cold war", and 'little d' development referring to "... the development of capitalism as a geographically uneven, profoundly contradictory set of historical processes" (p.650). For Cowan and Shenton, and Hart, the differentiation between intentional actions and immanent processes is an important one, as a single term had used for both, leading to conceptual confusion.

In arguing for a distinction between intentional intervention and immanent process, Cowan and Shenton have also highlighted the relationship between these two forms of d/Development. It is argued that intentional interventions have occurred in the global South over the past century to specifically shape large scale economic and political processes, for example, intentional agricultural, educational, medical interventions were undertaken during the 1940s-1970s in colonial and post-colonial African countries in response to, and to affect, processes of rapid urbanization and industrialization. Here big D Development occurred to counter the negative effects of the development of capitalism within these countries. More recently the theory and practice of intentional Development has addressed immanent political processes in North America (i.e. 1960s civil rights movements) and South America (e.g. radical theorists confronting 'structures of oppression', and catholic priests and indigenous communities undertaking popular education to address social inequalities). The neopopulist 'turn-to-the-people' within agricultural Development since the 1980s also

involved elements where Development sought to effect political and economic development beyond the specifics of the project i.e. promoting democratization and civil society. In part the criticism of participatory Development which emerged in the 1990s as Post-Development criticism (discussed later), also addressed the relationship between intentional interventions and immanent processes. Critics such as Escobar (1995; 1996), Esteva (1992) and Sachs (1992) argued that interventionist Development was not only embedded in Eurocentric and hierarchical discourses, but acted to maintain these inequalities i.e. the inequalities of (little d) economic and political development as colonial project were not altered by Development interventions, and the paternalism and local non-structural focus of big D interventions reinforced development inequalities. In charting the evolution of Development post-World War Two, the big D/little d development distinction is useful both conceptually in marking immanent process from intentional practices, and by articulating a tension between macro level inequalities and localized attempts to enact participatory ideals.

Returning to the early decades post-World War Two, during the 1950s and 1960s Development practice and theory reflected the modernist vision articulated in Truman's address (Andrews & Bawa, 2014). At this time extension and transfer methodologies dominated Development in an attempt to convert indigenous agricultural systems to those of the industrialized West. By the early 1970s critiques were emerging of this modernist Development. Drawing on Marxist theory, Dependency theorists argued that underdevelopment was a structural condition of global capitalism and not a product of internal deficiencies as modernist approaches to Development assumed (Frank, 1969). Dependency theorists therefore argued Development's focus on knowledge/technology transfer was both inadequate and mis-directed in effecting change, and that instead 'undeveloped/developing' countries needed to assert greater economic independence and resist exploitative relationships with 'developed' nations (Bennet, 2012).

By the late 1970s a neoliberal Development paradigm had emerged, marked by reduced state involvement, an increasing focus on market logics, and a rapid growth in the number of NGOs involved in Development. The 1980s saw a consolidation of the neoliberal paradigm, as well as the emergence of a new people-centred *neopopulist* paradigm. The *neopopulist* paradigm, and its most popular methodology, participatory development, has dominated Development from the mid-1980s to the present. A central feature of this paradigm has been the promotion

of indigenous knowledge (IK) within Development and an assumption of mutually beneficial collaboration between IK and institutional sciences.

Development's New Faces: the Emergence of China and India

With the emergence of the BRIC nations (Brazil, Russia, India and China) as economic and political powers, and active participants in Development, the established global order of Development is being re-configured (Six, 2009). Firstly, China and India offer new and often related political, economic and Development options for poorer nations. Second, the economic trajectories of the BRIC nations demonstrate patterns of increasing industrialization, market involvement and consumption that differ from models drawn from the experiences of the West (e.g. undergoing 'compressed development' (Whittaker, Zhu, Sturgeon, Tsai & Okita, 2008)), meaning Development involving indigenous peoples may be viewed in distinctive ways based on this 'compressed development' experience. Thirdly, the BRIC nations do not share the colonial history of European nations as global colonizers over two centuries, meaning Development networks and partnerships are novel for 'local' and 'outsider' actors. These factors together mean the old 'West-Rest' Development discourse is being reshaped as multi-lateral Development relationships involving non-Western research institutes, NGOs, and governments become more common (Six, 2009).

With respect to IKs and their interaction with other knowledge traditions, the involvement with BRIC nation Development actors opens the possibility of IKs engaging with knowledge traditions beyond Eurocentric science e.g. Daoism, Ayurveda and the BRIC nation's own forms of institutional science. Examples of this can be seen in Ling's (2014) use of a Daoist ontology and its concepts to explore interactions between China and non-Western countries and cultures. Ling describes how cultures can share fundamental elements of their cosmovision, providing 'deep' commonalities which can support relationships and mutual understanding between cultures. For example, notions that all things are living (e.g. the earth, rivers and mountains are living entities), that time is cyclic or linear, or an emphasis on interconnection, interdependency and mutuality of being can create ethical, practical and theoretical compatibilities and connections between cultures. In exploring this idea Ling uses Quechuan cosmovisions as an example, arguing that similarities between Daoist and Andean cosmovisions create compatibilities between the two cultures. For example, understandings, attitudes and practices related to elements of the natural world (mountains, rivers, plants as

medicines and/or seasonal markers) can reflect ‘deep’ similarities between Daoist and Quechuan farmers, who when visiting each other’s homelands are able to form a cultural connection which facilitates social interaction and mutual understanding. These deep commonalities between indigenous peoples mean indigenous-to-indigenous interactions have distinct characteristics from those between indigenous farmers and research scientists.

Development Actors

Development involves a range of actor groups with distinct roles (Lewis, 1998). The approach in this research was not to operationalize specific Development actor types, but rather to create a framework for understanding the unique characteristics and positionality of general categories of Development actors. Padron’s (1987) schema of Development actors provides a starting point for discussion of Development actors.

1. ***Agricultural communities*** – the communities who represent the social, cultural, agricultural and geographic context in which Development projects aim to instigate change.
2. ***Grass Roots Organizations (GROs)*** – often including farmer or worker groups. They can vary in levels of social and formal organization and can exist within or across communities. Where GROs exist their characteristics (e.g. openness and capacity to engage with externalists) can strongly influence the characteristics of projects.
3. ***Non-Government Organizations (NGOs)*** – these fall into two general categories;
 - a. ***International Development Cooperation Institutes (IDCIs)*** – International organizations which provide resources (e.g. funds, technologies, expertise), networks and other forms of support. Resources are often channelled from IDCIs to NGDO and GROs to undertake Development work. Examples include the United Nation’s Food and Agricultural Organization (FAO) and the International Fund for Agricultural Development (IFAD).
 - b. ***Non-Governmental Development Organizations (NGDO)*** – typically NGDOs have explicit aims of supporting GROs and impoverished or marginalized communities by undertaking projects, acquiring the resources from IDCIs, and acting as advocates for communities.

4. **Research Institutes (RIs)** – formal research institutes, typically involving agronomic scientists, and through the *neopopulist* period also social scientists (Ortiz et al., 2008).
5. **State Agencies** – state agencies and local political offices play a significant role in Development either directly or as part of the local political context.

Agricultural communities and GROs represent the target group of agricultural Development, with Development aiming to instigate enduring change in the agricultural and economic dimensions of community life. Of the various Development actors, these communities represent the most diverse categorization, spanning continents and a huge range of cultures, climates, agricultural crops and practices, and colonial experiences.

In areas with histories of Development, GROs are likely to have strong social connections and familiarity with a range of non-local organizations. Padron notes that at the earliest stage of *neopopulist* development (early 1980s) that NGDOs had played important roles in the growth, support and consolidation of GROs. Within this context NGDOs had begun to be called upon by GROs to act as intermediaries when GROs dealt with the state. This highlights the complex and politicized positionality of NGDOs, where NGDOs can be positioned to serve communities' and GROs' purposes beyond the specifics of Development projects.

Non-Governmental Organizations

NGOs are particularly important in contemporary Development for several reasons. First, they are one of the most common organizational types involved in Development at the community engagement level. Second, indigenous peoples have increasingly formed their own NGOs (SNGOs) where the staff and the organizations are distinctly indigenous. Third, within the bi and multilateral relationships formed to conduct Development projects, NGOs represent intermediary organizations who translate, influence and construct understandings, goals and processes between communities and external organizations (i.e. RIs, IDCIs, state agencies).

Lewis (2001) describes the antecedents of modern NGOs as a broad range of organizations that for centuries have been involved in supporting impoverished and marginalized communities. Through the period of European colonial expansion religious and missionary groups undertook actions within the areas of education, health, and agricultural development, using both welfare and empowerment approaches (Lewis, 2001). Likewise,

peoples of the South have a well-documented history of forming organizations to support members of their societies (Mitlin, Hickey & Bebbington, 2007), particular when communities underwent rapid social and economic change or when individuals migrated to urban areas and faced fundamentally different social, economic and cultural conditions e.g. the Māori Women's Welfare League formation in 1951 in response to Māori urban migration or the favela (Brazil) and Kukiya (Zimbabwe) organizations which communities created to assert local rights and address education, health and social needs in poor urban areas (Imas & Weston, 2012). The phenomena of non-government organizations supporting impoverished peoples is clearly not a new one. What was new as NGOs grew in prominence within Development was their role in undertaking Development at the local level (i.e. delivering Development initiatives) and positionality in international development networks between donors and research institutes, and communities.

In the immediate post-World War Two period NGOs were often involved in aid delivery and emergency response rather than conducting Development work, but by the 1970s a number of political, practical and academic conditions combined to create a fertile ground for the emergence of NGOs as central players within the Development industry (Lewis, 2001). Firstly, modernization and dependency theories had lost appeal, leading to new ideas and models of Development being sought (Lewis, 2001). Secondly, the persistence of widespread absolute poverty, despite almost 30yrs of attempts at alleviating poverty, highlighted the need for new models of Development. Governments of the developed and undeveloped worlds were seen as performing poorly in addressing poverty, with issues within governments (e.g. excessive bureaucracy, corruption, inefficient service delivery) and between governments (e.g. the transfer of capital government-to-government) seen as significant contributing factors in failing to alleviate poverty. Through the 1970s there was a growing sense that Development agencies had overestimated the capacity of governments to undertake Development initiatives, and therefore there was a need for 'new' non-governmental institutional or organizational approaches to Development delivery.

At this time (1970s) neoliberal economic philosophy began to play a significant role in national and international level economic thought, with governments increasingly looking to reduce spending, privatize state services and assets, and frame government activities more strongly within economic terms. The push to reduce state services under neoliberal philosophies

gained speed through the late 1970s and 1980s, with large reductions in state agricultural Development programs in many countries. For example, in Peru the government agricultural extension programme run by what is now the Instituto Nacional de Investigación Agraria (INIA) employed 1400 extension officers in 1986, by 1992 it employed fewer than 100 officers (Hellin & Dixon, 2008). This void in agricultural Development services as state involvement reduced, provided a space for NGOs to grow in number, with Southern NGOs taking a lead in providing extension services and promoting agricultural Development (Hellin & Dixon, 2008). The Peruvian NGO 'Practical Action' provides an illustrative example. In the mid-1990s the NGO emerged to undertake farmer support initiatives, filling the gap left by the reduction in state sponsored extension officers. The NGO however did not simply 'fill the gap' by replicating earlier models, rather it broadened the range of farmer support activities based on direct farmer feedback, developed a farmer-to-farmer support model, while establishing a network of private and public sector technical experts that farmer trainers could engage with as required. In the Peruvian example not only did new organizational forms (NGOs) grow in number, but the space provided a reduced state involvement allowed for innovative people-centred Development models to emerge.

Along with the neoliberal push to reduce state services other geo-political factors across the South created conditions that contributed to the growth in alternatives to state-led Development. Broadly speaking the 1970s marked a period of reducing post-World War Two industrial growth. The effects of rural to urban migration became increasingly salient in both rural (increasing under population) and urban areas (i.e. growing presence of shanty towns across the cities and towns of Asian, African and South and Central American nations). In terms of political reformation, a key strategy of Development was the promotion of Western style democracies within non-Western countries across the South. By the 1970s it was clear Western-style democracies were not being adopted by 'undeveloped' nations, with many of the nations of Africa and Latin America being under military rule. From a humanitarian perspective the social, demographic and political situation of many Asian, African and Latin American nations in the 1970s, after almost 30yrs of Development, appeared as a global failing to deliver on the Development promise. The phenomena of partially, intermittently or completely militarized states represents a significant element of the political and economic context of the South through the period when NGOs began to flourish. The point in

highlighting this aspect of the South's political life in this period is not to suggest that a direct causal link exists between militarized states and NGOs' rise in popularity, rather it is noted as an important part of the context in which NGOs were working, and it represents a significant element of the West's perception of the South/undeveloped world in the 1970s, as a part of the globe in which military coups and rule were common.

Another reason for the rise in NGOs was their active positioning of themselves as able to address issues of enduring poverty, practical and theoretical disillusionment within the Development field, a need for greater efficiency and efficacy, and to respond more rapidly to changing and emerging Development priorities (Lewis, 2001). By the 1990s and 2000s NGOs had demonstrated a greater responsiveness than states to development priorities relating to gender, the environment (e.g. climate change, water), and people-centred development (e.g. endogenous development). Finally, Lewis (2001) notes that NGO popularity may be in part due to their ability to appeal to all sides of the political spectrum; for neoliberals NGOs reflect a reduced state role and can act as promoters of market integration, for left wing activists the NGO model is seen as sitting outside of state hegemony, for environmentalists NGOs are able to adapt to specific local environmental issues (e.g. species protection, sustainable harvesting) and for indigenous activists NGOs provide a vehicle to promote local agendas while aligning with international support agencies and indigenous networks.

Along with these contributors to NGO's growing prominence, critical voices were heard during the early 'boom' period of NGOs (early 1980s) e.g. NGOs represented externally imposed organizational models, and NGOs accelerated processes of modernization, cultural loss and knowledge appropriation (e.g. more efficient bioprospecting/biopiracy) (Mitlin, Hickey & Bebbington, 2007). As NGOs became more common and increasing research of NGO practice was conducted, questions were asked regarding the effectiveness and accountability of NGOs, routes to scaling-up, the role of NGOs in promoting democratic ideals, and the potential for the radical potential of NGOs to support indigenous empowerment to be dissipated as NGOs become increasingly corporatized, professional and managerial in nature (Lewis & Opoku-Mensah, 2006; Mitlin et al., 2007).

An important distinction emerged in the literature in the 1990s between 'Northern NGOs' (NNGOs) which were based in industrialised countries and 'Southern NGOs' (SNGOs) who

were based in the countries of the Global South and undertook development initiatives within their own countries. Before the split between SNGOs and NNGOs, NGOs were considered as a single group who often worked between countries of the South and North. For example, NGOs based in the North would respond to Development funder agendas and secure resources within their home countries, while also implementing Development initiatives in the field (South). These NGOs were therefore based in the industrialized North while conducting development practice in the countries of the South. Through the 1980s SNGOs grew in prominence as their experience and capacity to deliver development projects increased, while providing opportunities for indigenous peoples' to directly shape Development policy and implement Development practice through participation as Development professionals (Andolina, Laurie & Radcliffe, 2009). Drawing on experiences in Ecuador and Bolivia, neighbours of Peru, Andolina et al. argue this professional indigenous presence has created complex and at times contradictory dynamics. Indigenous groups have been able to express greater agency within Development policy and practice, asserting greater levels of participation, while also reinforcing the notion that indigenous peoples and their cultures are objects of/for intervention, while failing to address broader issues of racism, national inequalities and land and water rights. The dynamics that Andolina et al. highlight draw attention to the concerns raised by Hickey and Mohan (2005) that participation can be depoliticized and broader issues of citizen rights marginalized.

At the project level SNGOs have played important roles in the development, transmission and adaption of Development methodologies. For example, the emergence of the Rapid Rural Appraisal methodology in the early 1980s, and subsequently the Participatory Rural Appraisal methodology in the mid-1980s involved widespread adoption and adaption of these methodologies by SNGOs across India, South-Eastern Asia and sub-Saharan Africa (Chambers, 2014). By the mid-1990s SNGOs were the preferred means of project delivery in many parts of the world, while NNGOs acted to secure and channel resources to SNGOs (Mitlin et al., 2007). With distinct roles, and geographic and cultural locations, NNGOs and SNGOs have come to form complex relationships. These relationships are far from stable, with for example competent and capable SNGOs now able to deal directly with international donor and development support organizations, with the potential to reduce the need for NNGOs in securing resources.

The role of NGOs in identity construction and shaping notions of indigeneity, authenticity, tradition and modernity within Development networks has also been explored. Shepherd (2005) describes Development organizations as actively shaping the subjectivities of Development participants by encouraging them to consider their needs from the perspective of the Development industry and its priorities. Concepts such as 'traditional', 'authentic', 'modern/progressive' and 'indigenous' are thereby shaped by the ideological, political and economic concerns of the Development industry. For example, if participatory Development promotes IK as central to Development initiatives, then questions of what is IK, who practices it, who is an exponent of it, etc. become questions formed within and responded to within the context of Development. This context within which identity is considered and constructed is not limited to the site of a project, rather the broader Development context is involved in these 'local' constructions i.e. indigenous identity can be constructed within the context of transnational Development networks and policies (Andolina, Laurie & Radcliffe, 2009).

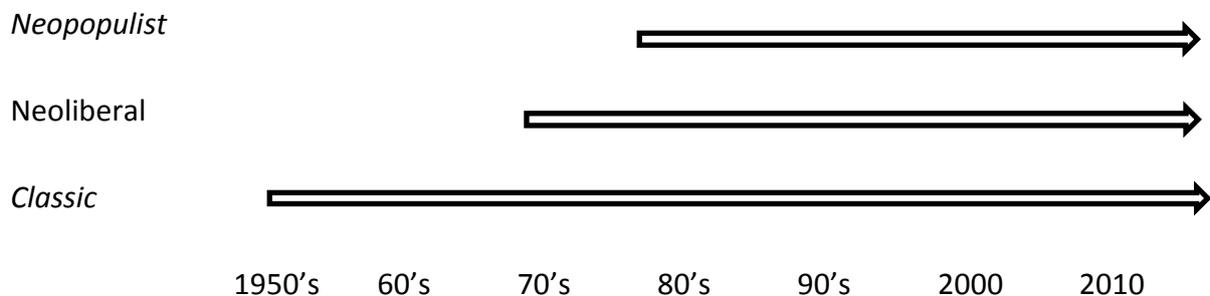
Development Paradigms

Through the post-World War Two period agricultural Development has taken on distinct institutional and inter-organizational arrangements, levels of engagement, practices, goals and views of social change (Blaikie, 2000; Sumberg, Thompson & Woodhouse, 2013). Blaikie (2000) uses the concept of a paradigm to describe these changes, with an emphasis on the systems of thought within a paradigm that reflect assumptions about human thought, decision making, social interaction, and Development goals and practice. Sumberg et al. (2013) have used the term agenda to describe the evolution of Development through the post-World War Two period, describing development as moving through *classic*, *neoliberal*, *participation* and *environmental* agenda's. The various accounts of Development changes since the 1950s often traverse common conceptual grounds, with Blaikie's account of particular relevance to this research as it focuses on local knowledge (LK), its role in the various paradigms, and the dynamics which impeded or promote it.

Blaikie et al. (1997) describes three dominant Development paradigms; *classic*, *neoliberal* and *neopopulist*. These paradigms have emerged into Development orthodoxy at distinct times, presenting internally consistent systems of thought, views of decision making, and ideal models of Development. These 'systems of thought' create Development 'lenses' through which community problems are framed and responded to, with each paradigm having

practical, administrative and bureaucratic aspects which create opportunities and constraints on how Development occurs and how LK is enacted.

Timeline of Development Paradigms



CLASSIC PARADIGM

The *classic* paradigm involves top-down approaches to Development which are typically initiated by the state or other external agencies. The *classic* paradigm is associated with a view of science and technologies as universal and the framing of community problems as technical problems which technology and knowledge transfer or extension methodologies can solve. This focus on problems as 'technical issues' is coupled with an ignoring of community problems as potentially created and sustained by exploitative economic relationships or land loss due to colonization for example.

Through the early stages of the *classic* Development period the state had played a dominant role as state-funded or controlled institutes (e.g. universities and research institutes) led Development until the 1970s (Chambers, 1983). Since this time state agencies have played a lesser role, although they remain significant players in agronomic research globally.

In the *classic* paradigm Development initiatives are typically one-off projects focused on technology transfer, with little need seen for long term relationships between Development practitioners and communities. Interaction between scientists and community members is often limited, with little impetus or opportunity to develop mutual understanding between the two groups. Knowledge processes are unidirectional, from privileged Western knowledge institutes to the 'deficient' local knowledge system. Local knowledge is considered as a reason

for community problems existing and therefore the replacement of local knowledge by Western knowledge, practices and technologies is a principle aim of *classic* Development.

Turning to the question of power, within the *classic* paradigm, power is maintained by experts from outside of the communities involved e.g. project managers and scientists. This power is expressed through framing of problems and solutions, the controlling of resources and establishment of practice norms. Within the context of colonial states, these power dynamics represent a continuation of colonial relations.

NEOLIBERAL PARADIGM

Neoliberalism refers to the ideas and practices associated with laissez-faire economics which became popular from the mid-1970's. Central to this form of economics was the promotion of a reduced role of the state, a reduction in the state's regulation of markets (deregulation), an increased private sector role in providing services to citizens (privatization), a promotion of market logics across the public sector, and the idea that capitalist markets are the ideal systems for meeting human needs.

As noted in the earlier discussion of the emergence of NGOs, through the 1960s and 1970s Development practitioners and theorists were voicing frustrations with traditional Development approaches (i.e. the *classic* paradigm). The problems associated with state delivery of Development highlighted the need for an approach to Development that was removed from the state, or at least had a reduced relationship with the state.

As the ideological elements of neoliberalism gained in popularity and governments reacted by reducing state services, state involvement in agricultural extension services and Development projects reduced. As noted previously the reduced role of the state that neoliberalism promoted also created an institutional void within the agricultural extension and Development sectors. These macro-level dynamics, along with Development's theoretical impasse, created an environment in which new organizational and inter-organizational models emerged, and novel 'people-centred' approaches to Development became increasingly popular.

The neoliberal paradigm involved a partial reconceptualising IKs. Like the classic paradigm, IKs were still considered as flawed knowledge systems, but rather than judging IKs on

epistemic grounds along, they were reframed in terms of market logics. The value of IKs was not based on their ability to reveal knowledge, but instead their ability to reveal knowledge which could be applied to capitalist markets. For example, within IK systems, knowledge relating to traditional plant uses could reveal avenues for application as pharmaceuticals, nutraceuticals or other industry purposes.

NEOPOPULIST PARADIGM

The *neopopulist* paradigm supports the notion that communities themselves are best positioned to articulate the problems they face, and that communities and other Development actors can in concert develop and implement solutions to those problems. A pivotal publication in the emergence of the *neopopulist* paradigm was Chamber's (1983) *Rural Development: Putting the Last First*.

As noted previously, examples of participatory approaches to Development which preceded the neopopulist paradigm's emergence can be seen in interventions from the 1940s to the 1960s in post-colonial Africa, and populist movements from the 1960s (Hickey & Mohan, 2005). From the 1960s writers such as Franz Fanon and later Paulo Freire focused on issues of contemporary colonization, and in differing ways offered intellectual and practical means of achieving emancipation from these ongoing processes. Along with these contextual factors, the Development industry, and particularly agricultural Development, saw an increasing awareness of the limitations of classic and neoliberal approaches, leading to experimentation with new participatory alternatives (e.g. Collinson (1972), Ruthenberg (1968)). Development's 'turn-to-the-people', although gaining in popularity from the early 1980s, should be considered as emerging from a broader historic context of populist change, and decreasing state and increasing non-governmental involvement in agricultural Development.

With the arrival of neopopulist Development as a specific methodology, a plethora of participatory methods emerged e.g. Farmer Participatory Research (FPR), Participatory Rural Appraisal, Alternative Development, Appropriate Development, Sustainable Development, Indigenous Development, Participatory Development, Endogenous Development and Ethnodevelopment (Andolina, Laurie & Radcliffe, 2005; Shepherd, 2005). The term 'participatory' has become the most popular marker of development methodologies within the *neopopulist* paradigm. Blaikie et al. describe the *neopopulist* and *neoliberal* paradigms as

maintaining an uneasy relationship as elements of each paradigm are complementary and antagonistic to the other. Ideologically, common ground can be seen between the *neoliberal* and *neopopular* paradigms as both seek a reduced role for the state in Development, while an oppositional relationship exists in terms of the *neoliberal* paradigm's market centric ideology, while the *neopopulist* paradigm values the local for technical, rights based, socio-cultural and economic reasons.

In addressing the question of what is participatory Development, approaches generally describe participation as varying in degree (e.g. from weak to strong, or narrow to broad), varying in goals (e.g. empowerment of marginalized groups within projects and within their societies, greater efficiency), scope (e.g. within-project participation, politically emancipatory at a societal level) or in relation to specific areas (e.g. decision making, resource allocation, project control (Waglé & Shah, 2003)). What defines participation is discussed in detail in the proceeding section, before commencing this discussion it is noted that participation has been justified for two main reasons, empowerment and technical efficiency, which can both be seen in the various conceptualizations presented. These two reasons for participation have not however been of equal emphasis through the neopopulist period. From the mid-1980s to the mid-1990s there was a strong desire to level power relations within projects and across Development networks, what Chambers (2014) describes as the heyday of 'people-centred' Development. During this period participation was driven by aims of both technical/functional improvement and empowerment of marginalized groups within projects and across societies. These original goals of power levelling reflected a conceptualization of participation as empowerment, that at its most radical sought to discard Development orthodoxy, it's neo-colonial, Western-centric values and centralized decision-making, and instead promote and enact democratic ideals at the project and broader levels i.e. participation was politically radical. Since the 1990s there has been a reduced emphasis on *neopopulist* Development affecting broader societal change (i.e. less emancipatory) and a limiting of participatory scope to the project level only (Mohan, 2007). In response some Development writers (e.g. Mohan, 2007; Chambers, 2014) have called for a re-radicalization of participation which centres the relationship between knowledge and power within Development, and re-affirms participatory and emancipatory goals of social justice and citizen rights.

Considering Participation

Early approaches to conceptualizing participation often involved linear models of overall participation. Arnstein's (1969) ladder of citizen participation (see Figure 3), developed originally to assess community participation in local level politics, has been widely used to assess participation in participatory Development (Hayward, Simpson, & Wood, 2004).

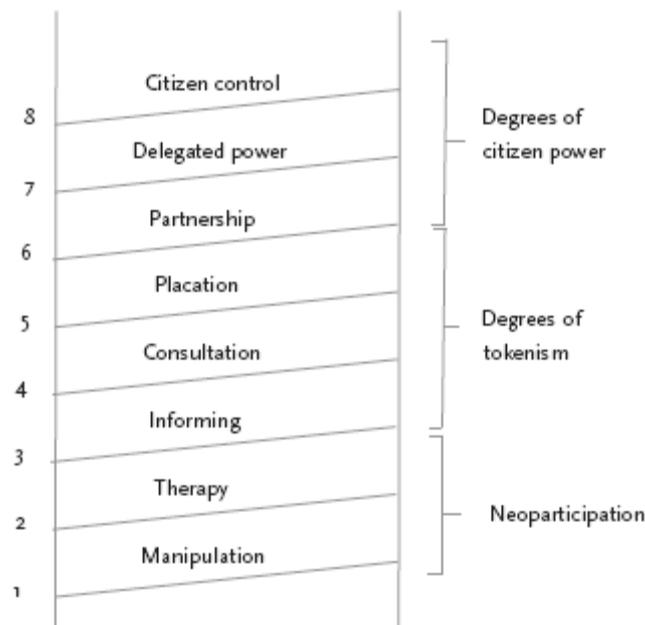


Figure 3. Arnstein's Ladder of Citizen Participation (Arnstein, 1969).

Arnstein herself pointed out the ladder was a simplification, but its conceptualization of participation by degrees, the strength of the ladder metaphor, and the easily comprehensible classifications of the levels of participation have contributed to its widespread use. The model has received criticism though as being overly simplistic and incorrectly assuming goals of participation culminate in 'citizen control'. Hayward, Simpson and Wood (2004) argue that within complex social relations, forms of non-participation or peripheral participation (e.g. intermittent engagement) may be preferred as they represent greater social and personal good for those people i.e. 'citizen control' is not the only preferred form of participation. Likewise, Pretty's (1995) 'participation scale' which includes manipulative, passive, interactive and self-mobilizing participation, and Lambrou's (2001) *Participatory Research and Gender Analysis* reflect more divergent and non-linear considerations of participation.

Similar to Arnstein’s model, Agarwal (2001) presents a typology of six levels of participation (see Table 1). At the lowest levels participation is *nominal*, *passive* or *consultative*, representing forms participation where involvement is given some value, but the practice of participation does not involve the exercising of power.

Level of Participation	Characteristic features
Nominal participation	Membership in group, being physically present.
Passive participation	Being informed of decisions <i>ex post facto</i> ; or attending meetings and listening in on decision making, without speaking up.
Consultative participation	Being asked an opinion in specific matters without guarantee of influencing decisions
Activity-specific participation	Being asked to (or volunteering to) undertake specific tasks
Active participation	Expressing opinions, whether or not solicited, or taking initiatives of other sorts
Interactive (empowering) participation	Having voice and influence in the group’s decisions.

Table 1. Participation typology (Agarwal, 2001).

The three stronger levels of participation, *activity-specific*, *active* and *interactive (empowering)* reflect stronger levels of involvement where there is a greater ability to influence and shape collective actions. Despite this, these levels of participation still lack reference to broader social contexts, and as such they lack a wider scale radical and emancipatory orientation.

Within the Aotearoa context the notion of levels of participation can be seen in Cunningham’s (2000) typology of Māori involvement in research (see Table 2). Central to Cunningham’s typology are issues of control, Māori participation, research methods and analysis. With respect to control, Cunningham demonstrates that institutional elements in the form of government research policy and funding criteria significantly affect the nature of Māori control. Cunningham’s policy was explicitly used by the Ministry of Research, Science and Technology (MoRST) in developing policy that encouraged science-mātauranga Māori engagement.

	<i>Level of Participation</i>	<i>Description</i>	<i>Examples</i>	<i>Control</i>	<i>Method/Tools</i>	<i>Analysis</i>
Kaupapa Māori	Major, possibly exclusive	Māori are significant participants and the research team is typically all Māori. Māori analysis is undertaken and Māori knowledge produced. Research primarily meets expectations and quality standards set by Māori	Traditional study of cosmology, study of cultural determinants of health	Māori	Contemporary – Mainstream and Māori	Māori
Māori-centred	Major	Māori are significant participants, and are typically senior research team members. Māori analysis is undertaken which produces Māori knowledge, albeit measured against mainstream research standards.	Longitudinal social science study of Māori households	Mainstream	Contemporary – Mainstream and Māori	Māori
Research involving Māori	Minor	Māori are involved as participants or subjects, or possibly as junior members of a research team.	Analysis of ethnic differentials in disease rates; genetic study of familial cancer	Mainstream	Contemporary - Mainstream	Mainstream
Research not involving Māori	Nil	Māori participation or data is neither sought nor considered relevant. Results are thought to have no impact on Māori	Quantum chemistry, clinical trial, volcanology	Mainstream	Contemporary - Mainstream	Mainstream

Table 2. Typology of Māori involvement in research (Cunningham, 2000).

This novel policy emphasis on science-mātauranga Māori in the early 2000s acted to shift the institutional norms of Aotearoa’s research, science and technology (RS&T) sector, as new project and organizational level practices were developed and implemented that increased Māori participation. An important point to note in Cunningham’s typology is that it moves beyond the marginalized (Māori) ‘being involved’ in research to research being indigenous centred, a step further than most participatory Development models (e.g. Agarwal, 2001) where empowering involvement is the highest form of participation. Models such as Cunningham fundamentally shift the political, social and ontological frame of relationships between indigenous communities and external agencies, centralizing these relationships on the communities themselves, while rejecting hierarchical subordinating positionality, and instead espousing dialogue and cross-cultural practice.

Neef and Neubert (2011) provide an alternative approach to linear conceptualizations of participation, using instead a multi-dimensional project focused model which considers participation in six distinct domains;

- I. **Project type** – research objectives, potential users and beneficiaries, institutional context and risks involved in the project
- II. **Project approach** – project methodology, epistemology, plan, process and methods for accessing local knowledge.
- III. **Researcher characteristics** – previous experiences with participation, attitudes towards participation, attitudes towards local stakeholders, accountability towards the potential users, commitment to the problem-solving cycle.
- IV. **Researchers and (other) stakeholder interaction** – involvement of stakeholders in the research process, control of research and centres of decision making, contribution to the generation of knowledge, type, frequency, and intensity of interaction, and investment of resources and payment.
- V. **Stakeholder characteristics** – local stakeholders’ experiences with previous projects, local stakeholders’ perception of the research project, local stakeholders’ perception of the researchers, time availability of local stakeholders, local stakeholders’ scope for action.
- VI. **Stakeholders’ benefits** – innovations, improved practices, creation of knowledge and awareness, improvement of skills, empowerment and social capital, improvement of livelihoods

Neef and Neubert developed their model to enable processes of self-reflection, informed discussion and decision making regarding the appropriateness of applying participatory methods, and to provide a broad range of conceptual domains to guide the application of participatory methods. By conceptualizing participation as occurring in distinct domains, the approach demonstrates that participation occurs in response to a broad range of factors. Across the IK and Development literatures the elements identified by Neef and Neubert have been described as influencing the nature of participation, for example Blaikie et al. emphasize that the knowledge systems of indigenous communities can vary widely in their openness to collaboration with Western science due to the characteristics and circumstance of the community (i.e. stakeholder characteristics). Blaikie et al.’s discussion of development

paradigms also emphasizes how project type and approach influence participatory dynamics between community members and scientists. An important element of Neef and Neubert's model is that in dimensions three (researcher characteristics), four (researchers and (other) stakeholder interaction) and five (stakeholder characteristics), a range of affective, experiential, social contact, organizational and power related (decision making) factors are described as influencing participation. These aspects represent a consideration of participation as relational and occurring as a function of characteristics of the marginalized and the powerful, and their interaction. This idea is supported by recent research such as Oritz *et al.* (2008) where the impacts of researcher/scientist characteristics, professionally and organizational, are demonstrated as having a direct impact on the ability to undertake participatory work. To put it simply, the actions, values and ideologies of those with power directly the nature of participation when the marginalized and the powerful come together.

The idea that participation is relational has been explored at the inter-organizational level. Literature from the 1980s highlighted the need for strengthened relationships between research institutes and Development organizations to improve farmer involvement in knowledge processes (Biggs, 1981, Reddy, 1986). As noted previously the growth in NGOs as state provision of Development services decreased in the 1980s saw the inter-organizational context of Development change in ways conducive to farmer participation. Through the 1980s and 90s CIPs engagement in novel inter-organizational alliances between research institutes and Development organizations, allowed organizations to learn from each other's experiences and apply the insights gained to processes of organizational learning and development (Oritz *et al.*, 2008). An example of this organizational learning occurred within the Consultative Group on International Agricultural Research (CGIAR) as it broadened its organizational focus to include both scientific and Development goals, changed its mission in the 1990s from a focus on increasing productivity to include concerns relating to food security, poverty alleviation, and natural resource protection (van de Fliert & Braun, 2002). The participatory push can therefore be viewed as stimulating change across organizational networks (e.g. CGIAR), at the organizational level (e.g. CIP) through the creation of roles and functional groups within organizations, and at project levels as new collaborative practise were explored.

The relationality of participation is also emphasized in participatory monitoring and evaluation (PM&E) which recognizes that processes of evaluation and monitoring reflect the ideological, political/power and efficacy dimensions of Development, and therefore have the potential to enact participation, and to restrict or distort it. PM&E aims to involve all Development stakeholders so that communication, mutual understanding and decision making better reflect goals of empowerment, efficacy, quality relationships, and transparent and fair governance (Hilhorst & Guijt, 2006).

Although PM&E processes can influence a range of formal and informal aspects of Development, the influence of M&E on knowledge processes is particularly relevant. Where Development involves IK promotion and engagement between IK and other knowledge systems complex knowledge processes occur, reflecting practice, social, ideological, affective and political elements. Hilhorst and Guijt (2006) describe the ability of PM&E to shape knowledge processes in relation to single-loop, double-loop or triple-loop learning. A single feedback loop links performance to established organizational norms, so as to improve performance, but these norms remain unchanged. *Double-loop learning* occurs when identified problems are addressed in ways that involve changing an organization's underlying structure or culture, while *tripe-loop* learning involves analysis of formal and informal learning, and the redesign of both types of learning so organizational aims are better addressed. In Development circumstances where there are cultural, educational, social, material and geographic differences, and where mutual understanding maybe low, PM&E the stakeholder's organizational and ethnic cultures, and their methods of learning to be considered concurrently, and responsive management decisions at individual, organizational and inter-organizational levels to be taken. For example, participatory Development often involves a triad of organizations and groups; communities, service providers, and funders. In these situations, PM&E represents an inter-organizational/community process that supports higher levels of mutual understanding and communication between these groups/organizations, identifies strengths and weaknesses in IK and agricultural science interactions, and provides guidance in managing these interactions e.g. identifying staff training needs, inform recruitment processes, support equitable outcomes, reduce misrepresentation of outcomes, and support project design and adaptation. In a very practical sense, PM&E represents an enactment of a relational conceptualization of participation.

Post-Development Critiques & Enduring Participatory Challenges

Post-Development Critique

By the early 1990s a body of Development criticism termed *Post-Development* had emerged. The initial '*first-wave*' *Post-Development* critics, drawing on Foucauldian conceptions of power and *Post-Structuralist* analysis, argued that Development is embedded in a discourse whose understandings, concepts and practices reflect hierarchical power differentials of Western supremacy and non-Western subjugation. In this Foucauldian sense discourse refers to the idea that knowledge(s) are constituted by social practices, forms of subjectivity and power relations which evolve over time. Foucault therefore argued that understanding knowledge(s) required an archaeological or genealogical approach which explored the continuities and disjunctures of dominant knowledge systems in specific places and over time, and the social circumstances that gave or denied legitimacy to these systems.

Central to the *first wave Post-Development* concerns were (Escobar, 1995, p.215);

- the rejection of Development outright, instead seeking alternatives-to-Development and not better forms of Development.
- an interest in local culture and knowledge.
- a critical stance towards established scientific discourses.
- the defence and promotion of localized, pluralistic grassroots movements.
- 'revealing' the truth of development as a Eurocentric discourse which rejects diversity and presents Western style consumption and prosperity as a global goal.

In exploring these issues *first-wave* writers argued that the structured power relations of Development at the macro level act to shape the localized practice of Development projects so acutely that attempts to reconfigure these practices or structures are doomed to fail, and as such, Development should be abandoned (Escobar (1995; 1996), Esteva (1992); Sachs (1992)). From this position of abandoning Development, it was proposed that alternatives to Development could, and were, being found within local economies, knowledges, approaches to power and social relations.

In response to the *first-wave* writers, Development theorists have argued that they displayed a tendency to homogenise and essentialize Development's practice and effects, failed to explore counter examples of Development, failed to illustrate what an 'alternative to

development might involve', and that the conclusion that Development should be abandoned is theoretically and empirically weak (Pieterse, 2000; Ahorro, 2008).

By the early 2000s a '*second-wave*' of *Post-Development* writers emerged who maintained the critique of Development as a Western-centric neo-colonial discourse embodying power differentials, but who found a more hopeful trajectory for Development. In contrast to the *first-wave* writers call to abandon Development, these writers argued Development can be re-imagined by emphasizing concurrently the political, epistemological and corporal, and problematizing and reformulating core concepts within Development (McGregor, 2009) or by linking Development explicitly to radical political movements, such as those promoting social anarchism (Wald, 2014). An example of this is Gibson-Graham's (2002; 2006a) notion of *diverse economies*. The diverse economy writers and practitioners have argued that by rejecting dominant capital-centric conceptualizations of economy and work, and re-imagining economy and work as inclusive of a broad range of modes of work, exchange practices, organizational arrangements, motivations and social contexts, Development can be locally centred and politically radical.

Challenges to Participatory Development

As a distinct Development methodology, a range of challenges to enacting participatory Development have been recognized including issues of power, cultural, social and geographic difference, poor project assessment, and differences in viewing participation as a means or ends (Lewis, 2001; Hayward, Simpson, & Wood, 2004). The issue of social distance/proximity between Development professionals, local farmers and their communities is a recurring theme in the literature (Bentley, 1994). Bentley (1994) described after a decade of participatory agricultural Development that innovative technologies generated through farmer-scientist interaction were most notable in their absence i.e. participatory methodologies were failing to deliver technical or functional benefits. In seeking to understand why farmers and scientists, who each have traditions of innovation, had been unsuccessful in generating new technologies together, Bentley identified seven basic problems that limit farmer-scientist collaboration, and subsequently the interaction of the knowledge traditions that meet within participatory development;

1. **Poor access to each other** – farmers and scientists are typically separated by long distances that limit opportunities for interaction.

2. **Different observation styles** – observation is a key feature of farmer and scientist epistemologies, but each has a distinctive style of observation. Farmers observe while working and through the course of daily life, scientists observe at discrete times and using discrete methods and technologies.
3. **Different experimental styles** – both groups experiment, but scientists develop controlled planned methods, while farmers use more opportunistic methods. Farmer experimentation may change overtime in response to immediate needs. For example, farmers involved in scientific experiments may harvest crops early than initially planned if they deem necessary, thereby compromising data collection.
4. **Different economies** – each works within the context of distinct economies. Farmer economies are centred on their household and community. Experimentation is deemed successful and adopted if it provides benefits within this context. There is less drive to extrapolate knowledge or apply beyond one's immediate social world, than there is for scientists, who are embedded in global academic and economic institutions.
5. **Scientists are Peace Corps volunteers** – here Bentley means scientists are not able to embed themselves within communities, scientific field work is conducted alongside teaching, writing, on-station experimental work, administrative work, family life. Scientists remain externally focused to the communities they work with.
6. **High local environmental variability** – in contrast to the controlled environment of scientific institutes and field stations, farm based development and research work can involve highly variable local conditions (e.g. micro-climates, soils), inter-farm variations in technologies (e.g. tools, irrigation systems, seeds) and farmer knowledge and capability.
7. **Social distance between farmers and scientists** – Bentley describes social distance as the most significant factor in achieving successful collaboration. In contexts where farmers are university trained and/or embedded in capitalist markets, collaboration success rates are higher than in contexts where cultural, educational and/or class differences separate farmers and scientists.

In identifying these seven challenges for collaboration, Bentley makes two important points; first that participatory projects could be improved through design which reduces epistemological, cultural, geographic and social distance. Second, Bentley argues that

difference/distance need not be reduced across all of these areas through the whole project lifecycle, rather reduced difference/distance may be important at specific project stages. For example, participatory approaches may be effective in identifying problems and setting the project agenda, assessing and critiquing the project, and redirecting the project if necessary, while each knowledge tradition (local and institutional science) may be better equipped to address identified needs and project agenda through working in isolation or with intermittent interactions.

Addressing the issue of social distance Bentley notes that participatory work involving fulltime students, NGOs and others who can live in remote locations allows social distance to be transcended as relationships are built through regularly interaction. For scientists employed by research institutes this is rarely possible. Bentley suggests farmer-scientist collaboration would be facilitated by the presence of intermediaries who live in villages fulltime and who act as information brokers.

This call for intermediaries acting as conduits between community members and scientist has been widely adopted since the mid 1990's. The emergence of SNGOs has facilitated the use of community based intermediaries, with NGOs filling this role organizationally and typically including specific community intermediary roles. Where NGOs maintain a long-term presence in specific locations relationships can develop where a knowledge of social and cultural context, friendships and the establishment of trust can mitigate some of the difference/distance issues Bentley identified. Well established SNGOs also provide continuity between discrete projects, often shaping project goals so that continuity and complementarity can occur over time and across projects funded by diverse IDCIs.

Considerations of power at levels ranging from the project (e.g. Chambers call to reverse top-down approaches and implement 'grassroots' participation) to community, societal and global levels have been highlighted within the participatory literature (Mohan & Stokke, 2000; Cornwall, 2003). Through the 1990s participatory Development came under increasing criticism for its apparent inability to address issues of power. Arguments against the approach included that it was 'local' obsessed to the point of essentialising the local/indigenous, it failed to address broader structural inequalities, that participatory proponents lacked a sensitivity too and sophisticated understanding of power, that discriminatory elements within communities were ignored and potentially reinforced when replicated within participatory contexts, and that due the 'mainstreaming' of the approach that it was becoming increasingly

seen as a technical method and its was losing its empowerment drive (Hickey & Mohan, 2004). As noted previously, there have been calls for Development to re-radicalize its political aspirations, to centre the relationship between knowledge and power, and to align explicitly with non-mainstream political and community rights movements (Mohan, 2007; Chambers, 2014; Wald, 2014).

Another strong critique of participatory Development focuses on the methodologies potential to support and legitimize forms of discrimination within communities through replicating forms of exclusion within project practice. For example, participatory approaches are likely to involve engagement with local 'elites' or a more powerful gender group, while the less powerful gender remains marginalized or hidden from Development participation (Guijt & Kaul Shah, 1998; Cornwall, 2003). In response to issues of gender discrimination within communities, participatory methods such as the Participatory Rural Appraisal tool-kit provide tools and processes which encourage participation across genders, or create spaces where gender specific process and methods can occur. Despite this recognition of gender as an issue with participatory approaches Cornwall (2003) and others argue the relationship between gender biases and participatory approaches remains an issue requiring constant vigilance. Concerns regarding gender in Development also raise questions of how Western views of gender can be applied in other cultural contexts and how understandings of gender within other cultures may be viewed with limited sensitivity or through the cultural biases of Western Development practitioners (Cornwall, 2003). For Cornwall the problematizing of gender within participatory contexts is a first step, which by giving visibility to the issue identifies it as something to be addressed.

After 30yrs of participatory Development significant theoretical and practice issues persist. Blaikie (2000) describes a need for Development, in response to *Post-Development* critiques, to take a more politically astute position and to focus on re-constructing the identified weaknesses of Development practice. Hickey and Mohan (2004a; 2004b; 2005) take a similar position outlining three important conditions for participatory Development to better address structural inequalities;

1. Participation needs to be a part of a more comprehensive political and radical project that aims to challenge and alter existing power relations.

2. Participation should be explicitly linked to citizenship by aiming at transforming and democratizing political processes.
3. Participatory projects should look beyond a particular intervention, and instead view Development projects as steps in achieving social change.

2.3. Indigenous Ways-of-knowing

Introduction

Since the emergence of the *neopopulist* paradigm indigenous knowledge (IK) has become an important topic of theoretical and practical concern (Briggs, 2013). Often essentialized as a singular homogenous type of knowledge and referred to as indigenous knowledge (singular), the knowledge traditions of indigenous peoples reflect ontological, epistemological, cultural, geographic and socio-political diversity, and therefore the plural term indigenous knowledges (IKs) is utilized through this thesis. Through the 1990s there was considerable optimism that IKs could be practiced within Development and positive interactions between IKs and Eurocentric sciences would address political, technical and socio-cultural concerns (Bebbington, 1991). Major development agencies lauded IKs as 'tools of Development' (e.g. the World Bank's *Indigenous Knowledge for Development: A Framework for Action* (World Bank, 1998)) and even the critical voices of the *Post-Development* writers maintained a generally positive, although at times ambivalent, view of IKs within Development, affording IKs a central role in embedding Development practice in the cosmovisions and lifeways of indigenous peoples (Escobar, 1995, p.98). Despite this optimism, after thirty plus years of attention, the issue of promoting and enacting IKs within Development remains problematic and challenging (Briggs, 2005; 2013).

Within the IK literature two broad strands can be identified; the first has a strong academic focus and seeks to describe the nature of IKs, addressing the 'what are IKs' question. The second strand is more focused on Development practice, addressing practicalities of enacting IKs within Development projects (Sillitoe, 1998). The first strand represents an older line of enquiry, large conducted within anthropology and involving methodologies where researchers live with indigenous peoples seeking to describe and explain patterns of indigenous life, including social interactions, factual knowledge and spiritual traditions. This

type of literature often produces rich ethnographic description of Indigenous Knowledges in context.

The second strand has emerged from a context of indigenous – outsider interaction within Development initiatives. This strand emerged in the 1970s as Development underwent changes in its institutional context (e.g. reducing state involvement, growth in NGOs), concerns regarding the efficacy of top-down approaches increased, and a shift occurred in funders demands towards greater ‘grassroots’ involvement and for ‘bottom-up’ development. Within this strand considerations have focused on IKs as applied to meeting Development goals (e.g. altering agricultural systems, localized approaches to environmental sustainability) and the interaction of IKs and ‘Western science’. This second strand is interdisciplinary, with development studies, agronomy, human geography and agricultural economics contributing. Researchers from both strands have argued there is a need to overcome the methodological and disciplinary differences between the two to better understand the complex encounters between Development regimes and local patterns of livelihood and being (Sillitoe, 1998; Shepherd, 2010). The discussion that follows therefore draws on both strands, while focusing on IK promotion within Development.

Theme 1: Defining Indigenous Knowledges & Science

Terms in the Literature

In seeking to define indigenous knowledges writers have explored ontological assumptions and differences (between cultures-societies), practices of application and knowledge generation and differences in social, cultural and geographic/ecological location. The notion of indigenous knowledge as a singular construct has been critiqued for either explicitly, or by connotation, suggesting that the knowledge traditions of the thousands of indigenous peoples are relatively homogenous and can be considered as a single class of knowledge. This singular construction of indigenous knowledges has been demonstrated to reflect a view of non-European peoples as a singular ‘other’, defined and understood in terms of our ‘not-being’ European (Smith, 1999) and has been replaced by terms reflecting plurality and diversity of knowledge systems e.g. indigenous *ways-of-knowing*, knowledge systems, indigenous knowledges.

Antweiler's (1998) survey of terms used within anthropology and Development Studies from the 1960s to 1997 to refer to indigenous knowledges demonstrates a range of disciplinary preferences, emphasis and changes in political contexts. For example, Antweiler explains up to the 1970s the term "indigenous" was equivalent to "local", but with the growth in indigenous movements through the 1970s the term indigenous came more to be paired with "Western" thereby reflecting a political relationship between indigenous peoples and settler states and the West more broadly. Antweiler's survey includes 23 terms related to indigenous knowledge, a selection of which are presented below.

- **Indigenous knowledge** - culturally integrated knowledge of small marginal non-Western groups (widespread term).
- **Endogenous knowledge** - of internal origin, as opposed to exogenous or external knowledge.
- **Native knowledge/expertise** - implies knowledge of a natural character, closeness to nature.
- **Local knowledge** - knowledge rooted in local or regional culture and ecology.
- **Traditional knowledge** - handed down, old, oral (implying static, low level of change).
- **People's knowledge** - broadly disseminated knowledge, knowledge as potential for political resistance, as opposed to elite knowledge.
- **Folk knowledge/science/competence** - traditional, rural (in industrial societies).
- **Community knowledge** - related to small social units.

More recently terms such as Traditional Ecological Knowledge (TEC), Indigenous Ecological Knowledge (IEC) (both used in discussion of natural resource management and indigenous peoples), Indigenous Intellectual Property (used in national and international legal contexts where protection of IK is an issue) and Indigenous Agricultural Knowledge (Bebbington, 1991) have been used in the literature, again reflecting specific academic concerns and fields of application.

The terms indigenous knowledge(s) and local knowledge(s) are used widely in the current literature, with indigenous knowledge appearing to be slightly more popular. I have a preference for the term 'indigenous knowledge' as the term indigenous more clearly reflects a cultural and ethnic group position than the more general 'local'. It is for precisely this reason

that Antweiler takes the opposite position, favouring 'local knowledge' over 'indigenous knowledge', in part to avoid the politicized connotations of 'indigenous'. In preferring the term 'indigenous' to 'local' I am not claiming that the bodies of research associated with each varies in any significant manner. Research which uses the term 'local knowledge' is drawn upon heavily in this thesis, particularly when it involves knowledge from indigenous communities and indigenous communities' knowledge within Development contexts e.g. Blaikie et al.'s (1997) and Bicker, Sillitoe and Pottier's (2003) *Negotiating Local Knowledge: Power and Identity in Development*.

Characteristics & Definitions of Indigenous Knowledges

Within the literature a common 'first-step' in discussing IKs has been the identification of characteristics of IKs i.e. What is indigenous knowledge? One approach is to consider IKs as the knowledge tradition or system of a specific cultural or ethnic group. This approach has its roots in anthropological research, with groups considered to be culturally and geographically discrete from the West and settler societies. Within contexts of centuries old colonial contact, geographic and cultural distinctiveness has reduced, with indigenous peoples' ways-of-life and knowledge traditions undergoing significant transformation. The knowledge traditions of indigenous peoples today display elements which are unique to that people, elements adopted and adapted from other cultures, hybrid elements, and novel elements born from this context of between-group interaction i.e. IKs display significant elements of ongoing hybridity.

From this 'cultural hybridity' perspective IKs can be viewed as occurring through continuous process between groups (Bhabha, 1985; Whatmore, 2002). Regarding agriculture there is considerable evidence of inter-cultural interactions where technologies, knowledge, plant varieties, practices and models of organizing move between cultures. In Aotearoa Best (2005; 2006) and Petrie (2006) describe processes of technology, knowledge and religious adoption, adaptation and innovation (e.g. new crops, participation in capital markets) during the early to mid-1800s resulting in fundamental changes in both Māori agriculture and society. In the Andes, Stobart and Howard (2002) provide contemporary localized examples of these processes. In describing the adoption or rejection of new crops within Andean villages, Stobart and Howard describe how new crops can be integrated into communal ritual and spiritual practices. Here crops are not adopted solely for economic reasons, rather they

become localized through holistic (multifaceted) processes of cultural integration. Empirical work from African agricultural contexts shows how agricultural knowledge is transformed constantly through social interactions between ethnic and cultural groups. Her formal trade and training is complemented by informal interactions, for example when farmers work urban areas as taxi drivers, through interactions within refugee camps or during religious festivals (Reij & Waters-Bayer, 2001).

The literature clearly demonstrates that the notion of separate or exclusive knowledge systems, be they indigenous or not, lacks empirical support. In describing characteristics of IKs the various IK traits or commonalities described should therefore not be considered as essentially indigenous, exclusively indigenous (e.g. IKs are holistic and Western science is not) or as indicating separate and exclusive knowledges. Rather the characteristics of IKs, such as described by Ellen and Harris (1996), Sen (2005) and Mistry (2009), should be understood as 'defining tendencies' which characterise the socio-cultural contexts in which IKs are experienced and thereby create distinct elements to IKs. As social phenomena the exclusivity of knowledge traditions and their degrees of interaction reflect the social characteristics of the groups concerned. From this perspective the nature of interaction or separation between Indigenous knowledges and Eurocentric sciences can be considered as a function of the social interaction between indigenous peoples and European and settler societies. If indigenous peoples are marginalized within a society, or if indigenous communities and scientists have little or no interaction, then IK - institutional science interaction will be severely limited. Conversely, if genuine and collegial interaction occurs between indigenous communities and scientists, if there is a high level of mutual understanding (e.g. being bilingual, having tools that facilitate mutual understanding, familiarity with the social and physical contexts of knowledge practices) then fruitful and equitable IK – institutional science interaction is more likely to occur.

Drawing on the work of Ellen and Harris (1996), Sen (2005) and Mistry (2009) a list of IK characteristics is presented below, with modifications where essentialist type claims are made e.g. that the localness of IKs makes them meaningless in other contexts. The list also draws on contemporary indigenous and non-indigenous writers on IK which emphasize the plurality of *ways-of-knowing* and the implications of interactions between knowledges within

colonial contexts (e.g. negotiated knowledges (Bicker, Sillitoe & Pottier; 2003) and global polycentric epistemologies (Maffie, 2009)).

1. **Local** – indigenous *ways-of-knowing* occur within specific social, cultural, geographic and ecological contexts. Indigenous *ways-of-knowing* therefore have their roots in particular places and communities. These contexts are not ‘bound’, and therefore IKs are open and dynamic.
2. **Oral transmission or through imitation and demonstration** – whether it be through stories, myths, songs, or by accompanying people and observing and learning, indigenous knowledges emphasize oral and practice dimensions. This does not exclude literacy, rather there is a relatively higher emphasis on oral and practice elements, and knowledge processes involving the written form are not privileged as they are in some knowledge traditions.
3. **Adaptive capacity** – over time and through everyday life experiences, indigenous knowledges are adapted through repetition, learning, experimentation, and adoption of novel solutions. IKs are not static but constantly changing.
4. **Social memory & expression** – indigenous knowledges are expressed through social interaction and often held across broad sections of a community. The distribution of IK can still be socially differentiated, for example, by age and gender, or maintained by experts.
5. **Holistic** – indigenous knowledge is situated within numerous interlinked facets of people’s lives. Conceptual, social or practice distinctions made between types of knowledge are based on the social and cultural context of the practitioners of IKs. Conceptual and practice distinctions will reflect local conceptual models (e.g. local taxonomies of the natural world) or practices undertaken within people’s lives.
6. **Relational & Integrative** – indigenous cultures have culturally specific norms and rules of interaction with other groups. Indigenous *ways-of-knowing* interact with others’ *ways-of-knowing* through the inter-group norms and rules of the cultures involved i.e. the interaction IK and science occurs through the norms of interaction of both indigenous peoples and institutional scientists.

Aikenhead and Ogawa’s (2007) description of three forms of knowledge, *indigenous*, *neo-indigenous* and *Eurocentric*, provide a useful contribution to this discussion as they describe

ontological and epistemological differences between these three forms of knowing, and the implications of these differences for interactions between each. Firstly, Aikenhead and Ogawa describe indigenous worldviews as often reflecting ontological assumptions of the world as being animate and all things as imbued with a life spirit. This idea that things in the world possess spirit means that knowing the world (human and others) involves living (spirit possessing) beings interacting and communicating. Scientific enquiry relating to plants, wind, water, people, stars and mountains, as examples, therefore occurs through interaction between living beings. This does not preclude empirical or positivist science as valid *ways-of-knowing* within indigenous cultural contexts, rather such methods occurs as dialogue and social interaction between living beings.

A second point raised by Aikenhead and Ogawa is that two general orientations towards mystery can be seen in different cultures. One orientation towards mystery involves a desire to remove mystery through the use of knowledge process to discover 'truths' i.e. to shed light on the unknown (mystery). This orientation dominates empirical science, with universities and research institutes providing the organizational vehicles to transform the unknown (mystery) into the known. The second orientation emphasises living in harmony with mystery and understanding the implications of mystery in the world. While Eurocentric knowing favours the first of these orientations, indigenous knowing maintains an emphasis on both, with the second orientation being much stronger relative to Eurocentric knowing. In Māori thought the idea of living-with-mystery can be seen in pūrākau where mystery (Te Pō, night/darkness is not something to be overcome, but rather exists as foundation from which knowing (Te Ao) emerges (Royal, 2003; Mika, 2012). This relationship between mystery and knowing can also be seen narratives involving ancestral figures were movement between Te Pō and Te Ao, through experiences of certainty and uncertainty, are inherently dangerous and ultimately life generating (see the narratives of Māui-Tikitiki-a-Taranga and Tāwhaki discussed in Chapter 3 for examples). Likewise, in other indigenous traditions such as the Cree (indigenous North America) the dynamic between mystery and certainty is expressed through narratives of figures moving between light and dark (Aikenhead & Ogawa, 2007). Within these mythic traditions darkness/mystery are often the source of new life, knowledge and technologies, but this source is not overcome in any substantial way, there is no conquest of light over dark. Instead protagonists gain familiarity with journeying between mystery and

light, a process through which they gain maturity, passing through life stages while gaining knowledge and things of use to their peoples, with mystery remaining as an ultimate source of life.

A third point raised by Aikenhead and Ogawa is that indigenous *ways-of-knowing* are orientated to active experiences of knowing, rather than static representations of knowing as knowledge. Knowledge in indigenous cultural contexts tends to be understood in a verb-orientated sense, where the term *knowing* more accurately reflects the valued mode of knowing the world. In the case of Japanese ways of knowing nature, described as neo-indigenous, knowledge/knowing related concepts include connotations of behaving well with the 'object' of one's knowledge. From this verb orientation to knowledge terms such as *ways-of-knowing* have gained popularity as they recognize the active sense of knowing, the plurality of knowledge/knowing (i.e. ways (plural) of knowing), and its relational dynamic.

Along with describing the characteristics of IKs another area of interest in the literature has been the question of what are the general domains of indigenous community life within which IKs are practiced. Examples of the "thematic" areas of indigenous interest include (adapted from Antweiler (1998), Royal (2003));

- **Environmental knowledge**, including;
 - Knowledge of the natural environment e.g. plants, animals, ecosystems, water
 - Knowledge of the modified environment e.g. agricultural knowledge
- **Agricultural knowledge** – knowledge of the lifecycle of plants and animals, and the correspondence with these cycles and other elements of the world such as annual weather cycles, lunar cycles, and the life-cycles of non-agricultural plants and animals.
- **Medical knowledge** – human and other species wellbeing, often linked to plant knowledge due to plant's role in health and healing.
- **Knowledge of technologies** – often technologies produced from locally sourced materials.
- **Organizational and management knowledge** – includes intra and inter-group conflict management
- **Knowledge of people and social relations** – kinship and other relationships, correct behaviour (social cognition (Fiske & Taylor, 1991)).

- **Spiritual and ritual knowledge** – knowledge of gods, ancestors, ritual practice
- **Narrative knowledge** – knowledge of the story forms of knowledge representation, and practices of transmission and interpretation.

A further distinction within IKs can be made regarding their form, as declarative and/or procedural in nature (see Table 3). Again, Antweiler provides an overview of these forms of knowledge and examples of their application. The distinction between declarative and procedural knowledge draws on the work of Polanyi (1957) and others who argued that knowledge involves distinct dimensions (e.g. Polanyi’s (1967) notion of tacit and explicit knowledge) which are not limited to that which we can be described i.e. Polanyi’s famous statement that we know more than we can say. Within this tradition more recent developments have involved considering knowledge as embodied, socially created and existing across a community e.g. Lave and Wenger’s *communities of practice* (1998). Such developments in understanding knowledge have allowed science and other knowledges to be considered as ‘products’ of distinct social contexts, and to reformulate questions of interactions between knowledges so inter-personal and inter-group interactions becomes central.

General forms of knowledge	Examples
DECLARATIVE KNOWLEDGE	
Factual knowledge	- Animals, plants, temperature, social status
Categorical knowledge	- Categories of organisms, colours, natural phenomena (e.g. winds, clouds)
PROCEDURAL KNOWLEDGE	
General processes, rules	- Farming calendar, religious calendar, lunar cycles, household cycles
Specific processes i.e. “scripts”, schemes, plans	- Everyday routines e.g. greetings and farewells, natural resource management, ritual sequences
Complex knowledge i.e. concepts, beliefs and knowledge systems	- Cosmology, therapies, models of “honour”, of “marriage”, of “justice”, cropping systems and decision-making systems.

Table 3. Forms of knowledge from Antweiler (1998).

By considering IKs from perspectives that are broader than simply declarative or factual knowledge, considerations of IK promotion within Development are broadened. By conceptualizing IKs as holistic, adaptive, socially and culturally embedded, while open to

engagement with other knowledge traditions through embodied social processes of intergroup interaction, IK promotion and engagement with science is reframed from a 'test of facts' to one where genuine social interaction becomes a 'first-principle' of participatory IK promotion.

Characteristics of Science

The origins of what is termed science today go back to ancient philosophies, with its evolution marked by major social transformation in Europe. Until the renaissance period science was known as natural philosophy, with natural philosophers engaging in both philosophical inquiry and exploring the characteristics and patterns of the natural world. As the ability of natural philosophers to describe, predict and exercise power over nature grew, their methods and insights were adapted to various industries, acting as a significant dimension of the industrial revolution (Mendelson, 1976). Within the context of European industrialization, natural philosophy become professionalized and institutionalized, with a growth in universities through the 18th century. The term *science* gained favour over *natural philosophy* at this time, with science becoming increasingly confined to privileged knowledge institutes and fraternities e.g. the British Association for the Advancement of Science (BAAS) established in 1831 and the American Association for the Advancement of Science (est. 1848). Because of this transformation of natural philosophy into a professionalized, institutional and European centred knowledge system, science has come to be claimed by those of the West as a product of the West. Science has its roots and is practiced across a wide range of cultures, and therefore to avoid the connotation and exclusivity of terms such as *Western science*, terms such as *transnational science* have been suggested (Krugly-Smolka, 2004). Following from Aikenhead and Ogawa (2007) the term *Eurocentric sciences* is favoured in this thesis, as it indicates the dominance of European societies and their offshoots in shaping and conducting a form of empiricism which is located within the institutes and institutions of those countries. Given the paradigmatic and disciplinary diversity within the institutes of science, the term *sciences* (plural) is favoured over the singular *science*. From this pluralist perspective Aikenhead and Ogawa describe science as "a rational empirically based way of knowing nature that yields, in part, descriptions and explanations of nature" (p.544).

Theme 2: Interacting Knowledges

Along with describing, defining and characterizing IKs, the question of how IKs and other knowledges may interact has dominated the literature from Chambers (1983) onwards. A significant theme within this literature has been the construction of IKs and science as binary opposites whose epistemological and ontological differences render them incompatible. Conversely, others have argued that mutually beneficial interactions can occur between knowledge systems, and that the characteristics of interactions between knowledges are a function of social, cultural and political factors. This theme does not ignore ontological and epistemological difference, but instead argues that by developing individual and collective (organizational, professional, institutional) capacity to work between-cultures, ontological and epistemological differences can be navigated and negotiated.

Binary & Incompatible

Arguments relating to ontological and epistemological difference typically construct IKs as a singular 'other' (i.e. indigenous knowledge) which exists in a binary and oppositional relationship with 'European' or 'Western' science. Common themes within the incompatibility argument include;

- IKs are a singular homogenous 'other' (IK not IKs) to science. 'IK' is therefore considered as homogenous and uniform in its epistemological deficiencies.
- IKs are a type of knowledge common to pre-industrial societies, and therefore presents a type of proto or pre-science
- IKs lack dynamism, they are socially bound and rigid.
 - IKs are restricted by social conventions which render questioning of established knowledge difficult and as social deviance.
- IKs lack technological achievement, in contrast to 'science' where the technologies and material artifacts of the industrialized West are evidence of science's epistemic superiority.

Within the incompatibility argument these themes represent premises of an argument whose conclusion is;

- Iks and science are incompatible on ontological and epistemological grounds. At best they may be considered “radically asymmetrical” as knowledge traditions (Dickson, 2009, p.171)

This argument has been rejected in this thesis, and instead the notion that knowledge systems can interact positively and with mutual benefit is taken. As the above argument persists, it is worth addressing the main points here briefly. The first two points above reflect elements of the developmentalist worldview discussed previously. The idea that indigenous cultures are less mature (developed) versions of European cultures represents a construction of non-European peoples that emerged in response to European exploration and colonization from the 17th century onwards (Hindess, 2007; Helliwell & Hindess, 2011). Part of this construction was a homogenizing of the immense cultural, social, geographic and environmental diversity of the peoples of Africa, the Americas, Asia and the Pacific. In short, the claim to cultural homogeneity, and by extension homogeneity of *ways-of-knowing* reflects a Eurocentric and racist construction of non-white peoples as an indistinct ‘other’.

The third and fourth points above, that Iks lack dynamism and evidence of technological achievement, also lack empirical support and fail to consider the historic, political and environmental factors that influenced the emergence of industrial societies. The emergence of industrialised societies in Europe involved a range of environmental factors within Europe and the broader Eurasian land mass, these included the presence of plant and animal species suitable for domestication, geographic similarities between urban centres that facilitated trade and technology-knowledge transfer, familiarity with communicable disease, and attitudes towards exploration and political dominance over newly “discovered” peoples i.e. global colonization (Diamond, 1997). The discovery of new peoples and their subjugation provided labour (e.g. slavery), minerals (e.g. silver from Peru), new crops (e.g. potato) and other ‘products’ which feed into the industrial transformation and growth of European societies and their new colonies.

The claim that Iks are socially bound, while ‘science’ is not reflects a binary construction which fails to recognize that all knowledge systems are social, and as such, social dynamics effect all knowledge systems. Empirical science has been shown to be a social product open to dynamics of authoritarian control (e.g. academic staff using their positions of power to restrict

and confine enquiry, research funding being influenced by political alliances) and psychological factors that bias scientists' approaches to knowing and knowledge (Kuhn, 1970).

The anthropological literature of indigenous knowledge traditions provides rich descriptions of knowledge processes within the social context of indigenous communities. Alan (2002) provides a detailed description of life within Quechuan communities outside of Cusco Peru, where knowledge, spirituality, agriculture and the obligations of community and family roles intertwine. Within this account Quechuan knowledge systems are shown as having the characteristics described as being absent in IKs, questions are addressed empirically, authority can be rejected, novel knowledge and technologies are adopted and adapted, and knowledge which lacks empirical support is discarded.

Turning to mātauranga Māori, real-life examples and symbolic references in traditional narratives to knowledge processes provide a similar affirmative answer to the question of IK vitality. The stories of Māui feature an almost constant rejection of authority, the results of which range from discovery and innovation, to destruction and death. Wiremu Tāwhai's (2013) account of Māori agricultural traditions within his iwi, Te Whānau-ā-Apanui, a neighbour of Ngāti Porou, recounts healthy debates amongst hapū members regarding the validity of traditional knowledge, community members deliberately undertaking alternative agricultural practices aimed at contradicting established knowledge, and empirical testing using available technologies and local forms of recording. Here scepticism, debate and the testing of alternative hypotheses were evident and common within the described IK system. The empirical evidence, drawn from the descriptions of community members or researchers deeply immersed in community life, show the vitality of the knowledge systems of the two indigenous peoples participating in this research, and that arguments of IKs being static and socially bound as lacking empirical support.

When considering technological achievements as indicators of a knowledge systems' epistemological merits, there is ample evidence of the merits of IKs. The technological and knowledge-based achievements of settling the islands of the Pacific (ship building and navigation knowledge), the transportation and establishment of crops and trees, including the tropical kūmara to temperate Aotearoa (horticultural, agricultural, biological knowledge),

and the exploration of forest and marine ecosystems all point to sophisticated and effective knowledge systems existing across the Pacific. Likewise, the material technologies and agricultural systems of Andean societies provide evidence of effective knowledge systems operating over millennia e.g. the development of approximately 4000 potato varieties.

A further point that incompatibility arguments often fail to consider is the impact of colonization and rapid change have on the vitality of indigenous knowledge systems. In some parts of the world up to 95% of the population died from introduced diseases during the first decades of contact with Europeans. In many colonized lands people were driven from productive lands to live in areas poorly suited to traditional economic practices, including agriculture. The process of colonization has also been marked by an exclusion of, or poor sensitivity to, indigenous peoples. It would be difficult to find a colonized people for whom the settler societies education system has met their needs from the earliest age to tertiary level. of indigenous children. Within the institutes of knowledge indigenous presence has been marked by dynamics of exclusion and constraint, with authentic indigenous presence being a hard-fought exception.

The lack of empirical support for the incompatibility argument does not mean interactions between knowledge systems is simply a case of getting along and talking to each other. The persistence of this argument, the deeply held negative views of individuals regarding different cultures, and the organizational and institutional dynamics that act to confine or exclude indigenous peoples, will continue to challenge efforts for cross-cultural interactions to be culturally and politically just. The following section explores this challenge in detail.

Beyond the binary: Interacting Knowledges

The binary approach to IK and 'Western science' has been criticized recently with alternate approaches proposed which explore conceptually and empirically interactions between knowledge systems e.g. Maffie's (2009) notion of a Polycentric Global Epistemology (PGE) or Aikenhead and Ogawa's (2007) discussion of distinct cultural ways of knowing nature, including *Eurocentric sciences* (plural), *Neo-indigenous*, and *Indigenous* ways of knowing nature. Central to these approaches has been the argument that knowledges are social products, and that therefore within distinct social and cultural groups unique *ways-of-knowing* exist, and that these *ways-of-knowing* are valid and serve valuable purposes within

their specific context. From this perspective the emphasis when considering interaction between knowledges moves from ontological difference to social interaction i.e. practices of between group/culture interaction are given prominence. As non-local Development actors and their organizations (scientists and research institutes, Development professionals and IDCIs) are typically members of the most powerful groups of societies, the practice perspective of IK promotion and Development casts the knowledge interaction question as one embedded within, and representing, the practice of colonization. Multi-knowledge perspectives, such as those of Maffie, and Aikenhead and Ogawa, provide a means of making conscious the political, historic, cultural and social dimensions of indigenous – elite relations, reframing conceptually these relationships, and enacting ethically grounded practices where difference is valued and divergence underpins relationships. Turnbull (1997, p. 551) provides an eloquent expression of the central premise and ethical assumptions of these approaches;

“By recognizing science as a set of local practices it becomes possible to ‘decentre’ it and develop a framework within which all knowledge systems can be equitably compared. It is argued that all knowledge traditions are spatial in that they link people, sites and skills. In order to ensure the continued existence of the diversity of knowledge traditions rather than have them absorbed into the great imperialist archive we need to enable disparate knowledge traditions to work together through the creation of a third space in which the social organization of trust can be negotiated.”

A first step for interactions to occur between knowledge traditions is a recognition from those practicing the various knowledge traditions that each represents a valid way of knowing the world. To use indigenous farmers and scientists as examples, each group must come to see the validity of each other’s knowledge traditions. For scientists their schooling, academic training and professional lives have typically privileged empirical and institutional science, while dismissing Iks as myth, superstition and un-scientific (Bala & Joseph, 2007). From the earliest period of participatory Development the idea that Iks offered technical insight and solutions to problems was encouraged, with researchers stating explicitly that IK systems held understandings, technologies and involve practices which could address agricultural production problems (Chambers, 1983; Thrupp 1989).

Given the impetus to promote Iks and for interaction to occur between knowledges, a challenge exists to conceptualize epistemic diversity (i.e. multiple knowledges) and develop models and practices which facilitate interaction between these knowledges. Maffie’s (2009)

notion of a 'Polycentric Global Epistemology (PGE)' addresses the conceptual, practical and ethical challenges of interacting knowledges. Maffie argues that claims of ontological incompatibility between knowledges can represent a confounding of colonial relationships of dominance and military subjugation with philosophical and practical (social) arguments of knowledge system (in)compatibility. The argument in short is that Western technological prowess, demonstrated through the development of military technologies that were applied against indigenous peoples globally, proves Eurocentric sciences are superior to other knowledge systems. Here technological dominance is considered an indicator of intellectual and epistemic superiority, a form of a "We've got the gun, you've got a spear, our knowledge is clearly superior" argument. Maffie addresses this argument in detail, providing an indigenous response and proposing an alternative to the privileging of 'Western science'.

Central to Maffie's notion of PGE are the ideas that distinct cultures have distinct *ways-of-knowing*, that these *ways-of-knowing* are valid within their culture contexts, that interactions between cultures' ways of knowing can occur where respectful attitudes and commitment to 'dialogue' between groups occurs. For Maffie diversity is not something to be overcome through dominance or homogenizing practice. Instead, an ethical/political position is argued for that assumes divergence and difference are positive, and which seeks to engage across difference. For Maffie this ethical/political position is central as an anchor in efforts to support the survival and self-determination of indigenous peoples and our *ways-of-knowing*. In response to the questions of what specific methods or prescriptive models might be used to achieve these aims, Maffie suggest that given the range of knowledges globally and the complexity of their potential interactions, that practices, models and tools for interaction be negotiated within the context of interaction rather than dictated in advance. To this end Maffie offers nine suggestions for the development of approaches to interacting knowledges. Maffie's first consideration is that a PGE involves a multitude of ongoing dialogues between participants from multiple cultures i.e. PGE is a multi-cultural practice. The multi-cultural and multi-direction dialogue of PGE occurs within global and nation state colonial contexts, meaning a PGE requires a high level of multi-cultural capability and political sensitivity.

Second, Maffie suggest a PGE functions as a way-seeking, rather than a truth-seeking, enterprise. Here greater emphasis is placed on searching out and developing understandings and practices that promote explicitly moral and socio-political goals such the emancipation of

disadvantaged groups, self-determination, harmonious social existence, mutual respect, cooperation, and ecological sustainability (p. 60). Third, PGE recognizes that knowledges are local, in the sense of being produced from specific positions within societies and cultures which includes being located within specific power relationships, value assumptions and historic contexts. The assumption that 'knowledge is located' nullifies claims to any knowledge being complete, and instead, knowledges are considered as 'partial', with potential for complementary interaction. This understanding of the relationality of knowledges is described as 'levelling the playing field', denying the privileging and centring of specific knowledges (e.g. the Eurocentric sciences) and creating an ethical foundation for multi-knowledge interactions.

Fourth, the ethical commitment of PGE to the survival and self-determination of indigenous peoples requires a specific attention be given to indigenous peoples' cultures, knowledges and political situations. This ethical commitment is a centring based on recognition of the value indigenous peoples place on our cultures and knowledge traditions. Fifth, PGE advocates for the conserving of epistemological diversity. This conservation may involve elements of capturing IKs through recording and storing, but it emphasises the need for resources (e.g. time, funds, space) and social forms (e.g. organizational capacity within Development) which facilitate the contemporary practice of IKs. Sixth, PGE embraces the idea of a "polyculture" of knowledges, and resists homogenizing dynamics that reduce epistemological diversity. Seven, PGE calls for an "insurrection of subjugated knowledges" and an end to the tyranny of science (Alvares, 1992), seeking to ensure indigenous peoples and our knowledge systems are vital and capable of engaging with, evaluating and adopting other knowledge systems. Eight, PGE requires participants approach others and their knowledges with attitudes of recognition, learning, careful listening, consideration and an openness to transformation. Nine, PGE involves an openness to knowledges being expressed in a wide range of forms including dance, poetry, work, experimentation, publication, divination alongside conventional practices of the academy.

In proposing a 'principles-based' model Maffie avoids a prescriptive approach which outlines specific practices, instead arguing the principles outlined in the PGE model provide direction for creative and ethically grounded approaches to cross-cultural engagement. Maffie uses the term 'epistemological trading zone' as a metaphor for interaction within the PGE approach

where sharing, borrowing, learning and collaboration occurs between cultures and between 'knowledge centres', such as indigenous farmers and research institutes. More explicit approaches such as those using participatory tool-kits or conceptual models applied across cultures (e.g. Neef and Neubert's (2011) conception of participation as multi-dimensional) are not excluded from the PGE approach, but are instead applied or adapted in response to the values Maffie describes within the 'epistemological trading zone'. The strength of the PGE approach is that it provides a set of higher level values and assumptions from which context specific approaches can be developed. A weakness of this approach is that it does not provide examples of formal inter and intra organizational models (i.e. structures, practices) which re-centre indigenous peoples politically and epistemologically, within Development and societal contexts. Other examples of participatory IK promotion, such as Aikenhead and Ogawa's (2007) discussion of *indigenous ways-of-knowing*, *neo-indigenous ways-of-knowing* and *Eurocentric sciences* also emphasize a 'principles first' approach. These approaches highlight the need for organizational insights into IK promotion, as it is at the intra and inter organizational levels where the decolonizing of Development can occur and participatory ideals put into practice, or not.

Indigenous Ways-of-Knowing Summary

The discussion of indigenous *ways-of-knowing* has focused on two dominant themes in the literature, first defining and describing IKS and second, addressing the issue of how knowledges, or more correctly ethnically, culturally, socially and politically distinct groups, might interact in socially just ways. This review of the literature highlighted enduring theoretical and practical questions. In concluding this section, the work of Aikenhead and Ogawa's (2007) and Maffie (2009) was discussed. In both cases the answer to the continued struggle to allow IKS full and authentic expression within Development contexts lies not solely in prescribed methods and tools, but rather in an ethical engagement with peoples, where the capacity and attitude to engage respectfully, openly and skilfully is cultivated. From this perspective tools and methods are used selectively and in response to the requirements and capabilities of those involved.

2.4. Participatory Development & Indigenous *Ways-of-knowing*

Blaikie et al. (1997) use the notion of 'actor interfaces' to explore the influence of *classic*, *neoliberal* and *neopopulist* paradigms on IK promotion. The actor interface concept positions social dynamics as significant in IK promotion. This conceptual shift moves the discussion of knowledge processes from polarizing essentialist binary constructions (e.g. IK vs 'science') to one which explores the possibilities and dynamics of social interaction between the practitioners of knowledge systems i.e. emphasizing the praxis of knowledge system interaction. This approach recognizes that questions of ontological and epistemological compatibility are important, but centres the social dynamics of knowledge (i.e. actor) interfaces. Social interaction between Development actors includes the formal and informal organizing of Development, thereby placing questions of IK promotion and knowledge system interaction within an organizational frame. Blaikie et al. identify 12 variables which effect actor interfaces and the expression of local knowledges across the three Development paradigms. The 12 variables are i) the role of local knowledge, ii) knowledge-in-action type, iii) institutional prescriptions, iv) academic discipline/profession, v) research framework, vi) responses to technical problems, vii) preferred technology, viii) models of peasant society, ix) peasant behaviour, x) gender orientation, xi) orientation to market and xii) views of collective action. Blaikie et al.'s list of variables is modified here to include 9 of the original variables which are most relevant to this research. Based on this research's focus on power and inter-organizational relations (IORs) the following variables have been added to Blaikie et al.s' list; i) inter-organizational approaches, ii) organizational behaviour and iii) responses to power differentials (See Table 4, p. 70 for full description).

Across the three Development paradigms Blaikie et al. describes six types of actor interfaces, characterized as varying along a continuum from a denial of the relevance of local knowledge to prioritizing and facilitating local knowledge and its interactions with other knowledges. The term "Knowledge-in-Action" (KIA) is applied to these knowledge interfaces;

Knowledge-in-Action: knowledge denied/ignored – disciplinary, structural, practical, professional and paradigmatic forces act to deny the importance of IK. Participatory rhetoric may be employed but the knowledge interface is marked by processes and outcomes where

IK does not appear in technological choices and IK practice is marginalized or ignored. This KIA is common in the classic paradigm.

Knowledge-in-Action: knowledge appropriated – the value of local knowledge is based on outsider's ability to extract knowledge and apply it within external systems e.g. local knowledge of plants and plant medicines tested for commercial use. Within this KIA, IKs are not considered to have value as whole systems, but rather as containing discrete factual elements which can be extracted and used within 'real science' systems. This KIA is common in the neoliberal paradigm.

Knowledge-in-Action: knowledge ventriloquized – development practitioners do not accord IK as having technical value, but may attribute IKs a functional value as assisting in the introduction of technologies and management practices through the use of local idioms, classifications and practices. This KIA involves a top-down approach that attempts to localize introduced elements at the local adoption stage to facilitate integration into local systems. This KIA is common in the classic paradigm.

Knowledge-in-Action: knowledge esteemed – the KIA occurs when scholars meet local people with a view to producing accounts of local technologies, knowledge, beliefs and social institutions, sometimes to inform external agencies. Here IKs are accorded intrinsic value. The flow of knowledge is from the local to the global. From this KIA some agricultural practices perceived as part of the problem under classic and neoliberal paradigms have been reconsidered as elements within sustainable development strategies.

Knowledge-in-Action: knowledge negotiated – at this KIA interface, knowledges and their processes are mutually constructed through negotiated processes (e.g. Bicker, Sillitoe & Pottier, 2003). Here IKs are centered and remain in situ, with negotiation between knowledges occurring to enhance the interacting knowledges e.g. IKs and Eurocentric sciences benefit from the interaction. Issues of mutual understanding, decision making power, organizational power, and wider socio-political factors directly influence dynamics of negotiation.

Knowledge-in-Action: knowledge as empowerment – the KIA positions IK expression as medium for self-determination and local empowerment. This KIA is typically promoted by

local activists and NGOs with strong ideological agendas, and is therefore often removed from the professional cultural of natural scientists. A central aim of this KIA is local people taking greater control of Development processes. External agencies may use this KIA where they have Development agendas beyond the technical e.g. social and political development. Examples of this KIA have been seen since the late in 1980s in the forestry field involving 'traditional' forest management strategies (Anderson, 1990).

In the Table 4 (following) relationships between specific types of actor interface and various ideological and organizational variables are presented. The Table is adapted from Blaikie et al., with three variables added by the author i.e. inter-organizational approaches, organizational behaviour and responses to colonial dynamics. One of Blaikie et al.'s main arguments is that rather than Development projects reflecting a single paradigm, different elements of a project may display characteristics typical of different paradigms i.e. a single project may concurrently or over its duration display *classic*, *neoliberal* and *neopopulist* elements. In the adapted model presented in Table X the range of organizational and ideological variables presented facilitates a detailed exploration of the relationship between IK promotion and organizational factors.

Of particular importance to Blaikie et al. is the nature of IK promotion within *neopopulist* Development and how ideological, methodological, bureaucratic and managerial (i.e. organizational) elements may shape, block or facilitate interactions between knowledges. Blaikie et al. note that the rhetoric of IK promotion may diverge from Development practices, creating what is politely termed 'slippage' between project text and practice (Bebbington et al., 2007). Where a Development project's rhetoric emphasizes IK promotion and productive interactions between knowledges (i.e. describes a *neopopulist* approach) but this does not occur, the model describes a range of variables such as 'role of IK', 'institutional prescription', 'research framework', 'organizational behaviour' whose specific form could indicate characteristics of other paradigms which create actor interfaces which inhibit IK promotion e.g. elements of the classic and neoliberal paradigms which ignore, ventriloquize or appropriate IKS.

In considering KIA interfaces Blaikie et al. make two sets of recommendations. The first set of recommendations is based on an argument that changes in Development practice and policy

must occur for IKs to be authentically enacted and knowledge interfaces to be mutually beneficial. For these changes to occur it is argued that behavioural and attitudinal changes amongst Development professionals (scientists and administrators) are required. This first set of recommendations are;

1. Research and consideration of all stakeholders' experience in participatory and collaborative initiatives should occur to discover what procedures exist or can be developed that would facilitate IK promotion.
2. Personnel from external agencies should engage in inter-personal, cross-cultural, inter-disciplinary and IK training which facilitates mutual understanding and collaborative work. Such training should emphasize cross-cultural methodologies.
3. IK should be a central feature of Development work, and considered from the earliest stages of a project.
4. Clarification and full consideration of the Intellectual Property Rights in Development projects. Analysis of possible impacts for communities must be a central focus of project design and implementation.

The second set of recommendations focuses on local knowledges and the circumstances that encourage or discourage their resilience and vitality. These recommendations are based on the notion that social, cultural and environmental context factors impact the nature of IKs, thereby effecting the ways IKs can be enacted within Development projects. Blaikie et al. describe five circumstances which may challenge the utility of IKs and the social system that produces them;

1. **Rapid population growth or rapid reduction in resource availability** – this circumstance effects the population-to-resource relationship, creating an imbalance where demand rapidly accelerates when populations increase or resources availability decrease. This imbalance affects the socio-economic system that produces IKs, resulting in rapid changes in IK systems.
2. **Rapid immigration** – rapid population changes may render 'home' communities depleted as knowledge holders and participants in agricultural systems leave.

3. **Disasters and extreme events** – these may create material, cultural or ecological ‘shocks’ that leave communities’ knowledge systems poorly adapted to meet community needs after these events.
4. **Slow moving change** – changes such as environmental change, widespread deforestation, land degradation or integration of indigenous children into state schooling systems may challenge the resilience and vitality of knowledge systems.).
5. **Rapid commercialization and economics shocks** – these can undermine the relevance of IKs e.g. intellectual property issues may affect access to traditionally used species.

In emphasizing contextual factors and the vitality of IKs Blaikie et al. make a valuable point in highlighting the need to closely consider the characteristics of specific IKs. The vitality of an indigenous community’s knowledge system is likely to be significantly affected if there has been large outward migration, if the community has been severely affected by a natural disaster, or if the community’s children have been compulsory enrolled in a state schooling system. When Development initiatives are being planned such contextual factors are of importance as they indicate the state of an IK system and what form promotion and engagement may take, while also highlighting broader community experiences over time.

It should be noted that Blaikie et al.’s list of five circumstances which may affect the vitality and utility of IKs represent community experiences which those communities may have responded to in adaptive and reinvigorating ways i.e. these circumstances may be challenging by indigenous agency may display positive responses to them. For example, indigenous community members may utilize agricultural knowledge within their new urban areas, developing individual and communal gardens (Shava, Krasny, Tidball & Cryton, 2010) or in cases where urban migration involves a maintained contact with homelands, movement between urban areas and homelands may act as a social bridge whereby technologies, understandings and practices diffuse between locations e.g. new crops or irrigation technologies may be brought by urban living community members to their rural homelands.

DEVELOPMENT PARADIGMS & LOCAL/INDIGENOUS KNOWLEDGE				
ORGANIZATIONAL VARIABLES	Variable	Classic	Neoliberal	Neopopulist
	Role (framing) of LK	Part of the problem	Contributes to rational choice, market info.	Indispensable, commensurate with other <i>ways-of-knowing</i> /knowledges
	Knowledge-in-action (KIA)	Ignored or ventriloquized	Appropriated, induced innovation	Negotiated, esteemed, empowered
	Institutional prescription	Top-down centralized decision making and power	'Market' policies, property rights, resource pricing	Bottom-up participation, decentralization, localism
	Academic profession/discipline	Science, bureaucrat	Economics, development professional	Sociology, development
	Research framework	Systematic empiricism, positivist, formalist, modernist	Methodological individualism, modernist, commercial	Community level, relativist, informal
	Project framing	Community deficit, solution through adoption of Western sciences and agricultural practice.	Community deficit, solution through market integration	Can combine deficit and strengths-based models. Strong rhetoric of external actors supporting local aspirations, local solutions.
	Local behaviour	Ignorant, irrational, traditional	Rational, egocentric	Virtuous, rational, community-minded
	Views of collective action	Deficient	Conditional rationality, political entrepreneurs	Essential and unproblematic
	Inter-org. approaches	Linear, centralized	Linear, commercial links	Strategic links, diverse stakeholder groups, privilege local groups & community
	Organizational behaviour	Structural exclusion of locals	Strategic inclusion of locals by external Development actors.	Community embedded in organizational model. Holistic integration of local and non-local aspects.
	Response to technical problems	Technical solutions	Economic solutions	Socio-political solutions, utilize & adapt local technologies
Response to power differentials	Tendency to enact colonial dynamics at project level through cultural, epistemic and political subjugation. Does not address directly broader level power differentials.	Tendency to enact colonial dynamics at project level through cultural, epistemic and political subjugation. Does not address directly broader level power differentials.	Concern ranges from exclusive to project, to project and wider (community, society). In strongest form attempts (re)centre community within projects and support indigenous rights across society and internationally.	

Table 4. Development paradigms and implications for local/indigenous knowledge promotion (adapted from Blaikie et al., 2000).

2.5. Organizational Perspectives on Indigenous Knowledge Promotion

Introduction

While the previous section introduced consideration of IKs and IK promotion from social and organizational perspectives (i.e. Blaikie et al.) (see Table 4), this section focuses the organizational literature, drawing on areas of research which have potential to inform this research topic. As noted previously, Development is conducted through formal organizations, typically collaborations between multiple Development actor organizations. Development Studies and Organizational Studies therefore have considerable overlap, yet despite this, the application of organizational studies' methodologies, concepts and theoretical models to core Development issues has been limited to a few specific areas (e.g. NGO management (Lewis et al., 2003)). This research explores dynamics at intra and inter-organizational levels and their influence on participatory Development and IK promotion. Based on a review of the literature the following organizational perspectives have been explored in detail;

- localization and diversification of organizational research
- institutionalism
- proximity and group interaction

Localizing Research

Ibarra-Colado (2006) argues that the imposition of models of organizing from outside of Latin America represents an epistemic coloniality, where ways of framing and understanding social realities are imposed from the 'centre' (Western Europe, the USA) on the 'periphery' (Latin America). Using examples of bodies of knowledge that have arrived in Latin America over the previous 150 years, first engineering knowledge, then psychological knowledge and most recently managerial knowledge, Ibarra-Colado describes these knowledges as ordering and simplifying the world by means of an instrumental non-local rationality, and expressing understandings and attitudes that represent and reinforce differentials of power that have been at the centre of colonization. This epistemic and corporeal coloniality, repeated globally, represents the context from which indigenous, Asian, African and Latin American organizational researchers have called for the localizing of organizational research to address academic, practical, ethical and social justice issues (Tsui, 2004; Banerjee & Linstead, 2004;

Ibarra-Colado, 2006). This call is not a uniform one, within distinct contexts shaping its expression. Across parts of Asia, Eastern Europe and Latin America a growing global economic presence has given weight to this call to localize, while amongst indigenous peoples, issues of social justice and decolonization have been more central in its promotion.

In terms of concepts and models of organizing, indigenous researchers have demonstrated the validity of exploring indigenous worldviews and constructs at the intra-organizational, inter-organizational, and macro levels (e.g. Henry & Pene (2001), Spiller, Pio, Erakovic & Henare (2011)). Within Aotearoa calls to indigenize research have been based on academic, ethical and economic reasons. Henry and Pene (2001) and Spiller et al. demonstrated that unique Māori constructs such as tapu, tikanga, kaitiakitanga and mana are present within organizational settings involving Māori, and that these constructs impact the formal and informal aspects of organizations. As organizational realities, Henry and Pene (2001) argue that to ignore Māori (i.e. context specific) constructs, will result in research that has poor construct validity, while lacking theoretical and practical relevance.

The presence and application of indigenous understandings and practices within formal organizational and institutional contexts provide real-world examples of the need for localized research. This can be seen at a macro-political level in recent constitutional and legislative reforms in Bolivia and Ecuador. In Bolivia legislative recognition was given to Pachamama (Mother Earth) as a living being with inherent rights enshrined in law. Within this legislation Pachamama was defined as, "...the dynamic living system formed by the indivisible community of all life systems and living beings whom are interrelated, interdependent, and complementary, which share a common destiny". In Ecuador, Articles 10 and Articles 71-74 of the Ecuadorian Constitution enshrined the rights of Pacha Mama/Nature, to respect her existence and the maintenance and regeneration of her lifecycles. Legislative processes concerned with the Treaty of Waitangi have led to the establishment of similar 'rights of nature', however these have been applied to specific locations and not across the whole country, for example Te Urewera and the Whanganui river, have both been legally declared as persons with standing and rights. The Waitangi Tribunal report into the WAI 262 claim offers another example of the application of indigenous worldviews, practices and knowledge being promoted at a governmental level, with the report offering multi-level organizational

and institutional recommendations to address social inequalities and establish new relational models between Māori and others.

In considering the contextualization of organizational theory, Tsui (2004) describes research as falling into three general types according to the degree of contextualization (see Figure 4). Research which has a low degree of contextualization, termed “context free”, ignores the impact of culture on constructs and theoretical relationships, assuming they occur consistently across cultures and the strength of relationships between independent and dependent variables is unchanged.

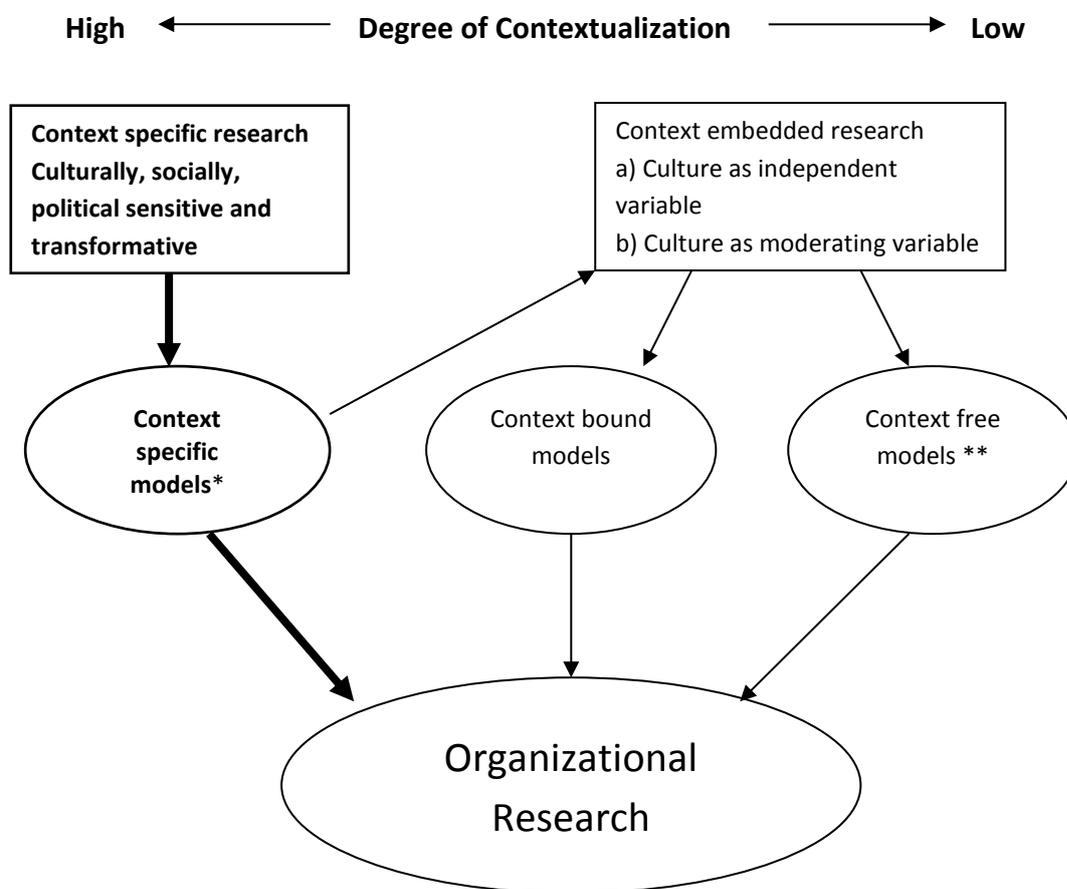


Figure 4. Degrees of research contextualization (Tsui, 2004).

*Context specific research path highlighted as the approach taken in this research.

** Context free ‘universalist’ approach - represents dominant approach in org. research

Tsui (2004) describes “context free” approaches as dominating organizational theory from the Global North. “Context bound” approaches assume that constructs occur across cultures, but the strength of specific constructs and the strength of relationships between constructs

varies in response to cultural factors. While both context bound and “context specific models” are sensitive to context, the context specific approach recognizes that the initial ideological and theoretical assumptions of research while shape research findings. Therefore, there is a need to consider context at the deepest level, allowing it to inform the conceptual and theoretical assumptions of research. As noted previously, cultures may have constructs, such as tapu and mana for Māori, or yachay and ayni for Quechuan peoples, which are significant within those communities and for which there are not equivalents in other cultures. Exploration of these constructs from ‘within’ their own social and cultural context will therefore provide nuanced and valuable understandings which are distinct to that which can be achieved through context bound and context free approaches.

In this short summary, economic, academic and ethical drivers of ‘localizing’ research can be seen. Together the emergence of regional economies (e.g. Asia, Latin America, Eastern Europe and Africa) and economies within countries (e.g. Māori) provide an economic impetus for contextualizing research. The call to increase the level of contextualization of research means conducting research which either assumes contextual factors are important in predicting variance in dependent variables (i.e. a context bound models) or assuming that at a fundamental level the nature of constructs and the processes they involve are shaped by the local context (i.e. context specific models). Tsui argues that by utilizing a greater degree of contextualization in research, construct validity, process validity, and the practical relevance of organizational knowledge will improve (Tsui, 2004). Others such as Gelfand, Erez and Aycan (2007) have argued that utilizing ontologically and epistemologically assumptions and practices which are distinct from the mainstream can invigorate knowledge processes, stimulating novel and creative responses to theoretical and practical issues.

A limitation of Tsui (2004) and many others who argue for context specific research is the lack of attention paid to societal level inequalities and issues such as colonization. Tsui’s research primarily involves Chinese organizational contexts where, unlike for indigenous peoples, colonization is not a significant issue. For Tsui the argument is largely confined to addressing imbalances of representation within the academic field of organizational studies, and not imbalances of power between the State and communities or ethnic groups. On a global scale the imbalances of European colonization are mirrored within the organizational field as North American and Western European research dominates. The use of context specific approaches

therefore reduces the imposition (epistemic coloniality) of foreign *ways of knowing* and *ways of doing* onto indigenous peoples (Ibarra-Colado, 2006), and as such supports the de-colonization of the academy and specifically the field of Organizational Studies through the assertion of the validity of indigenous ontologies and epistemologies.

Institutionalism

The central interest of Institutional Theory is the idea that social choices are shaped by the larger groups we are part of. Institutional Theory explores the way understandings, choices and actions at the organizational level are shaped, mediated and channelled by the collective perspectives across organizational networks, termed the institutional environment (DiMaggio & Powel, 1983; Lawrence & Suddaby, 2005). These institutional environments are comprised of networks of organizations who interact regularly and who together construct shared understandings and notions of legitimacy. Specific industries, general areas of activity or work types (e.g. IT, the arts), or at broader levels certain forms of economic activity (e.g. the formal economy) or governance models (e.g. the state, multi-national models) can each constitute an institutional environment.

The institutional environment functions as a discrete social phenomenon, and therefore as a unit of analysis, which exerts a normative influence over its organizational members. By the 1990s the term organizational field had become widely accepted as the term to describe a constellation of interacting (organizational) actors. Normative influences across an organizational field occur through regulative cultural-cognitive structures which provide stability and collective meaning to social behaviour. These structures act as taken-for-granted 'social facts', which once institutionalized provide collective templates which unify and legitimize actions. This means that organizations are driven to function legitimately (in accordance with the norms of an organizational field) as well as more salient aims of efficiency and profitability.

From its early focus on normative structures and conformity, researchers through the 1990s turned to processes of change and divergence within fields posing questions such as what role might the state and the legal/regulatory environment have on organizations' behaviour and field conformity, and how might individual and collective organizational responses reflect and shape patterns of field change and evolution? Affirmative action and equal opportunity

legislation are examples of changes in the regulatory environment that provoked change amongst individual organizations and across organizational fields. Within the Development context the emergence of NGOs can be seen as reconstituting the 'constellation' of actors within this field, likewise the emergence of new paradigms (e.g. *neopopulist*) created new ideals, norms and notions of legitimate action within the Development field.

Lewis and Mosse (2006) describe two institutional perspectives within Development studies. From a neo-Marxist 'dependency theory' perspective Development acts to sustain an economic order of international class inequality with disjuncture manifest in movements of resistance or rebellion. The second perspective, drawing on Foucauldian theory, critiques Development as a discourse, a knowledge-power regime, which has instrumental effects beyond the intentions of individual or organizational actors, or the state. Examples of this second perspective are seen in the *first-wave* of Post-Development critiques (e.g. Sachs, 1992; Escobar, 1995). From both perspectives Development is a hierarchical political field that exerts a political effect on those that participate which limits or rejects possibilities of divergence which might empower disadvantaged groups i.e. *neopopulist* goals are constrained by the effect of international class inequalities or knowledge-power structures. A strong institutional embeddedness position might therefore argue that goals of social emancipation are likely to be rejected outright, or reconfigured, either explicitly or implicitly, into processes of social and cultural regulation (Cook & Kothari, 2001), a conclusion argued for by the *first-wave* Post-Development writers. The *second-wave* Post-Development writers offered a more optimistic view regarding Development field change. These writers have argued that although Development practice is embedded in a power laden discourse, it is possible to reconfigure practice, power and knowledge at the inter and intra-organizational levels in ways that centre and empower marginalized peoples (e.g. Gibson-Graham, 2002; 2006a). This position aligns with institutional theorists focused on processes of change and divergence. A strong feature of agency and change orientated institutional research has been a focus on understanding the role of actors in effecting, transforming and maintaining fields (Lawrence & Suddaby, 2005). The notion of institutional entrepreneurship has been central in this scholarship, with attention focused on how actors influence their institutional contexts through technical and market leadership, lobbying for regulatory change, and discursive action (DiMaggio, 1988; Fligstein, 1997). From this perspective the emergence of the

neopopulist paradigm can be seen as a form of institutional entrepreneurship where actors such as Chambers (1983) were particularly influential, where policy makers and funders were influenced by practical and ethical considerations to demand participatory methodologies, and where the language of Development changed to articulate new power relations at the project level (discursive action).

Drawing on early work from Meyer and Rowan (1977) and DiMaggio and Powel (1983), Lawrence and Suddaby (2005) and others have explored the notion of 'institutional work' as a means of embedding institutional considerations within the practicalities of everyday work. Institutional work focuses on the practices of individual and collective actors aimed at creating, maintaining, and disrupting institutions (Lawrence & Suddaby, 2006). This perspective extends on previous approaches (e.g. focused on structure and shared cognitive elements), maintaining the notion of action as embedded within institutional structures, but it gives greater attention to two areas. First, that agency is a common feature of all action within institutions, and is therefore worthy of study where it is involved in normative processes of maintaining institutions, and not just where agency leads to divergence. Second, institutional work centres the everyday efforts of individuals and collective actors to navigate organizational life i.e. the everyday struggles, inconsistencies, collaborations, tinkering, inventiveness and compromise of work life is positioned as important in maintaining and diverging from institutions. In taking this approach Lawrence, Suddaby and Leca (2009; 2011) argue two issues are critical to understanding how 'work' and 'institutions' are linked; intentionality and effort. Intentionality can be considered as involving a future orientation which consciously seeks to reshape social situations, a 'projective agency' (Emirbayer & Mische, 1998), and an orientation towards the present where immediate practical issues of work are of primary concern. Lawrence et al. suggest that effort, both mental and physical, is a central feature of work, as following norms typically requires less effort than divergence as taken-for-granted assumptions are not questioned, patterns of individual and collective behaviour follow familiar patterns, and one remains within 'the norm'. Institutional divergence or entrepreneurship typically requires greater effort, beyond what is required for institutional compliance. To create new ways of understanding, organizing or acting within an institutional field requires effort, where political positionality, acquiring resources, social capital, organizational alliances represent forms of effort required to reshape institutions.

Returning to Development and the question of the relationship between IKS and organizational dynamics, this emphasis on work, agency and processes of conformity and divergence provides a novel framework for considering participation. If Development is a hierarchical discourse, to undertake participatory Development requires divergence from institutional norms of Development and society. For this divergence to occur and potentially 'scale up' across an institutional context requires 'work' in three general areas (Lawrence & Suddaby, 2005);

- **Overtly political work** – mobilizing political and regulatory support (*advocacy*), constructing rules that define status, identity and membership (*defining*), and creating rules that confer property rights (*vesting*).
- **Reconfiguring belief systems** – *constructing identities* that define the relationship between an actor and the field, *changing normative associations* between work and the moral and cultural foundations of those practices, and *constructing normative networks* where inter-organizational networks support and regulate novelty, creating new norms within the broader field.
- **Altering abstract categorizations** – associating taken-for-granted practices, technologies and rules with new work in ways that ease adoption (*mimicry*), developing new concepts, practices, and ideas of cause and effect (*theorizing*) and the educating of actors in the skills and knowledge necessary to support new institutions (*educating*).

At the organizational level, these three types of work provide a framework to consider the design of organizational structures, practices and understandings which are participatory, promote IKS, and diverge from institutional norms of Development.

Proximity & Group Interaction

The notion of proximity, with its obvious spatial connotations, has been used in the literature to explain a range of organizational processes e.g. inter-organizational learning and innovation. As noted previously, the notion of closeness or proximity is a recurring theme in the Development literature, with issues of geographic, cultural, political, epistemological and social proximity regularly identified as effecting Development actor collaboration (e.g.

Bentley, 1994). Knoblen and Oerlemans (2006) describe the following uses of *proximity* within organizational literature;

1. **Geographic Proximity** – the spatial proximity of organizations and actors (e.g. industry clusters, dispersed organizations and virtual teams) and variations in proximity through time.
2. **Organizational Proximity** – broadly refers to relationship patterns being congruent between organizations but it has been used ambiguously in the literature (Knoblen & Oerlemans, 2006).
3. **Cultural Proximity** – cultural similarities at the organizational level (i.e. organizational culture) and the societal level (ethnic or societal cultures).
4. **Institutional Proximity** – similar to organizational proximity, but focuses on the formal elements of an organization e.g. rules, policies, procedures and structures.
5. **Cognitive Proximity** – indicates similarities in how the world is perceived, interpreted and evaluated (Wyuyts, Colomb, Dutta, & Nooteboom, 2005). It is described as a relational attribute that typically defines a *community of practice*.
6. **Technological Proximity** – similarities in experience and knowledge related to technologies. Knoblen and Oerlemans note this is not a measure of similarities in actual technologies (i.e. having the same equipment, instruments, etc.) but rather the absorptive capacity to use new technologies. Cohen and Levin (1990) argue that inter-organization collaboration requires a shared base level of technological capacity across collaborating organizations, but diversity at the specialized level. This means collaborating organizations have common ground, while also having areas of complimentary specialist knowledge.
7. **Social Proximity** – refers to actors sharing sets of social relations within larger networks or fields (e.g. bio-medical field, the IT field), or organizations sharing specific internal social characteristics (i.e. internal social organization).

Callagher (2011) states that *social proximity* is also known as *relational proximity* by some authors. Drawing on Coenen, Moodysson and Asheim (2004), and Lechner and Dowling

(2003), Callagher (2011) describes *relational proximity* as the relative closeness (or distance) of norms, values, rules of thought and action amongst actors. For both Knoblen and Oerlemans (2006), and Callagher (2011)) *social/relational proximity* is linked to notions of *communities of practice*, however Callagher’s perspective has a more psychological emphasis, while Knoblen and Oerlemans have a stronger structural focus i.e. formalized intra and inter organizational relationships.

Knoblen and Oerlemans (2006) argue for a reduction of the dimension of proximity from seven to three (see Figure 5). From the seven identified dimensions of proximity two remain largely unchanged (i.e. technological and geographic proximity), while cognitive, institutional, organizational, cultural and social proximity are condensed into a single *organizational proximity* dimension.

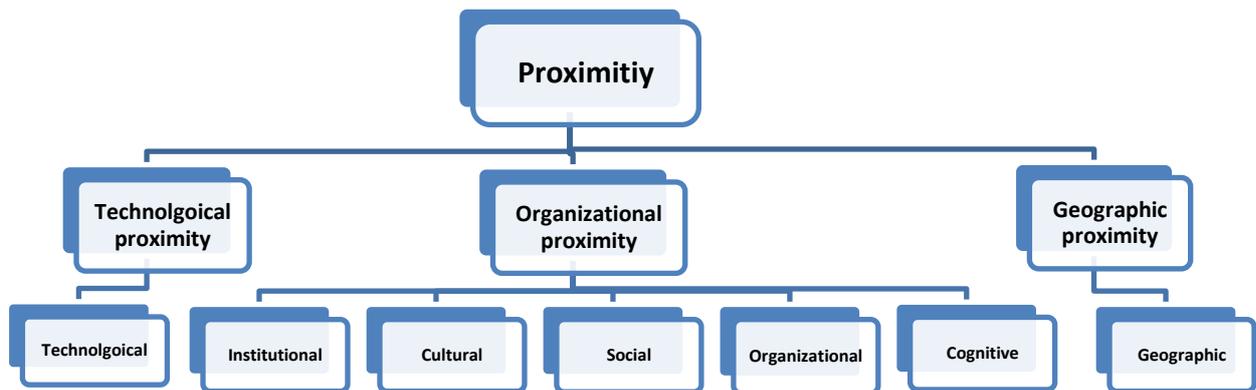


Figure 5. Proximity dimensions (Knoblen & Oerlemans, 2006).

Knoblen and Oerlemans argue that significant conceptual ambiguity existed across the various uses of proximity because of inconsistencies in the operationalization of constructs and the levels of analysis used. For example, cultural proximity was used at both the organizational level (i.e. to describe and compare organizational cultures) and the societal or ethnic group level (i.e. to describe and compare ethnic cultures). As super-ordinate level Knoblen and Oerlemans argue the *organizational proximity* construct be used at the (inter)-organizational level.

Proximity in the inter-organization literature has focused on organizations in typically paired relationships i.e. organizational dyads. More complex inter-organizational configurations where a large number of organizations are involved or where organizational hybridity occurs

(Billis, 2010) have not been the focus of proximity research to-date. When considering the applied value of the various forms of proximity, the concept provides a set of discreet inter-organizational constructs for considering relationships between Development actor organizations and potentially communities. For example, the dimensions of proximity could be used in considering relationships between SNGOs, research institutes and GROs. The construct would allow those entering into a Development project collaboration to identify areas of high proximity and/or congruence, and areas of difference/distance, and to plan accordingly. Over the lifecycle of the collaboration participants can also identify, assess and plan as proximity varies over time. Given that organizational proximity comprises a range of 'social' constructs which may be assessed in qualitative and quantitative ways, there may be significant challenges in comparing organizational proximity between different inter-organizational collaborations or between distinct Development initiatives i.e. the proximity concept may have greater strength to inform processes of 'way-seeking' (Maffie, 2009) within single Development projects than comparing patterns of proximity from one Development project to those of another.

If we turn to the Development project context, and consider it as an inter-organizational configuration, the various forms of proximity could be used to discuss relationships between the various Development actors i.e. communities, GROs, SNGOs, NNGOs, international development cooperation institutions (IDCIs), research institutes (RIs) and state agencies. For example, the notion of geographic and social proximity can be applied to the various actor groups, and with respect to the problem of farmers and scientist having poor access to each other (Bentley, 1994). Issues of technological proximity are likely to exist between scientists and farmers. Attempts to integrate formal organizational structures with community institutions or grassroots organizations could be considered in terms of institutional proximity between the various groups and organizations. Different observational and experimental styles between farmers and scientist could be considered in terms of 'cognitive proximity', with participatory tools and methods such as participatory 3D GIS acting to increase mutual understandings and creating a stronger sense of collectivity between Development actor groups. Given the diversity of cultures involved in participatory development, and recent calls to embrace multiple knowledge traditions (e.g. Maffie's polycentric global epistemology) exploring cultural similarities at the organizational level (i.e. organizational culture) and the

societal level (ethnic or societal cultures) is likely to be fruitful. A further potential benefit of Knobens and Oerlemans' conceptualization of proximity is the ability to consider proximity concurrently across multiple dimensions, thereby applying a holistic orientation to the multiple ways in which groups and organizations interact.

Rather than explore each of these proximity dimensions within this research, geographic, cultural and social proximity dimensions were applied to the two case studies.

Organizational Perspectives Summary

The discussion above highlighted areas of potential fruitful interaction between Development Studies and Organizational Studies. Firstly, the movement to engage with non-Western knowledges and worldviews as both objects of studies and ontological and methodological foundations has occurred within Organizational Studies over the last two decades. In contrast Development Studies has devoted considerable attention to the study of IKs within Development, but there has not been a corresponding application of IKs as methodology or philosophical foundation to Development research. The section also discussed institutionalism and inter-organizational proximity in relation to participatory Development and IK promotion. Each of these areas of organizational study address dynamics identified as influencing participatory Development and the promotion of IKs. The application of these conceptual models therefore allows the relationship between IK promotion and organizational dynamics to be considered from novel perspectives.

Chapter 3. MĀORI & QUECHUAN AGRICULTURE & INDIGENOUS WAYS-OF-KNOWING

3.1. Introduction

This chapter provides a contextualized overview of Māori and Quechuan agriculture. The chapter begins with a summary of the significance of kūmara and potato for Māori and Quechuan peoples respectively, before proceeding to a more detailed discussion of Māori and Quechuan peoples' agriculture and knowledge traditions. This discussion explores the colonial experience of each peoples, significant cultural constructs, and the nature of contemporary agriculture in the regions of the two case studies. Given that I am Māori and that there is a large body of English and te reo Māori literature on Māori culture and knowledge traditions, the discussion of Māori is of greater detail than that of Quechuan peoples where I was largely limited to English language literature.

3.2. Crops & Culture – Potato & Kūmara

People, Plants & Kinship

Kūmara (*ipomoea batatas*) and la papa (potato - *solanum tuberosum*) are the principle traditional crops of Māori of the Tai-Rāwhiti region and the Quechuan communities of the Pisac Valley respectively. Both Māori and Quechuan peoples understand themselves and these crops as children of Mother Earth, Pachamama to Quechuan people and Papa-tū-ā-nuku to Māori, meaning people and crops are kin. This kinship relationship is understood as one of mutual dependence, where communities nurture the crops and the crops in turn provide sustenance to the communities (Allen, 2002; WAI 262, 2011). The growing, harvesting, distributing, trading and eating of potato and kūmara is therefore an expression of familial care, which serves a broad range of inter-dependent functions, including;

- **Communal sociality** – agriculture acts as a space in which community sociality and kinship is enacted between people, crops and the broader landscape (Moon, 2005).
- **Economic practice** – producing and exchanging food within and between communities. This exchange occurs through

- **Knowledge in practice** – explicit, dynamic and embodied forms of knowing relating to agriculture, the environment, technologies, cultural values, medicine/healing, social relations and organization, and spiritual and ritual practice (Reedy, 1993; Apffel-Marglin, 1998; Best, 2005; Bentley, 2006; Lambert, 2007).
- **Artistic expression** – oral and material arts (e.g. song, dance, weaving) feature crops, crops were sung to and provided inspiration for song composition e.g. the oriori Pō Pō. amongst Quechuan agricultural communities of Southern Peru songs are composed for specific stages of the potato lifecycle, with specific flutes used for each stage of their lifecycle (Stobart, 1994; N. Wehi, personal communication, Sept. 2007).
- **Community identity** – the types of crops grown and success of agriculture activity influence community identity and reputation. The practice of agriculture represents a social space within which identity is constructed.
- **Multiple-uses** – various varieties of kūmara and la papa were consumed as food, used as medicines or supplied to community members with specific needs e.g. certain varieties of la papa were for breast feeding mothers, helping improve memory amongst older people, or used in ritual practices.

The practices, meanings and values associated with kūmara and la papa represent diverse and deeply inter-dependent elements of Māori and Quechuan communities' cultural life, with the cultivated fields of both peoples acting as a cultural nexus. In terms of IK, agriculture represents an important sphere in which Iks are enacted through processes of cultivation, ritual, experimentation, forgetting, innovation and artistic creativity (Yen, 1963; Apffel-Marglin, 1998; Petrie, 2006, Tāwhai, 2008).

Each iwi has its own version of the origins of kūmara and its arrival in Aotearoa, with Rongo (male) and Pani (female) being its most commonly described atua, parents and kaitiaki. Archaeological and genetic evidence suggests kūmara was originally domesticated in the northern Andes of South America or Central America, however the exact location of this domestication remains a mystery as no wild ancestor of the plant has been found (Zhang, Cervantes, Huamán, Carey & Ghislain, 2000). The earliest remains of kūmara are from the Chilca Canyon of Peru, dated at 8,000 years BP (Engel, 1970). Zhang et al. reported in 2000

that the International Potato Center's (CIP) sweet potato gene bank held 5526 distinct samples gathered from 57 countries, and at that time it ranked as the fifth most important food crop in developing countries, with annual global production topping 133 million tons. Due to its adaptability to poor soils and high nutrient content, sweet potato production provides one of the highest levels of nutrition per hectare of any food crop. Along with this global significance, kūmara has been a staple across much of the Eastern Polynesian islands since the 1200s. In short kūmara is a globally significant food plant whose pre-European Pacific dispersal indicates a historic connection between the peoples of South America and Polynesia.

As a tropical plant, the successful adaption of kūmara to temperate Aotearoa demonstrates an adaptive agricultural tradition amongst Māori. To achieve this adaption early Māori developed new storage technologies, methods of propagation, soil modification techniques and other practices (Yen, 1961; Best, 2005). Diffusion of these innovations occurred across Aotearoa to areas where climatic conditions allowed cultivation i.e. as far south as Banks Peninsula (Yen, 1961; Ballard, Brown, Bourke & Harwood, 2005).

The Andes are one of the original centres of crop domestication, with 8000+ years of agriculture and some of the world's highest levels of crop intra and inter-species diversity (Apffel-Marglin, 1998; Hawkes, 1999; Oritz, 2006). La papa provides a perfect example of this diversity with Quiros et al. (1990) finding more genetic variability in a sample of la papa from one valley in the Cusco region than occurs across the whole potato population of North America and Europe. Further evidence of the high level of intra-species diversity is the fact that CIP has collected approx. 3800 varieties of la papa from across the Andes region.

3.3. Agriculture & Te Ao Māori

An Historic Overview

Settlement of Aotearoa

Pūrakau (traditional narratives) recount the discovery of Aotearoa by both Kupe and Māui approx. 800yrs before present (BP). The pūrakau associated with Māui and Kupe's independent discoveries of Aotearoa both recount the discovery of previously unknown islands, a brief exploration and then return voyages to their home-islands. From these islands latter voyagers returned to Aotearoa to settle the uninhabited islands. Whakapapa lists

showing Ngāti Porou whakapapa place Māui as living 35 generations ago (Reedy, 1993; 1997), placing his arrival at between 875yrs and 700yrs BP (1100-1300A.D.). Archaeological evidence, suggest that widespread settlement occurred approximately 700yrs ago around 1300A.D. (Wilmshurst, Anderson, Higham, & Worthy, 2008).

Pūrakau recounting the initial settlement period describes the tropical gardeners converting to hunter-gather subsistence life-ways, with pūrakau associated with Toi-kai-rākau (Toi-who-ate-from-the-forest), a significant tipuna for iwi of the Bay of Plenty and the Tai-Rāwhiti (East Cape) region, recounting this hunter-gatherer period. Toi and his people, known as Te Tini-a-Toi or Ngā Uri-o-Toi, followed seasonal patterns of food availability (i.e. following bird, fish and eel movements), moving between forests, waterways and along coastal areas (Best, 1941). Archaeological evidence from this initial settlement period indicates a mobile non-agricultural way of life (Walter, Smith & Jacomb, 2006).

Archaeological evidence from the latter Māori period (sometimes called the Classic Māori period, contrasting the earlier Archaic Period) shows the establishment of widespread agriculture and subsequent changes in settlement patterns and the building of Pā (Philips, 2000; Basset, Gordon, Nobes & Jacomb, 2004; Burtenshaw & Harris, 2007). Likewise, pūrakau from this period recount the successful introduction of kūmara to Aotearoa and a corresponding change in settlement patterns. From this period kūmara was grown across much of the North Island and parts of the South Island where technological and practice adaptations to a colder climate were made.

European Colonization

Spanish and Portuguese ships ventured into the Pacific from the 1500's, however the first confirmed sighting of the islands of Aotearoa occurred in 13th December 1642 by Abel Tasman. In 1760 James Cook mapped most of the Aotearoa coast, landing on the 8th October 1769 at Poverty Bay in the Tai-Rāwhiti region. Accounts from this voyage note the extensive cultivation of kūmara around Tai-Rāwhiti settlements.

Through the late 1700s whalers, sailors and escaped convicts from Australia arrived, and by the early 1800's a small and growing European presence existed in Aotearoa. With this contact, and small numbers of Māori travelling to Australia and later Europe, Māori were quick to adopt European technologies and cultural practices. Hapū and iwi expanded their

agricultural economies to include new crops and animals. Potato became the root crop most widely grown and larger introduced kūmara varieties saw pre-European varieties such as Taputini, Rekamaroa, Hutihuti marginalized (Yen, 1963). By the second decade of the 1800s hapū and iwi based agriculture was supplying national and international markets (Petrie, 2002).

By the 1850's, with a rapidly expanding European population centred on a small number of regional towns, Māori supply to international markets reduced and focused on the nearer and growing local markets. The economic opportunity that increasing European settler numbers and growing urban centres provided quickly transformed into possibly the single greatest

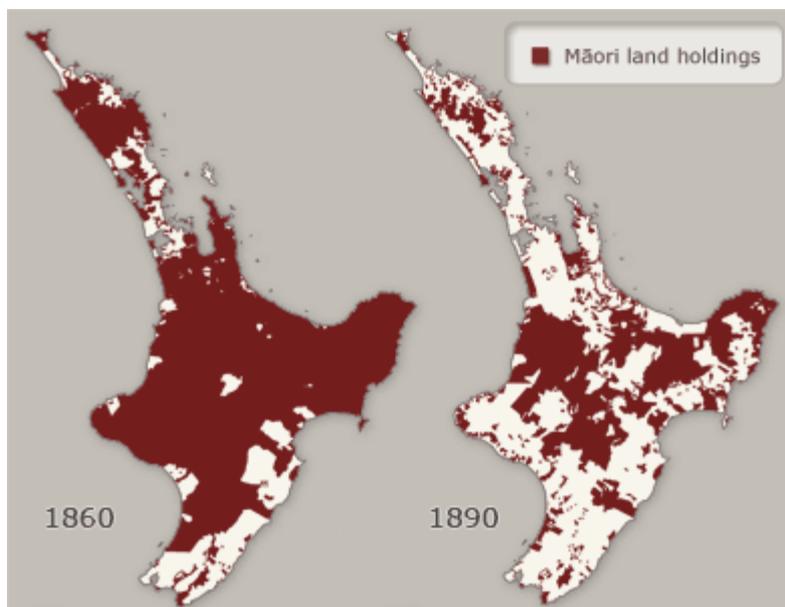


Figure 6. Māori land loss from 1860 to 1890 (Orange, 2001).

threat to Māori to-date, the use of military force to acquire land for this surge of European settlers. Unlike the early 1800's, were relatively small numbers of settlers married into hapū, providing strategic and economic benefits to hapū, the surge in European numbers from 1840 onwards saw a move from settler integration to state warfare,

dispossession of land, and state dominance over Māori. The Anglo-Māori wars from 1845 to 1872 began only 5yrs after the signing of the Treaty of Waitangi and violated a cornerstone of the Treaty, that hapū would maintain undisturbed possession of lands, forests, fisheries and other taonga. Unsurprisingly the areas that Māori had demonstrated were well suited to agriculture in the preceding decades (Taranaki, Waikato and the Bay of Plenty) bore the brunt of the Anglo forces. As well as the Treaty signing in 1840, the year was significant as the newly established New Zealand Company commenced bringing long-term settlers to Aotearoa from Britain under promise of readily available land. This claim was a lie and Māori found large numbers of tauwi arriving at the ports of Wellington, Whanganui and New Plymouth demanding land that was unavailable. With land wars occurring and corporate interests

promising land to unsuspecting new immigrants in England, the loss of land accelerated (see Figure 6). By the 1850's the state was actively developing means of removing communal mana whenua (land rights), and by 1858 was committed to individualizing title of Māori lands to facilitate the purchase of lands for European settlers. The state established the Māori Land Court under the Native Lands Act (1862) to convert all customary Māori land rights to title under English law. With military conquest, the control of productive lands, the growth in European numbers and decline in Māori numbers, State control of land and people solidified, with a distinct Aotearoa based European society emerging. Aotearoa was now a political, economic and cultural outpost of England. For Māori this surging European tide resulted in a period often described as the 'low ebb' of Māori life. The Māori population had been severely affected by war, disease and loss of land, and numbered approximately 50,000. At the beginning of the 20th century Europeans numbered 800,000.

During the mid to late 1800's sections of Ngāti Porou had sided with the State in their attempts to capture Māori leaders who promoted hapū and iwi autonomy. Ngāti Porou's political manoeuvring and its less desirable land saw it fare better than many other iwi. During the 1890's Ngāti Porou statesmen Āpirana Ngata promoted land block amalgamation to improve economies of scale and for a stronger commercial/market focus for local land use within his iwi. The amalgamated blocks were economically viable up until the Great Depression and WWII, but production generally declined post-WWII, leading to further amalgamations to increase economies of scale again. While these amalgamations improved economies of scale, they also resulted in significant loss of jobs as small scale labour intensive farming was replaced by larger scale farming with reduced labour requirements.

With the arrival of WWII, the young men of the region enlisted at a higher rate than in any other region of the country (approx. 70% of available men) (Souter, 2008), resulting in almost a whole generation entering manhood on the battlefields of Africa and Europe, rather than within their communities. The Māori Battalion's C Company members suffered the highest causality and death rates of New Zealand servicemen. For those that did return the combination of limited opportunities at home and army networks providing opportunities in urban centres, saw many soldiers migrating to cities and large town during the late 1940's and early 1950's.

The economic and cultural transformation from the early 1900's and the losses and effects of WWII left an enduring legacy in the Tai-Rāwhiti region. In considering kūmara based agriculture, these factors combined so that by the 1960-70s only isolated whānau and individuals continued large size cultivations. From the 1970s the Māori agricultural landscape of the region has been dominated by agribusiness, typically Trusts, Incorporations and private companies, with large areas of land run as sheep stations or leased for grazing and maize production. Communal agricultural is most notable in its absence. In considering contemporary Māori agricultural participation and the forms it takes it should be noted that from the 1970s the Tai-Rāwhiti region has been an area of significant marijuana production. This high value cash crop provides a return on labour which no legal form of agriculture can match. From a Diverse Economies perspective (Gibson-Graham, 2002; 2006a) legal and illegal economic practice should be considered concurrently as economic decisions by individuals and groups are based on considerations of all economic options.

Participatory Agricultural Development with Māori

In surveying the available literature, it is notable that through the first decade of the 2000s there were two major examples of participatory agricultural Development undertaken with Māori; the East Cape project, and a project involving Tāhuri Whenua: National Māori Growers Collective. At this time national research policy and funding priorities, such as the Ministry of Research, Science and Technology's (MoRST) Vision Mātauranga policy and the Māori Knowledge and Development Research Output Class (MKDOC), gave impetus and resources, to research projects that proposed engagement with mātauranga Māori. Mātauranga Māori engagement research projects were undertaken across the RS&T sector (CRIs, universities) and including diverse research fields e.g. health, weather-climate, agriculture, education, geology and forestry. The aim of this section is to focus on the work of Tāhuri Whenua as it is particularly illustrative of issues addressed in this thesis.

With the two projects commencing at approx. the same time (late 1990s) the East Cape project and the Tāhuri Whenua project emerged from a single political and policy context, with both stating similar objectives of supporting Māori horticulture and encouraging mātauranga Māori. While the projects were similar, their methodologies differed significant, with each displaying distinct approaches to organizing and engagement with Māori. In many respects the two projects would have provided excellent cases for direct comparison due to

these similarities and differences. The discussion of Tāhuri Whenua here does not represent a detailed case study, rather, drawing on published materials an overview is provided which focuses on engagement with mātauranga Māori, the interaction of institutional science and mātauranga Māori, and the organizational models used by the collective.

The genesis of Tāhuri Whenua was a small Massey University project undertaken in 1999 to grow disease free seed taewa (potato) for distribution to Māori. Roskruge (2006) reports the recipients of these seed potato were typically enthusiastic individuals returning to horticulture, and not established growers. The initial project proved popular and expanded in response to requests from Māori growers for seed of other traditional crops (kaanga (old varieties of corn), hue (gourd) and kamokamo)). During this period a realisation emerged amongst the 'new' growers and researchers, that Māori lacked a national forum, formal or informal, that could connect growers from across the country and advocate for Māori horticultural interests with policy makers, research institutes and across the commercial sector. The idea to form a national collective was formed, and in 2001/2002 hui were held across the country to explore the idea. From these hui a set of objectives for a national group were devised, and in 2005 the Tāhuri Whenua Incorporated Society was established.

From its inception the aims of Tāhuri Whenua were grounded in Māori values of kai (food) production as central to Māori identity and an expression of mana with direct benefits for whānau and hapū (Roskruge, 2010). The organization was not focused on a specific agricultural model as defined by the commercial sector (e.g. organic agriculture), but rather took a broader approach, promoting Maori interests in the horticultural sector and addressing related matters such as traditional and non-traditional production systems, markets, indigenous labels and research needs. The collective involved a broad national network of Māori growers and researchers who were predominantly Māori. Massey University was the main research institute involved, with Dr Nick Roskruge being a central figure. Lincoln University also involved, but to a lesser degree. Both universities have a strong agricultural focus, meaning Māori students attending the universities are typically interested in agriculture. These students are easily accessed, and encouraged to become involved with the collective. As university staff, the researchers involved in Tāhuri Whenua were both scientists and teachers, meaning notions of knowledge transfer/diffusion were understood from the perspectives of practicing educationalists. In contrast the science team involved in the East

Cape project were a mix of non-teaching scientists (from the CRIs and science contractors) and teaching scientists (the social scientists from the University of Auckland). The experiences of the researchers involved in the two projects were markedly different in terms of teaching experience and teaching practice while engaged in the projects.

In examining Tāhuri Whenua's work and research collaborations from a IK – science engagement perspective, Lambert (2007) describes Tahuri Whenua is positioned at both the “core” and “periphery” of innovation processes. Lambert argues that in research collaborations that promote interaction between mātauranga Māori and institutional science, Māori participants conceptualize knowledge dynamics as involving reciprocal two-way processes, of science from scientists to Māori growers, and mātauranga Māori from Māori to scientists. Such reciprocal knowledge interactions are described by Durie (2003) as ‘mana enhancing’ as social, ethical and practical benefits can occur for all parties and their communities.

Lambert argues that a lack of reciprocity, where science is expected to be engaged with by Māori growers, but where scientists fail to engage with mātauranga Māori, results in a violation of a fundamental social norm, resulting in Māori growers disengaging from the one-way (non-reciprocal) relationship. The Tāhuri Whenua case showed that engagement with ‘Western science’ was not considered threatening by the collective's members. Māori culture and its ways-of-knowing were able to engage with and absorb factual, practice and process elements of empirical science, through the norms of Māori sociality. When Māori social norms were not maintained, the social platform for dual knowledge diffusion were weakened, meaning the lack of receptivity and capacity to engage with Māori cultural elements by the researchers and their organizations thwarted their aims of science extension. Lambert further argues that what may be seen as poor adoption of science elements by Māori growers, can be alternatively read as a breakdown in social ties due to one-way knowledge processes violating social norms, rendering science diffusion impossible due to a lack of the pre-requisite social relations. Lambert's insights are particularly relevant in reference to the East Cape project, as issues of one-way knowledge processes, poor mātauranga diffusion to scientists, lack of reciprocity, and a lack of individual and organizational capacity amongst the scientists to engage with mātauranga Māori were identified.

Other important points to note regarding Tāhuri Whenua are that from its inception it had a broad geographic (national) base to identify and support committed growers. The collective has worked with a broad range of established Māori organizations, including branches of the Māori Women's Welfare League, mainstream and Kura Kaupapa Māori (Māori primary and secondary schools), various marae, and government agencies such as Te Puni Kōkiri. The collective's broad outlook and links to indigenous networks means they have maintained an awareness of, and engagement with, larger political issues and Development approaches internationally. A group from the collective visited South America in July 2009 to visit the homeland of kūmara and taewa (la papa), to establish links with indigenous agricultural communities, to experience Quechuan agricultural practices, and to view a range of agricultural Development initiatives. In a happy coincidence they visited ANDES and the Potato Park while I was undertaking field work. Members of the collective were also involved with the East Cape projects, attending events and working on small scale projects within the larger project. This meant the two case studies in this research were linked by myself as a researcher, and Tāhuri Whenua as an indigenous agricultural organization.

The collective continues to this time (2017), maintaining a national network that advocates for and supports Māori vegetable growers. The initial project of growing disease-free seed potato continues, distributing seed to Māori annually. The projects humble beginnings, its Māori centred approach, its ideological underpinnings of being part of a bigger picture which transcends the scope and timeframes of individual research projects, the demonstrated commitment of researchers to Māori horticulture in its many forms, its ability to revitalize mātauranga Māori, to demonstrate the relevance and adaptability of mātauranga, and the reflexivity displayed all provide lessons in what participatory Development and IK promotion may look like in Aotearoa.

3.4. Māori Principles & Practices

The following section discusses important Māori principles and practices. These constructs involve ideological, conceptual, ethical and practical dimensions, and as such their description provides an introduction to the worldviews and mātauranga of contemporary Tai-Rāwhiti communities. The term worldviews (plural) is used intentionally, as after 200yrs of colonization and cross-cultural interaction the understandings and practices of Māori reflect

this cultural diversity. As an example, the pre-colonial understandings of the origins of the universe have meet with those of the biblical tradition, and the empirical scientific tradition, so today the worldview of many Māori reflect these multiple Māori, Judeo-Christian and empirical scientific strands. Likewise, the everyday lives of contemporary Māori reflect both diversity and evolution with trans-Atlantic Anglo elements (the USA and England), a pop culture version of black American and Caribbean cultures (think Tupac and Bob Marley), and Māori-Pacific elements intermingling. In focusing on indigenous knowledge this thesis has not sort to explore this diversity and its evolution specifically. Instead it is noted here as important, while the following discussion focuses on the elements of rural Māori life that have their roots in the experience of peoples moving through the Pacific for 5000yrs, living in Aotearoa for 800yrs and engaging in agricultural Development in the 2000s.

Whakapapa

The term whakapapa has an everyday meaning referring to human genealogies, and a broader meaning which encapsulates an understanding of the world where all things are experienced as living and related through kinship (Roberts et al., 2004; Salmond, 2012). In this fuller sense whakapapa refers to the (inter)subjective experience of being within a kin-based cosmos where all things originate from a primal ancestor or ancestors (Roberts, 2013).

Cosmological narratives provide a starting point in the discussion of whakapapa as they articulate explicitly and symbolically important features of Māori ways-of-being and ways-of-knowing. An interesting feature of origin narratives is the use of metaphor and symbolism which draws on features of plant growth, aspects of the physical world, processes of change (e.g. growth, death, birth) and human family relationships to articulate understandings of the origins of the cosmos. For example, Royal (2003, p.180-181) presents an abridged creation whakapapa from Māori Marsden which shows examples of these diverse symbolic references. The whakapapa commences with a lord like figure 'Io', before progressing to the primal parents of the known world, Ranginui-e-tū-iho-nei (father) and Papa-tū-a-nuku (mother). Between this lord like figure and the primal parents the whakapapa passes through Te Kore (void), Te Kōwhao (abyss), Te Anu (cold) and Te Pō (night), before the 'Life-Principle' Te Mauri emerges. From the emergence of the life-principle the whakapapa passes through plant-like stages of development; Te Pū (a shoot), Te Weu (a taproot), Te More (laterals), Te Aka (the rhizome) and Te Rea (the hair-root). From these plant-based symbols, the whakapapa utilizes

general processes of change to represent the further evolution of the cosmos; Te Rapunga (seeking), Te Whāinga (pursuit) and Te Kukune (extension). The whakapapa then progresses through stages where consciousness develops, using symbols related to the human experience of knowing; Te Mahara (primordial memory), Te Hinengaro (deep mind), Te Whakaaro (sub-consciousness), Te Whē (the seed-word) and Te Wānanga (consciousness achieved wisdom). The whakapapa then progresses to Te Hauora (the breath of life), Te Ātamai (shape), Te Āhua (form), Wā (time), Ātea (space) and finally to Rangi and Papa (primal parents of the natural world). Notable in the symbolism of this account is the absence of a creator who 'makes the world/cosmos', rather, the cosmos comes into being through a series of natural generative processes.

From Rangi and Papa the major realms of the natural world are established as descending from their children Tāwhiri-mātea (the atmosphere), Tane (forest ecosystems), Tangaroa (the ocean and aquatic ecosystems) and Rongomatane (cultivated systems). These realms are perceived in multiple ways, as descendants of specific atua who are lord like figures, and also as the corporal embodiment of those atua. Waves of the ocean, currents, fish and all sea life are therefore both 'children of Tangaroa' and the material manifestation of Tangaroa, likewise crops are both the descendants of Rongo and his embodiment. The emergence of things typically occurs through multiple generations of atua liaisons, with each atua imparting specifically characteristics before reaching each thing's current form. An example of this is recorded in Simpson (2000), where Te Whānau-ā-Apanui tohunga Hohepa Delamere describes a whakapapa of the tree Tī Kōuka (*Cordyline australis*) where over multiple generations atua provide the morphological, physiological and biochemical aspects of Tī Kōuka.

Within the accounts of cosmological origins both explicit and symbolic reference is made to ontological and epistemological assumptions, and the accumulated explicit knowledge of Māori. Whakapapa is not only though an account of the cosmos, it represents a way of being in the world whereby the tangible experiences of life, water, earth, the sky, forests and the ocean are experienced as kin. The world/cosmos is social, familial, and something we are in perpetual relationship with. From this perspective whakapapa is a socially, geographically and ecologically located multi-dimensional expression and experience of life (see Figure 7). To

explore further the dimensions of whakapapa the diagram below is provided representing three aspects of whakapapa; *being-in-place*, *origin narratives*, and *everyday talk*.

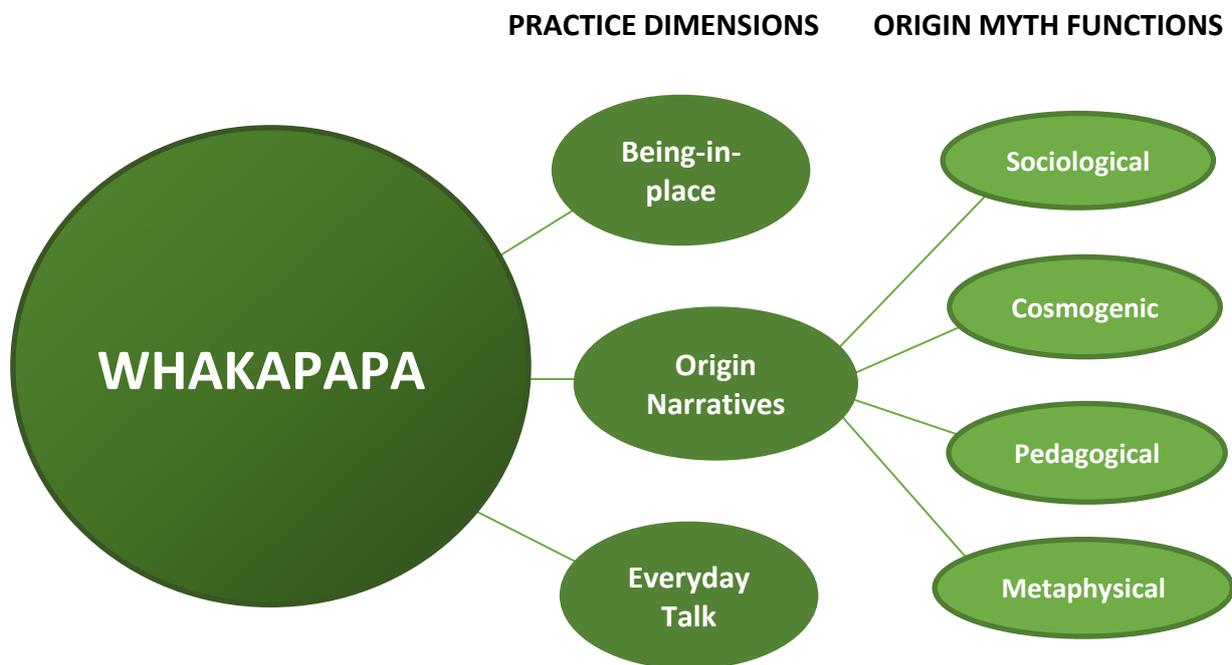


Figure 7. Selection of dimensions of Whakapapa and narrative functions.

As discussed *origin narratives* are the accounts of the origins of the world and the things within it. *Being-in-place* refers to the experience of living and being in a specific place e.g. the whakapapa of kūmara includes the agricultural practices that sustain the crop and its growers. *Everyday' talk* refers to the forms of communication that occur while undertaking specific practices, where understandings, instructions and demonstrations occur within the linguistic life of everyday communication i.e. 'knowledge' is expressed through jokes, anecdotes, recollections of learning, failing, succeeding, stories of others, and the general banter of communal discussion. Each of these dimensions represents intertwined aspects of whakapapa. For example, knowledge of a tree from a whakapapa perspective involves an experience of trees as kin, of the practices associated with trees (e.g. as medicine, as building materials, as firewood, as companions), as elements of a forest, an experience of the origin narratives of trees, and for this to occur within the social context of Māori communal life.

Along with descriptions of cosmological origins, the dynamics of atua interactions provide models of human interactions (i.e. social models) and a wealth of ecological knowledge. The

notion that origin narratives provide information relating to diverse aspects of life has been explored across cultures, with Campbell (2007) providing a comprehensive overview of the functions of origin myths;

- ***Cosmogenic Function*** – explains the origins of the cosmos, physical and non-physical phenomena, notions of causality and time, categorizing the elements which constitute the cosmos (taxonomic function).
- ***Metaphysical Function*** – Campbell described the cosmos and life as being understood as having its origins in a transcendent reality, an absolute mystery. The language of cosmogenic whakapapa points beyond the everyday to that mystery.
- ***Sociological Function*** – the interacting elements within origin narratives are often personified and their interactions provide social models for communities.
- ***Pedagogical Function*** – provide life-guidance as they depict transitions through the various stages of life within the social and cultural context of the narrative's community.

In terms of IKs these functions reflect important elements; the origins and nature of reality, patterns of social interaction, aspects of community identity, relationships between people and plants, and patterns of discovery, application and distribution of knowledge. Using kūmara as an example, Roberts et al. (2004) explore these functions in detail. Drawing on kūmara whakapapa from several iwi, Roberts et al. describe firstly how whakapapa establish people, plants and animals as kin where there is no disjuncture between the material and spiritual. Within the whakapapa narratives relational understandings and norms of kinship are described which provide examples of relational models. Kūmara whakapapa also depict relational taxonomies where living things that interact and are inter-dependent are described as genealogically close, for example vegetables and the weeds and animal pests associated within them may be depicted as having a common descent from the atua of cultivation (Rongo).

In considering whakapapa as a multifunctional phenomenon, Roberts (2013) poses an important question; is whakapapa an open or closed system, and if it is open, have Māori been able to integrate new understandings, practices, technologies, and forms of life into the holistic cosmology of whakapapa? Have new forms of life to Aotearoa been absorbed into cosmological narratives, are introduced crops, animals and peoples understood as children of

Rangi and Papa with accompanying origin stories? In the model presented in Figure 7 whakapapa is presented as multifaceted. It would therefore be incorrect to only use integration into creative narratives as proof of integration to a whakapapa cosmology. Instead, the various aspects of whakapapa, *being-in-place*, *origin narratives* and *everyday talk*, should be considered concurrently. For example, potato has been attributed by some Māori as having a pre-European arrival on Māori waka (origin-arrival narrative), it has been absorbed into Māori culinary practices (hangi), has received Māori names, and has been cultivated in accordance with the maramataka and place specific knowledge on ancestral lands. This example highlights that responses to novelty, be it explicit knowledge, social practices, life-forms or technologies, can occur in complex ways.

Another perspective, is to consider the introduction of novelty as creating new relationships, between what is new and what is already present. The introduction of crops, animals, technologies and social practices therefore positions Māori and the indigenous flora and fauna of Aotearoa within new relationships, with as Hanson and Hanson described, potential for generative interactions and symmetrical patterns of exchange (see sect. 3.5 for fuller discussion). Furthermore, from a Māori perspective, the dynamics of *mauri* and *hau* within these new relationships means that those involved will be transformed by their interaction. The *mauri* and *hau* of new crops will change the nature of the whenua of Aotearoa, and the nature of its people as we consume those crops and undertake the practices associated with them. Likewise, these novel things will be transformed by Aotearoa. The people who settle here will become 'of this place', animals will change form, the possum being a striking example, as it has changed dramatically in response to the environments and foods of Aotearoa's forests.

A further interpretation of cosmological whakapapa, which relates to Campbell's (2007) *metaphysical function*, is that it describes states of consciousness or being (Mika, 2012), what may be described as a Māori phenomenology expressed through cosmological symbolism. For example, a common sequence seen in many cosmological whakapapa involves Te Ao Mārama (our current space – time continuum) emerging from Te Pō (a restrictive space – time continuum), which emerged from Te Kore (an undifferentiated potential in which time and space do not exist). If these 'stages are viewed as dimensions of consciousness, Te Kore can be interpreted as representing a level of consciousness in which time, space, form and being exist as 'potentialities' where the necessary differentiation to perceive and experience them

has not occurred. Te Pō represents a level of consciousness where space, time, form and being exist in 'embryonic' form, partially differentiated, but awaiting full expression. The movement from Te Pō to Te Ao Mārama here represents a great cleaving apart of the fundamental duality of Papa and Rangi, resulting in the differentiation needed for space, time, form and being to manifest as we know them in our normal states of consciousness.

Mana

Definitions of mana often reference notions of power and authority derived from ngā atua Māori and which manifests in all aspects of the cosmos (Barlow, 1991; Royal, 2003). Literature on mana as a Polynesian phenomenon has emphasized four areas when describing the expression of mana (Firth, 1940; Sachadev, 1989; Tomlinson & Makihara, 2009);

- i) Involves notions of prestige, influence and power.
- ii) Is a success/achievement orientated concept.
- iii) Has a spiritual connotation.
- iv) The expression of mana is contextual.

These areas describe the ontological foundation and origins of mana (spiritual/from ngā Atua) and the expression of mana within social contexts (i.e. i, ii and iii). Linguistic evidence suggests that Proto-Oceanic cultures' use of the term mana referred to expressions of power in nature, and particularly thunder and wind (Blust, 2007). Blust proposes that the early Oceanic understanding of mana as natural phenomena of immense power has evolved under the influence of Christianity to a more canonical understanding i.e. as an 'authority from god' such as the description from Māori Marsden in Royal (2003).

Mana in this research is considered as power, potency, authority, efficacy and agency expressed through social relations between aspects of the cosmos. The term manaakitanga (to lift mana) provides another colour to considerations of mana. Manaakitanga is essentially an *ethic of care* which directs the authority and power of mana towards life sustaining and nourishing activities (aroha). Ethics of care occur in social contexts and as such the expression of mana through manaakitanga involves the strengthening of relationships. In this sense manaakitanga supports the building and maintenance of relationships.

Aroha

Often translated as love, the word aroha comprises two parts;

- *Aro* - as a noun *aro* refers to a path. As a verb *aro* means to align with, to focus on or to comprehend.
- *Ha* is the shortened form of *hā* and refers to the breath or in a deeper sense to that which is essential to life.

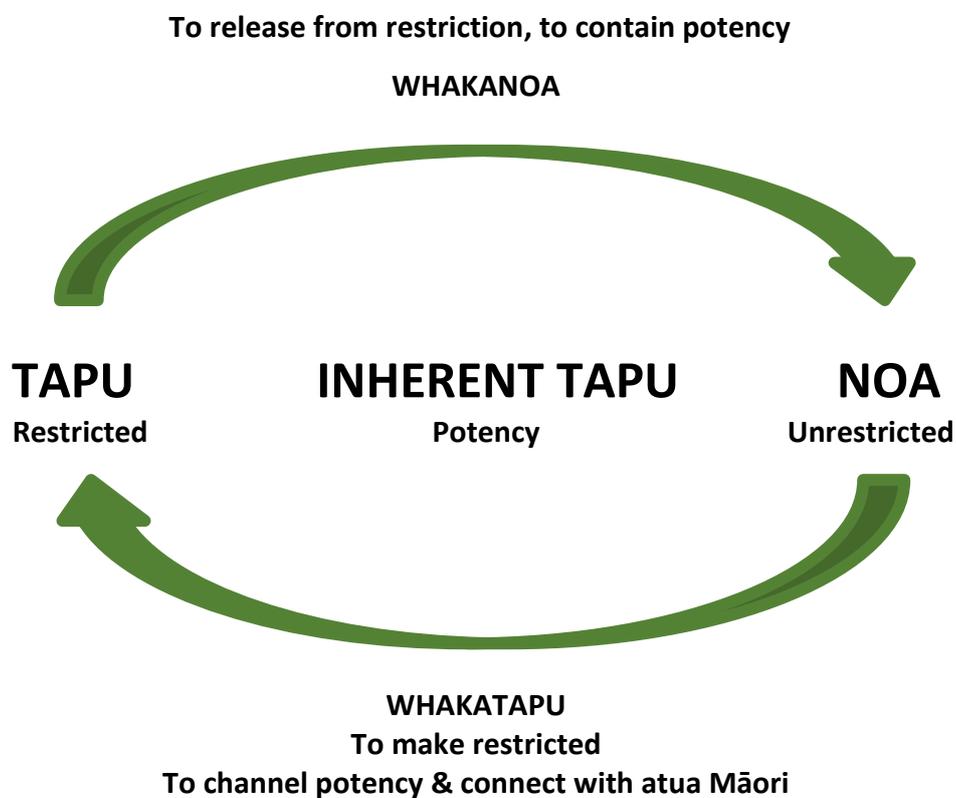
Together *aro* and *ha* combine to convey a sense of aligning with that which is essential to life. This notion of *aligning-with* has a central role in Māori approaches to knowing. Discussions of *mātauranga* Māori often describe a need to be connected to that which one is seeking to know better. *Aroha* also represents an ethical orientation within Māori *ways-of-knowing*, directing processes of knowing towards understanding and acting in accordance with the essence of life.

Tapu - Noa

The Williams Dictionary describes the term *tapu* as used as both an adjective indicating a temporary state (of *tapu*) and as a noun indicating something as being *tapu* in its inherent nature. In both uses *tapu* typically involves some form of restriction of access or prohibition. Complementing this notion of *tapu*-restriction is the concept *noa*, which Williams describes as being free from *tapu*, denoting an absence of limitations or conditions of access. *Tapu* and *noa* are considered as binary concepts whose meaning is understood in reference to each other.

In exploring the notion of *tapu-noa* Shirres (1997) and Mikaere (2011) describe *tapu* as having two general aspects, one relating to the notion of an inherent *tapu* and the second relating to the restrictions of access or prohibitions. In exploring the notion of inherent *tapu* the term ‘potency’ is often used with the source of that potency being *ngā atua* Māori (Shirres, 1997; Royal, 2003; Best, 2006; Mikaere, 2011). From this perspective the restrictive aspect of *tapu* acts to mediate the potency or latent energy of inherent *tapu*. If we look at social interactions, and specifically rituals of encounter (*pōwhiri*, *whakatau*), the Māori view is that a state of *tapu* is created within these situations. The ritual practice of *pōwhiri* and *whakatau* are formal constraints and directives of behaviour (*tikanga*) which moderate the potency of the encounter. Through the enactment of ritual, through the processes of *whakaeke* (entering the *marae*), *karanga* (calling), *whaikōrero* (speeches), *waiata* (song), *karakia* (evocations of *atua*), *hongi* (physical contact and greeting), *kōrero* (talk), *mātaki* (observation) and shared food the potency (*tapu*) of encounter is controlled and made *noa*. Salmond (2013) describes

tapu states as occurring when there is an ancestral presence, and in contrast, noa states occurring when there is no ancestral presence. Others have described the potency of tapu as a manifestation of atua, who are both ancestor and god (Shirres, 1997). Places, people and things through whom there is a heightened atua or ancestral presence are therefore tapu e.g. a rangatira was considered tapu due to the ancestral presence within them, they were the living manifestation of ancestors, and as such the mana and wairua was expressed through them. Likewise, things created or possessed by ancestors were considered tapu as they provide a means for the ancestor to be made present through the object.



Central to the effectiveness of tapu (as social restriction) is the complementary notion of noa, with each acting as a pole of social behaviour (see above). As described above noa refers to a complementary state to tapu, where restrictions of behaviour are loosened. Where a state of noa exists there is no threat to inherent tapu and the social context is familiar.

As binary poles of social behaviour the restrictions practices of tapu can act to;

- avoid the potency of inherent tapu through avoidance of a place.

- regulate the potency of inherent tapu to avoid its expression through destructive actions.
- regulate actions so the inherent potency of beings (individual or collective) is integrated, forming a greater whole (e.g. as occurs in pōwhiri).
- to focus the potency of inherent tapu for life affirming (aroha) reasons. These may be generative (e.g. a marriage), destructive (e.g. preparation for warfare) or simply liberating (noa).

The diagram above provides a pictorial representation of the relationship between noa and tapu (restriction), the centrality of inherent tapu, and the process through which restrictions are instilled (whakatapu) and released (whakanoa). To uses some of the examples mentioned previously, to establish a field of kūmara involves invoking the atua of kūmara thereby moving from a state of noa into a state of tapu for the duration of the crop's life, where specific behaviours (tikanga) are enacted. Once harvesting has occurred there is a release of restrictions and returning to a state of noa.

Mauri

The following quote from Ngāi Tūhoe tohunga Hohepa Kereopa illustrates both the nature of mauri and its relationship to other core Māori principles;

“... the way we, as Māori, look at plants is that each species has total power. That is power over themselves, over their relationships with other plants, and everything. Now, each species is like a whole universe unto itself. So each species has a mauri – which is that life force. And because each species has a mauri, it is tapu.”

Moon (2005, p.43)

Mauri is the 'livingness' inherent in all things, the life force or energy, and as such it is closely related to the concept of inherent tapu discussed previously (Barlow, 1991). Mauri is described by Māori Marsden as a force which generates, regenerates and upholds creation (Royal, 2003, p.44). Mauri can exist at all levels within whakapapa, individuals have mauri, mauri exists within relationships from immediate pairings between things and across groups and populations. For example, the ocean has a mauri, this is the largest scale within the domain of Tangaroa that mauri exists at. Tangaroa is the kaitiaki (protector) of that mauri. Each species of animal and plant within the ocean has its own mauri. Tinirau, often depicted

in pūrakau and whakapapa as the grandson of Tangaroa, is the tipuna (ancestor) who is kaitiaki (one who protects) of the mauri of the different species of the ocean. Each individual animal and plant also has a mauri, and numerous local kaitiaki exist as protectors of places and populations of plants and animals. Communities who access animals and plants for food hold a principle role as kaitiaki for the local area and the species they use i.e. guardians of local ecosystems, enacting what Greg Cajete calls a “people’s ecology” (Cajete, 1999a, p.3)

The protection of the collective mauri is of utmost importance as this allows species as a whole to thrive, while harvesting of individual animals or plants occurs. A wide range of rules regarding the hunting, harvesting, collecting of living things ensure that the collective mauri of things is protected. These rules typically relate to limits on quantity, location and timing of harvesting, and stress the inter-dependence of people and what is being harvested. Within Māori agriculture the protection and nourishment of mauri occurs through all stages of the lifecycle of a plant and involves plants, places of cultivation and people entering into states of tapu (restriction) to ensure the protection and nourishment of mauri.

Mauri also emerge within relationships, they are not bound to specific things, for example an event can have its own mauri or the act of creating a garden and cultivating crops creates its own mauri between people, plant and place (Moon, 2005). Hohepa Kereopa (Moon, 2005) notes that a mauri arises when issues occur or decisions are made. For example, when people communicate or work collectively a mauri is created. On formal occasions which involve a pōwhiri (ritual of encounter) the call leading the visitors onto the marae, the karanga, creates a mauri which lives for the duration of the gathering with the tikanga of the gathering ensuring the well-being of the mauri. Organizations, as purposefully collections of people, have their own mauri, and mauri are created through the activities undertaken within the organizations. In Māori organizations the use of tikanga Māori or tikanga-ā-iwi ensures a healthy mauri within the organizational context e.g. pōwhiri for new staff which whānau attend, waiata, haka, karakia, whanaungatanga, poroporoāki. These practices, understandings, and the collective states they engender act to sustain the mauri of the group/organization.

Te Ngākau

Ngākau refers to the seat of human subjective experience or consciousness (Royal, 2008b; Smith 2009). The ngākau includes sensations, feelings, emotions, thoughts, and intellectual

activity, exists within the body and major organs of the body act as centres for specific dimension of the ngākau (Smith, 2009). From a psychological perspective the ngākau represents an embodied consciousness which includes sensation, perception, affect and cognition.

The constituent elements of the word ngākau suggest multiplicity. The term comprises two parts; *ngā* is a pluralizing prefix, and *kau* refers to a centre, core or point of focus. The term ngākau can therefore be interpreted as meaning 'the many centres/points of focus'. In terms of subjective experience these centres or points of focus are the various types of subjective experience which occur within consciousness e.g. emotions, reasoned thought, intuition (Smith, 2009). Smith also discusses these centres as being located within the body, specifically within various organs, with notions of well-being being linked to the healthy and full expression of these 'centres'. Smith further describes the ngākau as primarily located in the organs of the central region of the body e.g. the stomach, gut, liver, as well as the roro (brain). The ngākau is described as the centre of physical well-being through the physical actions of the organs as well as the centre of psychological health and wellbeing. In the same way that food (*kai*) is digested and integrated into the physical workings of the body, the ngākau integrates and transforms subjective experiences. Royal (2008 a) describes the purpose of the ngākau as being to align our subjective experience, our consciousness, with that which is essential for life i.e. the ngākau is the subjective expression of *aroha* (to align with the essence of life). Smith states that subjective experience that is excessively rational, intellectual, or lacking an emotive element is "ungrounded and volatile" and located in the roro (brain). Rational and intellectual thought therefore represent partial elements and processes of the ngākau, with the fuller aim of well-being occurring when all 'centres' of the ngākau are vital and integrated in their functioning. This notion of an integrated subjective structure is further articulated by Māori Marsden (Royal, 2003) who describes the ngākau as a single ontological structure where emotions and intellect exist as facets of the structure rather than as discrete elements of consciousness.

In considering the development of the ngākau Mead (2003) describes it as being shaped through experiences in the world and by elements passed through parentage and broader inter-generational processes. This paternal legacy, termed *ira*, has biological and social elements, passed from generation to generation. The focus of Takirangi Smith's (2009)

discussion of ngākau is the connection between the various elements of subjectivity (sensation, perception, rational thought, emotions, etc.). This parallels the mind-body level of connectivity within the *situated* and *embodied* approaches to subjectivity/cognition/mind. Traditional epistemological assumptions within te Ao Māori position knowledge as collectively held, collectively experienced, intimately connected to place (landscapes) with specific individuals (tohunga) acting as conduits for knowledge.

3.5. Patterns of Māori Social Interaction

Everything has a male and female side. We go together and complement one another. We share a deep bond. We are brothers and sisters before lovers and anything else ... When you look to the horizon where Rangi and Papa merge do you see separation? There is no separation ... The sacred seed and the sacred river are one

Rose Pere cited in Murphy (2011, p. 59)

If IK and agriculture are considered as social phenomena, the exploration of IK, and IK interactions with other knowledge systems, requires an investigation into the social life of the communities involved. Drawing on a wide range of recorded pre-European oral forms (e.g. pūrākau (traditional narratives), waiata (song), mōteatea (chant), whakatauki (proverbs)) Hanson and Hanson (1983) apply a structuralist analysis to reveal two fundamental social dynamics within Māori oral forms; i) *complementarity* between dual social agents, and ii) *symmetry* of exchange patterns (reciprocal exchange) (see Figures 8 & 9). In articulating their argument Hanson and Hanson indicate a number of provisos regarding the models they present. Firstly, in looking for structural elements that underlie Māori social interaction Hanson and Hanson are building on the work of scholars such as Bruce Biggs, Hirini Mead, Margret Orbell and Anne Salmond. Hanson and Hanson offer their work as a continuation of the 'spirit' of these scholars and as such they do not claim an authoritative account of Māori social dynamics, rather they position their ideas within an ongoing inquiry.

Second, they acknowledge that they are outsiders to Aotearoa and that they are not Māori. This affords them a degree of distance and freshness in the perspectives they take, but they readily declare that at times they lack a nuanced understanding of Te Ao Māori. By acknowledging this Hanson and Hanson indicate the proposed models of *complementarity* and *symmetrical exchange* would benefit from development by those with a more intimate

experience of Te Ao Māori i.e. Māori scholars. Third, Hanson and Hanson note the issue of sources. Being neither speakers of the Māori language nor Māori themselves they are limited in their ability to directly access Māori communities and our social lives, Māori speakers within Māori settings, or sources recorded in Māori. The sources for their analysis are largely accounts and recordings made by early European settlers, government officials (e.g. Governor George Grey) visitors to Aotearoa and ethnographers such as Elsdon Best. These sources are exclusively male with a range of motivations regarding both their engagement with Māori and the nature of the depictions they presented to the public.

Complementarity

The *complementarity model* describes Māori social interaction as represented in cultural narratives as typically involving a social dyad (a pairing of individuals or groups). The two individuals or groups contrast in nature (e.g. male and female, groups from distinct iwi) but are equal in status. Interaction between the two individuals/groups is considered necessary, and the interaction creates wholeness i.e. the composite elements are incomplete in isolation. The wholeness of the interaction is not however a fixed state, rather it occurs as an ongoing process. The two individuals/groups are initially attracted to each other and a form of union occurs. The union is productive and a new individual/group emerges. Having achieved its generative function, the pairing separates, with the new individual/group also separating from its 'parents'. Both the parents and the new individual/group are then free to create new pairings (unions) whereby the cycle is repeated. The complementarity of Māori social processes is therefore generative and cyclic.

Hanson and Hanson argue there is a strong tendency in Māori narratives to view and understand the world as comprised of complementary dual categories. Hanson and Hanson argue the complementarities of Te Ao Māori can be hierarchical (e.g. parent/child, tuākana/teina), horizontal (e.g. woman/man) or reflect certain relationships to place (e.g. tāngata whenua (local)/manuhiri (visitor)). The complementarity of the two parties, whether related along hierarchical, horizontal or place based dimensions, demonstrates the necessity of interaction and its potential for positive generative and life-affirming outcomes. The general patterns of complementarity and symmetrical exchange are shown in the figures below. Affective states common to the narratives used by Hanson and Hanson have been added as they feature significantly as 'patterns of emotion' amongst the narratives' actors.

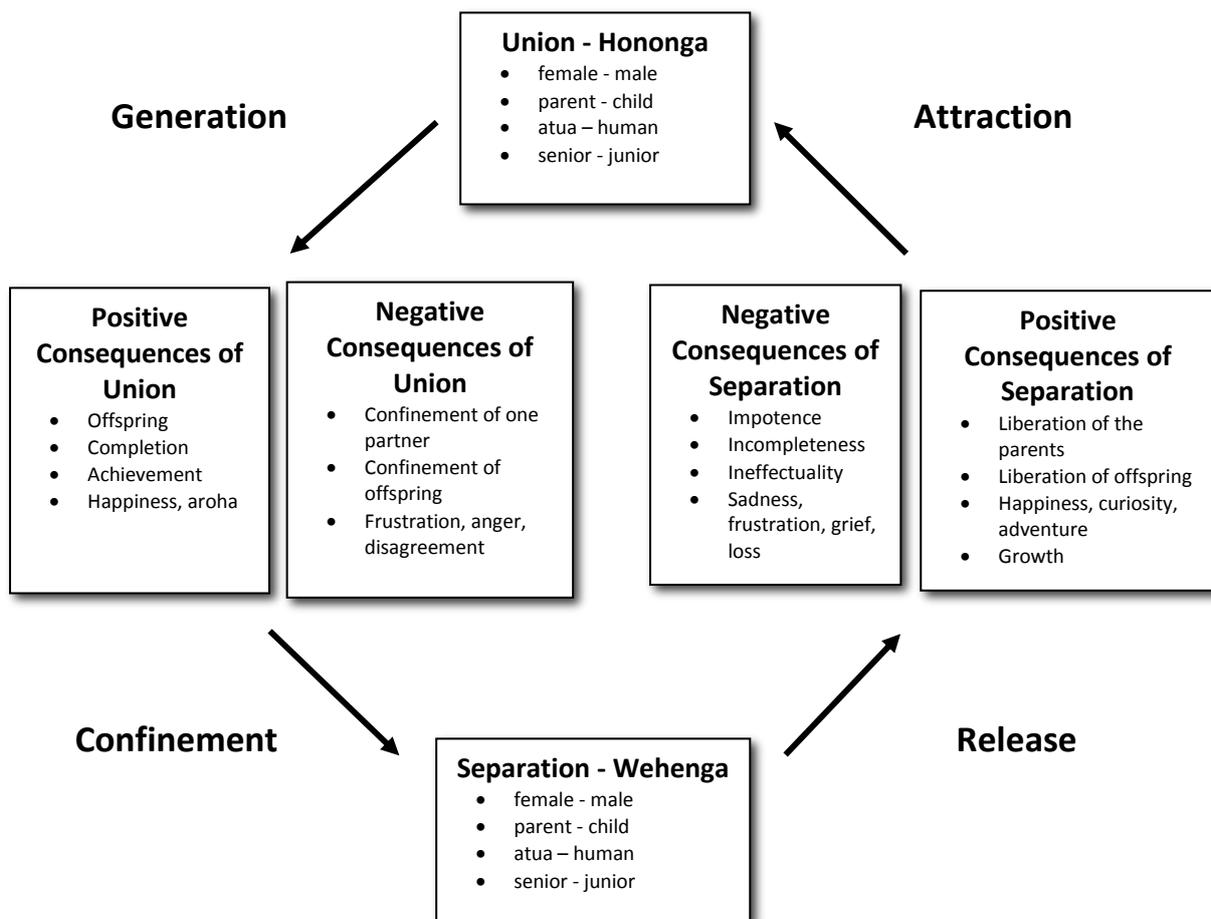


Figure 8. Complementarity within traditional Māori narratives (Hanson & Hanson, 1983).

Symmetrical Exchange

In the *symmetry model* reciprocity is described as a positive form of exchange dynamics. For symmetrical exchange relationships to exist Hanson and Hanson argue that initially the equivalence (symmetry) of parties needed to be established. In formal settings this equivalence is established through symmetry during the occasion, including symmetrical speech making patterns, and symmetrical exchange which occurs over time during occasions when groups meet e.g. repaying past acts of manaakitanga in kind. Traditionally an ability to supply the objects of exchange, most often food, provided an indicator to measure equivalence against.

Within hapū, reciprocity was the norm of community life and often involved services, such as agricultural work, bird-snaring or fishing. In the case of exchange being reciprocated exchange continued indefinitely or until a decision was made to cease the exchange. If the principle of

reciprocity is violated, then the relationship transforms into one of hostility as an “affront” is felt. Several possibilities are described as emerging from this state of hostility, these being continued hostility, reconciliation, separation or subjugation.

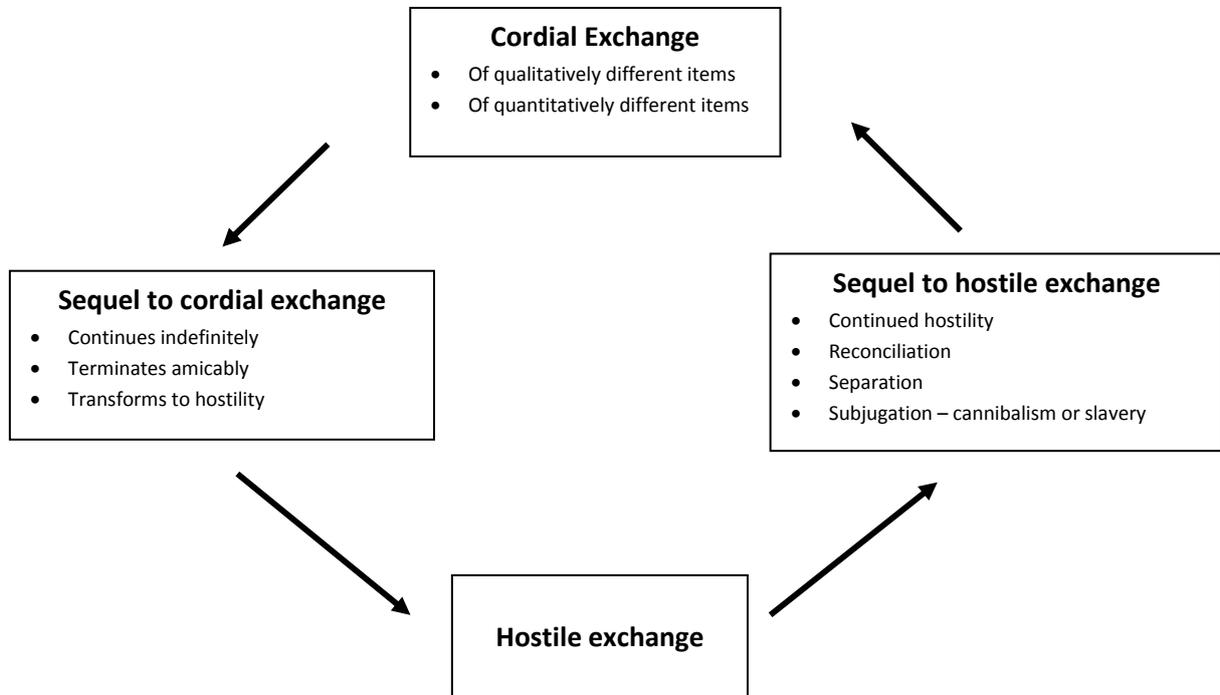


Figure 9. Symmetry within traditional Māori narratives (Hanson & Hanson, 1983).

In pre-European times continued hostility was a short-lived strategy, particularly for young male’s familiar with warfare, as hostility quickly escalated to violence and the removal of one of the parties from the relationship. Reconciliation, separation or subjugation therefore offered alternatives to one’s potential demise through warfare. Reconciliation is described as a transformation of the mood of hostility to one of cordiality, principally through an admission of one party failing to up-hold the obligation of symmetrical exchange (utu) and the paying of an agreed compensation (muru) in a communal forum. Separation in the narratives reviewed often involved the parties separating to discrete realms e.g. parties living on either ocean or land, either side of a river, or a forced to choose between inhabiting night or day. Subjugation is described as falling into two types; cannibalism, essentially a consumption of flesh and mana, or slavery, an entrapment and controlling of mana.

The social interactions Hanson and Hanson discuss are predominantly, but not exclusively, interactions between individuals, as these are the common units of interaction found in their

source material. An alternate reading could interpret the patterns of interaction as being applicable to inter-group dynamics generally i.e. complementarity and symmetrical exchange are considered norms of between-group interactions. Published accounts of contemporary Māori inter-group interactions indicate complementarity and symmetrical exchange patterns apply at the inter-group level also (Salmond, 1975; Temara, 2012). The work of Lambert (2007) discussed previously describes reciprocal exchange as being central to knowledge processes involving interactions between mātauranga Māori and science. Lambert description of a social norm of two-way interaction, where violations of reciprocal norms can result in termination of relationships as Māori disengage in response to reciprocal social patterns not occurring, provides a contemporary example relevant to this research that mirrors the findings of Hanson and Hanson using pre-European narratives.

A weakness of Hanson and Hanson's two models are their level of abstraction and the lack of fundamental Māori concepts and values within the models i.e. what is the relationship between these generalized patterns of social interaction and concepts such as mauri, mana, tapu, noa, wairua and whakapapa? Hanson and Hanson did not exclude these concepts and values explicitly, and therefore, there is scope to further explore these models through ethnographic methods and in reference to key Māori concepts and values.

3.6. Mātauranga Māori – Māori Ways of Knowing

3.6.1 Mātauranga, Mōhiotanga & Māramatanga

Royal (2006; 2008) describes Māori *ways of knowing* as falling into three general categories; mātauranga, mōhiotanga and māramatanga. It should be noted that the term mātauranga Māori is used as a generalized term describing Māori ways-of-knowing and as referring to a specific form of knowing as conceptualized by Royal. Within Royal's categorisation the term mātauranga refers to knowledge that can be expressed linguistically i.e. explicit knowledge in verbal or written form. As knowledge expressed through language, the transmission of mātauranga begins prior to birth with talking and singing to the unborn child (Reedy, 2011). A particular type of waiata called oriori are used for this specific purpose. Oriori describe important aspects of hapū life, knowledge relating to ancestors, food sources, battles, journeys, etc. Oriori are also sung in formal communal occasions such as pōwhiri, and as such

serve a broader function of knowledge transmission and performance inclusive of hapū and iwi. The oriori Pō Pō is of note as it contains symbolic and direct reference to knowledge and practices associated with kūmara cultivation in the Tai-Rāwhiti region and is sung in formal communal rituals to this day. The singing of oriori by parents and grandparents to children therefore both instils IK and prepares children for participation in communal rituals later in life.

Royal (2006; 2007) describes mōhiotanga as knowing which is internalized and which does not require an exchange (of knowledge) for it to be present in one's consciousness. Royal (2006) uses the term 'instinctual' to describe mōhiotanga, providing examples like the movement of a leaf toward the rays of the sun, the knowledge of a bird to build a nest, the 'bracing' of one's body when scared, and a baby crawling. Royal's discussions of mōhiotanga focuses on knowing/knowledge which is transmitted through biological means i.e. genetic transmission. The principle means of inter-generational transmission of mōhiotanga is via the ira. Leonie Pihama (2001) quotes Mereana Taki as describing ira as having three types; ira tangata, ira atua and ira whenua. Mereana Taki uses the notion of a seed as a metaphor to convey the characteristics of ira. Ira tangata is described as a 'cultural seed of descent'. Ira atua is described as the 'seed of descent' from the creator gods (ngā Atua Māori), and ira whenua is described as the 'seed of descent' from Papa-tū-ā-nuku, representing the power from the earth as living mother.

The embodied nature of mōhiotanga means its expression is embedded in the physicality of the body i.e. mōhiotanga is expressed through movement, emotion and visceral experience. Royal's discussion of mōhiotanga at times shows a degree of conceptual flexibility, at times appearing to refer to strictly inherited phenomena and at other times describing social influence. This conceptual flexibility indicates a need to further explore and articulate what constitutes mōhiotanga, what is its relationship with mātauranga and māramatanga, and how it is affected by social processes.

Māramatanga, the third form of knowing/knowledge can be translated as illumination or wisdom. Māramatanga is connected with degrees of understanding (mārama) and represents the most profound form of knowing (Royal, 2007). As illumination or wisdom, māramatanga is not an esoteric form of knowing, rather it is wisdom that is grounded in the everyday experience of Māori people. For example, when in conversation and a moment occurs where

we deeply understand the other person that is a moment of māramatanga. Royal (2007) describes māramatanga as not being a form of knowing which can be achieved through a series of pre-determined steps, rather a “mysterious alchemy” takes place inside a person which transforms less profound forms of knowing (mātauranga, mōhiotanga) into māramatanga. Mārama is described in many Māori creation stories as the pinnacle of Tāne’s actions, whereby through his effort to separate his parents (Rangi-e-tū-iho-nei and Papa-tū-ā-nuku) the world of mārama (Te Ao Mārama) is created. Māramatanga can therefore be translated as ‘to know the world’ implying a broad and deep experience of life.

Whakapapa & Ways of Knowing - An Ontology of Knowledge

As noted previously, whakapapa that commences with the origins of the world can be interpreted as providing symbolic and metaphoric representations of Māori ontological and epistemological assumptions. Within these origin narratives categories of being and their relationships are depicted in metaphors of light-dark, plant growth and development, and human social behaviours. In Mohi Ruatapu’s whakapapa kōrero the youngest child of Rangi and Papa, Tāne-nui-a-rangi, is responsible for separating the sky (Rangi) and earth (Papa).

“E Koro, you must be separated up above, so there will be light when you look down on us”. And he (Rangi) agreed to this. Tāne’s father said, “You must put my legs up and my head down”. Then he (Rangi) said, “Perhaps when I am separated up above, I will not make light”. Tāne told him, “I will give you signs”. So then Rangi was propped up. This was his karakia;

*Taken up in the evening,
Nearing seven, nearing eight, a Tāwhaitari bird,
Nearing seven, nearing eight, he a iki, a iki ē!
Propped up seven, earth changes, sky changes direction.
His penis is lifted up, his penis is lifted up iaia, iaia!*

Behold, their father was separated up above! Then his elder brothers said to Tāne, “Oh, we thought that when our father was separated, we would be able to look up and see him clearly”. So then Tāne took a basket, this basket was The Fish-of-the-Sky and the stars were the food inside it. He threw it in the sky, and as well he threw the sun and the moon. So then there was light. Then at last they saw what they looked like, and what their parents were like as well. The parents stood there as sky and earth. As for the sons they stood there as trees, water, wind and all kinds of other things. As for Tāne, he looked like a man. The origin of the sun, the moon and the stars was in Tāne’s perspiration, his sweat.”

Mohi Ruatapu (Reedy, 1993, p.117-118)

In this story we see several themes which are relevant to understanding Māori notions of knowing and knowledge. The social structure depicted shows multiple levels. Rangi and Papa as parents are the primary level. The story states there are six sons. Within Māori society there is typically a hierarchy amongst siblings from tuākana (elder) to teina (younger). In this account Tāne-nui-a-Rangi is the pōtiki (youngest family member). The main dynamic in the story is between the most senior (a parent) and most junior (the youngest child) of the social group. Tāne as the pōtiki (youngest family member) instigates the fundamental change of separating his parents, and thereby creating Te Ao Mārama, the world we now inhabit. The pūrakau's dynamic of senior and junior members within the social group driving change is a feature of the pūrakau of Māui and in a slightly altered form in the pūrakau of Tāwhaki, both discussed later.

In terms of the narrative's structure Tāne is the instigator of change while Rangi is less active, but holds authority over the proposed action. Rangi offers advice on how this change can occur but also admits his instructions may not be sufficient to achieve the suggested change. Tāne offers to make a contribution in order to ensure the desired outcome is achieved. After this period of discussion ritual observances are conducted (karakia) and the desired outcome is partially achieved. At this point the brothers of Tāne are introduced, pointing out that although their father has been separated, they still can't see. Tāne acts independently and disperses bodies of light (stars, moon and sun) into the sky, and then there is light. At this point the desired outcome has been achieved, all can see themselves, the brothers as trees, water, wind, and Tāne as man. There is a final note, that the bodies of light in this world are the sweat of Tāne.

In a symbolic sense Rangi can be viewed as representing tradition and authority, Tāne as change and novelty, and the brothers as the general community. From the previous discussions of social structures and process, the interaction of tradition/authority and change/novelty occurs in a constructive way, what Tapsell and Woods (2007) call a generative relationship. The revelation of Tāne's form being that of a man suggests that it is the nature of human kind to instigate change as we carry the qualities of Tane through the *ira tangata* and *ira atua*.

Although there are differences across iwi (tribes) and hapū (sub tribal groups) there exist recurrent themes and ideas which whakapapa relating to Tane and the separation of Rangi and Papa reveal, these include;

- I. Ontologically the world consists of undifferentiated potential (Te Kore), darkness (Te Po) and comprehension/light (Te Ao Mārama).
- II. Within Te Ao Mārama an inherent and complementary duality exists (Rangi and Papa).
- III. Epistemologically, knowledge is an intrinsic property of Te Ao Mārama.
- IV. Knowledge is created through the interplay of tradition (Rangi) and desire for change (Tane) within dynamic social contexts.
- V. Innovation/change processes are tapu (potent) and carry an inherent risk. This risk is moderated through karakia and tikanga.
- VI. Innovation/change is for the benefit of the community and the community plays a key role in guiding and evaluating innovation processes.
- VII. The dominant structural form is one of multiple layers which both create and support subsequent layers i.e. layers are interactive and complementary. Multiple elements exist within each layer and as such each layer is itself a dynamic entity.
- VIII. Metaphor, symbolism and narrative are important elements in the oral communication of ontologies, epistemologies, values, behavioural models and process.

Whakapapa of Being, Knowing & Living Well

Royal (2008) states the following whakapapa kōrero directly refers to the ontological assumptions within a traditional Māori view of consciousness, ranging from the most primordial layers to the lived experience of human social reality. The whakapapa kōrero provides structural representation of consciousness from a Māori perspective, a kind of Māori phenomenology. This structure links a fundamental 'deep' level of experience characterized as undifferentiated wholeness, through a series of intermediary layers, to community health and well-being. Relationships between the layers are dynamic, non-linear, and multi-directional.

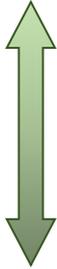
<p>Surface</p>  <p>Deep</p>	Te Hau Ora	Community health & well being
	Te Wānanga	Dialogue & action in communal settings
	Te Whē	Discrete thoughts are 'cloaked in sound' & become words
	Te Whakaaro	Thoughts gain discrete form & are meaningfully related
	Te Hinengaro	Discriminated awareness begins to form thoughts
	Te Mahara	Discrimination occurs within awareness
	Te Hihiri	Undifferentiated consciousness, aroha, pure awareness

Table 5. Whakapapa representing layers of consciousness (Royal, 2003; 2008).

Te Hihiri represents a field of experience characterized by pure undifferentiated energy and awareness. Distinctions such as space, time and matter do not occur at this level. Royal describes this level as “pure aroha”, “wonder” and as involving an absence of thought in which a sense of a separate self exists i.e. a separation between the ‘observer’ and an ‘observed’ world. At the next level, Te Mahara, a distinction is made between a perceiver and a perceived reality. Here the individual comes into existence as a separate entity in relation to the world. The undifferentiated wholeness of Te Hihiri has been divided. Royal describes the next phase, Te Hinengaro, as a symbolic growth out and away from Papa-tū-ā-nuku i.e. the fundamental female principle of the earth;

“Ka tupu te Hinengaro” – the growth and rising of the discriminating thought.

The word hinengaro comprises two parts; *Hine*, referring to female qualities, and *ngaro*, which means to be absent i.e. hinengaro literally means, an absence or loss of female qualities. In a world view which places Rangi and Papa (male and female) as the fundamental principles of this world (Te Ao Mārama) the absence of the feminine implies the dominance of a male energy. Here this dominance drives discrimination within consciousness, but also creates an imbalance between the inherent duality of feminine and masculine. The answer to this imbalance is that which permeates all levels of this whakapapa kōrero, aroha (Royal, 2008).

As discussed elsewhere the word aroha conveys meanings regarding the path of life and the act of aligning with the essence of life. Royal describes aroha as performing a regulating and balancing function through the various levels, and specifically by balancing the excessive masculine energy which dominates Hinengaro.

Te Whakaaro represents knowledge which is more clearly defined than that of Te Hinengaro. Whakaaro comprises two roots; “*whaka*” – to cause, and “*aro*” – to focus on, a path, to align with. Here consciousness begins to take a more solid form than at deeper levels of the whakapapa, allowing consciousness to be directed upon specific things i.e. attention, concentration. At this level the discrete elements of consciousness of Te Hinengaro become further refined, becoming increasingly discrete as they are positioned in meaningful relationships. A sense of individual self emerges as conceptual frameworks solidify, and it is the establishment of discrete forms of knowledge in meaningful networks/relationships which marks Te Whakaaro as “causing the mind/the seat of feeling” (Royal, 2008).

Royal (2008) states the Te Whakaaro dimension of knowing includes emotions and other forms of knowing and subjective experience which are non-verbal e.g. procedural knowledge (cognitive psychology) or knowing ‘how’ to do something (Stephenson, 2007). In riding a bike, recognizing a face, or laughing at a joke, forms of knowing are involved which may be difficult to articulate but which are subjectively experienced and known.

As the “seat of feeling” (Royal, 2008) the emergence of knowing as “Te Whakaaro” represents the development of a structured dynamic subjective consciousness i.e. the Ngākau. The Ngākau is the space in which mātauranga (declarative knowing), mōhiotanga (embodied knowing) and māramatanga (integrated knowing) interact, and as such the levels of the whakapapa from Te Whakaaro to Te Hau Ora directly involve processes of the Ngākau. Te Hinengaro precedes Te Whakaaro and as such represents the ground from which the Ngākau emerges. It should be noted that the boundary of Te Ngākau described here is porous and flexible. Each stage represents a fluidity of growth and change, and as such the transition in states (levels) of consciousness which constitutes the beginning of Te Ngākau cannot be fixed. Te Whē represents knowledge which is able to be expressed verbally. This transition from the non-verbal knowledge of Te Whakaaro to the verbal knowledge of Te Whē is expressed in the saying;

“I Kahuria te kupu e te whē” – the word was cloaked in sound.

In expressing a distinction between a verbal and non-verbal layer to knowledge a parallel emerges with Polanyi's (1967) notion of knowledge occurring as tacit and explicit processes. Tacit knowledge processes refer to knowledge processes which exists in forms that are not typically coded in language i.e. we know (tacit knowledge) more than we can say (explicit knowledge). The explicit dimension refers to that aspect of knowledge which we can articulate. Polanyi (1967) expressly referred to knowledge as being comprised of both dimensions i.e. knowledge has both tacit and explicit aspects. Polanyi did not view tacit and explicit as discrete categories of knowledge. The whakapapa kōrero presented here does not consider Te Whakaaro and Te Whē as discrete categories but instead they are considered as layers within the totality of consciousness.

This notion of layering is essential to the concept of whakapapa. The various layers of knowledge, from Te Hihiri through to Te Hau Ora, co-exist. There is no complete conversion of tacit knowledge (Te Whakaaro) to explicit knowledge (Te Whē) as Nonaka argues (Nonaka, 1994). Rather Te Whē exists as a layer over Te Whakaaro i.e. as a cloak, and it is this cloak which is the verbalized/explicit form. This supports Polanyi's (1967) notion of tacitness and explicitness being as Tsoukas says “two sides of the same coin”, and not discrete categories of knowledge (Tsoukas, 2002). A metaphor of growth and development may provide a more useful conceptual tool as each layer of the presented whakapapa represents a foundation from which the next layer grows out of or emerges from.

The next stage of the whakapapa kōrero, Te Wānanga, refers to the sharing of explicit knowledge within a communal context. The term wānanga refers to an environment specifically created for learning e.g. a traditional place of higher learning. The term taken more broadly can refer to any context where intentional learning occurs and can therefore be applied to a broad range of social settings.

The next stage, Te Hau Ora, refers to a collective state of well-being. The term hau refers to the vitality of life, and also carries meanings of wind/breeze. Ora refers to health, life and well-being. Te Hau Ora therefore refers to a state of health, vitality and well-being, and in the context of this whakapapa this wellness represents an optimal state achieved through the expression of all layers within the whakapapa.

The whakapapa of knowledge presented depicts both ontological and epistemological elements. As noted previously, the understanding of complex phenomena can be enhanced by the use of multiple symbolic representations. In seeking to understand Māori conceptions of consciousness the whakapapa of knowledge can be viewed in concert with the three-part typography of Māori ways of knowing discussed earlier; mātauranga (declarative knowledge), mōhiotanga (embodied knowledge) and māramatanga, the notion of Ngākau as Māori subjective experience, models of Māori social interaction (e.g. Hanson & Hanson, 1983), the symbolic and practical elements of key Māori principles (e.g. mana, aroha, whakapapa, tapu-noa, mauri), everyday sociality of work and communal life, and the meanings of contained within local oral traditions (e.g. pūrakau, waiata tawhito). At the completion of this Chapter's discussion of Māori ways-of-knowing a framework is proposed which seeks to integrate these various elements. The model is termed the *Mātauranga Māori Knowledge Framework*.

Oral Traditions: Pūrakau & Ways of Knowing

Wrapped in the adventurous tales of ancestors, pūrakau (traditional Māori narratives) hold a wealth of information regarding community knowledge, ways of knowing, values, practices, attitudes, ideals, norms, principles and philosophical positions. Within the Tai-Rāwhiti region the pūrakau of Māui and Tāwhaki are of particular importance, as the iwi of the region (Ngāti Porou and Te Aitanga-ā-Hauiti) are descendants of Māui and Tāwhaki and these pūrakau constitute a significant element of the areas oral tradition. Furthermore, as two of the dominant cultural narratives of the Tai Rāwhiti iwi, exploration of the meanings within the pūrakau of Māui and Tāwhaki, and the contexts in which these pūrakau are re-told, represents a contextualization of local IK.

Māui-Tikitiki-o-Taranga

Written in 1871 and 1875 the Ngāti Porou tohunga Mohi Ruatapu provides two accounts of Māui's life with only minor variations between them (Reedy, 1993). The full accounts are too long to consider in detail here, but in abbreviated form Māui was born through miscarriage, and was then tossed into the sea. Carried by the ocean he eventually washes ashore, is found and placed against the barge boards of a house. He is then taken to his grandmother's cave where he is looked after by her, eventually emerging as a young man. Māui then participates in a series of adventures which include;

- Winning a spear/dart throwing competition by surreptitious means.
- Visiting hidden realms with his mother.
- Inventing the barbed hook for spears.
- Steals fire from Mahuika.
- Invents crayfish pots and eel traps.
- Snares the sun.
- Turns a human (Irawaru) into a dog.
- Disfigures Rohe when she makes disparaging remarks towards him.
- Uses his grandmothers jawbone to create a hook used to hauls up the Great Ika of Māui (North Island) which is then settled by others.

The story of Māui ends with him attempting to conquer death by entering Hine-nui-te-Pō, the kaitiaki of death, through the birth canal. This attempt fails and Māui is killed by Hine-nui-te-Pō.

Tāwhaki

Tāwhaki is the great, great grandson of Māui. He enters into a number of adventures with his younger brother, Karihi. In Hirini Mead's (Mead, 1996) version of the Tāwhaki story, Tāwhaki must ascend to the heavenly realms to both find his wife and acquire baskets of knowledge for the benefit of humanity. To ascend Tāwhaki must find and climb the great vine which reaches up from earth through the heavenly realms. Tāwhaki's grandmother, Whaitiri-mātakataka (Crashing Thunder) in her old age has been assigned to guard the base of the vine to the heavens to ensure only those worthy make the ascent. She is the gate-keeper of the place of knowledge. She spends her time endlessly counting and recounting her ten kūmara. Whaitiri counts her kūmara while waiting for Tāwhaki, as she knows he will one day attempt to climb the great vine. Whaitiri has killed many who have tried to begin the ascent to the heavenly realms and when Tāwhaki and his brother Karihi arrive she smells that men are present and thrusts her weapon at them. They avoid her attempts to strike them and play a game with her, dodging her strikes and misplacing the kūmara she is counting, leaving the old women confused and frustrated.

Tāwhaki and Karihi eventually announce who they are, at which point the grandmother weeps with happiness that her grandsons have arrived. She says she wishes she could see their faces, at which point Tāwhaki gently touches her eyes and recites a karakia (ritual chant) and her

sight is restored. The grandmother then tries to outwit the two brothers as she disagrees with their plan to ascend to the heavenly realms. The brothers are not fooled by their grandmother's attempts and the following day, attempt their ascent. Karihi tries to climb the vine first but is blown off and dies. Tāwhaki realizes the grandmother has fooled them, he returns to her and gets more advice. This advice turns out to be false, at which point Tāwhaki returns for a third time. Tāwhaki then receives the correct advice and ascends through the ten heavenly realms, eventually meeting a tohunga from whom he receives new knowledge. The tohunga, Tama-i-waho, provides knowledge which he says has potential for both good and bad. A period of learning ensues, at the completion of which Tāwhaki thanks Tama-i-waho and acknowledges the good that the knowledge he has received will have for humanity. Tāwhaki however does not return to earth, instead remaining in the heavenly realms. Some of Tāwhaki's immediate descendants return to humanity for intermittent periods, having children and passing on some of Tāwhaki's knowledge. Tāwhaki and the bulk of his knowledge though, remain in the heavenly realms.

In the Tāwhaki story presented by Mohi Ruatapu (Reedy, 1993), Tāwhaki does not ascend to the heavenly realms via a sacred vine that his grandmother guards. Instead Tāwhaki and his brother go on a journey to find their grandmother and ascend a path leading upwards which an unnamed woman has shown to them. As in the previous version, Tāwhaki's brother falls and dies while making the ascent. Tāwhaki mourns his brothers' death, then takes his brothers eyes, places them in his belt and continues.

When Tāwhaki finally finds his blind grandmother, she is counting taro. Tāwhaki plays a trick on her, then places his brother's eyes in the eye sockets of his grandmother. She is now able to see again. Tāwhaki then goes on to help in his grandmother's settlement, fixing things and generally tidying it.

The final adventure of Tāwhaki's life involves a further attempt to reach a higher realm. This time he attempts to do this with a flying kite. Tāwhaki's grandmother tries to help him, she controls the kite string and recites karakia (ritual chant) while Tāwhaki soars upward on the kite. However, Tāwhaki is killed by a chief guarding the higher realm he's attempting to enter.

Themes from the Māui and Tāwhaki narratives

Tapsell and Woods' (2007) and Keenen (2009) have both examined the traditional narratives of Māui looking for insight into the socio-cultural dynamics of Māori and particular in relation

to knowledge processes and the relationship between tradition and innovation, and senior and junior members of Māori communities. Tapsell and Woods have discovered in these narratives that kinship relationships allow the tradition (as represented by Rangatira-tribal elders) - innovation (as represented by the pōtiki (youngest child) Māui) dynamic to act as a generative one. Traditional social structures acted to direct and encourage the desire of pōtiki to explore and innovate towards beneficial responses for the community. This is an important point within these narratives, the youthful adventurer and the elder must interact and some sort of cooperation occur before the narrative can progress. In the Tāwhaki story we see that this interaction, although risky and fraught with suspicion on both sides, ultimately allows the grandmother to see again, and Tāwhaki to continue on his journey i.e. the interaction is mutually beneficial. Likewise, in the earlier kōrero tawhito discussed where Tane separates Rangi and Papa there is a co-operative interaction between the elder and the pōtiki.

The senior/junior dynamic and its impact on the development, application and integration of new knowledge/innovation into communities can also be seen in the pūrakau of Māui and Tāwhaki, these include;

- I. ***Interaction with Tradition*** - symbolically the elder characters (e.g. the grandmothers) can be viewed as representing tradition. The representations are not of staid elders, rather the elder characters are at times caring, nourishing, guiding, conservative, threatening, dangerous and rigid. The youthful characters are at times curious, adventures, arrogant, spiteful, and vindictive, they are risk-takers and they overcome multiple failures, often through cunning and deception.
- II. ***Grandparent – Child relationship*** - the primary characters are kuia (female elders) and their mokopuna tane (male grandchildren) suggesting an inter-generational complementarity across genders. The use of Māui's grandmother's jawbone (a traditional symbol of practical knowledge) and the role Tāwhaki's grandmother plays as guardian of the pathway to the places of knowledge, symbolically represents the significance of elders/tradition plays in processes of discovery and innovation.
- III. ***Risk Taking and Learning*** - Mohi Ruatapu's version of the Tāwhaki narrative describes Tāwhaki's brother as dying when he attempts a difficult task first. Tāwhaki then picks up his brother's eyes and continues safely on the journey. Here Tāwhaki is able to use the knowledge of his brother's mistake, literally being able to see through his brother's eyes.

This suggests that mistakes are valuable if learnt from and that success is built upon failure and achieved through persistence.

- IV. ***Tension and Resolution*** – within the stories there are also tensions between the various characters, where the resolution occurs when the tension leads to a ‘break’, where the binding social structures are torn apart, leading to opportunities to discover and the establishment of new social orders.
- V. ***Subterfuge and Deception*** – almost universal in the narratives are examples of characters concealing intentions, actions or objects.
- VI. ***Mana*** – one of the principle signs of mana is an ability to get things done (efficacy). Through a mix of curiosity, bravado, and deviousness Māui discovers and develops technologies, knowledge and land that are central to Māori life.

3.7. Kūmara & Te Ao Māori

This section brings the discussion of mātauranga Māori directly to Māori agriculture, and specifically kūmara. The Aotearoa case specifically sought to invigorate agricultural mātauranga Māori, to foster a productive interaction between mātauranga Māori and ‘Western Science’, and to explore the potential for developing commercial organic agriculture which draws upon mātauranga Māori and reflects a contemporary form of this knowledge.

Earlier discussion of knowledge emphasized that knowledge takes various forms (e.g. explicit, tacit) and is active (knowing), involves communities of practice who are socially, culturally and geographically located. The following section discusses explicit forms of agricultural knowledge, including waiata (song), whakapapa and pūrakau (traditional narratives), Maramataka (lunar calendar), before reviewing literature relating to agricultural Development projects involving Māori horticulturalist – research institute interaction.

Oral Representations of Agricultural Mātauranga

Whakapapa kōrero and kūmara

Roberts, Haami, Benton, Satterfield, Finucane, Henare and Henare (2004) provide a comprehensive overview of published kūmara whakapapa. Robert et al. describe these whakapapa and their associated kōrero as articulating the cosmological positioning of kūmara, moral imperatives, folk taxonomies, social practice and phylogenetic classifications.

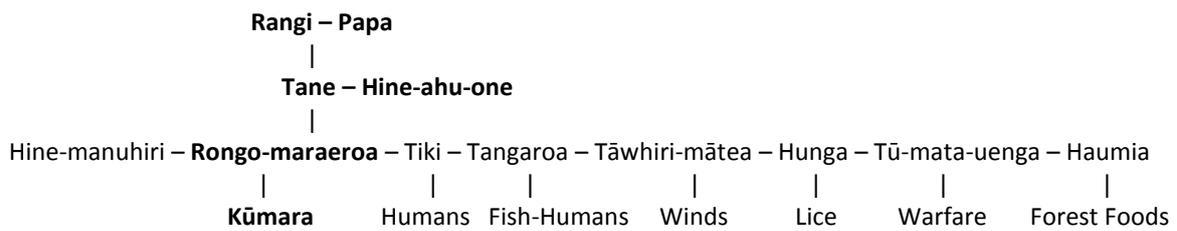


Figure 10. Ngāti Porou whakapapa featuring kūmara (Mohi Ruatapu in Reedy, 1993).

The whakapapa kōrero of kūmara connects directly to whakapapa kōrero of related plants and animals (e.g. the other vine like plants, the kīore (pacific rat)), celestial rhythms (e.g. the helical rising of constellations and specific stars) and the Maramataka. As this research involves members of Ngāti Porou the focus is on whakapapa kōrero from that iwi. A kūmara whakapapa presented by Ngāti Porou tohunga Mohi Ruatapu in the 1870s shows Rongo-maraeroa, the atua of kūmara, as a child of Tane (forest) and Hine-ahu-one (heaped earth) (Reedy, 1993). Within this whakapapa the origin of crops (Rongo) is a union between Tane (forest) and Hine-ahu-one (the first human and heaped earth), demonstrating an understanding that the antecedents (ancestors) of crops are wild plants (Tane) and that the combination of wild plants and ‘turned earth’, results in the ‘birth’ of domesticated food plants.

Like all siblings, there are a range of relationships between the children of Tane and Hine-ahu-one; relationships between cultivated crops, humans, marine life, the atmosphere, lice, warfare and forest foods. The nature of the relationships between the children of Tane and Hine-ahu-one are expressed through narratives (pūrākau) and song (e.g. Pō Pō), the knowledge based on direct individual and collective experience, and further structured through frameworks such as the Maramataka (lunar calendar). It should be noted that multiple whakapapa kōrero exist for kūmara (Rongo-maraeroa) with different elemental categories, described as ngā atua Māori, emphasized and different relationships described (see Roberts et al.), highlighting the heterogeneous nature of Māori knowledge.

Waiata and kūmara

Another important mode of performing and transmitting IK is through song. Oriori are a type of māori song which contain important collective knowledge, are composed to be sung to

children (i.e. oriori act as a means of intergenerational knowledge transmission) and are performed in formal situations uh as rituals of encounter. Performance of song to children or in formal settings demonstrates the social practice and performative nature of IK, where indigenous ways-of-knowing both encode knowledge and enact and strengthen social processes. Through this dual function of knowledge transmission and social enactment the performance of oriori acts to maintain the integrity of whakapapa in its holistic sense of connection to kin, both past and present, their lifeways and the environments they inhabit (Reedy, 2011).

The oriori Pō Pō is a particularly significant and illuminating example of IK as song. Pō Pō, whose composition is attributed to Enoka Pakaru of the iwi Te Aitanga-a-Māhaki, is widely sung in the Tai-Rāwhiti region and its central theme is the origins and agricultural practice of kūmara. Our purpose here is not to provide a comprehensive analysis of Pō Pō, instead a sample of its content is presented is presented for discussion. In the beginning of the waiata atua, tīpuna and places of significance in the origins of kūmara are mentioned. Maui-Whare-Kino and Pani are described as the parents of kūmara and Pani gives birth to the kūmara in the sacred waters of Monariki. As well as being a place of ancestral significance, the reference to water in the origins of kūmara is important in terms of growing kūmara as submerging kūmara in water is a common method of stimulating the growth of roots and sprouting stems, important preliminary steps in cultivation. Taken together this early passage says kūmara is the product of male (Maui-whare-kino) and female (Pani) elements, the female element gives birth to the kūmara in water and the new-born kūmara (sprouting kūmara) are to be placed in openings (piere/matata) in heaped alluvial (onehunga) and fast draining (onerere) soil.

Later the song refers to the call of the Pīpīwharauoa (*Chalcites lucidus*), a migratory native cuckoo which returns to Aotearoa from the tropical Pacific in early Spring, heralding the change of seasons and the time for preparing kūmara gardens. Seasonal markers are a continuing theme as the song refers to the arrival of Hakirangi (a female ancestor of Ngāti Porou, the sister of Paoa, the captain of the waka Horouta) at the time of the flowering of the Kōwhai (*Sophora*), which occurs in spring, and establishing successful cultivations at this time. Later the song progresses to the time of harvesting;

“Waiho me tiki ake ki te kūmara i a Rangī!”

“The kūmara is left and then fetched up by Rangī”

Rangī refers to the original male atua and partner of Papa-tū-ā-nuku. After having grown within Papa-tū-ā-nuku for approximately 5 months the completion of the lifecycle of the kūmara is approaching and it will soon see the light of day (Rangī). The male atua of the sky that is most important at harvest time is Rehua, a male Atua whose physical manifestation is the star Antares. Antares is the brightest star in the constellation Scorpio and first appears low on the eastern horizon in late summer as the time for kūmara harvest (April) approaches. The appearance of Rehua is not simply a seasonal sign of kūmara being ready for harvest but as an Atua Māori it was the mana of Rehua that nourished the final stages of kūmara growth, a role of Rehua’s seen more broadly in the maturing of forest foods over late summer, a characteristic referred to in whakatauki (Best, 2005, p.389);

“Ka kai ngā rangatira me ngā tāngata katoa; ka whakataukī ngā rangatira, ‘Ka rawe koe e ngā kai i taona e Rehua’.”

“When the chiefs and all the people eat it is said by the chiefs, ‘Excellent Rehua, it is you that has cooked (ripened) the food.’”

Best describes the heat of late summer as being the influence of Rehua through which all summer fruits, flowers and crops ripen i.e. the mana atua of Rehua, manifesting as ‘summer heat’ ripens the fruits of Papa-tū-ā-nuku completing their growing cycle for the year.

The final section of the oriori provides more information regarding celestial positions, and culminates with a description of the end of the growing season in autumn and the abundance of food at this time;

*“Ko Pekehāwani ka noho i a Rehua, Ko Rūhiterangi ka tau kei raro. Te ngahuru tikotiko-
iere, Ko Pou-tū-te-rangi! Te mātahi o te tau, te putunga o te hinu, e tama!”*

“Below the star Spica, there appears Antares; with Ruhi-te-rangi below them, coming to rest on the land. The bounteous harvest-time of the month Poutū-te-rangi! It signals the autumn season, the first fruits, when the calabashes are full with fat, my son!”

This brief summary of a small sample of the information contained in Pō Pō demonstrates the significance of kūmara in the lives of the iwi of the Tai-Rāwhiti region, while providing a wealth of social, ecological and agricultural knowledge contained in song. As the song is widely sung

today in the Tai-Rāwhiti region, its performance represents both the enactment of IK, a form of social inclusion and a marker of identity. When considering Pō Pō in terms of interactions between knowledge systems, the waiata provides an opportunity for practitioners of 'western science' to engage with Mātauranga Māori by performing (singing) the oriori, understanding its meaning and responding to the knowledge it contains.

The Maramataka Māori – Integrating Ecological, Lunar & Human Cycles

The lunar cycle provided one of the dominant regulating frameworks for Māori communities, particular in reference to agricultural and food gathering practices (Tāwhai, 2013). The body of knowledge associated with the lunar cycle is called the Maramataka. The Maramataka includes a specific naming of each night (24hr period) of the lunar cycle, and describes cyclic variations in the presence or influence of specific atua and corresponding changes in marine and terrestrial ecosystems during each night (see Moon (2005) and Tāwhai (2013) for discussion of individual nights). Based on these fluctuations in marine and terrestrial ecosystems the Maramataka integrates the social and ecological;

- **Social organization** – provides a framework for ordering communal activities within the lunar cycle. Mahinga kai is the dominant theme of the Maramataka, with periods of celebration (Te Oike), periods of spiritual practice (Rākau-mātohi) and periods when preparation for hunting, fishing and cropping occurred (the Korekore nights).
- **Ecological knowledge** – knowledge and practices relating to the environment and particularly those realms important for mahinga kai (economic activities) i.e. cropping, fishing, and hunting.

In discussing the Maramataka with kaumātua from Te Whānau-ā-Apanui and Ngāti Porou a number of features were remarked upon which demonstrate the ontological significance of the Maramataka and its ability to regulate interaction within communities and between communities and the natural environment;

- **Te Po (the night) as Source** – the night period is the first half of each 24-hour period i.e. a new 24hr period begins with sunset. This means the activities described as best undertaken on a specific night are to occur in the daylight period following the night when the moon was in that phase. Reasons for commencing with the dark period were described as the need to see the moon, to witness its appearance before acting, and

the fact that the night (Te Pō) is viewed as the source of all things and that Te Ao Mārama emerged from Te Po.

- **Flexibility of Nights** – although there is a general consensus amongst iwi regarding the nights of the Maramataka and their sequence, there are tribal differences. This raised the question, “Is our Maramataka tika (correct) and those others wrong?” The answer from all the kaumātua and kuia was that it was not correct to think of there being a single correct Maramataka, rather the various Maramataka were described as being correct for the iwi to which the Maramataka belonged.
- **Holistic Framework** – kaumātua stated that the true depth of the Maramataka resided across the whole month, as a month-long cycle that regulated the social activity of a community in relation to the natural environment.
- **Dynamic Maramataka** – the Maramataka was described as constantly evolving. Kaumātua would say that the Maramataka had changed when people came to Aotearoa because of the new circumstances found here, and that the Maramataka would continue to evolve as people and environments changes. Central to the evolution of the Maramataka was a need to be sensitive to the regularities and changes of weather, climate, ocean, forests and crops.

3.8. Developing a Mātauranga Māori Knowledge Framework

Based on the exploration of knowledge systems outlined in chapters 2 and 3, a knowledge model was developed termed the *Mātauranga Māori Knowledge Framework*. This framework integrates indigenous ontological and epistemological assumptions, social practice as exemplified in traditional narratives (Māui, Tāwhaki) and contemporary research (Hanson & Hanson, 1983; Lambert, 2007), values, language, and a series of symbolic representations of a way of ‘being in and of the world’ which is grounded in the social world of Māori.

The model integrates a whakapapa of *being* as layered from Te Hihiri to Te Hau Ora, of knowing in three general forms (*mātauranga*, *mōhiotanga* and *māramatanga*), the notion of Te Ngākau as the seat of consciousness and inter-subjectivity, the dynamic relationship between potential and expression, between knowing and mystery, represented metaphorically here as Te Pō and Te Ao Mārama, and an openness to interaction with other

knowledge traditions as dialogue, trading (Maffie, 2009) and occurring at actor interfaces (Blaikie et al. 1997).

Mātauranga Māori Knowledge Framework

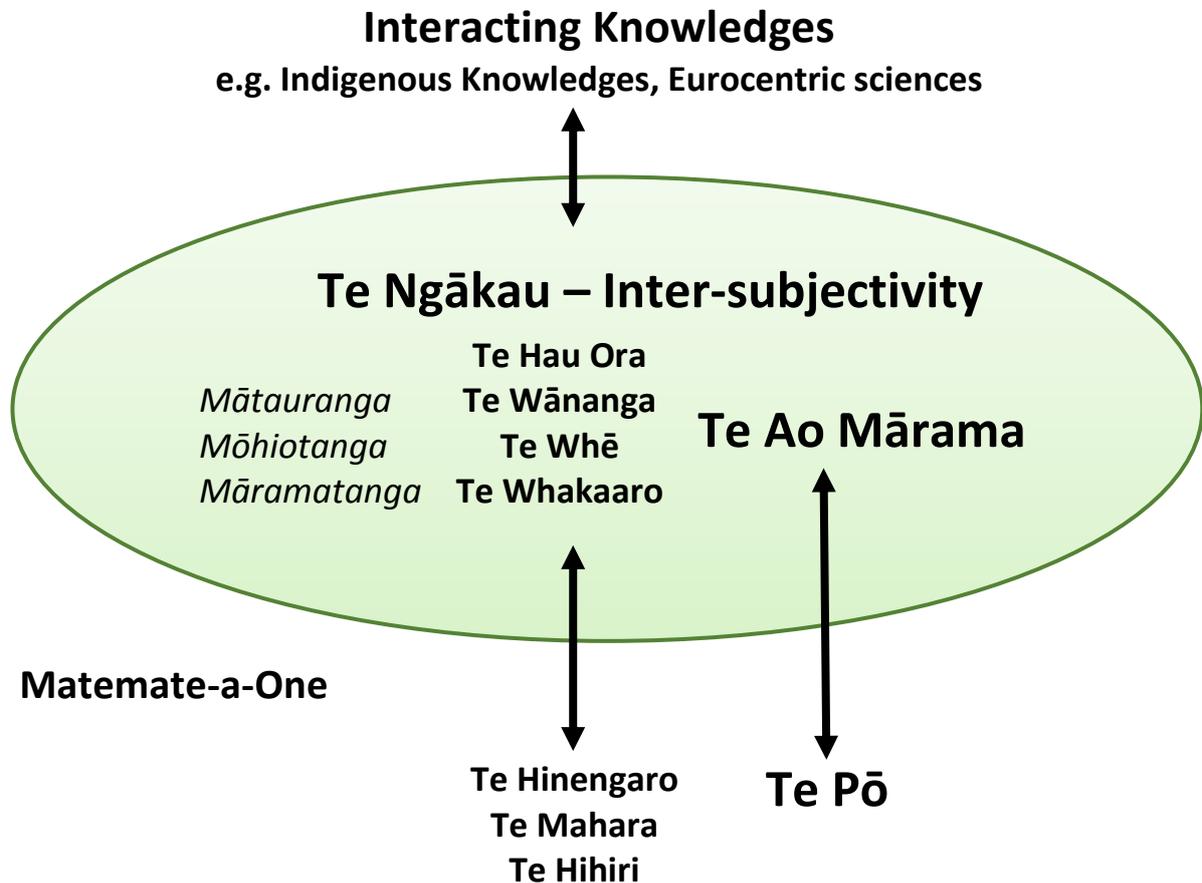


Figure 11. Mātauranga Māori Knowledge Framework (developed from Hanson & Hanson (1983; Marsden in Royal (2003), Royal (2003; 2008), Lambert, 2007); Smith (2009) and Maffie (2009)).

The model integrates a whakapapa of *being* as layered from Te Hihiri to Te Hau Ora, of knowing in three general forms (*mātauranga*, *mōhiotanga* and *māramatanga*), the notion of Te Ngākau as the seat of consciousness and inter-subjectivity, the dynamic relationship between potential and expression, between knowing and mystery, represented metaphorically here as Te Pō and Te Ao Mārama, and an openness to interaction with other knowledge traditions as dialogue, trading (Maffie, 2009) and occurring at actor interfaces (Blaikie et al. 1997). Central to the model are the social dynamics of Māori, with ancestral narratives (e.g. Māui, Tāwhaki) considered as representative of normative and divergent social patterns of complementarity and symmetrical exchange (Hanson & Hanson, 1983;

Lambert, 2007). *Matemate-a-one*, discussed in greater detail in the Methodology chapter, is introduced as it reflects an important dimension of mātauranga Māori, that is, “... a deep and profound affection for one's land and people, a condition or state that elicits certain cultural responses from indigenes”, thereby providing an explicit affective and people-place orientation to the framework.

3.9. Pacha – the Quechan World

The discussion of the Quechan world commences with a historic overview of Andean agriculture, moving to a discussion of important Andean cultural principles-practices. The section concludes with an examination of the annual agricultural cycle and some of the unique elements of Andean agricultural practice and *ways of knowing*. The aim of this historic, cultural and ecological overview is to present elements of agricultural Quechuan life that may be of relevance to conducting participatory Development.

Agricultural History

The domestication of crops and establishment of agriculture in the Andes occurred independently of other centres of crop domestication, with beans domesticated around 5000 BP, peanuts 4500 BP, potatoes 4000 BP. and the guinea pig around 3800 BP (Orlove, 1985). Around 2000 BP large coastal irrigation structures appear, along with new ceramic and textile forms (e.g. tapestry, gauze, and embroidery). The societies that developed through this period had formal institutions of governance, organized religion and art, monumental construction programs, social stratification and highly productive agricultural economies developed and settlements numbering as high as 10,000 e.g. Moche (100 to 800 AD) and Nazca (300BC to 800 AD) (Hass & Creamer, 2006).

Murra (1984) notes three distinct “steps” in the growth of Andean societies, these are;

- i. Domestication of crops across vertically distinct zones.
- ii. Domestication of climate by using high altitude cold patterns in food production e.g. freeze-dried foods and storage facilities that used variations in wind, sunshine and humidity.
- iii. Development of economic, political and administrative institutions that could integrate distinct ethnic groups and utilize production systems over large scales e.g.

road systems, regional food storage facilities and regional administrative centres were developed.

The first stage is an adaptation in food systems to the vertically distinct climatic zones of the Andes i.e. growing different crops at different altitudes. Specific altitudinal zones developed their own crop suites, with practices within zones developed to maximize agro-diversity and production e.g. alternating cropping with fellow pastoral grazing. Steep slopes were widely terraced to control water distribution (via canals) and create flat areas for planting. Erickson (1992) estimates one half to one million hectares of puna (high altitude) slopes were terraced in southern Peru and Bolivia, however 50-75% of this terracing is unused today.

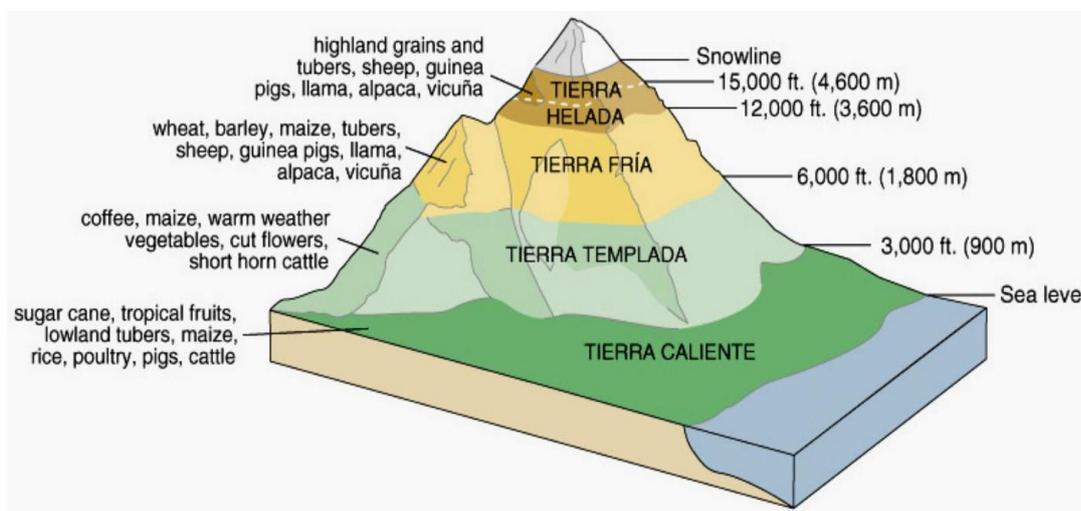


Figure 12. Altitudinal zones and agricultural systems of the Peruvian Andes. Potato Park is located between 3500 and 4500m.

The second of Murra's (1984) steps in the growth of Andean societies involved an ability to use (domesticate) high altitude cold in food production processes. In the *puna* and *altiplano* there may be up to 250 nights per year of frost, while during the day there is high exposure to solar radiation as the areas are in the tropics. The 24 hrs cycles of frost and equatorial sunshine was used to create *ch'uño* i.e. freeze-dried potatoes which could be stored for long periods. By using the large diurnal temperature range and related climatic factors (e.g. low humidity) the Andean societies were able to produce food-crops that could be accumulated, stored, transported distributed in a large scale. Initially these processes occurred within local contexts, but the emergence of large Andean polities involved an increase in the scale of *ch'uño* production, storage and distribution (Bermann, 1997), hall marks of Murra's third-step

in the growth of Andean societies. In many respects these freeze-dried foods, which included meat and fish, occupied a similar dietary, economic and political function as the stored grains of the Middle East and Europe (wheat), and Asia (rice). In both cases the ability to store large amounts of easily transportable foods for long periods, and most importantly distribute those foods, was an essential element in developing large and enduring polities e.g. the Inca.

Peruvian Andes – Agricultural Zones

The Andean highlands are positioned between two distinct climatic and economic spaces i.e. the cool dry coastal (westward) side of the mountains and the wet hot tropical (eastward) side of the mountains. This meant the polities of the highlands were able to trade with their western neighbours for dried fish, textiles, beans, ornamental shells and their eastern neighbours for fruits, timber, cacao (for making chocolate) and decorative bird feathers. Interestingly we see echoes of this broad social, political and economic interaction in Incan cosmology where three animals symbolize the realms of existence; the puma, the serpent/snake and the condor. The condor is largely limited to the western flank of the Andes (the cool dry valleys towards the coast), while the puma and serpent both predominantly inhabit the eastern flanks tropical and temperate altitudinal zones.

The Inca began as a relatively small political group centred on the city of Cusco whose territory expanded from 1430 to 1480 to cover an area from present day Ecuador and Colombia in the north, to Chile and Argentina in the south. Orlove (1985) argues this expansion was largely achieved through political means and the integration of newly “conquered” groups into the Inca economic system. Military force appears to have been used sparingly, with the empire being largely built on the diplomatic integration of distinct regional polities into the larger Inca Empire. This expansion was supported by an expanding infrastructure network that involved the creation of a large scale roading and food storage network which supported both trade and supply to Inca groups.

As the empire expanded trade of goods and labour across vertical ecological zones became more common i.e. trade between the agricultural systems of tropical, temperate and cold areas (Murra, 1975 cited in Orlove, 1985). Due to the sharp changes in elevation of the Andes, multiple climatic and distinct agricultural zones that may be separated by 1000’s of kilometres in relatively flat landscapes, were instead separated by distances easily walked in days e.g.

within a 50km distance one could move between a cool temperate and a tropical agricultural zone. This eco-agricultural diversity created what Brush (1976) called vertical archipelagos marked by high levels of trade. The history of the indigenous peoples of the Cusco region, and more broadly across the Inca Empire is one where high levels of social, cultural, ecological and agricultural diversity has existed both naturally and through political integration. This statement is not to downplay divergence, particularly amongst groups of the Andes who resisted the growth of the Inca empire and integration within it, but it highlights a unique context of high diversity marked by extensive patterns of interaction and interdependence across that diversity.

Across these diverse landscapes the social interaction of agricultural trade continues today, albeit buffeted by state politics. During fieldwork I attended a barter market at a Lares, a mid-altitude town, where crops from the lower (tropical) and higher (puna) altitudes were brought to trade, along with locally (mid-altitude temperate) grown crops. I visited these markets and saw first-hand people arrive by foot with sacks of bananas from lower altitudes and potatoes from higher altitudes. Potato traders would acquire bananas, and vice versa, each would then depart for their home villages, taking tropical fruits to villages of the puna and potato's and other highland crops to tropical lowland villages. AS well as this trading of goods, trading of labour across the Andes occurs as villagers migrate seasonally according to labour demands at different altitudes to attend to different crops.

European Colonization

Commencing with the arrival of the conquistadors in December 1532, the invasion and colonization of the Americas marks a period of dispossession and death, initially to European diseases and latter through forced labour in mines and on farms, of an immense scale. In 1520 the Peruvian indigenous population is estimated to have been at least 5 million and possibly as high as 9 million, dropping to as low as 600,000 by 1620, principally due to introduced diseases (Cook, 1981). Families and communities were decimated on a scale beyond imagination. People from worlds never dreamed of brought sicknesses that killed children, grandparents, brothers, sisters, uncles and aunties, leaving grieving and lonely family members to rebuild their lives, a rebuilding that would occur under the yoke of colonial rule. This tidal wave of death and its legacy should be acknowledged; I offer a few words in remembrance of this meeting of worlds.

*He mihi aroha tēnei ki a koutou,
E kore koutou e wareware I te hunga ora
Kua hoki koutou ki tō koutou whāea, a Pacha, engari kei te ora tonu ō koutou mana, ō
koutou aroha*

Through the 1600s land grants were made to conquistadors, Catholic missionaries and other early settlers to form estates called *haciendas*. *Hacienda's* become local political and economic centres, and the owners, called patrons, became a dominant landholding section of colonial societies. The *hacienda's* labour force were guaranteed under the *encomienda* systems, where representatives of the Spanish Crown 'assigned' indigenous community members to land holding individuals, typically conquistadors or soldiers. Although couched in paternalistic and protective language, the system was effectively a form of slavery.

As a political and economic locus within the highlands the hacienda system lasted approximately 300 yrs. until the military coup and agrarian landforms of the 1960's and 1970's. The agrarian reforms of this period saw ownership of the haciendas move from their patron's to community members. One result of the hacienda period and their ownership by European men was the emergence of a social class within Spanish colonial societies of people of mixed Indigenous-European descent as these men formed liaisons with indigenous women, resulting in children called *mestizo*. The Spanish colonial period involved a caste system that defined political rights and social status based on ancestry. For example, the colonial Mita system, established in 1605 by Spanish administrators, legally required indigenous peoples to work for two to four months every year on local hacienda. This legal slavery was presented as a civilizing practice, exposing indigenous peoples to the cultured life of Europe. Mestizo people did not have this legal obligation and through time they came to be the largest group within many Latin American societies with political, economic, social and cultural benefits above their indigenous, but below their Spanish ancestors. Allen (1988) notes that in villages adjacent to those of the Potato Park, where she undertook extensive field-work during the 1980's, a definite mestizo class existed who self-identified as being distinct and above their indigenous cousins. In contrast Argumedo (2011) presents a case that within the communities of the Potato Park a strong sense of indigenous identity prevails, stating only 1% of community members are not indigenous, while not discussing those who may identify as

mestizo. This difference in reported ethnic identification between sets of adjacent communities may reflect ethnic differences between the two areas, or it may reflect the construction of identity within a Development context e.g. emphasizing an indigenous identity (Shepherd, 2005; Andolina, Laurie & Radcliffe, 2009) or a rejection of the mestizo classification as a colonial construct. The reasons for such a difference were not explored in this research but it is noted that a difference in reporting of ethnic identification occurred between these two sources (Allen, 1988; Argumedo, 2011) for sets of adjacent communities.

3.10. Quechan Principles & Practices

Pacha

Pacha is an all-encompassing conceptualization of reality through time and across space (Allen, 1981). Mallon (2011, p.119) describes *Pacha* as;

“...one of the richest, most complex terms in Quechua’s semantic universe. It refers to the entire and very ample spectrum of space and time in which we are located.”

Apffel-Marglin (1998) describes Andean worldviews as understandings of the cosmos as a living entity where all things, every star, planet, wind, mountain, rock, person, river, plant and field is considered to pose a living essence. This totality and its interdependent aspects is *Pacha* (Apffel-Marglin, 1998).

A fundamental ontological assumption within Quechan worldviews is that of a gendered duality termed *yanantin* (discussed in detail later). All things have an internal duality, a male and female aspect, and all things exist in dual/dyadic relationships i.e. everything has a complementary partner. *Pacha* therefore is considered to have a male and female aspect. This female aspect of *Pacha* is called *Pachamama*, the living earth (Mother Earth). The male aspect of *Pacha* is called *Tirakuna* and manifests in specific places which are noted for their power and liveliness/energy. These places are named, display their own personality traits and are arranged in social hierarchies. Often *Tirakuna* manifest as the revered mountains of a region, the *Apu*.

In attempting to describe the nature of *Pacha*, Mallon (2011) notes the importance of positionality and interdependence. We cannot comprehend *Pacha* in its full sense, we cannot comprehend the cosmos, so we comprehend *Pacha* from the specificity of our location. Our

relation to the things around us and with whom we interact e.g. our position and interaction with mountains, rivers, clouds, ideas, plants, cultures, animals and people, orientates our experience of Pacha. Pacha is therefore only experienced partially and from a specific location, which is itself in constant flux.

Given this partiality and fluid relativity, the question arises; how do we orientate ourselves within Pacha, where is there a constant? Mallon (2011) describes the Quechuan *being* as encompassed in the notion of *Runa*. *Runa* is discussed in detail in a later section, but in reference to understanding the notion of Pacha, *Runa* refers to a person who lives in accordance with the customs and lifeways of the Inca. To be *Runa* is to be a person, or more correctly a community member, whose very being is grounded and continuous with those of the ancestors. From this perspective being *Runa* orientates one within the flux of an everchanging universe (*pacha*), representing a synchronized 'location' within that flux.

The term *pacha* is also applied to a range of specific phenomena. A selection of these are described below;

- ***Pachamama (Mother Earth)*** – the female form of *Pacha*. She is often addressed as simply *Mama* and represents the experienced living earth who feeds and nourishes all things. Allen (1981) describes *Pachamama* as primarily benevolent, although her nature is complex and she can be easily angered. When she is angered and her fertility and nourishment are reduced she is known as *Pacha Tira* (malevolent *pacha*). Discussions with community members in the Potato Park revealed a different perspective regarding *Pachamama*. One village elder described *Pachamama* as often “angry” with humans, requiring humans to constantly placate her.
- ***Hanaq pacha, kay pacha and ukhu pacha*** – these are the three levels of existence. *Hanaq pacha* is the upper level of existence including the sun, moon, souls of the dead and various deities (Webb, 2012). The condor is the symbol of *Hanaq pacha*. *Kay pacha* is the earthly realm, the realm of humans. The puma is the symbol of this realm. *Pachamama*, rivers, trees, the physical earth, lakes, and crops exist within the *kay pacha*. *Ukhu pacha* is often translated as “underworld”, but a more accurate translation is “inner world” (Urton, 1981). This world-within is described as the source of life, a hidden world that is intimately linked to *kay pacha*. This mistranslation of

Ukhu pacha as “underworld” has led to its misrepresentation as a kind of Andean hell. Webb states unequivocally it is not an Andean hell. The energies and entities that inhabit *ukhu pacha* are described as consisting of a “heavy” form of energy called *hucha*. The light energy of *hanaq pacha* (the upper *realm*) called *sami* combine in a productive and transformative process of *yanantin*, from which the realm of being we know (*kay pacha* – the earthly realm) is constantly reproduced. This *yanantin* relationship between *sami* and *hucha* is an essential element of Andean conceptions of well-being. Well-being is conceptualized as a state of balance between these energies, while ill health is perceived as an imbalance between energies and/or between their manifest forms (Webb, 2012).

- **Uma Pacha** – revered space, sacred, potent space. Often described as being a farm where spirits sprout and flourish like seeds (Salomon, 1998, p. 11). Salomon provides another description of *Uma Pacha* as a ‘high farm’ where the departing anima of the dead are replanted and regenerated (Salomon and Urioste in Salomon 1998, p. 12).
- **Pacha Kutiy (Pachakuti)** - refers to a fundamental change in the nature of Quechuan reality, literally an upheaval (*kutiy*) in the nature of reality (*pacha*) (Thomson, 2011). Mannheim (1986) describes *Pacha Kutiy* as indicating “a turn in the basic ontological assumptions constituting an evidential model or world.” (p. 269). The term is often applied to the arrival of the Spanish. The change *Pacha Kutiy* refers to when the Spanish arrived is more than the appearance of previously unknown peoples; rather it refers to an overturning of the previous *way of being* of Quechuan peoples. The notion of *Pacha Kutiy* is not one of explicit disaster; rather *Pacha Kutiy* represents a tumultuous turn of events that can be a catastrophe or a revolution (Thomson, 2011, p. 450).
- **Pacha Tira** – the Earth in a malevolent and destructive aspect which can be placated through invocations and ritual practice (Allen, 1981, p. 163).

The notion of Pacha described here represents a fundamentally distinct worldview to that typical in the industrialized urban West, within the academy and amongst development practitioners. In discussing this indigenous world, the question arises do differences in worldviews such as that of indigenous Quechuan peoples and those of the industrialized West render each mutually incomprehensible and incapable of reciprocity and collaboration? Do such differences exclude the knowledge traditions of peoples with differing worldviews from

productive and respectful interaction? Does an awareness of difference blind us to the potential for connection? Or more politically, does difference led to privilege and subjugation?

Difference and its implications are at the heart of Development, colonization and this thesis, and as such the questions posed above need not be answered immediately. Instead, a less direct set of questions can be asked; Could we imagine mountains, rivers, trees, birds, and animals as kin, the earth as our source and sustainer, our mother? Could we imagine being in a world where each mountain, every bird, river, person and plant has a responsibility to each other, and where each can nourish each other?

Apu

Apu are the revered and venerated mountains of the Andes (Bolin, 1998) and were described to me by members of the Potato Park communities as the primary authorities of the Andes. The Webster's Quechua - English Thesaurus Dictionary (Parker, 2008) defines *Apu* as meaning; lord, rich, mighty, Supreme Being, boss, supreme, casique (a sort of Andean major), chief, powerful, wealthy. Other meanings reflect understandings where *Apu* are considered as ancestors, benefactors, guardians, paternal figures and agents of good and/or misfortune to the human community (Bollin, 1998). *Apu* are living entities and they hold the greatest mana of all things in an area. The permanence and dominating presence of *Apu*, the fact they support forests, wildlife, that they are capped by snow and the glaciers which rest on their flanks feed the rivers essential to life in the high Andes, that they attract storms, lightening, hail and rain, that they are held in immense reverence and considered with deep affection, all demonstrate the nature and significance of *Apu*. Given that the productive practices of the *ayllu* (community) occur in these spaces between the *ayllu* and the upper flanks of *Apu*, maintaining a healthy relationship with local *Apu* is a significant and ongoing aspect of community life involving practices ranging from the daily rituals to annual communal pilgrimages to ritual sites on the *Apu* (Allen, 1988; Bolin, 1998; Williams & Nash, 2006).

Community members within the Potato Park described all major actions within the communities (e.g. cropping activities) as requiring a mandate or permission from local *Apu*. Local *Apu* exist in hierarchies of authority and in paired relationships (*yanantin*), typically a male and female *Apu*/mountains. I was told that when two *Apu* are a "good couple" they are both fertile and sustaining i.e. the rivers, forests and fields of each are bountiful and

dependable. Other *Apu* may exist in less positive relationship, or the individual *Apu* may have qualities that are less predictable or more malevolent. *Apu* also have different roles, for example the authority of some *Apu* is directly over crops or even specific aspects of a crop's life-cycle (e.g. specific *Apu* are responsible for seed germination), other *Apu*'s authority may directly affect weather. Within communities, elders and 'spiritual' experts are the main communicators with *Apu*. During one discussion of *Apu* an elderly lady described how much of our emotions/feelings were the result of our relationships with local *Apu*. If one maintains a good relationship with local *Apu* one will be generally happy, if one ignores *Apu* then one's emotions are affected.

During a discussion between visiting Ethiopian researchers and elders of the Potato Park the Ethiopians asked two revealing questions; Do the roles of *Apu* change? And if bad things happen is the *Apu* responsible? The elders answered that specific *Apu* have relatively consistent nature, and if bad things happen the *Apu* is not responsible. The *Apu* has its traits and it is the responsibility of community members to understand these traits, to maintain dialogue with the *Apu*, and to act accordingly. Local knowledge includes intimate knowledge of all local *Apu* and appropriate behaviours in relation to these *Apu*. Misfortune regarding crops and weather are considered as being due to a misreading of signs from the *Apu* or because the knowledge of the *Apu* and appropriate behaviour (ancestral knowledge) has been ignored. Interestingly the Ethiopian researchers and their accompanying elders commented their own relationships with the revered mountains of Ethiopia were the same; the mountains had authority over the region, there were local experts charged with maintaining relationships with these mountains, and 'misfortune' was seen as the fault of ignoring tradition or misunderstanding signs (communication) from the mountains. When the discussion turned to contemporary issues such as climate change the Ethiopian and Quechan elders agreed if there are changes in the world such as climate variation, it was because the rituals that maintain community-mountain relationships were being ignored. This example of cultural similarities regarding understandings of and relationships to mountains reflects what Ling (2014) described as compatibilities and connections between cosmovisions, in this case Ethiopian and Quechuan, which provide a basis for developing relationship and mutual understanding. The notion of mountains as living entities that significantly influence human

and ecological spheres, and to whom people communicate, also resonates with Māori cosmovisions.

Ayllu

“The ‘Ayllu’ is the ‘cell of life, the celebrating and ritual atom but also the economic foundation of subsistence and the internal battering trade’.”

Eastermann, cited in Stadel (1995, p.7).

Ayllu refers to kin-based communities who share location, language and worldviews (Apffel-Marglin, 1998). The terms *ayllu* and *runa* are closely related, with *ayllu* being closer in meaning to ‘village or community’ while *runa* refers to the identity of being a community member. For example, a village maybe described as an *ayllu*, while *runa* would refer to the community of people of the village. The term *ayllu* has a broader set of meanings than what are associated with the English language term village, with Orata (2001) noting that a translation of *ayllu* as village glosses over the culturally and ecologically distinct social, ritual, and political dimensions of *ayllu* where places are considered kin and social interaction involves people and place.

Within *ayllu* the immediate family constitutes the principle social space, as the family lives in their own house and conducts their own productive practices e.g. maintaining crops and pastures/livestock. These economic practices occur in concert with other families within the *ayllu*. Social institutions such as reciprocal labour exchange (*ayni* or *mit’a*), the sharing and exchange of seed potato, the sharing of equipment and the use of communal crop storage facilities characterize inter-family practices within the *ayllu*.

The *ayllu*, although a traditional term, exist as a constantly evolving social form within Andean societies. This evolution occurs in response to internal and external factors, but of particular importance to this research are processes of *ayllu* identity and culture formation in response to interactions with NGDO’s and international donor organizations (Garcia, 2005; Andolina, Radcliffe and Laurie, 2005; 2009; Shepherd, 2010). For example, many Andean communities have shared negatively valued identities through the colonial period e.g. as ‘peasants’, ‘campesinos’, or as being generally backward or deficient, what Shepherd (2010) calls the de-legitimization of Andean culture. The re-validization that occurs through involvement with NGDO’s and transnational networks reverses this centuries old process of de-legitimization.

Here the colonial period has seen *ayllu* as subjugated in relation to the state, and a more recent validation within Development networks. From the 1970's the growth of NGDO's in the Andes has also seen *ayllu* constructed by NGDO's workers as participants in transnational indigenous rights projects based on shared ethnicity (e.g. amongst Quechan communities from Ecuador to Chile) or shared experience as indigenous and colonized peoples (e.g. the South-to-South development paradigm).

Along with these transnational dynamics, at the national level phenomena such as urban migration and urban *ayllu* member interaction with their homelands has shaped a new form of dispersed *ayllu* identity and membership (Paerregaard, 1998). Paerregaard found former rural community members living in Peruvian urban centres would often maintain strong links with their home communities. These connections occurred most saliently through urban *ayllu* members returning to their *ayllu* to participate in annual festivals, practices of remittance and new urban arrivals staying with fellow migrants e.g. Paerregaard notes in Lima, Peru 60% of recent arrivals to the urban centre lived with fellow migrants. Important, high urban migration since the 1970's has not meant a 'leaving behind' of rural life and identity for migrants, nor has it meant *ayllu* have lost their sons and daughters to Peru's urban centres. Paerregaard's research shows *ayllu* can anchor urban, rural and trans-regional identities through common psychological, cultural, social and geographic reference, with *ayllu* members maintaining *ayllu* centred identities while traversing rural – urban spaces. If we turn to the issue of community Development and agricultural extension, the exposure of *ayllu* members to urban environments, either through migration or through the migration of kin who regularly return to the *ayllu*, creates fertile ground for *ayllu* engagement with outsider organizations i.e. NGDO's. NGDO's in Peru are often staffed by indigenous and mestizo who have lived in urban centres and who either were raised in *ayllu* or have had close contact through family with their *ayllu*. For example, many of the staff at CIP have strong connections to rural *ayllu*.

Runa

The term *Runa* (or *Runakuna*) refers to a group of people who share kinship connections, worldview, language and critically understand what constitutes 'correct behaviour'. Mannheim (1986) describes how Quechua speakers of Southern Peru make a distinction within their social worlds between *Runa* and Q'Ara. The significant difference between *Runa*

and Q'Ara is the expression of reciprocity (*ayninakuy*). The following quote from Mannheim illustrates the point (p.268);

“Runa live and work, eat and marry, drink and pray, think and fight in a universe governed by reciprocity. Human beings ritually establish relationships of reciprocity with mother earth and the mountain lords (Apu). People care for domestic animals as their domestic animals care for them ... on the way to the hereafter one must pass through the world of dogs and be reciprocated by dogs for one's treatment of dogs in this world People reciprocate each other in agricultural and pastoral labour and preparation of food as well as in interpersonal relationships. Children at play are said to ayni with god.”

For Mannheim the most notable feature of *runa* is that their common social practice expresses community values and beliefs, most notably *ayninakuy* (reciprocity) e.g. the norms (etiquette) of preparing, sharing and consuming food, cigarettes, *chichia* (a home brew) and *coca*.

Allen (2002) describes *Runa* as understood by community members as referring to those who live in accordance with the practices, understandings and ethics of Inca. In an earlier work Allen (1998) provides an illustrative example of this living correctly and in concert with ancestors. While sitting and chewing *coca* with local elders in a community outside of Cusco Allen was told that to chew *coca* correctly identifies one as *Runa*. The elders present stated that children do not chew *coca*, they play at it, but it is only *Runa*, the mature community members, who understand that the handling, sharing and consumption of *coca* must adhere to a specific set of rules (i.e. *tikanga*). These rules are prescribed by Quechan tradition, and as such the correct chewing of *coca* demonstrates an immersion in Quechan life and an ability to enact cultural norms. The etiquette of *coca* chewing demonstrates reverence for the plant, for others involved in the ritual, for surrounding *Apu* and for *Pachamama*, all qualities of a *Runa*. Through the practices involved in chewing *coca* and the understandings it entails *Runa* maintain a relational matrix (i.e. between people, plant and *Apu*) that is the expression of *ayninakuy*.

Yachay: Andean Ways-of-Knowing

Quechan traditions do not consider knowledge as a discrete phenomenon, rather it is understood as embedded within the context of dynamic social and cultural practices (Howard, 2002). The Quechuan term *yachay*, often translated as knowledge, encompasses

notions of 'being accustomed with' and 'being able to' i.e. displaying competence and skill (Harris, 2007). Here observation, listening and talk are essential epistemic practices, leading to the familiarity of being 'accustomed with' where knowing occurs as interaction between living entities i.e. knowledge is an active social process of mutual knowing.

Stobart and Howard (2002) describe *yachay* as a process whereby the latent nature of the universe is made manifest through the actions of the gods as they are revealed to, or perceived by, those in communion with them. Contact with the source of *yachay* is described as having a transformative affect as one is altered by the interaction with the divine (pg. 19 in Stobart & Howard, 2002). These views have ontological and epistemological parallels with Māori understandings of *mātauranga* as residing with *ngā Atua* (the Māori gods) and through process of interaction with the source of knowledge as being transformative e.g. creating generative states of *tapu*.

Where gods are physically manifest within the landscape, *yachay* processes of communion with the divine occur through social interaction and dialogue with mountains, rivers, animals, plants and spiritual beings (Apffel-Marglin, 1998). The dialogues and relationships which Apffel-Marglin describes occur in the relatively familiar context of communal Andean life. In situations where dialogue involves foreign participants e.g. people or technologies from outside of traditional Andean communities, Bourque (2002) suggest the traditional notion of dialogue is altered. The common experience of *yachay* a mutual knowledge, that is jointly constructed through linguistic interaction and shared perceptual experiences (Hintz & Hintz, 2014) is altered when knowledge involves novel elements. Here *yachay* does not involve consensus, but rather involves narrow forms of social interaction, with small groups or individuals engaging with novelty, and then through social processes across communities the novel element is absorbed and distributed across the community. Using an example of a new crop variety being adopted within the Sucre district, Bourque (2002) describes how the adoption was driven by the identification of the crop's potential by a local woman, her adoption of the crop by growing it and acquiring specific knowledge from external experts. As the crop proved successful other members of the communities approached the lady regarding advice for also planting the crop. When information was required from external sources regarding diseases afflicting the crop, the community as a whole were reluctant to engage with outsider experts. Instead a respected individual from the community approached the

outsider experts and gathered the necessary information. The respected community member then recommended which of the outsider experts the community members should visit. The community members felt they could trust the recommended experts and relationships were forged. Bourque notes that 'outsider knowledge', particularly from whites, is often viewed with deep suspicion by Andean people. The involvement of influential community members is important in achieving dialogue between outsider experts and the local community. Knowledge is incorporated into local social networks, and in doing so adapted to meet local needs. Knowledge does not diffuse 'outward' from knowledge centres to rural communities along a linear path, instead repetitive and incremental social processes occur through networks of trust. Here the demonstration of technologies or practices by outsiders is insufficient to result in integration of knowledge into communities, instead trusted individuals within community social networks act as intermediaries between the community and 'outsider' sources of knowledge (Bourque, 2002). It is these types of internal community dynamics which are built upon in participatory methods such as farmer-to-farmer models where trusted community members act as intermediaries between local and external knowledge systems.

Ayninakuy & Yanantin – Reciprocity & Duality

***Ayninakuy* – Reciprocity**

Allen (1983, p.93) describes *ayni* at its most basic and abstract level as, "the give and take that governs the universal circulation of vitality". Shepherd (2005, p.43) focuses on human dynamics within economic practices, describing *ayni* as, "... reciprocity, or the non-simultaneous exchange of labour, seed, coca, and so forth that bond Andean peoples together". These definitions vary in scale and focus, from the universal to the human, emphasizing Andean cosmologies tendency to view human social dynamics as an expression of cosmological patterns. At the human economic level of this universal principle, reciprocal exchange dynamics are enacted through agricultural practice, which is itself embedded in seasonal and ecological cycles.

The dynamic of *ayni* can be seen the relationship between people and crops. The care shown to crops by *ayllu* members will see the crops reciprocate by feeding those who have cared for them. The *ayllu* and the crop are bound in a reciprocal and mutually dependent relationship.

Neither can survive without the other, and as such they form a *yanantin* (dual) relationship which requires *ayni* to be maintained. The economic activity of the *ayllu* and the various exchange patterns between people, between people and crops, and between people and Pachamama demonstrate a normative ideology and set communal practices of mutual exchange. Mannheim (1986) notes that *ayni* and *mink'a* are both often translated as 'reciprocity', but they have distinct meanings, *ayni* referring to reciprocity that is direct and between equals, while *mink'a* refers to exchange that occurs across social hierarchies, and which is asymmetrical and redistributive.

Yanantin – Duality

Yanantin has two important aspects, one internal and the other relational and external. Internally *yanantin* refers to an understanding and experience where things are understood to be comprised of an internal duality e.g. everything has a female and male aspect, an upper and lower aspect, a left and right aspect, etc. (Stobart, 2008 p.84). The relational aspects of *yanantin* refers to all things being understood as being part of a fundamental pairing. Everything has a partner, and it is the pairing which constitutes an ontological whole. This pairing, the relational external dualism of *yanantin* represents a basic ontological unit within Andean worldviews (Webb, 2012) with individual entities seen as being incomplete (*ch'ulla*) or immature i.e. a couple is a single entity.

Turning to the relationship between entities the quote below from Webb (2012) sheds some light on the ideological and practical obligation to cultivate *yanantin* relationships;

“For us, yanantin doesn’t focus on the differences between two beings. That is what disconnects them. Instead, we focus on the qualities that brought them together. That is yanantin. We don’t really see the differences. That’s why we see them as not necessarily opposed, but as complementary. One on its own can’t hold everything, can’t take care of everything. Not only are they great together, but they need to be together. There is no other way. When there is another, it represents strength for both. ... it doesn’t matter what you do. Everything you do, no matter what it is, it must have its yanantin ... anything you perceive has a yanantin ... everything is in a pair, right from the beginning.”

In the above quote the pervasiveness of *yanantin* is described, but also a key aspect of a *yanantin* relationship, that being an ideological and practical 'pull', a kind of inherent gravitational attraction. In *yanantin* an ideological and practical commitment exists to bring

the polarities of a duality into a harmonious relationship. This interaction involves a dialogue, a continuing conversation, that reveals and instantiates the interdependence between entities (Fernandez, 1998).

If we look for practical examples of this complementary and interdependent duality, *yanantin* can be seen in a range of areas of Quechan life; social categorizations and organization (e.g. into moieties) within communities, the classification of space (e.g. agricultural spaces, settlement patterns), economic activity (e.g. between vertical economic zones) and ecological zones are understood as having an internal duality, and to exist in complementary pairings. Across these various expressions of *yanantin* there is an almost ubiquitous engendering of Andean dualism (Isabel cited in Gelles, 1995);

“Sexual complementarity is perhaps the most pervasive concept used to classify cosmological and natural phenomena. It also symbolizes the process of regeneration. Phenomena conceptualized as female and male interact with one another in a dialectic fashion to form new synthesis (in Gilles, 1995, p. 714).”

Platt (1986) states the term *yanantin* refers to married couples, and is used to describe mirror like qualities between opposites in a range of semantic contexts, for example body parts (e.g. eyes are *yanantin*, as are hands and feet (Stobart, 2008)) and the environment (e.g. high pastures and warm valleys are *yanantin*).

The relationship between herding and cropping is an illuminating example of *yanantin*. In fieldwork in the 1980's Paerregaard (1992) describes an “ecospace” (i.e. a geographic area delineated by a single aquatic system of rivers, springs, marshes) that was divided into dual categories along a vertical and horizontal axis. Vertically the ecospace was divided between the higher and drier *puna* (pastoralism) and the wetter lower valley (cropping). The *puna* zone was further divided into the Puna Grande (great plateau) and the Puna Chica (little plateau). Likewise, the cropping area and its growers were divided into two parts; Hanansaya (upper part) and Urinsaya (lower part). Members of the ecospace concentrate on producing specific products (e.g. animal products, fruits or vegetables) within their part of the ecospace. Production occurs beyond immediate subsistence need, generating surplus for barter exchange. Interestingly, barter systems have a strong social dualism. Firstly, bartering typically occurs between two individuals (or groups) who each have products desired by the other. Through a process of dialogue each comes to a point where an exchange can occur

whereby products of equal value but distinct in nature are exchanged. As an example bananas and potatoes, two commonly bartered crops, are grown in distinct altitudinal zones. Production in each zone occurs to meet subsistence needs, for use in communal settings (e.g. festivals) and for exchange with growers from distinct altitudinal zones. Over the course of the seasonal calendar growers engage in productive practice on the assumption that a distinct but equally valued product will be produced in another altitudinal zone. Post-harvest, when seasonal exchange occurs, the economic actors engage in an exchange of distinct but equally valued products. This annual production and exchange cycle displays complementary dualities (*yanantin*) across vertical and horizontal geographic, ecological and social spaces. Within this context *yanantin* can be seen as promoting and maintaining balanced dynamic relationships, as the economic patterns of production and exchange are not driven by ideals of exploitation or profit maximization, rather cyclic complementarities dominate ideologically and practically.

The process of enacting *yanantin* is called *masintin* (Webb, 2012). An informant of Webb's describes the process of *masintin* as involving four stages; *tupay* (meeting), *tinkuy* (interacting), *taqe* (unifying) and *trujij* (separating).

- I. *Tupay* is the first meeting in a relationship. This can involve meeting a person, an *Apu* (revered mountain), a place, a river, anything. Webb's informant describes this stage of initial meeting as very powerful. What could be described in Māori as the tapu of first-encounter (e.g. pōwhiri).
- II. *Tinkuy* refers to the initial interaction between entities. This interaction can be violent or peaceful, for example the annual 'battles' between some communities of the Andes are called *tinkuy*. These *tinkuy* involve large groups of men meeting to fight one another in a designated space. The initial convergence of two rivers, the whirlpools, foam, and cross-currents when they meet is also called *tinkuy*. Within the context of human relationships *tinkuy* represents a stage of interaction where two people or groups have been drawn together, but a sense of inter-dependence is yet to emerge (Webb, 2012). One of Webb's informants explains one reason why relationships can fail is the inability to move beyond the early attraction of *tinkuy*. An essential element in moving from *tinkuy* to *taqe* is the mutual exchange and balancing of *ayni* i.e. through reciprocity the enactment of *yanantin* can mature.

- III. *Taqe* refers to a matured interaction where mutual understanding and a sense of shared purpose is developed. Here *ayni* is maintained and a sense of wholeness and oneness pervades the relationship.
- IV. *Trujiy* is the stage of separation, when the *yanantin* pair has achieved its purpose and the individuals separate, moving on to new processes of *tupay* (meeting), *tinkuy* (interacting), *taqe* (unifying) and *trujiy* (separating).

Webb's description of *masintin* highlights the dynamism of *yanantin*. *Yanantin* represents a state of *being-with*, while *masintin* describes in detail the contours of this dynamic *being-with*. Through *ayni* the *masintin* process involves a softening and sharing of boundaries and the creation of harmony. *Tinkuy* is the point where boundaries and identities either change through 'coming closer' or are maintained, thereby excluding the possibility of *masintin* maturing. Here independence is softened and interdependence developed within the *yanantin* relationship when those involved become interdependent. With the process/practice of *masintin*, is the critical stage of union and harmony. It should not be assumed that the *masintin* process, the achieving of *tinkuy* and the expression of *yanantin* are easy to achieve, peaceful or pleasant. The pairing of distinct groups or individuals can be confusing, distressing, revealing, brutal and seductive. The violent annual battles between Andean villages, often involving stone throwing and physical confrontation are *tinkuy*, but this violent confrontation experience does not exclude fruitful interaction, it is in fact an acknowledged stage within the *masintin* process.

Sami

Sami is an animating essence within things (Allen, 2002). Allen (p.33, 2002) describes anything with an inherent "liveliness" as possessing *sami*; people, foods, weather, mountains, manufactured objects all possess *sami*. *Sami* does not reside permanently in specific things, rather it is in constant movement, moving between things and increasing and decreasing over time. Because *sami* is an animating and dynamic essence within all things, a principle concern of human activity is the holding, controlling and directing of *sami* (Jennings 2003). Central to understanding *sami* are the two metaphors commonly used in describing it, flow (*sami* as water-like) and food (*sami* as something cultivated, shared, consumed and energising). From the *sami* as flow perspective, *sami* is seen as manifest in things that flow, for example within the circulation of water from sky to land (rain), then down mountains before returning to the

sky, or the circulation of blood in people and animals. Where *sami* is seen as food-like, social relations provide models for maintaining the health movement of *sami*. For example, in making offerings (*despacho*) in everyday rituals of coca chewing or more formal and communal settings such as the Qoyllur Rit'i festival, offerings are made from people to more powerful elements of the Andean cosmos such as ancestors, *apu*, Pachamama, Pachatira, Inti (Sun God), Virachoca (a pre-Inca creator god) and Mama Quilla (Moon God) (Jennings, 2003). By making an offering *sami* is offered to these beings, who are made more vital by these acts, and who in turn offer *sami* back to elements of the world i.e. people, crops, rivers. Here a social model of reciprocity (*ayni*) acts to animate the world. To enhance the efficacy of these rituals they are typically conducted by experienced community members on or near *Huacos*, features of the landscape that are particularly potent (e.g. beside lakes, rivers, rocky outcrops and caves) or at cemeteries and other funerary sites.

Sumaq Qausay/Kausay – Living Well

Good Living or Living Well is a broad concept that has emerged in South America in reaction to conventional notions of Development and as an expression and assertion of local (indigenous) understandings of harmonious living (Gudynas, 2011). The term *Sumaq Qausay* (or *Kausay*) is applied to this concept within Quechan contexts. *Sumaq Qausay* is described as being achieved through the enactment of traditional values and practices, involving dialogue with the significant elements of the landscape e.g. *Apu*, stars, rivers, Pachamama, etc. (Argumedo & Yun Loong Wong, 2011). Ishizawa and Grillo (2002) describe *Sumaq Kausay* as an active state involving love, nurturance, symbiosis, conversation, reciprocity, and dance. Salgado (2010) draws on linguistic and anthropological analysis to highlight the aesthetic and affective elements of *Sumaq Kausay*, stating beauty, tenderness and the nurturing of a vigorous life are inherent aspects of *Sumaq Kausay*, "Sumaq Kawsay consists in knowing how to nurture and how to let oneself be nurtured in this living and vivifying world, the Pachamama, which must be loved and healed unreservedly." (Salgado, 2010, p.203).

In the constitutional reforms of Bolivia (2009) and Ecuador (2007-08) *Sumaq Qausay* was used as a dominant theme through the process of constitutional reform, featuring explicitly in the final constitutional documents. Bolivian politician David Choquehuanca (cited in Gudynas, 2011) describes *Sumaq Kawsay* as;

"... recover(ing) the lives of our peoples, to recover the Culture of Life and regain our lives in complete harmony and mutual respect with Mother Nature, with the Pachamama, where everything is life, where everyone is uywas [beings], servants of nature and the cosmos. We are all brothers, the plants, the hills, people ... "

3.11. Quechuan Principles & Practices in Context

The following sections describe the annual cycle of cropping, providing additional context to the principles and aspects of Andean life discussed above. The description includes discussion of the relationships between wild birds, plants, weather, celestial observation and agriculture, highlighting the interdependence of domains of IK that might be considered as discrete in Western thought. The aim in this final section is to contextualize the core principles described previously and to illustrate some of the unique aspects of a holistic and culturally specific form of agriculture that has emerged over 4000+yrs across the Andes.

The Annual Cycle of Potato – Plants, Birds & Stars in Dialogue

For Andean agricultural communities the annual cycle of field preparation, planting, raising, harvesting and storing crops is a dominant social communal rhythm (Stobart & Howard, 2002; Allen, 1988). An overview of the annual agricultural cycle amongst the Park's communities is presented below. This overview is based on fieldwork conducted by Graddy (2013; 2014) with ANDES in 2007, 2008 and 2011-2012. This overview is also presented in the case study chapter, but is presented here first to orientate the discussion of Quechuan agriculture;

- **August** – Andean dry season, Pago ceremonies occur where offerings are made by the communities as part of the reciprocal cycle of Pachamama's bounty nourishing communities, and communities sustaining crops and relationships with *Apu* (revered mountains) and Pachamama. If weather predictions indicate appropriate, some early potato planting can occur.
- **September-October** – approaching rains indicate the planting season will commence soon. Communal rituals involving musical composition and welcoming of the spiritual aspect of potato occur. Large groups undertake field preparation and hand planting.
- **November** - early planted potatoes have earth mounded over them.
- **January** – second mounding of potato occurs.

- **February** – *Puccllay* festivals, also called carnival, which are dedicated to honouring the fertility of the rainy season occur.
- **March** – Santuruma T'inkay, a celebration to Pachamama and the potato for their gifts to *Runa* (people), occurs on Fat Tuesday in February or March.
- **May** – the main harvests occur May – June, with elaborate artistic and spiritual expressions. Papa Watay, a ritual of “tying” the spirit of potato to Pachamama occurs. The ritual can be done within families or involving whole communities and involves bringing a sample of all potatoes being harvested, placing them in a mound, and offering thanks and gifts to Pachamama for her bounty. A rope is placed around the mound of potato as a symbol of their spirit remaining united with Pachamama.
- **June** – Selected potatoes are stored for upcoming season. Observation of Pleiades occurs to forecast weather through upcoming growing season (October to April) (see for scientific explanation for annual variations in Pleiades appearance).
- **July** – processing of potatoes, for example dry freezing to make chuño.
- **Lunar cycles** – in addition to the yearly (solar) cycle, planting, harvest and storage occurs in alignment with lunar cycles. This following of lunar cycles was more common amongst older community members than younger generations of growers.

In its simplest sense the potato cropping cycle in the high Andes (known as *Hatun Tapay*) commences with rituals and planting from September-October with the main harvesting occurring from May to June (Theisen, 2006). Allen (1988) describes ‘listening’ as one of the great pastimes of community life, and a key aspect of understanding and participating in the cycles of *Runa* life; “Nothing seems more interesting to *Runakuna* (people) than sitting in a high, sheltered spot watching what happens (p. 40)”. Over the course of a lifetime this listening develops to such a degree that members of the community are able to easily identify everything within the landscapes they are familiar with and the patterns unique to each of those things. Within the valley people recognize each other at great distances with any variations in a person’s normal activity proving a worthy topic of conversation. Equally, the non-human world is watched and any variation noted and discussed e.g. the late flowering of a plant or the reduced flow of a spring (Potato Park community members, personal communication, 28th September, 2009).

Through this listening the regularity of cycles are revealed, as well as variations in cycles. Daily cycles such as birds flying from their roosting area to feed then returning in the evening, people collecting firewood, the thawing of frosts, the movements of *Apu* (mountain) shadows across valley floors are familiar to *Runa*. Likewise, annual cycles of seasonal winds and rains (e.g. the *wayra* wind in August when kites are flown by young and old, and the rainy season from October to April), the increased flow of water-courses as glaciers melt, the flowering of wild plants, and the departure and returning of migratory birds are observed and variations noted and discussed. Looking upwards celestial cycles of star and constellation movements mark the movement of time through the year as constellations rise earlier each night, progressing from east to west before reappearing in the east. The movement of sun, moon and stars also occurs along a north-south axis. Their rising and setting points move along the horizon, marking at their extreme northern position the December solstice and at their southern position the June solstice, both being important ritual occasions (e.g. Inti Raymi around the June solstice).

The vast array of cycles within the local landscape and the understandings and practices associated within them form the symbolic language of the conversation between Andean peoples and Pacha. Within this cosmological conversation the cropping cycle represents a specific discourse, locally orientated and to which the survival of *Runa* depends. Given the marked difference in weather during the rainy and dry seasons, any miscalculation at planting time, at the transition from dry to wet season, can be catastrophic. If seed potatoes are planted and the dry season is prolonged a significant proportion of the crop will fail. Likewise, if the initial rains are heavy and constant fields may be flooded, again with significant crop loss. The survival of families and *ayllu* therefore depends on predicting the strength and timing of the rainy season's arrival. To this end a range of private and public rituals are practiced to reduce the uncertainty regarding the timing and strength of the rains.

Such ritual practice occurs in concert with the daily observation of the immediate environment (e.g. plants, animals, weather and stars) and the relationships between elements of that environment i.e. interdependence. Hernandez, (2002, p.4) quotes a conversation with a member of an *ayllu* near Puno on Lake Titicaca, Peru, regarding weather prediction which is illustrative of Andean environmental observation;

"In my zone I have two old people who are over 100, I always consult with them about different indicators of the agricultural calendar. About this year they told me that there is going to be more rain than last year, they tell me to plant in places where there are no flooding problems, to try to sow neither very early nor very late, furthermore it is a year of good harvests of potato, possibly not a year for oats or barley. I have been consulting for five years, in no year have they failed me. They live at the edge of the lake, observe the birds, the well-known lequecho, the position of its eggs, and the materials of the nest (Note – a potato variety named "feet of the lequecho" is grown in the Potato Park). They give me other indicators, besides, like the winds and the sunsets, this is nice, I like to observe too. I have confidence in the signs that the plants, wild animals, the rains and the winds give us. For that reason in general I have not had losses in my harvests, there are years that I recover 100%, I think the lowest has been this year (2001) which dropped to eighty per cent."

In 2001 when *ayllu* members commented that a wetter than usual rainy season would occur and that changes in planting times, locations and methods were necessary in response to the anticipated increased rain Hernandez and others developed a list of "signs" of a wetter than usual rainy season, these signs included (Hernandez, 2002, p.6);

- During the week that the day of San Juan de Dios (Saint John of God) (8th March) occurs in it has rained a lot all week.
- The first three days of the month of August have been cloudy and with little wind. This means there it will rain continually the months of January, February and March.
- The Tiqui Tiqui (lake birds) have made their nests high up in the patches of totora reed.
- The llacho (a type of lake weed] is growing a lot.
- The fox is crying on the slopes and hills, places that should be sown.
- The chickpea of the pampas [plains] has disappeared.
- The winds are not so strong and principally come from the Cordillera.
- The first flowers of the sankayo, pullapulla, maycha and carihua have been affected by frost, for that reason the first planting will have frost.
- The *lumasas* are just now waking up: The sankayo, pullapulla, maycha and carihua are flowering late (*Lumasas* are wild flowering plants that are indicators of seasonal weather).

- The kellopiscos (migratory birds) are just arriving, but the doves have yet to arrive.
- The leqechos are just getting together, they still have not made their nests.
- There are no toads, so it will be a late and rainy year.
- The pichitanka (Andean sparrow) is singing very late and is failing in its first songs, this means the first planting is not going to be seen.

These signs commence from early March till the normal time of planting in late September and involve observation of the patterns and variations of metrological phenomena and plant and bird behaviours. For Hernandaz the demonstration of local ecological knowledge's veracity poses a direct challenge to the privileging of scientific, technological, cultural and political assumptions within much Andean Development, supporting instead dialogue between IK and other knowledge systems.

Stars, Rain & Planting Cycles

The communal practices associated with the first appearance of Pleiades (Mataariki to Māori) in the pre-dawn eastern sky in June-July provides another example of the ways in which IKs are based on acute observations of the natural world and its variations, embedded in specific social, cultural and ecological contexts, and performed through communal ritual practice. The constellation Pleiades disappears from the sky from late April, reappearing in the eastern pre-dawn sky in June or July depending on visibility. Late June is also the time of the winter solstice and the sun's furthest movement southward, meaning the pre-dawn appearance of Pleiades coincides with a major phase in the annual solar cycle, acting as an important seasonal marker for many indigenous peoples of the southern hemisphere (Randall, 1982).

As well as being a seasonal marker, in parts of the Andes region variation in the perceived brightness of the constellation's stars and their relative position are considered to be predictors of rainfall patterns during the upcoming wet season (November – February/March). Based on these predictions of rainfall 5 – 8 months later crop plantings are altered accordingly. Using the appearance of Pleiades to predict rainfall patterns many months before the arrival of the rainy season has long been noted with early colonial records from the 1600s noting its use as a weather predictor (Orlove et al.).

While travelling through the Andes in the 1990's, Ben Orlove heard about communities where men would gather in the pre-dawn darkness of late June – early July to observe the rising of

Pleiades and make predictions regarding the coming rainy season (Orlove, Chiang & Cane, 2002). Intrigued by the accuracy that was reported Orlove and a team of researchers looked for some kind of physical connection between the appearance of Pleiades to the villagers and the variations in rainfall during the rainy season. Villagers' reports of how they assessed the appearance of Pleiades included brightness of the constellation, date of first appearance, apparent size of the constellation and which of the stars within Pleiades appear the brightest. The researchers hypothesized that atmospheric clarity would impact the four attributes of the constellation reported by the villagers. A sky that was very clear would result in Pleiades appearing brighter, it would be visible on the horizon on the earliest possible night, the constellation would appear larger as more stars could be seen within the constellation and individual stars would appear brighter, and the appearance of the dimmest stars (which may be invisible when the sky is not clear) was thought to possibly influence the perception of which star is brightest.

Orlove, Chaing and Cane (2000, 2002) found that the most significant cause of changes in seasonal rainfall patterns in the Peruvian Andes was the occurrence of El Niño, a variation in the Humboldt Current. El Niño is felt most strongly in the months from November – February, however the earliest stages of El Niño changes in the ocean current occur in June, with a resulting increase in high cirrus cloud at this time. This increase in high cirrus cloud is not visible to the naked eye. As these cloud changes are unnoticeable during the day, there is no apparent change in the clear blue days characteristic of the Andean dry season (April to September). However, during the clear nights of the Andean winter the increase in high cirrus clouds is sufficient to make stars appear less visible, with faint stars disappearing from sight. Orlove et al. therefore hypothesized that observed differences in Pleiades brightness may be due to variations in high cirrus clouds during the early stages of El Niño. Orlove et al. undertook interviews with members of 12 villages from the central Andes (northern Bolivia to southern and central Peru) that use the appearance of Pleiades as an indicator of growing season weather patterns. It was found that annually the perceived brightness of the Pleiades could vary by up to 25% and the number of visible stars from 6 to 11. The researchers found in non-El Niño years the stars were perceived as normal, appearing bright, with normal planting patterns undertaken in September – October. In El Niño years the stars were perceived as dimmer and less in number, with reduced and delayed rainfall during the 'rainy

season' from October to February. In response to the accurately predicted reduction in rainfall la papa was planted later in these years as initial September-October rains may be absent or significantly reduced.

In discussing this example of scientific research into IK, the aim is not to seek validation of IK through science, but rather to highlight the level of observation of naturally variable phenomena within the environments of Andean farmers, the annual performance of communal practices based on IK, and how these practices influence the kinship relationship of people and la papa. To identify slight annual variations in a constellations brightness, and then to comprehend a correlation between constellation brightness and seasonal rain timings, and to successfully modify the major economic activity across large areas of the Andes demonstrates a culture of communal observation of the highest order. Observation of Pleiades and its annual variations in brightness also represents the type of ontological and practice 'common ground' between indigenous peoples which Ling (2014) argued facilitates relationship building and dialogue between knowledge traditions (Ling, 2014). To Māori observation of Pleiades, known as Mataariki, is a significant cultural practice which could provide common ground between Quechuan and Māori peoples.

3.12. Chapter Summary

The discussion of Māori and Quechuan culture, agriculture and *ways-of-knowing* provided an overview of historic, cultural and ecological factors that may affect the promotion of IKs within participatory Development. Within a Quechuan context pacha, the *ayllu*, and the conceptual and practice elements of *yachay* (indigenous ways-of-knowing), *ayninakuy* (reciprocity) and *yanantin* (duality) provide a framework for considering participatory collaboration between Development actors and the promotion of IK. Within a Māori context the exploration of concepts, understandings, and cultural frameworks through which mātauranga Māori is expressed allows for a high level of theoretical, practical and ethical sensitivity when considering the Tai-Rāwhiti project and its efforts at IK promotion. From an organizational perspective the challenge of participatory Development and IK promotion is to design and implement organizational models that are responsive to and invigorate IKs, while facilitating constructive interaction between indigenous and other knowledges.

Chapter 4. METHODOLOGY

“Wisdom is a thing of the heart. It has its own thought processes. It is there that knowledge is integrated for this is the centre of one’s being”

Māori Marsden in Royal (2003, p.1)

“I have no idea how I develop theory. I don’t think about it; I just try to do it”

Mintzberg (2005, p.355)

4.1. Introduction

This chapter outlines the research process, its methodology and methods. The chapter begins with a discussion of the research’s philosophical and ethical foundation, using an adapted form of the Whakapapa of Knowledge Framework as framework to describe the conducting of research from within a contemporary IK tradition. *Matemate-ā-one* is discussed in detail as a holistic expression of a Māori worldview which informed the research. The chapter then proceeds to the specific research methods, strategies and analytic tools. A research timeline is provided, describing engagement with each project (fieldwork) and the processes of insight generation which occurred.

A summary of the research methodology is provided on the following page.

RESEARCH METHODOLOGY SUMMARY

Philosophical & Ethical Orientation

Whakapapa - a living, connected, mutually dependent world.

Whanaungatanga - relational dynamics within a whakapapa worldview.

Matemate-ā-One - a deep affection and expression of aroha for people and place.

Mātauranga-ā-Iwi – centring indigenous local *ways of knowing*.

Tiakitanga - to nourish and protect mauri, mana, mātauranga.

Te Ngākau – embodied knowing & creative connection.

Mahi Kotahi - participatory, ethnographic, getting muddy (collective intimacy).

Research Paradigm	Integrating indigenous ways-of-knowing, multidisciplinary, positionality, gentle ngākau centred knowing.
Research Objectives & Guiding Questions	Develop and utilize set of research objectives and guiding questions to focus research process.
Research Design	Ethnographic multiple-case study.
Level of Analysis	Organization – Development project.
Research Strategy	Case specific ethnography; Aotearoa: episodic and immersive engagement; Peru: more superficial ethnographic data gathering.
Research Methods	Focused in-field discussion. Collaborative insight generation. Analysis of field notes, project texts, concept and theory building using adapted version of Ritchie and Lewis’s Analytic Hierarchy (2003).
Information Sources	Project participants (staff and community members), organizational documentation, published reports and articles.

4.2. Philosophical Foundation

The foundation of this research was an approach which privileged the ontologies, epistemologies and knowledge of Māori and Quechuan peoples, while integrating elements from a range of academic disciplines. The research assumed knowing occurs through social interaction, and as such eschewed ‘extractive’ positivist approaches, instead focusing on creating spaces of dialogue and immersive experience where the sociality of meeting and coming-to-know within places acted to foster kinship and generate insight.

In Chapter 3 the Whakapapa of Knowledge Framework was developed as a Māori conceptual model of IK. This research is itself an example of a contemporary IK in practice, and as such the Framework can be applied here as a research methodology. Central to the model is the assumption that through discursive and practical interaction between communities which practice knowledge systems, insight generating processes can occur which are of practical and theoretical value, and which can reshape power relations locally and more broadly. For Maffie (2009) interaction between knowledge traditions should be more than just an expression of pluralism, it should maintain a radical agenda which aims to transform subordinating institutions, to re-empower the marginalized, and advocate for the conserving of ontological and epistemological diversity. This political perspective is central to this model.

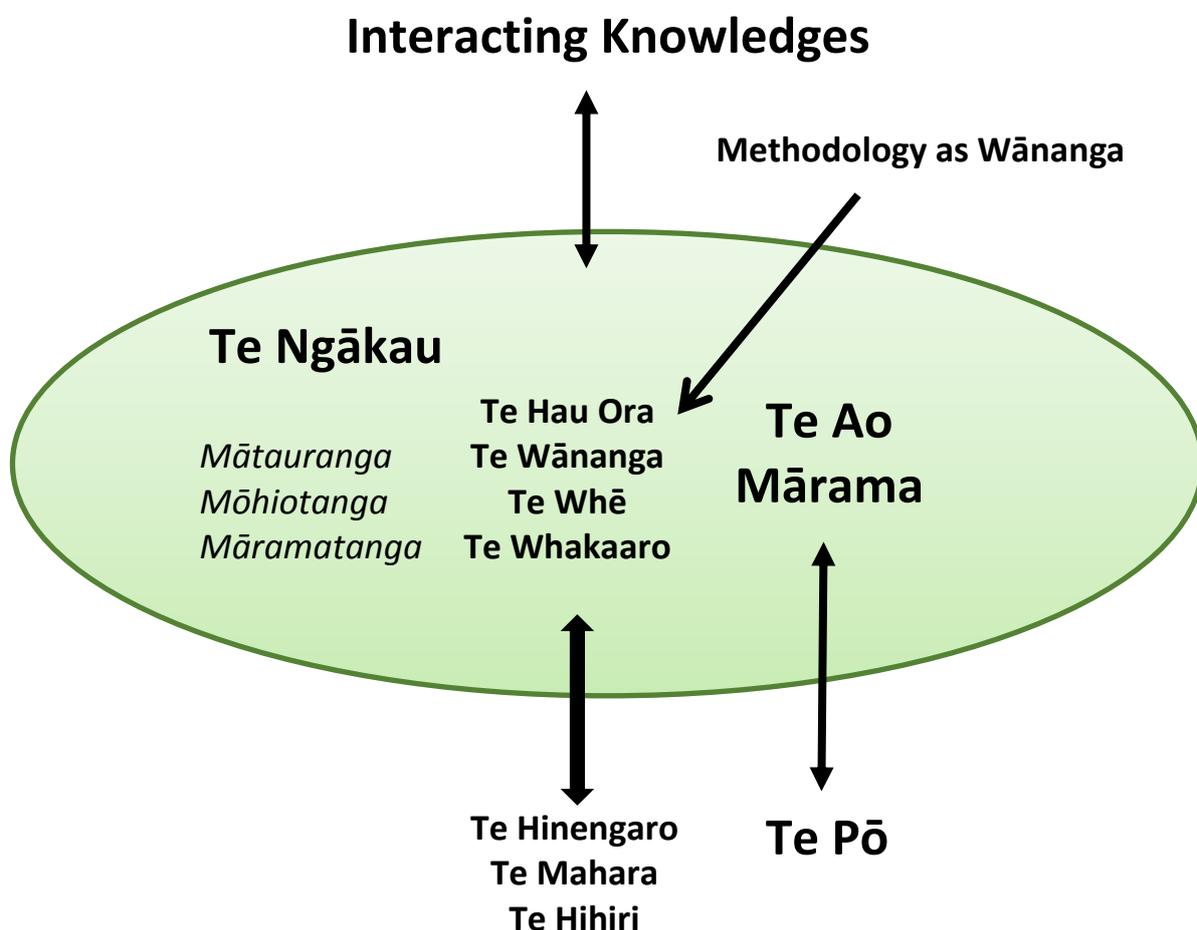


Figure 13. Adapted Whakapapa of Knowledge Framework (see Ch. 3 for full description).

The model assumes complementarity between Māori ways of knowing and other knowledge traditions, indigenous and non-indigenous. The model draws on Maffie's (2009) notion of

Polycentric Global Epistemology which calls for dialogue between multiple epistemologies as a “trading zone” for mutual sharing, borrowing, and learning.

Matemate-ā-one – Orientating the Methodology

Bargh (2011) describes indigenous research as commonly motivated, and responsive to, a range of diverse factors such as intellectual curiosity, social responsibility, ideological commitment and affective dispositions. This is a sentiment echoed and reiterated by many indigenous scholars (e.g. Smith, 1999; Cajete, 1999b). Given the holistic and multifaceted drivers of indigenous research, it may be described as whakapapa in action, focused on a specific topic or set of questions, but occurring within and constituting a significant element of a person’s life (see Chapter 1, section 1.6 for a discussion of the research origins and their relationship to my life experiences).

For much of this research this breadth of meaning has been clearly present, but I had struggled to articulate what constituted it and how it shaped the research. The notion of Kaupapa Māori reflected elements of the research orientation, but it lacked a ‘home’ flavour, and was clearly a framework from within the academy, albeit a distinctly Māori one. After approximately three years of research I became aware of a Māori concept that articulated the interests from which the research emerged and which had continued to drive its progress, a concept that integrated intellectual, social, ideological, affective and cultural dimensions, while expressing a clear ethical orientation towards places where nature is close, and kinship is the norm, that concept was *matemate-ā-one*. *Matemate-ā-one* is a term most often heard within the Ngāi Tūhoe iwi where for many now urban living iwi members there is a great longing to reconnect with relatives and return to the mountains, forests and rivers of their homelands.

Matemate-ā-one – Aroha in Action

Matemate-ā-one is a term most often heard within the Ngāi Tūhoe iwi where for many now urban living iwi members there is a great longing to reconnect with relatives and return to the mountains, forests and rivers of their homelands. The Whanake Māori Dictionary defines *matemate-ā-one* as, “... a deep and profound affection for one’s land and people, a condition or state that elicits certain cultural responses from indigenes.” Using an alternate spelling the Māori dictionary ‘He Pātaka Kupu’, defines *matemateaone*, as “he aroha tino nui, tino

hōhonu”, loosely translated as, *a very great and deep love*. The focus of this aroha is one’s people, living, past and future, the forests, rivers, and mountains that one’s people have lived with, and the ways of life that occur when living within those places. Drawing from discussions with kaumātua (elders) of Ngāi Tūhoe, Te Awekotuku and Nikora (2003) provide the following description of *matemate-ā-one* from Tamaro Nikora;

“Matemateaone has a number of facets but is essentially a feeling of genuine relationship and behaviour between people, place and property that engenders and demonstrates “whanaungatanga” - a sense of relatedness, commonality, and group belonging

Te Awekotuku and Nikora (p. 22).

Wharehuia Milroy, another Ngāi Tūhoe kaumātua expands further on *matemate-ā-one* saying;

As we understand it, it is a dynamic associated with the manner in which we Tūhoe organise ourselves socially, culturally, politically, and spiritually. They are our ideals as an iwi, moral dictates that say how we are to behave. Matemateaone grows from within the group, knowing and getting to know each other. The physical cues such as trees, mountains, rivers and kāinga, etc. are all factors that activate matemateaone. Everyone of Tūhoe should share a subtle code of knowledge that goes to make up matemateaone

Te Awekotuku & Nikora (p. 23)

The term *matemate-ā-one* is often heard today in reference to activities such as the Te Hui Ahurei a Tūhoe, an event where every two years dispersed iwi members return to their homelands to reconnect with relatives and the mountains and forests of Te Urewera. As a term *matemate-ā-one* therefore links experiences of *Being* with place and people, to an ethical orientation to maintain that collective connection throughout one’s life. At the heart of *matemate-ā-one* is a positive and affirming (aroha) drive to remain connected to, or to reconnect with, one’s kin and the places our ancestors have lived with.

Matemate-ā-one is a concept, practice, experience that has its roots within a Māori worldview. Its contemporary form has however emerged within the context of colonization and processes of urban migration, social fragmentation, language loss, and political and

cultural aspirations. It centralizes experiences of place and familiarity, orientating action towards affirming and re-constituting the connection between people and place i.e. strengthening whanaungatanga. Central to this connection is the experience of aroha, and a living of the generative potency of aroha.

Reflecting upon *matemate-ā-one* and how this form of aroha for people and place can be enacted through research practice, it is clear that *matemate-ā-one* encapsulate the ideals of 'people-centred' action. The concept is applied when calling to respond to colonial dynamics which act to separate people from their kin, and to leave their tribal homelands. The ethical and practical elements of *matemate-ā-one* align with elements of Action Research, KMM, and other indigenous, humanist and social change orientated methodologies which call to centre communities within research processes, to utilize their understandings and to create research outcomes of positive value to those communities. Personally, the concept of *matemate-ā-one* resonates more deeply than any research methodology as it reflects a stronger expression of aroha for people AND place. Its origins and principle expression has been outside of the academy, meaning as a concept-practice and way-of-being it has not been defined, operationalized and constructed for the utility of institutional research practices i.e. it is neither overly intellectual nor institutional in character. Research that has a philosophical foundation of *matemate-ā-one* holds the potential to destabilize academic and institutional privilege, and re-position the academy and the work carried out through the academy within a people-and-place centred culture. i.e. *matemate-ā-one* represents a culturally specific and ethical foundational framework for social action, including research. From this foundation a culturally grounded assessment of the appropriateness of specific methodologies, methods, and analytic approaches and tools can occur. This approach did not aim to embed the research process within specific established academic paradigms (e.g. functionalist, interpretive, radical humanist or radical structuralist to use Burrell and Morgan's (1979) framework), instead it drew on aspects from across paradigms, for example radical and post-structuralist research such as Sachs' (1992) dissection of power within Development, Gibson-Graham's (2002; 2005a) notion of *Diverse Economies* and Cornwall and Eade's (2010) exposition of discursive elements (e.g. *buzzwords* and *fuzzwords*) in maintaining Development's hierarchical discourse.

4.3. Research Design

Strategy & Methods

Ethnography

The research utilized an ethnographic multi-case methodology within the philosophical and ethical framework described previously. Ethnographic research refers to an immersive form of engagement with groups, organizations or communities which aims to describe the culture of a group from group members' perspectives, and to use these perspectives to build theoretical insight (Eisenhardt, 1989). As a methodology ethnography has its origins in anthropology's study of non-western cultures, however since the 1980s, the methodology has been increasingly applied in organizational settings (Mouly & Sankaran, 1995).

The early use of ethnography within anthropology saw ethnographic methodologies practiced from a positivist social science paradigm, where the 'expert researcher' extracted data from 'naive subjects' (Mouly & Sankaran, 1995). With the emergence of distinct social science paradigms since the 1960s, the fundamental assumptions of the social sciences, including anthropology, have been questioned. This has resulted in new configurations of the researcher – researched relationship, and new objects of study revealed (e.g. discourse analysis). One methodological effect of new paradigms (e.g. interpretivist, post-structuralist and radical paradigms) was to de-stabilize positivist notions of research objectivity and expertise. In enacting an indigenous approach to ethnography, processes of engagement, power and knowledge production were framed in novel ways. The relationship between researcher – researched is understood as a kin-based relationship where differentials of power are navigated through normative patterns of encounter and relationship establishment (i.e. *whakawhanaungatanga*, norms of reciprocity and symmetrical exchange (Hanson & Hanson, 1983)). The Whakapapa of Knowledge Framework placed an emphasis on *in situ* co-production of knowledge, assuming knowledge is socially produced. These assumptions re-orientated the spaces of knowledge production from a privileging of the academy and a construction of communities as places of data collection, to a practice of community – academy dialogue which ontologically, geographically, social and politically centres the communities i.e. communities become the axis points around which the research is conducted.

Polycentric Ethnography – Challenges Across Cultures

Wolcott (1999) distinguishes between two types of ethnography; *doing field work*, which is a deeply immersive and rich form of engagement, and *gathering data* which is rapid, extensive and focused on surface phenomena on a relatively large scale. Each type of ethnography has distinct focuses and methods of gaining insight. *Doing field work* typically involves long periods of immersion within a context and relies in field notes (diaries) and the capturing of normal life through sound and video recordings. Traditionally *ex situ* analysis of ethnographic data was favoured using forms of content analysis, but due to sometimes extensive periods of immersion, processes of abstraction and theory building can occur informally or formally occur while doing field work (Eisenhardt, 1989; Wolcott, 1999). *Gathering data* maintains the commitment to presenting a social reality from the perspectives of inhabitants of that world, but it may use surveys, questionnaires and other ‘fast’ methods due to constraints of time in the field.

It was originally planned to undertake *doing field work* type ethnography with both cases, with 12 months given to fieldwork in Peru to allow time to build relationships and improve my Spanish to an appropriate level. This did not occur as fieldwork in Peru was reduced to 6 months. The Peruvian fieldwork was therefore closer to a *gathering data* approach than originally intended. This resulted in Peruvian fieldwork involving more rapid and intentional ‘information gathering’ then occurred with the Aotearoa project where field work was immersive, allowing insight to emerge through direct *kōrero* and *wānanga* with participants. It has been argued that access to everyday organizational practices are essential in understanding how the meanings associated with Development (e.g. formal Development goals participation, collaboration and IK promotion) are “produced, contested and reworked in practices” and how people understand what they do in their own terms (Bebbington et al., 2007, p.605). In this case the difference between *doing ethnographic field work* in Aotearoa and *gathering ethnographic data* in Peru reflected a difference in the ability to comprehend, engage with, and present the social realities of the participants in the two projects. These differences are acknowledged and their implications discussed latter.

Multi-Case Study Method

The case study approach is a form of enquiry that investigates contemporary phenomena within their real-life context (Yin, 2003a; 2003b). Case studies also allow for the use of single

or multi-method approaches which can combine quantitative and qualitative methodologies (e.g. *in situ* conversation, interviews, surveys, observation and document analysis). The use of multi-methods allows diverse 'data' forms to be integrated (triangulation) in analysis and theory building processes (Eisenhardt & Graebner, 2007; Yin, 2009).

Language & Identity in the Field

Yin (2003) cautions that multiple case study research should be considered wisely, as this methodology requires considerable research investment in resources and time due to the level of time required with each case. In the case of multiple case studies in distinct indigenous contexts without a common language, the level of multi-cultural capacity (e.g. language skills in multiple indigenous languages), or the time to acquire languages, is considerable. Upon reflection conducting research with two indigenous communities without a common language, separated by the Pacific Ocean, one in an English colonized country, the other a Spanish colonized country was ambitious. Undoubtedly the most significant challenge was acquiring the necessary level of language competency to conduct ethnographic research in Māori-Pākehā and Quechuan-Spanish language contexts. Subedi (2006) notes that amongst Western researchers there is a reluctance discuss their language skills, including knowledge of local dialects, and how this may influence relationships (e.g. rapport with locals), the types of information gained, and insider-outsider perceptions from participants. Drawing on insider-outsider models of researcher positionality, Subedi demonstrates that for 'halfie' researchers, people whose national or cultural identity is mixed by virtue of migration, overseas education and/or parentage, issues of language are more salient than for their (our) counterparts from a single culture. Limited linguistic capacity was a recognized limitation of the research from its commencement. In this research linguistic ability affected both field work and access to literature. To address this issue formal language training was a necessity. Initially it was planned that Peruvian field work would be for 1 year and language study would occur through this period. Due to obstacles in commencing fieldwork, the Peruvian fieldwork was reduced to 6 months, resulting in reduced period of language learning.

Ethnographic field work, by its nature involves intimate social interaction. A common criticism of research within Indigenous communities, and Development work, is that 'outsiders' fail to engage meaningfully with locals and engagement occurs on the outsider's terms and for the outsider's benefit. For example, indigenous community research may provide material and

social benefits of advancing an academic career for a professional researcher, while providing little or no material benefit for locals, and may create a burden of hosting and accommodating the researcher and their project. Allen (2002) eloquently discusses these issues, describing in detail how a researcher can be a burden on their hosts and the broader community, particularly if they lack the skills required to participate in community life. The nature of one's involvement in normal community life, directly effects one's identity, as identity is constructed through social interaction. Allen (2002, p.59) provides a succinct comment on this in her recollection of her time within an Andean village not far from the Potato Park, "I recalled how, when I learned how to spin (weave) two years before, Basilia had exclaimed in delight, "Well, you're finally a woman!". Within this research, my ability to communicate in English and te reo Māori with the participants in the Aotearoa project and engage immediately in crop work (planting, weeding, harvesting) with them meant the social interaction between researcher and locals took a form distinct from that which occurred in Peru, where I was unable to interact in this same. Fortunately, towards the end of the Peruvian fieldwork I was able to become (locally) useful, acting as a driver for ANDES staff, visitors and members of the Park's communities. This usefulness profoundly changed the nature of social engagement between myself and others, allowing a closer understanding of ANDES work than had occurred when I lacked a locally relevant role.

In Situ Co-Production of Knowledge

As stated through this chapter the research centred an *in situ* co-production of insight approach. This approach was based on the understanding that conversational dynamics in natural settings can act to reveal deep levels of insider understanding and perceptions, and allow insiders to reflect on their own contexts and experiences. The approach assumed a co-construction of realities which aligns with interpretivist and social constructionist perspectives (Berger & Luckmann, 1991). The social constructivist perspective argues that over time concepts, understandings and behaviours become routinized into collective patterns of thought and action, termed institutions. People's understandings and beliefs about what constitutes reality are therefore embedded in these social institutions. This creates a situation where social interaction acts to express social institutions and realities, and to co-create realities within the present. *In situ* dialogue and action therefore represent the co-production of social realities by the researcher and others, and as spaces of reflection

and exploration of those realities. The approach taken assumes that social practices of dialogue (wānanga and kōrero) and shared action represent unique dynamics for exploring, demonstrating and enacting socially constructed realities. The familiarity of known social realities (institutions) (i.e. *in situ* contexts) therefore allows research participants to act and discuss in ways reflective of their social realities.

In centring the *in situ* co-production of insight approach it was clear that attention needed to be paid to researcher biases influencing dialogue and the information shared by participants. Although not undertaking field based interviews, the interview method literature provided useful insights into eliciting information and minimizing researcher biases. Drawing on this literature, personal research experience and discussions with supervisors, the following points were developed as considerations regarding *in situ* discussion (Smith, 1999; Stage & Manning, 2003; Denzin, Lincoln, & Smith (Eds), 2008);

- *Local lead* – the researcher is active but not central to the discussion.
- *Often collective* – discussion and work often occur in collective settings where multiple locals contribute, thereby enacting their own norms of discussion and work.
- *Anecdotal and historic* – discussion often presents histories of phenomena with salient elements recounted. Such accounts are rich in detail but may reveal elements of local life that are not for public or wider disclosure.
- *Minimize researcher opinion* – when discussing topics avoid giving personal opinion unless explicitly asked for.
- *Maintain anonymity* – the researcher may be privy to opinions and information from a range of community members. As a general rule the researcher should avoid quoting participants when in conversation with others unless consent has been given.

Central to the approach was the active engagement in normal activities amongst project staff and community members, where through shared work (mahi kotahi) and getting our hands dirty and sense of commonality, familiarity and mutuality was engendered.

Fieldwork journals were the principle means of capturing information and insight gathered.

In reflecting on the appropriateness of a multiple case study approach from within an indigenous research paradigm, the ability to consider phenomena and context concurrently,

the use of multiple data sources, and the flexibility to allow relational considerations to influence research dynamics and case selection demonstrate the ability of the case study method to align with indigenous worldviews and approaches to research i.e. the case study method can be used within a whakapapa (Māori) or pacha/lo Andino (Quechan) worldview, or where multiparadigms are involved (Lewis & Grimes, 1999).

Secondary Sources: Project Documents & Publications

The case study method allows for the use of multiple information sources, including published written, sound and video documentation e.g. organizational documents, radio interviews, documentaries and academic publications (Yin, 2003). For both the Aotearoa and Peruvian cases a range of documentation was available for use as data and analysis. From the Aotearoa project documentation such as funding proposals, funding approval statements stating the projects aims and level of public resourcing, academic publications (Kerckhoffs, 2006; Bruges & Smith, 2008; Bruges & Smith, 2009; Kerckhoffs & Smith, 2010) and an unpublished thesis (Bruges, 2006) were available. From the Peruvian project internal organizational projects, such as funding proposals, were not used, however a large range of academic and non-academic publications and video documentaries were accessed (Suri, 2005; Argumedo & Pimbert, 2006; Argumedo & Stenner, 2008; Argumedo, 2011; Argumedo & Wong, 2011; IUCN, 2011; Parque, de la Papa, 2010 (Potato Park website); Graddy, 2013 & 2014; IIED, 2014). These secondary sources of information from both projects represented publicity materials and academic materials, including peer reviewed articles and theses. The publicity material provided important information regarding dates, and individual and organizational participants in project activities. As promotional materials these data sources were considered as data sources constructed to present superficial and positive information about the projects. In contrast theses and peer reviewed academic articles were available from both projects, providing more rigorous insight into each project. In the case of the Peruvian project where the ethnographic methodology faced considerable challenges due to language differences. Correspondence with Graddy, who conducted fieldwork with ANDES between 2007 and 2012 and produced ethnographic accounts (Graddy, 2013; 2014), was of particular value in complementing fieldwork data and clarifying elements of IK promotion and IK - Eurocentric science interactions within ANDES work.

Analytic Techniques

In combination with *in situ* co-production of insight processes during the Aotearoa fieldwork, the research used formal analytic techniques to identify themes within the data and develop conceptual models. An adapted form of Ritchie and Lewis’s Analytic Hierarchy (2003) which integrated Mātauranga Māori processes was used to analyse data (see Table 7). The technique was applied first to within-case analysis, simplifying the rich data of engagement down to core concepts, relationships between concepts, from which explanatory models were developed, and conceptual and theoretical insights explored in relation to the literature (Ritchie & Lewis, 2003).

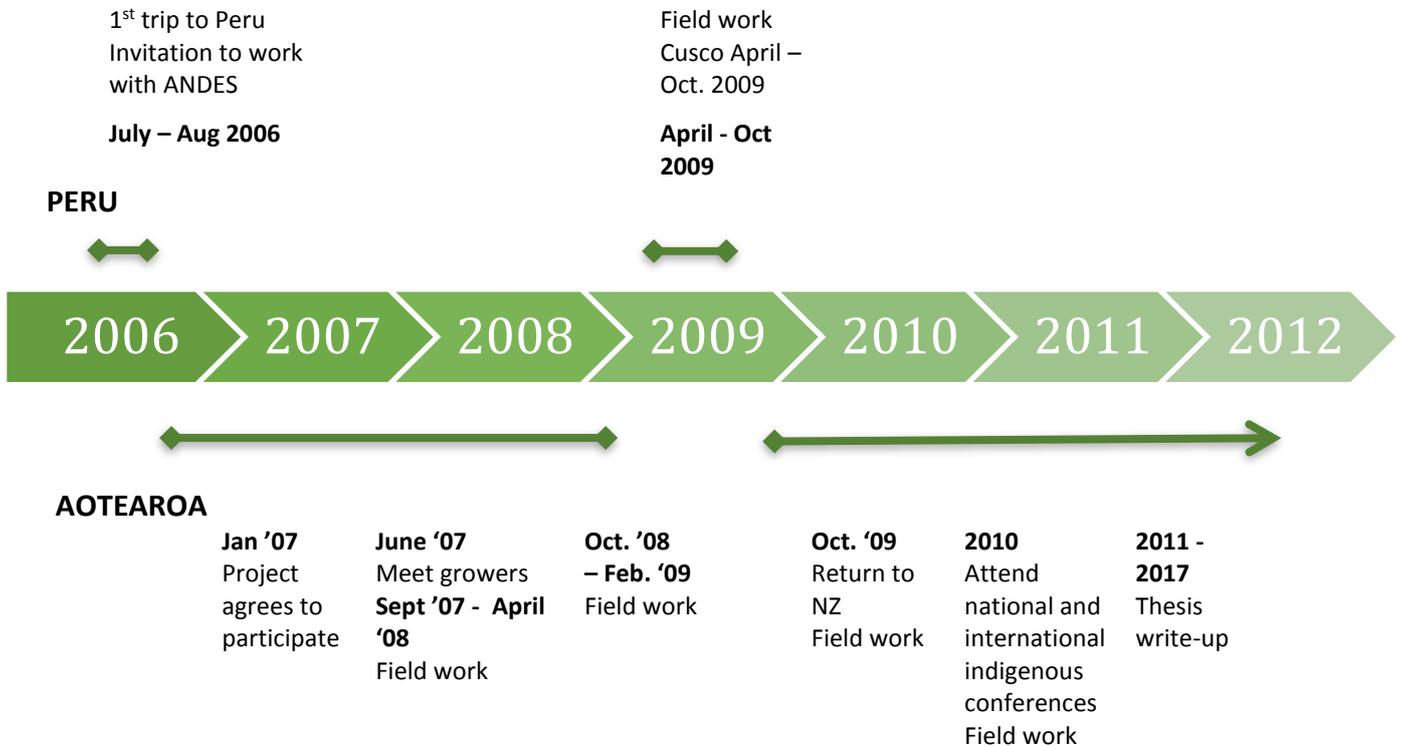
INTEGRATIVE MĀTAURANGA PROCESS			
Analytic Hierarchy		Māori Ways of Knowing	
Raw Data Focused in-field discussion, journal notes, remembered conversations. Secondary sources (published articles, etc.)	Generating themes 	<i>In situ</i> Work, Listen, Talk, Reflect, Feel 	Whanaungatanga Whakarongo Titiro Mahi kotahi Kōrero
Identify initial themes & concepts	Assign meaning 		
Label/tag data by concept/theme	Assign data to themes/concepts to portray meaning 	Ex situ Apply analytic tools Compare & integration with literature Present and discuss in indigenous academic fora Return ideas to growers, community	Maumahara Pukunoho Whakatairite Kōrero Whakahokia ki te hapū
Sort by theme	Refining & distilling concepts 		
Summarize or synthesize data	Assigning data to refined concepts to portray meaning 		
Identify elements & dimensions. Refine categories			
Establish typologies			
Detect patterns. Identify clusters/associations			
Develop explanations of how & why questions			
Application to other theories & discuss <i>in situ</i>/real world settings			

Table 6. Integrative Mātauranga Process (adapted from Analytic Hierarchy (Ritchie & Lewis, 2003)).

The Analytic Hierarchy provides a technique for conducting thematic analysis where important elements within qualitative data (themes) and the relationships between those elements (models) are to be identified. The method can be applied when data from varied methods is acquired (e.g. interviews, recorded observation and documents). The method also places an emphasis on the completion of the analytic process occurring with insight being returned to the field. This returning to participants aligns well with indigenous methodologies that emphasis reciprocal exchange, enduring relationships and participant benefit from research (Smith, 1999; Cajete, 2000). Ritchie and Lewis (2003) describe the technique as usable with preliminary or limited data. In these cases, the earliest stages of the technique, for example identifying initial themes and concepts, labelling/tagging data and sorting data by theme can occur. In the case of episodic engagement (the Aotearoa case) this analytic flexibility allowed the technique to be used before fieldwork was complete. Individual in-field episodes would not generate sufficient data for fully analysis, so provisional theme and concept identification could occur with this limited data. After regular episodes of infield work over a growing season, sufficient data was obtained to conduct a more comprehensive application of the technique. For the Peruvian fieldwork the technique was applied upon completion of fieldwork and returning to Aotearoa. The use of the adapted Analytic Hierarchy allowed themes to emerge from data gathered through the two ethnographic approaches of *doing field work* and *gathering data*. The identification of concepts, themes and explanatory models within each case allowed these abstracted elements to be juxtaposed and compared.

4.4. Fieldwork – Responsive Ethnography

Research Timeline



Aotearoa

Establishing Relationships, Working Together & Generating Insight

After making contact with the project managers in early 2007 I attended a project marae noho (marae stay) in June 2007. This was my first opportunity to meet with the science team and local growers. The marae noho was held at Tīkapa marae at the mouth of the Waiapū river, amongst the hapū Te Whānau-a-Hineauta and Te Whanau-a-Pōkai. The noho lasted three days and relationships were established with local growers and members of the science team. Discussion occurred regarding both my participation in the Crop Science for Māori and Science for Community Change projects. The growers and science team agreed to my involvement in their project, and to also participate in my research.

The first marae noho had occurred in early winter 2007. From the start of the following growing season (Sept. 2007) I would attend the projects two – three monthly marae noho and visit growers between these. These visits occurred approximately every six weeks and

would last from one to two weeks. These regular periods of field work represented episodic ethnographic engagement. It was during these stays that relationships matured between myself and the growers. I would often spend time with growers weeding paddocks or helping with other farm work (e.g. herding cattle, mending fences, etc.). It was also a chance to spend time at local marae, helping out with various hui when needed. This pattern of visits to the area continued through the 2008-09 and 2009-10 growing seasons, with a gap from February 2009 to October 2009 while field work in Peru was conducted.

The visits allowed discussion to occur outside of the formality of official project activities (e.g. marae noho, field trials, etc.). Occurring within the familiarity of normal daily activities these discussions had a spontaneity, inclusiveness and degree of 'straight talking' regarding the project which did not occur when the science team was present. Discussions would include talk relating to cropping in general, the nature of the project, and other aspects of whānau and hapū life. Discussions often occurred over lunch breaks or during smoko, allowing wānanga to occur in natural settings i.e. the generation of insight occurred *in situ* and involved the co-production (involving grower, growers' whānau and researcher) of knowledge.

During these visits a journal was kept where daily events and discussions were recorded. This recording occurred each evening. There was no direct note taking or interviews with the growers, the aim being to allow natural dialogue to occur. The nightly reflection while writing-up daily events and the periods when I had returned to the University of Auckland allowed further investigation of ideas that emerged in discussion with growers (e.g. the application of formal analytic techniques when sufficient data was available, which occurred at the end of growing seasons). The *in situ* conversations and *ex situ* reflection and analysis allowed for an iterative and complementary research method process to develop over the course of the research.

The periods out of the field also provided opportunity to explore the data and insight gained within academic contexts i.e. to apply analytic tools and to discuss within academic fora. In terms of research process, of particular importance through this period was participation in a number of indigenous and Māori conferences and wānanga. During the 12 months after returning from Peru (October 2009 to October 2010) research findings were presented or discussed at six Māori and Indigenous conferences/wānanga. This period of indigenous

academic interaction influenced the research in two ways. Firstly, these academic fora allowed interaction with fellow Māori and indigenous scholars working across diverse fields. Through this a sense of academic whanaungatanga was cultivated, providing a reminder to me that this work is part of a larger collective endeavour. This sense of place within a larger kaupapa provided immense personal motivation, reinforcing the importance of what we (indigenous scholars) were involved in.

Second, the opportunity to present and discuss work in indigenous inter-disciplinary contexts allowed research findings to be viewed from a great range of disciplinary perspectives. To discuss research topics with indigenous scholars working across fields as diverse as linguistics, neurology, physics, medical sciences, education, law, psychology and business studies, allowed diverse academic orientations and methodological approaches to be expressed, debated, 'teased out', juxtaposed and woven together (synthesized). Here the silos of academic fields, the segmentation of institutional disciplines, could be transcended, and the potential for alternate and holistic ways of knowing be explored.

In summary the Aotearoa research process involved repeated episodes of contact with the growers where *in situ* co-production of insight occurred. Ex situ analytic processes and discussion of research finding in various academic fora complemented the *in situ* processes. A high level of whanaungatanga was cultivated through the research fieldwork, and research insights were communicated back to the growers and community members informally during personal visits to the area.

Peru

In Peru – Late Start & a Happy Ending

When arriving in Peru later than initially planned I was to find the key insider/informant absent for all but the last two weeks of my 6 month stay in Cusco. I was fortunate in that amongst ANDES staff a strong working and personal relationship emerged with a long-term staff member who spoke English. This person was able to provide considerable support in setting up for my time in Cusco (i.e. finding accommodation, familiarizing me with the 'layout' of Cusco). During course of fieldwork this person was the main informant.

After securing accommodation and being introduced to ANDES staff, priority was given to commencing Spanish lessons. The first three months were dedicated to intensive Spanish

instruction, with ongoing less intensive Spanish lessons for the remaining three months in Cusco. Despite what I perceived as slow progress my ability to communicate with local people improved daily and by the end of the six months my Spanish fluency was at a level I would describe as basic conversational. In discussing language acquisition with other foreigners living in Cusco there was a general consensus that a minimum of 12 months was necessary to develop the level of fluency in the local Spanish dialect and general cultural understanding to navigate with relative ease most social situations within Cusco. Twelve months was the original intended time period for fieldwork in Cusco, with some scope for an extension of that period if required. The impact of a delayed arrival in Cusco had resulted in both missing an opportune time to arrive (i.e. during ANDES hosting of an ethnobotany conference) and reducing the time in field necessary to develop the cultural capacity (i.e. language skills) to conduct the research.

Despite the limited time and its impact on relationship building and language acquisition the research did progress. Nearing the end of 6 months the data collected was limited and I was considering extending the period of fieldwork by two months to try and gain more data. Fortunately, ANDES was to host a group of visiting Ethiopian researchers for two weeks. During the visit a 10-day workshop was held where ANDES showcased all of their projects, and described in great detail the organization's conceptual models and organizational practices. The workshop was based in the communities and included ANDES supporters and funders (e.g. the Potato Institute, the United Nations Food and Agriculture Organization (FAO)) attending, thereby allowing discussion with these Development partners (most spoke English). The director of ANDES who was to be my 'key informant' and who had not been present in Cusco for virtually all of the 6 months of fieldwork was present for the workshop, enabling a considerable conversation between him and myself to occur. This person was also one of the founders of ANDES so the ANDES life-cycle (from his perspective) was recounted in detail. During this workshop a 'cultural night' was held where all present presented aspects of their culture e.g. foods, music, dance, etc. After this night, and the obligatory haka, a number of ANDES staff asked how long I was staying for and they looked forward to working together. It was heart-warming on that night to feel their openness to working together, but it drove home the importance of arriving at the best time to conduct fieldwork. Much of what occurred during the workshop, the presentation of information, the establishing of

relationships, the sharing of cultures, would have occurred during the ethnobotany conference I had initially intended to commence fieldwork during.

A shortage of drivers during the 10-day workshop greatly affected access to ANDES staff and growers, as I was able to volunteer for this role. By taking on this role I went from being a visitor who made little practical contribution to activities, to being an essential part of the team. Every day of those workshops I had an important role that allowed me to spend many hours in a confined space with key members of ANDES, and to listen to them discuss ANDES work with the Ethiopian visitors. These conversations often expanded on presented information, revealing the roles of key individuals and the life-cycle of projects, including the failings and successes of projects. Over the 10-days of workshops and informal discussions while driving between workshop sites I was able to gain a greater insight into ANDES than had occurred over the previous six months, a fortunate and happy ending to my fieldwork.

4.5. Chapter Summary

In summary, it can be seen that the research involved a philosophical, ethical and practical which the Whakapapa of Knowledge Framework articulates. *Matemate-ā-one* was of central importance in this research, and it is argued *matemate-ā-one* holds potential to inform and ground Māori research in ways that build on approaches such as Kaupapa Māori Theory, while expressing a stronger ngākau, people and place centring of research. The chapter described the distinctiveness of the approach taken, and the unique challenges of indigenous-to-indigenous research where there is no lingua franca between the peoples involved. The following chapters present the outcomes of applying this research approach, the findings from the two cases studies.

Chapter 5. CASE STUDY: AOTEAROA PROJECT

The case study presented is based on field work from 2007 to 2010 and analysis of project documentation, including the project's annual reports to its funder, academic publications and project publications for growers.

5.1. Aotearoa Project

An introduction to the Aotearoa project, its institutional context and the communities associated with the project was provided in Chapter 1. The discussion which follows focuses on the research objectives and guiding questions i.e. describing the relationship between IK and organizational dynamics within project work. This discussion is structured to first consider the community context of the project and the characteristics of the project context that may encourage or discourage IK promotion. The relationship of IK promotion and organizational dynamics is then considered at the macro and organizational levels, with a focus on issues of framing, power and organizational structures. Finally, emerging themes are presented from the case.

Community Context & IK Vitality

In the introduction to the Aotearoa case in Chapter 1 and the overview of Māori agriculture in Chapter 3 demographic changes through the colonial period and particularly post-World War Two were discussed. The following points are worth noting from those previous discussions;

- Outward migration post-World War Two led to significant depopulation, and in 2006 only 6% of Ngāti Porou's 72,000 members lived within the iwi rohe.
- The economic life (formal and informal economy) has changed significantly in the post-World War Two period for demographic reasons and changes in the nature of primary production across the region.
- Significant and rapid demographic and economic changes can challenge the vitality and relevance IKs (Blaikie et al.). For example, depleted communities have struggled to maintain their language, communal agriculture had virtually disappeared with a small number of individual whānau maintaining mātauranga (IK) based horticulture.

- Formal engagement with IK within Development therefore requires engaging with IK in a state of loss. This raises questions regarding the contemporary relevance of IK to community members, community capacity to revive and embed IK, appropriate methodologies for agricultural Development within this context.
- Where IK is labour intensive (i.e. agricultural IK) project aims of IK engagement or revival must be considered against individual and household economic capacity and choice i.e. are there people willing and capable to engage in labour intensive IK, and is this a viable or preferred choice for community members?

In now discussing the Aotearoa project these social, cultural and economic dynamics provide a context against which the case study and research questions should be considered.

Project Summary

Project Genesis, Framing & Participants

The genesis of this project was a state-initiated, joint local and central government taskforce, formed in 2000 to investigate and promote economic development in the Tai-Rāwhiti region. The taskforce identified organic production on Māori land as holding potential for increased commercial activity within the region (Bruges & Smith, 2007). Crop and Food Research (CFR), a state-owned crown research institute (CRI) and the East Coast Organic Producers Trust (ECOPT), a predominantly Māori collective of organic famers/producers in the Tai-Rāwhiti region, both participated in the taskforce. From informal discussions at the time, the idea of a collaborative project involving ECOPT and CFR was born, with the two organizations developing a strategic plan for a collaborative project to develop land for organic production (Bruges & Smith, 2007). This planning included the creation of an implementation plan and a joint application to the Foundation of Research, Science and Technology (FRST) for funding for a 5-year project which involved eight distinct areas of work. Six of these ‘sub-projects’ had an agricultural science focus, while the other two integrating social science and agricultural science elements. One of these two integrative sub-projects, termed “Crop Science for Māori”, aimed to explore how agricultural scientists might better work with Māori communities. The other, termed “Science for Community Change”, aimed to use social scientists to analyse and assess dynamics between scientists and project participants in the other 7 ‘sub-projects’. Of these eight sub-projects, funding was only approved for the two

integrative projects. In 2003 hui (meetings) were conducted to finalize the aims of the approved projects, the agreed aims were;

1. To aid Māori in the transition from extensive agriculture to intensive organic agriculture. Māori organic agriculture is envisaged as forming a niche within the growing organic agricultural sector.
2. To provide scientific, education and extension services to ECOPT to develop and implement best practice organic vegetable farming.
3. To design research methods to promote beneficial change in rural Māori communities and production (in conjunction with the broader Māori community).
4. To engage with and encourage mātauranga Māori as it is related to Māori agriculture.

Along with CFR, additional science providers were enlisted; AgResearch (a CRI), the University of Auckland's School of Geography, Geology and Environmental Science (SGGES) and Page Bloomer Associates (a private consultancy). Geographically the science providers were all based at considerable distance from the project area, SGGES in Auckland was 7-8 hrs drive from the project area, while the other science providers, all based in the Hasting-Napier region, were 5 hrs from the project area. At the commencement of the project in 2003 ECOPT was an organization in its infancy, comprising a small group of enthusiastic members who were tasked with supporting the growth of a new approach to horticulture within the region (i.e. organics).

Project funding was approx. NZ \$700,000 per annum, totalling \$3.5 million over 5 years (2003-2008). Different growers reported project funding at different levels, suggesting a lack of clarity amongst them regarding the project funding. Despite the variable amounts reported, all growers stated they believed the project received a high level of funding with a figure of \$1.5 million commonly quoted.

As noted previously local participants were members of iwi of the Tai-Rāwhiti region. During the initial project period (2003-5) there were approx. 5-10 active core members of ECOPT involved with another 5-10 peripheral participants. By the final stages of the project (2006-7), when field work for this thesis commenced, this number had reduced to three active participants (and small numbers of whānau members) and three 'peripheral' participants. Larger numbers did attend community orientated events, but these event attendees were

not active project participants/growers. The active growers were each from distinct hapū/communities, and therefore daily horticultural practice occurred in social and geographic isolation (i.e. approx. 20-50kms between active growers).

Project Methodology – Delivery & Reporting

The project methodology was developed which a focus on two areas. Firstly, on the transfer of agricultural and social science knowledge and technologies, and second to engage with and encourage mātauranga Māori. This first area of focus addressed aim 2 directly (to provide scientific, education and extension services to ECOPT), and aims 1 and 3 less directly. The second area of focus addressed aim 4.

Over the course of the project two things were clear, firstly that the bulk of project resources (time, capital, expertise) were focused on knowledge extension provided by contracted ‘experts’ i.e. the science team. Secondly, that aim 4 was addressed in a way that involved framing mātauranga Māori as something that should be ‘by and for Māori’ exclusively, and that scientists should only engage with as outsider observers. This framing meant that the science team excluded themselves from direct engagement with mātauranga Māori. This focus on knowledge extension and the siloing of mātauranga Māori as something others do (i.e. not the scientists) had significant implications on the project practice and its ability to address the stated aims thoroughly and with sensitivity.

In presenting the Aotearoa project two fundamental questions should be kept in mind. Firstly, did the project’s methods addresses all four aims comprehensively? For example, was the project aim of aiding Māori in the transition from extensive agriculture to intensive organic agriculture considered thoroughly, were factors that could assist or hinder this transition identified, and were project methods developed to address these factors in a systematic and comprehensive way? The second question involves considering how the project’s aims and methods reflect the objectives of participatory Development and the relevant literature.

Returning to the project’s strong focus on knowledge extension, processes involving agricultural and social science were formal, conventional and well understood by the science team. These processes involved ‘extension models’ focused on aspects of agricultural and social sciences such as weather and climate monitoring and assessment, soil analysis, crop variety selection, pest and disease management, irrigation, storage and transportation,

market analysis, organic certification, research collaboration, technology adoption and adaptation, and brand development and marketing.

In contrast, the processes involving mātauranga Māori were much less clearly defined, with Mātauranga Māori poorly operationalized and poorly understood by the science team. An approach was taken to IK promotion that did not involve the project managers or science team having or developing a familiarity with IK, rather the project strategy was to create activities or spaces within larger formal events for growers and knowledgeable community members to share mātauranga, and to demonstrate traditional and contemporary agricultural IK e.g. visits to historic and current Māori cultivation sites where growers and community members would lead discussions and demonstrations. Māori growers from around the country were supported to visit the project allowing knowledge sharing, demonstration and network building on a broader scale e.g. members of Tāhuri Whenua – National Māori Vegetable Growers Collective would regularly visit project events and one junior project scientist worked closely with Tāhuri Whenua on school based projects such as the ‘Spud in a Bucket’ project.

These events and network building exercises did act as a platform for sharing knowledge, building relationships and providing mutual support. However, the fourth aim of engaging with mātauranga Māori was compartmentalized as something that Māori did, while the science team’s engagement with mātauranga Māori occurred as a function of personal interest rather than as a project requirement and outcome. There was a clear difference in the nature of engagement in each other’s knowledge traditions between the science team and the growers. While the growers were expected to engage with and learn agricultural science, the scientists were neither expected nor required to engage actively with mātauranga Māori. In short, there was a lack of reciprocity and balance between the two groups, scientists and growers, with the scientists acting as observers of IK, not engaging in any meaningful way with either agricultural IK nor Māori IK more broadly.

Reinforcing this unequal valuing of knowledges was the level of reward provided to mātauranga experts. Whereas the science team was contracted as science experts and rewarded accordingly while engaged in project events (i.e. contracted by their organizations at consultant rates to perform services for the project), mātauranga māori expertise was not rewarded formally in a similar way. This difference in rewarding expertise within the two

knowledge systems was commented on by a number of growers and event attendees as reflecting a broader inequality between Māori and Pākehā.

Annual reporting of project progress was provided by the science team only, with no direct reporting from growers. This meant the contracted service providers were self-reporting annually on their own project delivery for five years.

Project IK Capacity: Whose Bi-lingual Here?

The project involved interaction between rural Māori with a high level of bi-cultural experience and capability, and mono-cultural Pākehā scientists. The promotion of IK (mātauranga Māori) rests upon conceptualizations of difference i.e. mātauranga Māori – Western science. Within the organizational (e.g. Knoben & Oerlemans, 2006) and participatory Development literatures (e.g. Bentley, 1994) concepts such as ‘proximity’ and ‘distance’ have been applied to characterizing geographic, organizational, cultural, institutional, cognitive, technological, modes of economic practice and social difference between individuals, groups and organizations. During fieldwork growers and scientists commonly described difference using concepts of proximity and distance. A selection of these conceptualizations are presented below.

Geographic Proximity

As noted previously there was a significant physical distance between the agricultural and social scientists, based in Napier/Hastings and Auckland, and the participating communities.. Members of the science team would attend activities approx. every 2-4 weeks, with weekend marae stays occurring every three months. The activities that occurred every 2-4 weeks were usually attended by 2-3 agricultural scientists; the marae stays would involve a larger group of agricultural and social scientists and invited guests. Social scientists would attend the 3 monthly marae visits, typically flying to Gisborne (1hr flight from Auckland) then driving to project events (1-1.5hrs drive from Gisborne) for the weekend and then leaving when the formal activity was completed. The social science team did not attend all major events. Two members of the social science team spent some time in the region in September 2005 conducting interviews, however this involved little participatory involvement i.e. helping with cropping activities. Geographic proximity is a salient form of proximity, and was an issue acknowledge by growers and scientists. The scientists generally described a desire to spend more time with the grower’s communities to strengthen relationships, to gain a better

understanding of local culture, values and practices, and for personal reason tied to notions of citizenship of New Zealand and feeling improved Pākehā – Māori relationships were valuable personally and at a societal level.

For the growers the limited number of participants and their distance, no participants were from the same hapū/community, meant they worked in relative isolation. Some of the peripheral participants, less focused on entering commercial organic markets and more focused on practicing agriculture based on mātauranga Māori and to server their communities, were engaged in more communal type horticulture e.g. setting up gardens at marae and schools. However, even these growers with a stronger community engagement still tended to work in relative isolation with support from immediate whānau.

Lack of geographic proximity was evident in terms of grower – scientist interactions and interactions between growers, with distinct effects for each. Despite a number of scientists acknowledging the effects of their limited contact with growers, these scientists did not take formal steps to improve their cultural capacity to engage more meaningfully with growers e.g. learning te reo or developing familiarity with aspects of Māori culture. For the scientists, interaction with the growers remained largely confined to professional roles, with one exception, the project manager who spent a notable amount of ‘extra’ time amongst the communities.

For the growers, the lack of close proximity between the participants, both core and peripheral, meant their agricultural efforts occurred largely in isolation. Features common to vital/healthy indigenous agricultural systems, including Māori agriculture until the 1960s, such as communal work, sharing of equipment, regular distribution of foods, transmission of IK, use of indigenous languages within communal contexts, expressions of local social norms, etc. did not occur between growers due to the lack of close regular contact. These elements occurred periodically during project events, meaning they were not lost completely, but they did not flourish within the scope of the project.

Cultural & Social Proximity

The participants indicated that positive personal relationships had been established with the science team. Likewise, the science team reported positive personal relationships with the participants. In terms of Māori and Pākehā cultural capacity, there was a significant imbalance

with the scientists and their institutions being mono-cultural. At the individual level the science team was predominantly middle aged male Pākehā with little cultural capacity within Māori contexts e.g. familiarity with marae, tikanga Māori or fluency in te reo Māori. These scientists had little or no understanding of mātauranga Māori, and over the project's five years there was no formal project activities to change this. The science team had limited understanding of Māori norms of behaviour, language and understanding, meaning they required guidance in formal settings, would transgress local norms, or never really fit in. This meant while undertaking project activities the science team lacked the cultural capacity to tailor knowledge processes to local context. To use Unruh's (1979) typology and characteristics of social participation, the science team remained as *tourists* within the project communities. In contrast the growers were all bi-lingual, comfortable in Māori and Pākehā settings, and therefore able to respond to context and engage accordingly.

The growers would often discuss the relationships between growers and scientists in terms of whanaungatanga, often describing limited whanaungatanga as being a key factor in a range of negative project outcomes and experiences e.g. limited relationship building and development of mutual understanding (whakawhanaungatanga) meant the science team misunderstood the growers' normal life, their needs and how to relate well. The scientist's poor knowledge of tikanga and te Reo Māori reduced their ability to act appropriately in formal and informal settings, and to explore mātauranga engagement in nuanced ways. This situation, and the fact it remained almost constant over the five years of the project was a clear sign to the growers of the imbalances between the two groups. The below quote demonstrates how cultural familiarity and competency can effect social aspects of the project;

"Of course they (scientists) don't know about Māori, they don't spend time with Māori, they're Pākehā and live in town, so they come here and do silly things (breaching tikanga) like taking kai (food) into the wharenuī or speaking English on the Atea, then they wonder why people don't come to their hui!"

Community member, New Zealand Project, March 2008

Amongst the science team there was no formal development of social and cultural capital. Given the project funding (\$700,00/yr) and duration (5yrs) there was sufficient time and

resources to address this lack of capacity through training (te reo or mātauranga Māori) if it was recognized as being required and there was a motivation to do so.

Within the science team involvement with growers varied considerably. The project leader spent more time with growers and made a greater effort to develop and foster relationships than most members of the science team. In general, the science team did not visit the Project communities outside of formal activities, and did not develop strong relationships with the growers and their communities. The growers had particularly positive feelings toward the project leader, describing him as a good person and someone whose motivations were valued, but it was recognized he lacked a strong knowledge of Māori community dynamics;

“X is a good man, he has a wairua for the people, but he doesn’t know our people (Māori). His heart is in the right place, but I feel sorry for him, he doesn’t know what our (Māori) people are like.”

Local grower, March 2009.

As manuhiri (visitors) to the communities the science team were warmly welcomed and hosted on various marae. There is a cultural obligation to host manuhiri well (manaaki manuhiri) and this provided a basis for developing familial relationships (whanaungatanga). The intermittent nature of contact between growers and the science team, the physical distance separating the communities and the research institutes involved, and the lack of Māori cultural fluency (knowledge, skills, language) within the science team acted to limit relationships developing from the positive preliminary stages of whakawhanaungatanga to a more familial and intimate level. Interestingly, the most significant example of a member of the science team displaying cultural competency on the marae came not from the science team itself, but from a child of one of the science team who performed a long Māori waiata perfectly during a formal event nearing the end of the project. This was met with surprise and great admiration by community members. This highlighted both the value of developing cultural capacity, in this case in the form of being able to perform a traditional song, and the lack of cultural capacity of the science team after 5 years of involvement in the project.

5.2. Organizational Level: Institutional Context & Organizational Practice

Organizational Culture: Context, Practice, Meaning & Power

Values, Meaning & Framing

Framing Issues & Science as Saviour

A central aim of participatory Development is to understand issues from local perspectives and to explore community generated solutions. Within this approach external framing and external creation of solutions is rejected as for ethical and practical reasons. This project's framing and development of solutions was predominantly externally generated, with local framing and solution generation confined to spaces defined by the science team. Despite claims of being participatory, the project either ignored or only partially applied core aspects of participatory Development.

In addressing an economic aim, of developing commercially viable organic agricultural producers, the project presented knowledge adoption (i.e. science extension) as an essential aspect of a transition to organic agriculture. The project therefore focused on science extension with project resources largely dedicated to contracting science experts to 'transfer' knowledge to growers. Growers were asked about the project's 'science is the answer' approach and the project being dominated by knowledge extension practices. The growers responded that local perspectives were limited in project framing, and methods of achieving project goals were excessively restrictive i.e. limited to 'knowledge extension' while ignoring other aspects of agricultural production.

Commercial agriculture is a material physical practice, requiring knowledge, capable people, land, favourable climate and soils, material equipment (e.g. irrigation, tractors, harvester) and access to markets. Growers described a need for project resources to be utilized more broadly than being highly focused on one of these areas, knowledge, based on a thorough understanding of what facilitated or challenged agricultural transition. For example, growers typically had available land, but there was a need to support understanding the range of formal mechanisms for using land (e.g. leasing or other agreements). Growers recognized the importance of scientific knowledge, but as growers engaged in the arduous task of small scale organic production, the importance of functioning and reliable equipment was highlighted to the growers, and voiced to project management and the science team. The participants

lacked capital to obtain reliable equipment and utilized farming equipment that was old and in constant need of repair e.g. 40+ yr. old tractors, equipment in constant need of repair or which did not function correctly. To return to the project aims, a comprehensive assessment and response to factors identified in relation to aim 1 (to aid Māori in the transition from extensive agriculture to intensive organic agriculture), would have identified and proposed solutions to this issue. Although initially there was optimism amongst community members regarding the project, it quickly became apparent that the project addressed their needs only partially (i.e. knowledge extension) with an essential element, functioning equipment, excluded from the project.

“Well, \$1.5 million was spent, and what difference has it made for the coast (Tai-Rāwhiti region)? That money went somewhere, so someone has done well out of it, but not us!”

Anonymous project participant, March 2010.

In contrast the science team were perceived as part of well capitalized organizations (government agencies) and as the recipients of project funding. Growers commented that the project funding and the organizations involved were able to provide the material requirements for scientists to undertake their roles (e.g. vehicles, farming equipment when required, weather stations, travel costs, paid for participation in all project activities), while the growers were not supported in key areas for project aims to be achieved. On several occasions growers and non-participating locals commented on the fact that growers worked long hours for uncertain returns, while the science team was handsomely rewarded for doing little more than “having a holiday on the coast” when attending wānanga or other formal activities.

Bruges and Smith (2007) report that during the planning stage community members stressed the cultural significance of kūmara (and cropping in general), the need to develop positive social and economic systems to keep local youth within their communities, and to attract hapū members who were living outside their hapū areas back to those lands. These themes were repeated by project participants during field work, reflecting local framing of project aspirations. As well as these cultural and social considerations, Bruges and Smith (2008) report that organic farming was generally viewed by participants as having health and environmental benefits. This was confirmed during field work, with some community

members and project participants, not wishing to adhere to strict organic certification requirements, but rather being supportive of the general kaupapa but framing their involvement in terms of promotion of traditional methods that allowed integration of non-organic farming practise where they felt those practices aligned with Māori understandings of whenua (land) and tangata (human) wellbeing.

In describing these aspirations, there is clear local framing of *what* the project's aims were, but grower feedback and selective engagement indicated a lack of local framing of *how* these aims could be achieved. The need for functioning equipment was clear to the growers, but even with funding of \$700,000/yr., was unable to be addressed effectively. There was an early attempt at leasing equipment, but this proved problematic and was abandoned, with no effective alternative found for the remainder of the project.

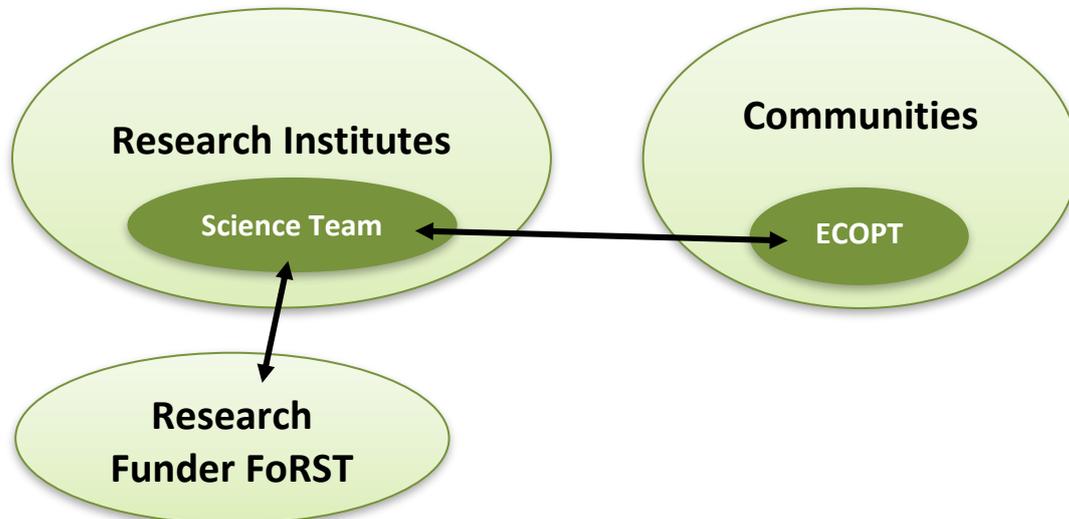
There was also some community members whose engagement with the project might be described as selective. These growers were motivated to develop intensive small-scale agriculture on their lands, but were not committed to organic certification and market supply. These growers attended project workshops, shared mātauranga Māori and applied scientific knowledge and technologies from the project. These individuals had significant local ecological knowledge, would practice kūmara according to the maramataka, would use traditional sprouting and storage techniques, while experimenting with 'transferred' knowledge and technologies. The organic kaupapa and the practice of IK based agriculture, although having many synergies, were not considered by these project participants as being identical. Organic agriculture was considered as a useful and beneficial method, while some of its restrictive elements (e.g. limitations regarding the use of synthetic pesticides and herbicides) were rejected as being excessively limiting on participants agricultural practice. For these growers contemporary mātauranga Māori based agriculture is agriculture conducted from within a Māori worldview and according to Māori values, and therefore the use of pesticides or herbicides is not necessarily excluded. Within the project it was these core and peripheral local growers who demonstrated interaction between IK and Eurocentric science as they applied aspects of scientific knowledge, mātauranga Māori and other knowledges (e.g. permaculture) to their individual growing efforts. The highly resourced scientific team in contrast lacked the capacity across both Eurocentric science and IK to

engage in practices between the two knowledge systems i.e. there was an imbalance between the growers and science team in addressing project aim 4.

Organizational Power

Formal relationships between Development actor organizations, communities and groups reflect power dynamics and differentials (Noor et al., 2010). Between the three groups two binary relationships dominated; between the science team and project funder, and between the science team and the growers. The project was notable in that there was no formal relationship or methodology which allowed the funder and community to communicate or interact e.g. participatory monitoring and evaluation. As the project did not involve independent assessment methods, nor was there a formal mechanism for direct assessment from growers to the funder (e.g. participatory assessment and evaluation involving the three parties), the funder was reliant on the science team's annual self-assessment, a situation which allowed the science team to independently shape funder perceptions of project practice and outcomes.

Relationship Map: Overview



The project had a clear hierarchical power structure in terms of influencing the dominant ideology, practices and control of resources within the project. The science team were contracted to manage the project and provide science services to the participating growers. In terms of monitoring and evaluating project practice, the project lacked a methodology that would allow monitoring and evaluation to be participatory i.e. involving all the stakeholder

groups. Instead of an inclusive participatory monitoring and evaluation model, the project utilized a model where the contracted service providers and project manager monitored and evaluated the project themselves i.e. a self-reporting methodology. This lack of a participatory evaluation and monitoring methodology meant that the growers were marginalized in terms of this process, and therefore their perceptions of project practice, and their ability to influence project management were limited, while conversely, the science team and project managers exercised an exclusive ability to influence project management and funder perceptions.

The lack of a participatory organizational structure and participatory processes did not mean ECOPT and the growers had no influence or power within the project, they did, but it was neither formalized nor consistent. The project managers had considerable good will for the communities, the growers and ECOPT, and involved them in consultation regarding project activities, but this was at the discretion of the project managers.

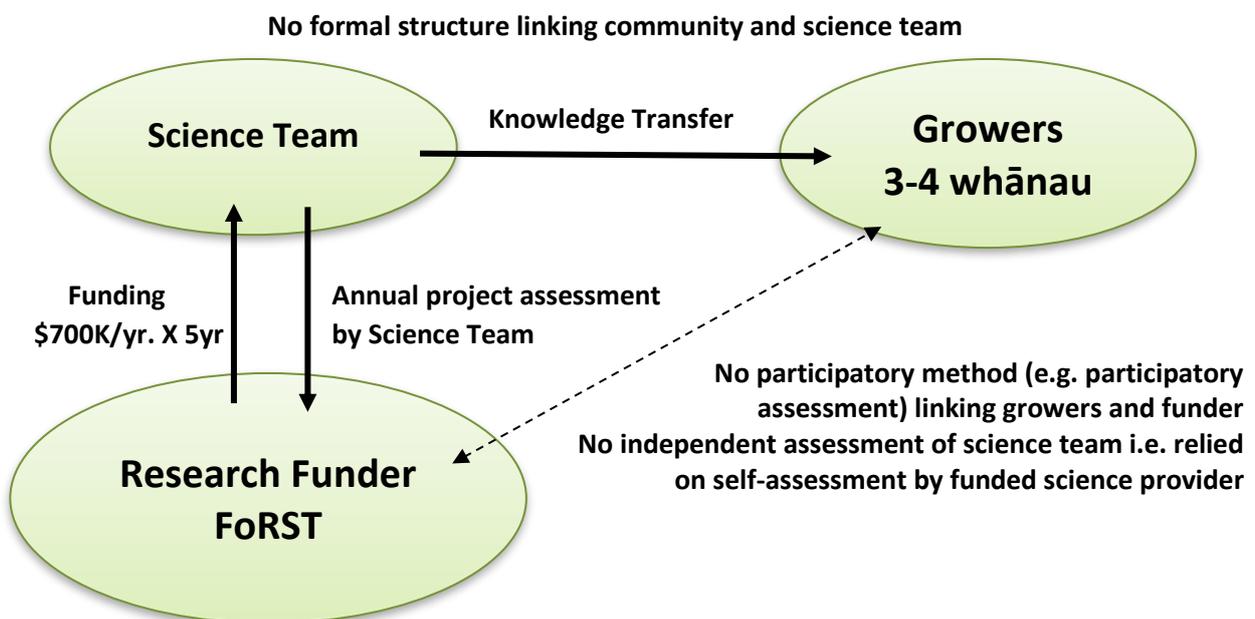
In discussing with growers who decides how the project is run, how the project might best support the growers, responses were typically framed in terms of State-Māori or Pākehā-Māori relations where the state and Pākehā worldviews and control of resources dominated Māori. Consideration of the science team highlights the cultural difference between growers and the science team; the science team included approx. 10 agronomists and social scientists. The majority of the science team were Pākehā males, with one of the science team being female, and two junior members Māori. The senior scientists and project manager were all Pākehā.

Upon commencing research with the project (July 2007) ECOPT membership was low and their main function was providing administrative support to project. The project covered a large geographic area, approx. 100kms in length and encompassing 10 communities and over 20 marae. Across this area active project engagement was limited to four whānau/households, each from different communities i.e. no single community had more than one active whānau/household. By 2008 participation had reduced to three whānau/households.

Overall, participation within the project involved a small core group of motivated growers (3-4 growers and their whānau), a similar number of peripheral growers whose involvement was

more selective, with wider community involvement dependent on the event being staged. Over the course of the project grower participation decreased dramatically. It was reported that 50+ people attended the initial planning hui in 2003, with a large proportion expressing interest in participating in the project. By 2007 the core group of regular participants in project activities numbered three whānau, each living in different hapū and approx. 20-30kms apart.

Project Funder – Science Provider Relationship



The institutional arrangement of the project funder – science provider relationship reflected a dynamic where one branch of the state funded another branch of the state to provide ‘expert services’. Evaluation of the project was conducted by the service provider, meaning they self-evaluated their work and based on this self-assessment decisions regarding the continued provision of \$700,000 per annum in project funding were made.

This situation creates both opportunity and motivation for biased self-reporting as neither independent nor participatory project assessment occurred. Discussion with project staff and a review of annual reports for four of the five years revealed project assessment focused on the science team performing activities (e.g. holding field trials, community visits/marae stays, providing information sheets, supporting community activities) and not on indicators of economic development or successful adoption of agricultural science by growers i.e. they are

process rather than *outcome* focused. The project evaluation reports are notable in that there is little critical reflection of the methodology used, the use of resources, the lack of cultural capacity amongst the science team or efforts to address this, and the lack of a participatory model of evaluation and monitoring.

5.3. Indigenous Knowledge in Practice

Agricultural & Environmental IK

The growers displayed a high level of local ecological knowledge. This knowledge involved a wide range of natural phenomena, their annual patterns and behaviours, and correlations between those patterns e.g. the correlation between planting and harvesting times, the flowering and fruiting of various trees, astronomical cycles (e.g. position of stars) and annual weather patterns. These correlations were understood within the cultural context of the growers as part of a relational dynamic between multiple phenomena. Growers would therefore maintain knowledge of their natural environment through formal measurement where available (e.g. from rain gauges) and through direct perception and understanding through cultural frameworks. For example, the relationship between the rising of a celestial constellation or star and a specific activity in the growing season was not understood as a correlation between unrelated phenomena, rather it was understood as a direct communication and relationship between the constellation or star.

An example of this 'landscape embedded' *way of knowing* was described by one grower. Not only was the description given while walking through parts of his farm, the grower's two sons were present, listening attentively to their father as the discussion progressed. Below is an abridged version of the discussion.

"Over the dry summer months the grass changes colour (from green to yellow) as the soil dries out. Some places it dries out quicker, which usually means sandier soils, other places it is slower. When we get floods the silt changes the soil around the farm, an area might've had good soil, then it floods and sandy silt is spread there, so different grass grows there, and if the silt is richer, it can improve the soil.

*As the dry summer months pass you also see the birds moving across the farm, moving to different trees to feed. Can you see a Miro (*Prumnopitys ferruginea*) boys? Yes dad, over their (boys point to a tree at the edge of the paddock). Ae, he tika kōrua (you're both right). See, that Miro, Kererū go there to feed late in*

summer. Tūi move around too following the nectar, Kōwhai in Spring, then on to other trees. Now the Kererū that feed on the Miro berries, they've got a special taste. They're the kai for special guests at the marae, for our kaumātua and kuia. When the rains come in early autumn the rivers rise again and the tuna (eel) will soon come down from the hills. That's when the kūmara is ready to harvest. You can see Scorpio, the constellation, you know it? The bright star in it, that's Rehua, but the constellation sits low on the horizon to the East, it rises just after the sun sets. As Rehua rose higher as time passes the rains come more and more till we get flooding. This flooding happens after the Kahawai have finished coming into the rivers. Now the old people said floods cleanse the river banks, cleanse them of the blood of the Kahawai. So the floods cleanse the banks and they spread silt, new soil onto the fields. If you've got a winter crop you might lose it, but the kūmara is ok, it's been harvested. Then Mataariki rises before dawn in June, that's the Māori New Year. That's the time we get the whānau together, or have hapū hui, to talk about the years that's been, to remember our people who have passed, and plan for the year coming."

This discussion demonstrated a holistic body of local knowledge which integrated ecological and agricultural understandings based on an experience of concurrent rhythms of crops, stars, fish, birds, trees, and rivers within a specific place. The strength of this particular *way-of-knowing* was not based on a techno-scientific epistemology, but instead a deep attunement to a broad range of natural elements within the local environment. This *way-of-knowing*, empirical, and culturally and geographically centred, was shared by each of the project's active growers.

To further describe the place-centred empiricism of the growers' *ways-of-knowing* the nature of measurement, understandings of cause and effect, the growers' approaches to 'theory', their sense of connection to place, and their emphasis on *knowing-how* are discussed below.

Measurement of Phenomena – includes the conceptualizing of phenomena, assessing (measuring) variability, and the means of assessing variability (technologies, direct perception).

- **Conceptualizing phenomena** – natural environmental elements such as rainfall, temperature, wind, river flow, sunlight hours, soil composition, etc. were understood within local cultural contexts. For example, local classifications of water include wai ora (living water), wai tapu (sacred water), wai māori (natural water), wai kino (bad/dangerous water), wai mate (lifeless water). These classifications are based on

cultural understandings which include mauri, ngā Atua, and annual cycles of reciprocity between living beings.

- **Assessing change** – this involves both direct comparison between specific examples/events, and the comparison of natural cycles and their variations. For example, a period of rain may be directly compared to another episode in form of dyadic comparison. Multiple dyadic comparisons can form complex patterns which are conceptualized within annual cycles with distinct rhythms. The cyclic regularity of these rhythms provided evidence for decisions making regarding cropping (e.g. when to planting or harvest). Annual cycles are themselves punctuated by extreme events which become temporal markers amongst the community. In the Tai-Rāwhiti region, Cyclone Bola in 1988 is one such event. It was common for growers to talk of community or personal events as being before or after Cyclone Bola. Cyclone Bola's economic, psychological and social impact allowed it to become a significant temporal marker within a broad web of connected and cyclic phenomena.
- **Direct perception and technologies** – recording technologies were rarely used. Technologies use interval or ratio level data as standards for measurement. The growers understood measurement using these types of data and could estimate values accordingly, but direct experience was favoured over measurement technologies.

Understanding Causality – A key feature of the positivist scientific method is the categorization of phenomena as independent and dependent variables, and the manipulation of independent variables to assess their effect on dependent variables. The core growers actively manipulated independent variables in order to make a positive impact on kūmara quality (dependent variable) or noted naturally occurring variation in phenomena which affected kūmara quality. Examples of variations in cropping techniques implemented by growers included field preparation techniques, row orientation, kūmara shoot growing techniques and timing, planting methods, weeding methods, weed and pest control, harvest times, curing techniques and storage methods. Sometimes multiple techniques would be used in a single crop e.g. sections of a field would be planted at different times or different planting techniques used. In other cases, different techniques would be used over successive

years. Examples of naturally occurring variations that growers noted and assessed impact on kūmara included soil type, soil moisture, temperature, rainfall, humidity, and wind exposure. By assessing the impact of these naturally occurring variations in kūmara the growers were participating in an approach to knowledge that could be termed natural experiments as causal relationships were formulated and observed between naturally occurring variations in independent variables that effected the dependent variable (kūmara quality). These experiments, whether naturally occurring or through grower manipulation of elements of crop growing were often conducted without 'hard' measurement, with growers principally using assessment based on direct perception of variation to 'quantify' cropping techniques, natural phenomena and crop quality. In some cases, this informal measurement method would be complemented with formal measurement techniques (e.g. use of rain gauges complemented grower memory of rainfall), but these techniques were generally used inconsistently and acting to complete the principal ways of knowing through direct experience, memory and discussion with other growers and community members e.g. discussion of rain was ubiquitous upon community members and growers meeting.

Theoretical Modelling – In examining the relationship between controlled or naturally varying independent variables and dependent variables theoretical models were used and tested. The growers' theoretical models were based on local understandings of phenomena, and typically involved a mix of mātauranga Māori and empirical science. For example, the Maramataka (Māori lunar calendar) describes how kūmara size and storage qualities vary depending on which night within the Maramataka kūmara are planted on (Tāwhai, 2010). Grower's would plant according to their personal maramataka with expectations of crop characteristics based on planting times. When crops varied from expectations (e.g. smaller than expected) growers would consider variables which in natural phenomena such as rain, temperature and soil moisture, and agricultural practices such as soil preparation techniques and weeding rates, and then develop explanatory hypotheses to explain variation from expected outcomes.

Environment Connection – the growers universally viewed the land they lived and worked on as something they were intimately connected to. Land blocks, although bounded by surveyed boundaries and fences, existed within larger landscapes including maunga tapu (sacred mountains), ngāhere (forests), puna (springs), awa (rivers), wahi tapu (sacred sites), pā sites

(earlier settlement sites), former garden sites worked by tīpuna, and urupā (burial grounds). Cultivation activities were therefore understood as elements within these larger ancestral landscapes.

Knowing How – Amongst the growers there was a strong emphasis on *knowing how* to do something i.e. demonstrable and practical knowledge. Propositional/declarative knowledge (knowledge expressed in statements) was valued, but it was understood that explicit knowledge and *knowing how* (tacit knowledge) should occur in concert. ‘Know-how’ was valued because it represented an ability to do something tangible and valued. It also demonstrated that a person had done things in the past that were valued, and as such positioned the person within a community to whom they had made positive contributions. These past positive contributions demonstrated the mana of a person with respect to their own people. An example of the difference accorded ‘know-how’ and declarative knowledge was clearly witnessed during one of the marae stays. Typically, a group of scientists would arrive and present information to the local growers i.e. declarative knowledge was stated. There was no evidence that the scientists were skilled in cropping, all that was demonstrated was that the scientists had at hand a collection of facts relating to a particularly aspect of cropping. During one marae-stay a Māori grower from another part of the country came and spoke. He was Māori and had developed a successful business on whānau land with very little capital. He was someone who had a demonstrated ability and had ‘know-how’ enacted within the contexts of his own whānau and hapū. He was also an entertaining speaker who communicated in a way that resonated with the growers. This grower knew exactly what the project participants were going through and presented a narrative of the last five years of developing a successful horticultural business. In terms of the appropriateness of knowledge presented, the success in the audience learning, the entertaining nature of the talk, the motivation it generated in the audience, in every possible way this presentation exceeded all other presentations witnessed by me within the project.

As a guest speaker he was paid a small amount to attend, much less than the scientists acting as agricultural consultants, yet his speech and presence at that marae-stay had a greater impact than any of the science team over the time I was involved with the project.

Together, the connection to place, the theoretical models which describe casual relationships, the nature of phenomena in the local environment, the methods of assessing change, the

importance of 'know-how', and the specific locations in which knowledge processes occur combine to give the ways of knowing of the growers a unique epistemological orientation.

Interacting Knowledges: Mātauranga Māori, Eurocentric Sciences & Agricultural Paradigms

There was little direct transfer or adoption of agricultural science knowledge by the growers. This seemed to be due to the science knowledge tending to be either too technical in nature or requiring practices that growers were not able to maintain e.g. data collection on rigid timeframes. The project's knowledge transfer model appeared to largely fail, no evidence of consistent adoption and application of knowledge and techniques presented during Project activities. The growers displayed a strong interest in mātauranga Māori and Western cropping knowledge which was not highly technical and compatible with local values e.g. organics, permaculture. This type of context appropriate knowledge did occur through formal project channels on occasion, but the growers commented it was rare. An interesting point was that Project events that brought Māori growers from outside of the region to the Project communities were extremely well received. These growers being Māori had been through the challenges facing the Projects' growers (e.g. working on whānau multiple owner land, starting up cropping with little capital and at a distance from urban markets). The shared experience of these visiting growers and the Project growers highlighted how local responsiveness to knowledge can be heightened when those presenting have similar experiences and cultural background i.e. the social and inter-personal aspect of knowledge processes were significant.

Observations of growers, and their responses to questioning, indicated that their responsiveness to expert knowledge was influenced by the perceived commitment of the presenter to specific types of agriculture. For example, an established organic producer could present the same information as a CRI scientist, but the information from the organic producer was received more readily than that of the scientist. One grower commented that although the information from the science team was valuable, the fact the science team did not display a specific and long-term commitment to organic agriculture and to mātauranga Māori more generally, meant the information was not as readily received by growers as that presented by those who had 'walked the walk'. Other growers confirmed this idea of 'presenter authenticity' effecting grower responsiveness to knowledge. Social dynamics and

perceptions affected the transfer and exchange of knowledge. From a Māori perspective, the mana of a person and the knowledge they share are intimately linked. A person who has demonstrated a long-term commitment to a kaupapa therefore has more mana than someone who moves across kaupapa e.g. a scientist who one day is working in an organic framework, and the next day working in a conventional farming framework.

5.4. Organizing & IK

As discussed previously, the science team's attitude to their own knowledge tradition and that of Māori showed a privileging of agricultural science, and a compartmentalizing of mātauranga Māori. Science team members commented that mātauranga Māori was for Māori, and therefore it was not their place to engage with it. Within the project context space was created for Māori to discuss and demonstrate elements of mātauranga Māori between themselves, and with members of the science team present. Where traditional practices could be understood in physical terms, for example kūmara shoots being planted so roots developed to the east, crops rows aligned north to south to allow direct sunshine on both faces of the heaped row (i.e. the east facing row in the morning, the west facing row in the afternoon), the science team readily accepted these techniques. Where elements of Māori spirituality were present in agricultural understandings or practices, the science team positioned themselves as observers. In discussing the meeting of empirical science and mātauranga Māori one science team member offered the following perspective;

“There’s no way you’d do a trial on a karakia vs. non-karakia fields, so we (scientists) didn’t. That sort of things falls outside what we do. The growers can use karakia, but we can’t test that. Maybe it works, I don’t know.”

Agricultural scientists, July 2008.

During this discussion the scientist acknowledged that karakia and other Māori practices may help cropping, but stated that it is not possible to conduct empirical experimentation on these practices. Rather than discrediting completely Māori epistemological assumptions and practices (as some members of the science team did), this scientist positioned those assumptions and practices within a specific cultural context i.e. within a Māori context. Although this scientist had not been able to work across epistemological (and cultural) fields, he had allowed for the (context specific) validity of Māori epistemologies and practice.

An example of an attempt to engage with mātauranga Māori can be seen in the development of a kūmara and a taewa (potato) seasonal planning calendar (see Figure 14 for kūmara calendar). The creation of the calendar was led by one of the science team, and involved information drawn from both local growers and the science team. The final product contained predominantly mainstream agricultural and Eurocentric scientific knowledge, with a small amount of mātauranga Māori represented. One of the growers who supplied a significant amount of mātauranga Māori to this project felt that the information provided had been poorly represented and at times used inappropriately i.e. there was very little mātauranga Māori within the calendars, the sources of mātauranga were not acknowledged, they did not include te reo Māori other than a few words, they used images which included local growers and their cultivations but did not indicate who these growers were, and there were no Māori design elements in the calendar's layout (they looked like an oversized Excel spreadsheet). These sentiments were expressed by a number of the active growers. The strengths of the calendars were their use of pictures to illustrate seasonal activities, simple (English only) and relevant language, and a clear depiction of the sequence of seasonal activities.

The calendars represented an attempt to integrate elements of the growers and science teams' knowledge traditions, by presenting them within a single representation (a calendar). Assessment of the calendars differed significantly between Māori growers and the science team, with the calendar highlighted by the science team in project assessment reports, publications and project promotions as an example of a successful interaction between mātauranga Māori and 'Western science'. This difference of opinion between some growers and scientists highlights how cross-cultural interactions may be viewed differently by those from the respective cultures, and how assessments of knowledge processes can favour scientists' opinions over local views when participatory methods are not utilized to monitor and evaluate project practice. Where project monitoring and assessment is not participatory, the ability to monitor collaboratively and in ways sensitive to local context and empowering of local influence can be severely limited (Simpson & Gill, 2007).

The science team members' limited insight into, or representation of alternate perspectives regarding the nature of participation and its successes or failings suggested a lack of reflexivity within the science team. In considering the value placed on mātauranga Māori and institutional science within the project, demonstrable differences existed in the

understanding and valuing of each. Mātauranga Māori was poorly understood and operationalized, agricultural science was well understood and operationalized, mātauranga Māori was for one group to engage with, agricultural science was for both groups to engage with, the project did not offer tangible rewards for mātauranga Māori expertise while it did for agricultural science expertise, and mātauranga experts were competent in bi-cultural settings, while the science team remained persistently mono-cultural over five years of so called participatory engagement.

Calendar for Organic Kumara Production

Month	Moort Calendar	Paddock scope	Field Tasks	Woods to Watch	On-Field Tasks	Administration Tasks	Equipment needed	Task, Operation or Observation	Target Date	Actual Date	Application Rate	Supplier/Labour	Work Hours	Cost Estimate	Notes
June			Check for frost damage and soil moisture. Amend if necessary.			Check records of sowing and seed quality. Prepare topsoil (sand & straw mix).	TRACTOR, FRONT LOADER, SPREADER, VIBRATORY PACK								
July			Check for frost damage and soil moisture. Amend if necessary.			Check for sowing success, soil moisture and seed quality. Amend if necessary.	TRACTOR, FRONT LOADER, SPREADER, VIBRATORY PACK								
August			Check for frost damage and soil moisture. Amend if necessary.			Check for sowing success, soil moisture and seed quality. Amend if necessary.	TRACTOR, FRONT LOADER, SPREADER, VIBRATORY PACK								
September			Check for frost damage and soil moisture. Amend if necessary.			Check for sowing success, soil moisture and seed quality. Amend if necessary.	TRACTOR, FRONT LOADER, SPREADER, VIBRATORY PACK								
October			Check for frost damage and soil moisture. Amend if necessary.			Check for sowing success, soil moisture and seed quality. Amend if necessary.	TRACTOR, FRONT LOADER, SPREADER, VIBRATORY PACK								
November			Check for frost damage and soil moisture. Amend if necessary.			Check for sowing success, soil moisture and seed quality. Amend if necessary.	TRACTOR, FRONT LOADER, SPREADER, VIBRATORY PACK								
December			Check for frost damage and soil moisture. Amend if necessary.			Check for sowing success, soil moisture and seed quality. Amend if necessary.	TRACTOR, FRONT LOADER, SPREADER, VIBRATORY PACK								
January			Check for frost damage and soil moisture. Amend if necessary.			Check for sowing success, soil moisture and seed quality. Amend if necessary.	TRACTOR, FRONT LOADER, SPREADER, VIBRATORY PACK								
February			Check for frost damage and soil moisture. Amend if necessary.			Check for sowing success, soil moisture and seed quality. Amend if necessary.	TRACTOR, FRONT LOADER, SPREADER, VIBRATORY PACK								
March			Check for frost damage and soil moisture. Amend if necessary.			Check for sowing success, soil moisture and seed quality. Amend if necessary.	TRACTOR, FRONT LOADER, SPREADER, VIBRATORY PACK								
April			Check for frost damage and soil moisture. Amend if necessary.			Check for sowing success, soil moisture and seed quality. Amend if necessary.	TRACTOR, FRONT LOADER, SPREADER, VIBRATORY PACK								
May			Check for frost damage and soil moisture. Amend if necessary.			Check for sowing success, soil moisture and seed quality. Amend if necessary.	TRACTOR, FRONT LOADER, SPREADER, VIBRATORY PACK								

Property Details Block Name: _____ Property Name: _____ Manager: _____ Contact Address: _____ Contact phone: _____	Field Details Field Length: _____ Field Width: _____ Field Area: _____ Cropped Area: _____ Soil Type: _____ Previous Crop: _____	Main Crop Details _____ _____ _____ _____ _____	Production Budget Yield: _____ First Yield Estimate: _____ Second Yield Estimate: _____ Final Harvested Yield: _____ Marketed Yield: _____ Post Grade %: _____
--	---	---	---

Contact Phone a
 CropFood

 AgResearch
 Page Bloomer

Figure 14. Organic kumara production calendar.

Chapter 6. CASE STUDY: PERUVIAN PROJECT

6.1. Peruvian Project

An introduction to the Peruvian project was provided in Chapter 1. The case study is structured to first consider the nature of local agricultural IK, its characteristic and the conditions that may encourage or discourage its vitality and responsiveness to participatory Development. The relationship between IK and organizational dynamics is then considered at the macro and organizational levels. Examples of the ways in which IK was creatively engaged with and invigorated is presented next before discussing the benefits of Development initiatives. Finally, emerging themes are presented from the case.

Community Context & IK Vitality

The Development - IK literature demonstrates that socio-economic and environmental change can affect the social context within which IKs are enacted, thereby affecting the vitality of IK and its responsiveness to Development practices (Padron, 1987). The communities of the Pisac region have experienced both significant change in the late 20th century, and high levels of continuity (Allen, 2002). At the time of the Park's establishment the socio-economic systems of the Park communities featured a strong continuity of agricultural practice and IK vitality. The Park communities had not undergone economic or social 'shocks' that would render the institutions through which IK is enacted as unresponsive to participatory Development. The communities are part of an area of initial domestication of potato and of the highest level of agrobiodiversity (i.e. species diversity) with approx. 1000 varieties of potato traditionally grown amongst the communities. Through the 20th century a loss in species diversity had occurred, with ANDES describing an approx. 50% reduction in species numbers i.e. 500 down from 1000. This loss was deemed significant and was a driver for establishing a repatriation agreement with CIP. This loss though did not represent a break in the prevalence of the agricultural system of the communities i.e. the principal economic activity within the communities remained subsistence potato growing. IK promotion therefore occurred within a socio-economic context where IK was relatively healthy, vital and able to respond positively to appropriate IK focused initiatives. The extremely high level of traditional species diversity amongst the communities (approx. 1000 varieties) demonstrated the strength of local practices of developing and maintaining agrobiodiversity, and provided

a strong argument for scientific research institutes to engage with the communities in ongoing ways (e.g. the in situ-ex situ co-management of native potato varieties).

6.2. Macro Level: Institutional Context & Networks of Development

From State Sponsored to International Allies

After beginning as a voluntary organization in 1995, ANDES secured state funding to undertake projects aimed at integrating indigenous communities into regional and national economic systems through the production of livestock (pigs, chickens and cows) (Argumedo & Stenner, 2008). ANDES staff recalled a growing realization at the time that positioning farmers as low value primary producers for capitalist markets would likely alienate farmers from their agricultural heritage and the rich biodiversity it contains. ANDES staff felt that economic benefits could be achieved through engaging creatively with the rich biodiversity of local agricultural systems. Their early experience with state-led Development led ANDES to seek out alternative approaches to Development without State involvement and which viewed local traditions as valuable and not to be abandoned. ANDES staff described a “transition” as they moved from State funded projects focused on market integration to projects which asserted local culture, identity and political rights with Development projects. This transition involved seeking and collaborating with international agencies who i) supported and provided resources to undertake diverse and holistic forms of Development, and ii) which allowed ANDES and their partner communities the autonomy to develop their own Development priorities, strategies and practices. Examples of these international organizations included the International Institute for Environment and Development (IIED), Cultural Survival Canada and the Danish International Development Agency (DANIDA) (see Table 8). Between 1995 and 1997 ANDES and several international development cooperation institutions (IDCIs) developed multi-community approaches to in situ preservation of Andean potatoes and Andean agrobiodiversity. This period culminated in the establishment in 1998 of El Parque de la Papa, the Potato Park. Engagement with IDCIs provided resources, autonomy, networks and were conduits for sharing of ideas and refining alternate forms of participatory Development. From 1996 to 2006 ANDES developed relationships and projects with approx. 20 IDCIs and research institutes.

DEVELOPMENT SYSTEM - NETWORK		
Local Orientation	External Orientation	Year
	International Relationships	
	Cultural Survival Canada	1996
Pachamama	International Institute for Environment and Development (IIED)	1996, 2001-06
	International Potato Institute	1997-2011
Indigenous Bio-Cultural Territory areas (IBCHT)	DANIDA	1997-98
	Indigenous Knowledge Program	1999
	IPGRI	2000
	Society of Wetland Scientists	2000
Inter-community Agreement for Equitable Access & Benefit Sharing	Quaker Office of the United Nations of Geneva	2001
	Rockefeller Foundation	2001-02
	ICLARM – Millennium Ecosystem Assessment	2002-04
	Winged Horse Trust	2002-06
39 individual communities (to 2006), 4 IBCHTs	Independent University of Barcelona	2002
	IUCN – Holland	2003
	OXFAM Netherlands	2003
	IUCN	2004
Ecosystems	Conservation, Food and Health	2005
	CARIPLO Foundation	2005-6
	South-South Exchange	1996 onwards
	Food and Agricultural Organization of the United Nations (FAO)	2002 onwards
	Svalbard Global Seed Vault	Ongoing
	International policy & legal mechanisms	

Table 7. Development context & relationship overview - local and international.

ANDES' work through this time focused on the conservation of Andean crops, principally la papa (potato), with complementary projects occurring based on aims of maintaining and enhancing biodiversity (e.g. repatriation of potato varieties), traditional knowledge and developing indigenous networks. Through these projects ANDES also sought to preserve and promote Andean culture, artistic expressions, language and cosmovision (worldview). This led to the integration of these themes in single programs of poverty alleviation, and conservation of biological and cultural diversity. These projects would typically align with national and international policies promoting indigenous rights. At the time of field work (2009) ANDES had approximately 15 regular staff and worked with 30+ communities.

Diverse Projects and International Development Cooperation Organizations

The transition from State to IDCI sponsored Development allowed ANDES to gain distance from colonial patterns of state-indigenous community relations, to access a wider range of resources (capital and technical expertise) and to be more responsive to local needs. A sample

of these projects is provided below (Table 9) and include potato variety repatriation and co-management with CIP, agro-ecotourism, plant pest research, traditional agricultural and ecological knowledge recording, traditional plant medicines, international legal protection of indigenous knowledge rights, wetland conservation and traditional weaving.

YEAR	PROJECT	DONOR
1996	Network of Indigenous Communities and Biodiversity	Cultural Survival Canada
1997-1998	Establishment of a Network of Indigenous Communities and Development	DANIDA
1999	Traditional Quechua Phylogenetic Knowledge and In-Situ Conservation of Agricultural Biodiversity in an Epicentre of Mega-diversity of the Potato (<i>Solanum tuberosum</i> Sp) in the South of Peru	Indigenous Knowledge Program (IKP)
2000	Local Protocols for the Protection of the Rights of Indigenous Communities Related to the Conservation and Sustainable Use of Agro-biodiversity.	IPGRI
2000	Conservation and Sustainable Development of the Wakarpay Wetland	Society of Wetland Scientists
2001	International Workshop: "Dialogue On Commerce, Intellectual Property and Biological and Genetic Resources in Latin America"	(Cepal) Quaker Office of the United Nations of Geneva (QUNO)
2001-2006	Sustaining Diversity and Local Livelihoods: Decentralization and Capacity Building, the Adaptive Management of Agricultural Biodiversity and Local Food Systems.	International Institute for Environment and Development (IIED)
2001-2002	Sustainable Development and Food Security in the Andes	Rockefeller Foundation
2002-2004	Sub-Global Ecosystem Assessment in the Vilcanota Region of Peru	ICLARM - Millennium Ecosystem Assessment (MEA)
2002-2006	Indigenous Peoples and Primary Health: Education and Training of Young Women on Medicinal Plants	Winged Horse Trust (WHT)
2002	Regional factory of "Payment by Environmental Services"	Independent University of Barcelona
2003	Ecotourism and Conservation and the Sustainable Use of the Resources of the Wakarpay Wetland	IUCN - Holland
2003	Local Protocol for the Protection of the Rights of Indigenous Peoples to the Knowledge Production related to the Conservation and Sustainable Use of Agro-biodiversity	OXFAM Netherlands (NOVIB)
2004	Traditional Knowledge Related to Insects Associated with the Cultivation of the Potato in the Potato Park (Pisac, Cusco)	International Institute for Environment and Development (IIED)
2004	National Consultation of Natural Sacred Sites	IUCN
2005	Determination of Natural Enemies Associated with Quinoa	Conservation, Food and Health
2005-2006	Promoting Agro-ecotourism for the Conservation and Sustainable Use of Agro-biodiversity, the Character of the Andean Landscape and Reduction of Rural Poverty	CARIPLLO Foundation

Table 8. Development projects and donor organizations (Argumedo & Stenner, 2006).

ANDES' relationships with IDCIs and research institutes provides the bulk of ANDES funding along with technical expertise and in the case of the Potato Repatriation project, repatriated potato varieties and ongoing collaboration in the in situ – ex situ co-management of potato varieties. It should be noted that ANDES is a non-profit civil association.

In considering the two cases it is worth noting the differences in who provides project support and the level of funding. In contrast to the Aotearoa project which had a single state funder, with support totalling \$700,000/yr. over 5yrs, ANDES funding involves a diverse mix of international supports with no significant funding from the Peruvian state. Between 2001 and 2006, ANDES received an average of just over US \$200,000 funding per year from charities and international organisations (Argumedo & Stenner, 2008). In 2006 ANDES' total budget was \$210,000, 60% from Intervita-Italia for an ecotourism project, with the International Institute for Environment and Development (IIED) providing the remainder for action-research projects on localised food systems and customary laws and genetic resources. In 2005, ANDES' total budget was \$189,000. IIED provided approximately 78% of the budget that year, with the rest coming from the Winged Horse Trust for a medicinal plants project (\$27,000) and the Millennium Ecosystem Assessment programme (\$13,000).

6.2.1 External Orientation & Connecting Outward

During the 1996 to 2006 period ANDES worked with approx. 20 IDCIs and 39 communities on a wide range of projects. During this period holistic conceptualizations of indigenous community territories (i.e. Indigenous Bio-Cultural Heritage Territory (IBCHT)) were developed, a number of multi-community governance and benefit sharing agreements were established and community governance models were integrated into ANDES' organizational structure. Together these conceptual and relational dynamics created what might be termed a holistic indigenous centred Development system.

It is evident from the lists of international projects and organizations in Tables 8 and 9 that ANDES is involved in a range of constantly evolving relationships as projects with specific IDCIs were developed, implemented and completed. Formal relationships involve a pre-project stage where ANDES staff review opportunities to work with IDCIs, make contact with identified IDCIs, develop funding proposals, and make funding applications. As not all project applications were successful, the total number of IDCIs ANDES engaged with was greater than

the 20 with whom projects were conducted (exact figures of IDCIs engaged with were not obtained).

Each project involved unique mixes of Development actors, including resource donors, agricultural scientists, ANDES staff, community coordinators, and community members, with involvement varying over a project's lifespan. While conducting field work I witnessed visits from members of external organizations, including the United Nations Food and Agriculture Organization (FAO), the International Potato Institute (CIP), scientists and growers representing indigenous peoples of Ethiopia and Aotearoa, European donor organization representatives, and academics from European and North American universities. IDCIs were typically European or North American, with ANDES acting as manager of projects, while the IDCIs supplied resources (e.g. capital and technical expertise). These IDCIs would often send staff to visit ANDES during the initial stages of projects and through the project's lifespan to monitor project progress. Participatory evaluation and monitoring methodologies were used which allowed funders to gain insight into project progress from both ANDES and community member perspectives, and for operational decisions to be made accordingly. In cases where projects were collaborative and required more frequent interaction, staff from external agencies would visit for extended periods. This occurred with the potato repatriation and in situ – ex situ potato co-management projects which required visits from CIP (International Potato Institute) staff at regular intervals through the growing season. As CIP is in Lima Peru geographic distance was not a major obstacle, as a 1hr 15min flight connects Cusco and Lima. ANDES staff emphasized that in developing relationships with external organizations they were engaged in constant processes of multi-directional translation and negotiation. Translation occurred at a linguistic level, between various European languages and Quechua, at a conceptual level as ANDES staff translated and negotiated IDCI and community priorities, and within applied contexts as initiatives were enacted within the Park. Examples of these processes of translation and negotiation are discussed later in reference to IBCH territories and modelling, Life Plans and the Inter-Community Agreement for Equitable Access and Benefit Sharing.

Tangible Benefits: Individual and Collective

A central feature of ANDES work has been the development of financial opportunities for ayllu members and inter-community collectives. These opportunities included paid employment as

workers on building construction, as project staff (e.g. community technicians), as service providers to tourists and visiting academics (e.g. trekking guides, homestays, hosting), as well as opportunities to market locally produced products (clothing, medicines and cosmetics) under the Potato Park's collective trademark. Where community members receive financial reward from Park collectives or use of the Park's collective trademark, a percentage of that income is provided to the Inter-Community Fund. Income from the use of the Potato Park restaurant and payments from CIP are also directed to the Fund.

In the case of the Inter-Community Fund the rules of benefit sharing were formalized in the Inter-Community Agreement for Equitable Access and Benefit Sharing, with the Association of Communities of the Potato Park overseeing the Fund's management. The Fund also receives monies from Park admission fees associated with tourist and educational activities, visits by academics and journalists, and donations. Exact figures for the fund were not available, but Alejandro (2011) reports the Fund doubled each year from 2007 to 2010. Once a year the Fund is distributed amongst the communities. In 2007 this distribution involved equal sharing between the communities. In 2008-09 this distribution approach was reviewed, with the communities deciding distribution should be based on each community's level of participation in Park activities. The criteria for assessing community participation in Park activities were decided through meetings with each community and collective agreement by all communities. ANDES staff reported the concept *rakunawi* (equitable sharing based on contribution and need) as being used through these processes. The criteria were then included in the Inter-Community Agreement for Equitable Access and Benefit Sharing as part of the Agreements regular review.

Within the Park several collectives have been formed, including the Papa Arariwas collective (a seed repatriation and conservation collective), the gastronomy collective Q'Achun Waq'achi collective, the Tika Tijillay women's video collective, the Naupa Awana craft collective, the Willaqkuna guides collective, and the Sipaswarmi Medicinal Plants Collective. Each collective has its own criteria for distributing financial and non-financial benefits from their activities (Alejandro, 2011). The gastronomy and medicinal plants collectives use collective labour, and financial benefits are therefore distributed collectively, while the crafts collective involves individual labour to create goods for sale, so monies go directly to the craftsman. In the case of guiding and homestays, payments are made directly to the

individuals or families involved, but these services are rotated between individuals and families, so benefits are distributed across ayllu.

6.3. Organizational Level: Participatory Organizing

Centring the Local

A central feature of ANDES work was the enactment of an organizational approach which centred Andean communities and their cosmovisions (worldviews), and was open to integrating non-local worldviews and practices. This was developed through the identification of important cultural principles-values, the development of locally centred and integrative conceptual models, reflective and collaborative work with community members, the integration of community social institutions and ANDES organizational structure, and through processes of normalizing community understandings and practices within ANDES work. Three of these elements are discussed below; i) conceptual models, ii) inter-community governance and benefit sharing models, and iii) the centring of local Quechuan values-principles within organizational practice.

CONCEPTUAL MODELS

The various conceptual models ANDES and the communities use utilize local and non-local elements, and were developed and implemented through iterative process involving ANDES staff and community members, often within the context of undertaking multiple Development projects.

The following conceptual models are discussed with reference made to their symbolic, practice, communicative and negotiated dimensions; Indigenous Biocultural Heritage Modelling, Life Plans, Indigenous Biocultural Heritage Territories, Inter-Community Agreement for Equitable Access and Benefit Sharing, the Inter-Community Trust, and the Biodiversity Group. Together these conceptual models and their ongoing practice act to influence each other, while coordinating, integrating and regulating understandings and activities across the communities of the Park.

Indigenous Biocultural Heritage modelling

Indigenous Biocultural Heritage (IBCH) modelling refers to an approach to conceptualizing the landscapes and ecosystems of Quechan communities which expresses Quechan cosmovisions (worldviews). The approach draws on the theoretical, conceptual and methodological approaches of complex system mapping and traditional Quechuan symbology, such as the famous 1613 drawing of “Inca Mythology and Religion” by Joan Santa Cruz Pachacuti Yamqui Salcamaygua. During a South-to-South workshop with visiting Ethiopian farmers and academics in October 2009 IBCH modelling was described as involving the following four levels;

- Geographic Location
- Ecosystem & biodiversity
- Watershed
- Peoples - demographic and cultural characteristics and dynamics, governance models, including land tenure systems, formal and informal community governance models, other political institutions (e.g. political parties, labour unions), modes of economic production and distribution.

The first three levels embed the modelling process within specific landscapes, while the fourth level focuses on the community characteristics. When considering local economics, the model assumes diverse local centred modes of production, exchange and organization. Central to this economic modelling is the notion of biocultural assets, where local crops and other ‘products’ of local economies are conceptualized as being biological and cultural in nature. The biocultural conceptualization of crops and other economic products was described as acting to embed understandings of economic resources, products and processes within local ontologies e.g. a potato is understood in fundamentally different ways by community members, than by scientists or commercial growers. IBCHT modelling provided a holistic, locally centred understanding of place and people, and was used as a tool in identifying local needs and problems, and potential ways of addressing those needs and problems. Along with these four levels within the landscape IBCH modelling was described as involving;

- **Identification** – Things typically have multiple context specific meanings which vary between Development actors. For example, weather phenomena may be understood by community members as having spiritual, affective, material, power and

communicative aspects by community members, while empirical scientists may understand weather purely in empirical ways.

- **Interaction** – identify and develop understandings of the interactions between phenomena. Interaction is inclusive of all phenomena across the system.
- **Adaptive** – elements within systems are co-dependent and as such change is adaptive, recursive and involving processes of “co-evolution” (A. Argumedo, personal communication, Sept. 2009). The systems mapping therefore included a strong temporal dynamic including the past (descriptive and explanatory) and future (strategic).
- **Productive** – the landscape and all its parts are understood as having a strong ‘generative’ aspect i.e. the interaction between phenomena is assumed to both alter the participating elements, and generate new phenomena and new patterns of interaction. IBCH modelling involved describing how production was understood by various parties (e.g. how growing potato was understood community members, Development professionals, plant scientists)
- **Hierarchical** – local worldviews involve ontological hierarchies which express obligations, responsibilities and rights across the whole environment. The hierarchy functions to create *Sumaq Kawsay* (well living) across the whole environment. Community elders did state that phenomena within their landscape were variable in mood. For example, Pachamama was described by some elders as having a strong malevolent streak, which could result in destroyed crops and in extreme cases the death of people.
- **Expansive** – the system is open to extension and widening in scope as socio-cultural systems and ecosystems interact with external elements e.g. local communities interact with those from outside the communities through Development initiatives and other means, external factors influence local climate.
- **Diagnostic** – causal relationships can be identified and actions taken accordingly.
- **Future Planning and Management** – IBCH modelling can (was) used in developing place-specific Development initiatives (e.g. Indigenous Biocultural Heritage Territory) and used in the creation of community and multi-community strategic plans, which ANDES termed “Life Plans” (discussed later).

Through identifying and exploring these dimensions ANDES staff described IBCH modelling as representing various forms of framing issues by the various parties involved in Development. This process of describing alternate framing of phenomena within a territory was described as facilitating discussion, mutual understanding and collaborative work between those involved in Development projects. For example, the IBCH modelling approach was used at the earliest stage of the potato repatriation and co-management project between the Potato Park communities, ANDES and CIP, as it allowed the various parties to articulate their understanding (framing) of potato diversity and potential actions to address maintaining potato diversity e.g. co-management and combined ex and in situ conservation.

Indigenous Biocultural Heritage Territories

The IBCH modelling allowed clear territories and their characteristics to be mapped. The concept of IBCH Territories (IBCHTs) was identified as providing a strong means of localizing and focusing Development, and by 2009 four IBCHTs had been declared; i) the Potato Park, ii) the Spiritual Park (Quispicanchis and Paucartambo), iii) Lares (barter markets and vertically integrated exchange networks), and iv) Lucre-Wakarpay (wetlands).

Each of the four IBCHTs has a defining characteristic that provides a high-level focus for Development initiatives and which acts as a defining identifier of each IBCHT often included in the name of the IBCT e.g. Potato and agrobiodiversity in the Potato Park, Quechuan spirituality in the Spiritual Park, indigenous trade and distribution in the Lares IBCHT, and wetland ecology in the Lucre-Wakarpay IBCHT. These defining elements did not restrict broader Development initiatives from occurring in each IBCT, rather, they provide a focal point for those initiatives, while also facilitating complementary and integrative Development strategies across the IBCHTs.

To coordinate Development initiatives a range of inter-community conceptual and governance models were developed and implemented, including inter-community governance and benefit sharing agreements, and intercommunity Life Plans which identified Development priorities and goals across the communities. developed through the IBCH modelling and community and inter-community Life Plans.

Life Plan as Development strategy

The “Life Plan” is a form of communal strategic planning which draws upon the complex systems mapping of the IBCH modelling. The plan draws on the principle of chaninchay

(dynamic equilibrium) as a form of balance within the hierarchical network of living phenomena, to guide future thinking for communities. This meant that where issues were identified, the IBCH modelling process was used to identify if traditional values and practice related to these issues. For example,

Within the Life Plan approach conventional Western notions of “managing the environment” were rejected as unrepresentative of local understandings, and instead, human activity was conceptualized within the Life Plans as occurring within the landscape’s own hierarchical structures and dynamics i.e. Pachamama, Apu, glaciers and rivers, and seasonal climate cycles. Life Plans were therefore described as a way of guiding people to ‘fit in’ with Pacha. Life Plans were developed for individual communities and across the communities of the Potato Park i.e. multi-community Life Plan. These Life Plans were then integrated into the Inter-Community Agreement for Equitable Access and Benefit Sharing, and used in the creation of Indigenous Biocultural Heritage Territories.

The following were described as key aspects of the Life Plans and their Development;

- **Sumaq Kausay** – often translated as “living well” from an Andean perspective. At ANDES and in the context of a Life Plan, Sumaq Kausay was described as a communal state of living which involves an on-going and active cultivation of balance between Pachamama, Apu, people and all aspects of the environment.
- **Vision Development** – Aspirations for individual communities and the Potato Park collective were developed through a series of community meetings. The aspirations provided direction for ANDES relationship Development with external organizations e.g. developing alliances with international donor organizations whose objectives fit with community/inter-community aspirations.
- **Pathway to Aspiration** – Options for achieving aspirations were created, identifying potential contributors (e.g. community, ANDES, external organizations), actions required, timeframes, and obstacles. Potential pathways were developed to fit within the social, cultural and climatic context of the communities i.e. to fit within agricultural season, cycles of annual festivals, community activities such as Linderaje and semi-regular events such as El Niño weather patterns.

- **Building Consensus** – develop support for the vision and pathway within and between communities. It was noted that generally strong consensus was needed before commencing a project as activities typically required community support and participation e.g. repatriation of potato varieties was pointless if community members were not interested in cultivating the returned varieties.
- **Plan Adaptation** – the Life Plan assumes constant change and the Development of understanding through action, therefore flexibility, reflexivity and responsiveness are core features. It is essential that the communities are involved in all aspects of the Life Plan Development, implementation, assessment and modification.

INTER-COMMUNITY GOVERNANCE & BENEFIT SHARING

As noted previously, the centring of the local in ANDES work involved developing an organizational culture where conceptual models (e.g. the IBCH), organizational values and practices expressed a distinctive Quechuan community orientation. The establishment of the Potato Park involved the development of novel approaches to governance that integrated traditional and formal community governance institutions with formal organizational approaches.

Communities	Inter-Community Instruments
Sacaca	Indigenous Biocultural Heritage (IBCH) Modelling
Kuyo Grande	Indigenous Bio-Cultural Territory (IBCT)
Pampallaqta	
Peru Peru	Life Plans
Amaru	Inter-Community Agreement & Trust Fund
Chawaytire	Biodiversity Group

Table 9. Potato Park communities and formal inter-community instruments.

To co-ordinate decision making across the 6 communities an inter-community governance and benefit sharing was created. Members of ANDES stated that interaction between the communities had not always been amicable, and in developing and implementing the formal Inter-Community Agreement, there were considerable challenges in overcoming animosity

between communities. The main inter-community agreements are listed below alongside the Park's communities.

Community Institutions: Traditional & Formal Governance

It was realized in the early stages of ANDES work that it was necessary to understand and work with the communities' own social institutions. Within the communities both customary and state institutions exist, termed traditional governance structures and formal governance structures respectively. Traditional governance structures are not state sanctioned, but they have a degree of formality in that they involve community elections and appointment. The formal governance structures refer to governance structures that occur within the Peruvian legal system. Argumedo (2011) describes formal governance structures at the community level as occurring under Peru's General Law of Rural communities and involving three bodies; i) the **Asamblea General** (General Assembly) which is the highest body, ii) the **Directiva Comunal** (Community Board) and iii) **specialized committees** that coordinate with the Community Board.

Traditional Governance Structures are described by Argumedo as occurring at three scales within the encompassing sphere (landscape) of Pachamama;

- **Landscape scale** – relates to mountain spirits, Apu, with Ausangati being the dominant mountain of the Cusco region, and Sunpichu and his wife as the dominant mountains of the Park communities. Sunpichu and his wife are considered traditionally to be the owners of the land, animals and community members.
- **Community (Ayllu) scale** – every two years communities elect a varayoc (referred to as community mayors or presidents). They are responsible for maintaining good relations amongst community members, coordinating communal work and organizing and leading communal celebrations (e.g. leading crop rituals, Linderaje, track and road clearing, tree felling, construction of communal infrastructure such bridges and water canals). Varayoc often fill roles in ANDES Consultative Committee and the Planning and Monitoring Circle, while also playing important roles in projects within their ayllu. Communities also nominate pututeroc, younger community members, to support varayoc in their work. The relationship between varayoc and

pututeros facilitates inter-generational transmission of knowledge, and acts to mentor younger community members into leadership roles within their ayllu.

- **Family scale** – decision making regarding most activities occurs within families. Males are typically spokesman for their families, at events such as communal assemblies, while women play a lead in decision making concerning their families.

A detailed analysis of the interplay between traditional and formal governance roles, and their implications within community life, and Development projects, is beyond the scope of this research. For a detailed discussion of Andean community life, drawn from ethnographic fieldwork in Sonqo, a community adjacent to the Potato Park and which addresses the interplay between traditional and formal roles, one should read Catherine J Allen's *"The Hold Life Has: Coca and Cultural Identity in an Andean Community"*. The first edition of Allen's book was based on field work in 1985, with a second edition produced based on field work in 2002. Allen's work is rich in detail, and written with a great empathy for the people, families and communities she lived with. In working in a community adjacent to the Potato Park much of what she describes relates directly to the dynamic cultural context of ANDES work. The second edition (2002) of Allen's book shows starkly the rapid changes occurring in Andean communities, as it compares her impressions from 1985 with those of 2002. By the 2000s the American led war on drugs had reduced the availability of coca, a central part of Andean social life, while alcohol availability has increased, new religions have entered communities affecting participation in communal rituals and festivals, and Development projects have affected traditional practices, values and understandings. More recently internet cafes have sprouted up across the Andes, resulting in younger generations particularly having an exposure to worlds beyond those experienced by previous generations. The interested reader is encouraged to seek out this work as it provides much valuable detail on the subject matter of the ANDES case study.

Inter-Community Agreement for Equitable Access & Benefit Sharing

In order to manage communal and inter-community ownership rights, to state the rights and responsibilities of each community, and to control the distribution of benefits from the Park's activities, the Inter-Community Agreement for Equitable Access and Benefit Sharing was developed. ANDES staff described this formalizing of inter-community relationships around valued resources as an essential component of successfully applying the IBCT model to Park

activities, and necessary to ensure IK agreements and resource use occurred in accordance with Quechuan principles. The development of the Agreement had other benefits including articulating an application of customary law in Development contexts, allowing the experiences of the Park communities to be shared with other indigenous groups, and to strength understanding of governance issues when utilizing biocultural (IBCH) systems approaches (Argumedo, 2011).

In the initial stages of the Agreement's development focus groups, interviews, conceptual graphics, videos in Quechua and participation in community assemblies were used to identify principles which underpinned community institutions and norms of behaviour, and which could be applied to the Agreement. These identified principles were *ayninakuy* (reciprocity), *yanantin* (complementarity), *chaninchay* (dynamic balance) and *rakunawi* (distribution model based on need and contribution). Along with these local values ANDES staff noted that policies and instruments developed within international indigenous rights contexts were applied. This occurred as ANDES staff were active in international indigenous movements and had intimate knowledge of instruments and policies such as the UN Declaration of Rights of Indigenous Peoples, the Mataatua Declaration and the International Treaty of FAO. The Inter-Community Agreement was therefore an instrument grounded in the local, while drawing on indigenous rights developments internationally.

Draft Agreements were developed and presented in Quechua to the communities, with several iterations occurring before a final Agreement was completed. This process was described as involving significant difficulties in gaining broader support across the six communities. These difficulties reflected differences in priorities and expectations, varying levels of market engagement, and suspicion and animosity between communities and influential individuals. In terms of undertaking participatory Development these difficulties highlight that participation involves local social dynamics which can significantly impact processes of participation, and shape the forms it takes.

A notable example of the Inter-Community Agreement's positioning of power with the communities was seen in the decision making involved in the building of a restaurant at Chawaytire. A decision had to be made regarding which community the restaurant would be built at. Senior members of ANDES who were not community members felt that Sacaca, the

community that was the closest to Písaq, a major tourist destination, would be ideal as it was believed visitors and tourists would be more easily attracted from Písaq to a relatively close village, rather than the more distant villages of the Park. Discussions were held across all the communities, with community members deciding that one of the more isolated communities high in the valley would provide a better location. The reason for this decision was that by building the restaurant at one of the high villages, visitors would have to travel through other villages to reach it, and there would be flow-on benefits to those other communities. Rather than prioritizing accessibility for visitors, the community members prioritized benefit sharing across the communities. The Inter-Community Agreement prioritized inter-community decision making, ANDES staff recognized the collective benefit of the restaurant being in Chawaytire, and the restaurant was built at that village, being completed in 2007. The restaurant is used regularly to host visitors to the Park, and its positioning has proved beneficial to the other communities, as visitors regularly stop at the other villages when travelling to the restaurant.

From the early stages of the Park it was recognized that the erection of buildings in each village, featuring different elements of the communities' culture, would provide tangible benefits to each community and help create a tourist circuit. A tourist circuit was developed which encouraged visitors to travel to each community and experience an element of the communities' culture. Each village featured a distinct aspect of local culture that they were specialists in, creating a complementary range of cultural features across the communities of the circuit e.g. the restaurant at Chawaytire highlighted local cuisine, a resource centre at Sacaca provided a space to host visitors, conduct workshops and to a base the natural medicines and cosmetics project, and a handicrafts workshop at Pampallaqta allowed visitors to witness all aspects of indigenous clothing production and to purchase garments.

ANDES staff described the decision making involved with erecting buildings as leading to inter-community rivalries emerging. Construction of the first building was described as problematic as several communities wanted to have the first new building built in their community. Members of ANDES described how "jealousy" emerged at this time, as members of other communities felt the community with the first building would benefit immediately, while their communities would receive no immediate benefits. This "jealousy" highlighted the difficulties of working across multiple communities were tensions between communities and key

individuals within communities can arise. In the case of the buildings, as they were erected in one community at a time, the benefits of the construction and use of the buildings occurred asymmetrically across the Park. The Inter-Community Agreement provided a formal framework to mitigate these issues and ensure benefits from buildings were spread across communities. Through the implementation of the Agreement with respect to the construction and use of the buildings, community members could understand that despite some projects occurring sequentially across individual communities, benefits from those developments would be shared across all communities.

Inter-Community Conflict Resolution

As noted, differences of opinion, jealousy and conflict can, and did, arise in the management of inter-community activities. Where conflict occurred between communities there would be an initial attempt to resolve matters informally. If resolution did not occur through informal means, the General Assembly would hear grievances and suggest resolution options.

Biodiversity Group

While the Inter-Community Agreement acted as a kind of meta-community and meta-project organizational model, a more localized example of multi-community organizing was the “Biodiversity Group”. The Biodiversity Group comprises the six community presidents who are part of the group for the term of their community presidency (2 years) plus an extra year where they act as advisors to new community presidents who join the Group. The focus of the group was maintaining agricultural and wildlife bio-diversity within the Park. The group would lead projects which documented agricultural and wildlife biodiversity, mapped changes over time, assessed community activities with respect to biodiversity, and planned and implemented programs to restore, maintain and/or enhance biodiversity.

The Biodiversity Group connected the six communities through established community level organizational structures (community presidency and related offices), and embedded this inter-community group within ANDES organizational structure i.e. members of the group were also members of the Consultative Committee (see Figure 16 ANDES Organizational Structure) which held the highest formal decision-making position.

CULTURAL VALUES-PRINCIPLES

Quechuan principles as organizational values.

During ANDES initial Development the Quechuan principles **ayninakuy** (reciprocity), **yanantin** (complementarity) and **chaninchay** (dynamic balance) were identified as significant within local communities, and as providing a framework for developing organizational structures and approaches to Development. ANDES director Alejandro Argumedo described the adoption of these principles as challenging for staff as it was not immediately clear how to apply them within a formal organizational setting. There was no single implementation strategy, instead ANDES staff were encouraged to maintain the salience of these principles and to explore ways to apply them within organizational activities. It was realized that in areas of strategic planning, project development and relationship management with external partners, and across all aspects of engagement with Quechuan communities, these principles could guide staff actions and thinking e.g. in the development and implementation of inter-community instruments such as IBCH modelling, Life Plans, and the Inter-Community Agreement and Trust Fund. The embedding of Quechuan principles within organizational practice was therefore described as an iterative, experimental and on-going process.

ANDES staff described how as ANDES and the communities developed projects through the late 1990s and early 2000s, as relationships with the communities matured, as more community members worked for ANDES and in Development projects, a greater understanding of Quechuan principles within organizational practice occurred. Through this period the 'closeness' of the communities and ANDES grew, resulting in many aspects of the communities' life (e.g. worldview, values, social norms and institutions) becoming normalized within ANDES governance processes, operational management and organizational practice. Questions of how values such as ayni or yanantin might be practiced within ANDES practice were therefore addressed through formal process and normative process of community member participation within Development projects. For example, the Inter-Community Agreement for Equitable Access and Benefit Sharing took approximately 3 years to develop and confirm. Through this process ANDES developed a strong understanding of how Quechuan principles can be embedded in organizational practice and formal mechanisms such as the Agreement. The Agreement is reviewed approx. every two years, and as such there is a regular process of community – ANDES discussion and negotiation regarding how

core Quechuan principles may be applied in the operations of the Park, and the relationships between communities, and with ANDES.

Las Papas Nativas – Local Understandings of Native Potatoes

As la papa is central to the identity and lives of the ayllu of the Park, and Park's Development initiatives, a brief discussion of a selection of potatoes native to the Park and the agricultural cycle is provided. This discussion highlights a key aspect of the IBCH approach, that crops are multi-dimensional, and that the understanding of crops from a holistic local perspective can act to destabilize market and science centric Development assumptions, while opening Development practice to new possibilities. Information was provided by ANDES staff and community members.

Sample of Potato Varieties

Puma Maki – the origins of the Puma Maki (Puma's paw) lie in an incident when a wondering puma lay down to rest on a potato plant. The potato didn't like this and did everything it could to convince the puma to leave. Eventually they fought. The potato won by transforming itself into the shape of a puma's paw and then beating the puma until it departed. The story was described as referring to the need to resist negative things and that you may need to match your opponents' strengths to win i.e. to 'fight fire with fire'.

Q'ewillu – named after the walking stick of an old man who features in a number of traditional narratives.

Q'Achun Waq'achi – "the weeping bride" is an integral part of community practices leading up to a wedding. As the valley has hundreds of potato varieties, peeling potatoes is considered an essential skill for any prospective wife. This potato is the hardest of all to peel so a short time before a wedding occurs, it is taken to the bride to be and she must peel it in one peel while the groom's family watch on, with the threat of the wedding being cancelled if the bride to be doesn't successfully complete the task. A gastronomy project in the Potato Park is named in honour of this potato and its important function.

Puka Sawasiray (not in image) – this variety has small lumps on it which are said to represent two Apu (sacred mountains). One mountain, Pitusiray, was a young woman and the other, Sawasiray, a young man. They fell in love but Pitusiray's father forbade them from marrying. The mountains were forced apart and now stand at the top of the valley, separated by

Willkamayu river (Quechua for “the sacred river”). The river flows into the Urubamba Valley, the home of the Inca nation. The full version of the story tells of the social norms of courting and depicts social hierarchies within families and communities. The positioning of a male and a female Apu represents a general pattern of complementarity relationships (yanantin).



Figure 15. Selection of native potatoes (image supplied by ANDES).

During an inter-community meeting I also heard discussion of other potato varieties and their specific qualities. One variety was described as acting to enrich breast milk, and was therefore cultivated for breast feeding mothers. Another was said to improve the memories of elderly people, and was therefore grown and provided to community elders and their families. In these examples, local knowledge regarding these two varieties highlights how the value of potato varieties may be broader than simply their market value.

Organizational Structure, Practice & Capacity

PARTICIPATORY STRUCTURE

ANDES staff described the development and maintenance of an organizational structure that integrated community institutions and social norms as being central to their aims of creating an indigenous NGO. The organizational structure diagram below describes;

- key functional and governance groups within the broader organization (i.e. consultative, executive, advisory, and program committees, administrative staff, a planning and monitoring circle, and “thematic areas” coordinators and teams).

- integration of community members into and across the groups
- formalizes relationships within ANDES and between ANDES and the communities
- highlights the integration of community members, community processes and practices, and community relational models within the organization.

The **consultative committee** comprises community members involved in the initial formation of ANDES and two community representatives from each of the Indigenous Bio-Cultural Heritage (IBCHT) areas ANDES works with i.e. i) the Potato Park, ii) the Spiritual Park (Quispicanchis and Paucartambo), iii) Lares and iv) Lucre-Wakarpay.

The community representatives from the IBCHT are typically senior members of the communities who have been elected to formal positions of authority within the communities. Communities elect Community Mayors (a Varayoc) every two years and these people often fill the role of community representative within the consultative committee. The consultative committee meets once a year to evaluate the progress and direction of ANDES (Argumedo & Stenner, 2008).

The **executive committee** comprises an executive director, program director, administrator and a legal administrator. The executive committee oversees general operations, with other duties including – personnel management, fund raising, representing ANDES, ensuring ANDES follows organizational principles and mission, approving work plans and budgets (Argumedo & Stenner, 2008). The **advisory committee** comprises Peruvian and international experts in indigenous community Development.

The advisory committee's experience in indigenous issues across a range of countries is utilized in areas including the development, implementation and reviewing of governance mechanism such as the Inter-Community Agreement. The political and academic standing of the members of the advisory committee also adds credibility to ANDES activities and aids fundraising activities (Argumedo & Stenner, 2008).

The **program committee** manages ANDES operational activities at the project level and report to the **planning and monitoring circle**. The Program Director heads this committee and works closely with **administration**, the Executive Director and individual **Program Coordinators** manage operational activities (Argumedo & Stenner, 2008).

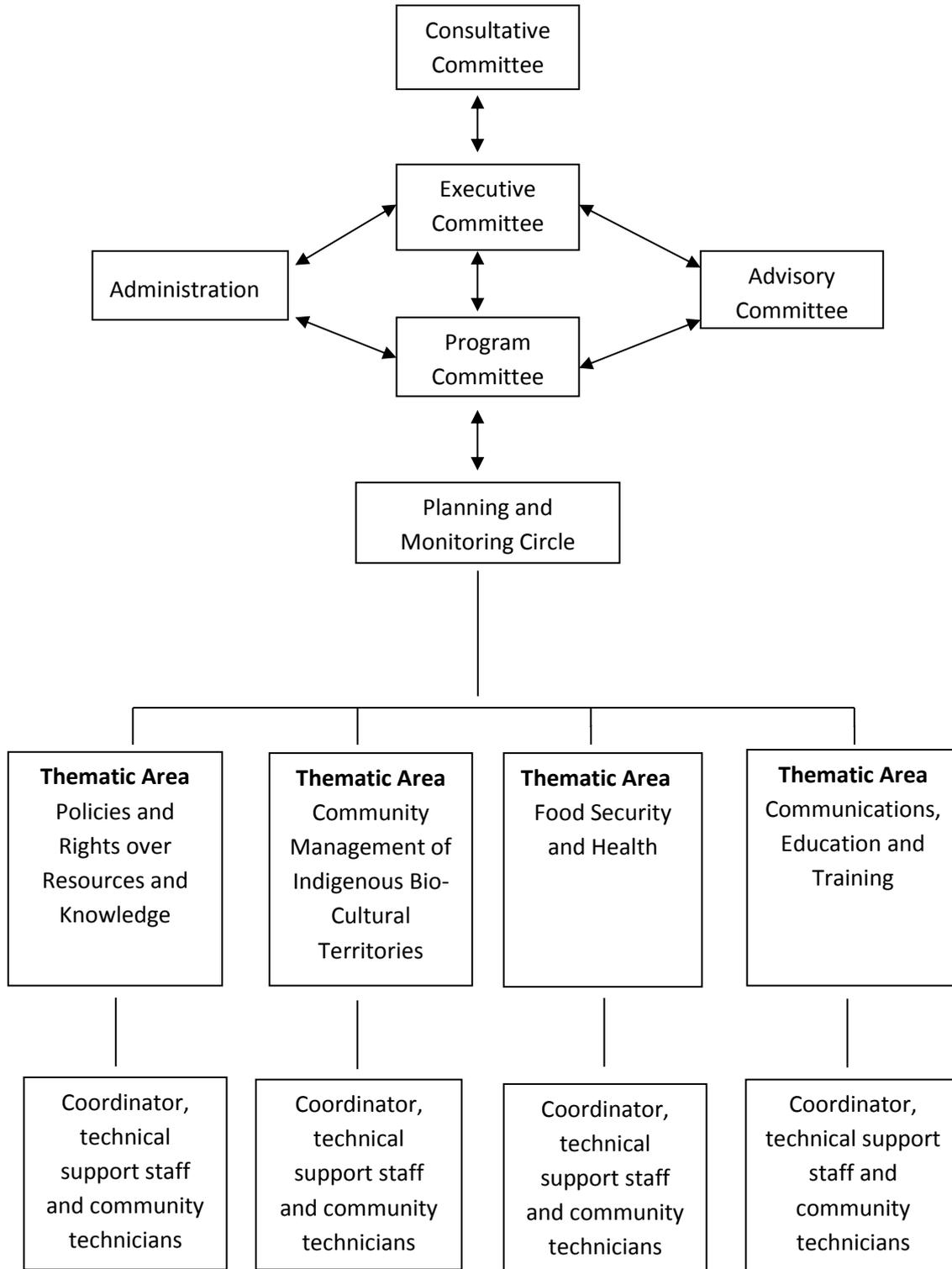


Figure 16. ANDES organizational structure.

The **planning and monitoring circle** comprises members of the communities and ANDES staff. The circle ensures programs/projects align with and support the mission and goals of ANDES,

demonstrate tangible benefits for the communities, and fit with the Life Plans (Argumedo & Stenner, 2008).

Thematic areas refer to four general areas under which ANDES projects are grouped. Each thematic area has a **coordinator, technical support staff** and **community technicians**. Each thematic area team is responsible for planning and implementing projects, monitoring projects, evaluating results, generating information (reading, analysis and internal dissemination of information), monitoring and promoting new concepts and ideas, and diffusion of project results e.g. creating databases, writing reports (Argumedo & Stenner, 2008).

The communities are represented at all levels and a range of complementary skills and backgrounds (local experts to institutionally trained scientists) were seen at ANDES. The thematic areas should not be viewed as discrete functional units, rather the themes, and related organizational activities, were interdependent. As projects receive funding and are undertaken the thematic area teams work to ensure each theme is addressed within those projects.

ANDES' organizational structure ensures direct participation of community members at key decision-making levels of the organization and across the various functional areas of ANDES work. Multiple thematic areas allow diverse Development initiatives to be undertaken. The staff within the thematic areas act as conduits between external and community knowledge systems i.e. between local IK and Eurocentric science. Examples of important decision making (e.g. the location for construction of buildings) and specific projects (discussed later).

Together, IBCH modelling and territories, the Inter-Community Agreement and ANDES organizational structure create a multi-layered and deeply inter-woven set of relationships embedded in the communities' ontologies and socio-political structures.

6.4. Indigenous Knowledge in Practice

Diverse Projects & Multiple Knowledges

The previous section discussed formal organizational aspects, the various intercommunity agreements, approaches to conceptualizing and modelling the communities, ANDES organizational structure, and the values and meanings prevalent in the organization. This has

given insight into the ways IK is framed (e.g. in the IBCH modelling and Life Pans) and the structuring of the organization to facilitate and normalize IK within ANDES and its projects. Within the Park many projects have been IK focused while integrating aspects of other knowledge traditions. These projects represent a diverse range of applications of IK, and as such, each gives insight into IK dynamics within specific contexts. A selection of seven projects (A to G) which highlight these aspects is presented below;

PROJECT A

Native Potato Repatriation

Repatriation Agreement and In situ-Ex situ Co-management of Native Potato

Undoubtedly the single most important work within the Potato Park and a cornerstone of all Park activities was the returning of potato varieties to the Park and the on-going co-operative management of potato varieties between the Park communities and CIP. The repatriation of potato varieties acted as a nexus, connecting and integrating multiple projects within a framework aimed at maintaining high agro-biodiversity and enacting practices that supported the communities' agency and *ways of being, doing and knowing*. Key elements in returning the potato varieties included;

- I. **Community – Institute complementarity** – the principle of community – institution complementarity in maintaining agro-biodiversity was central to the co-management approach. From this principle a community-institute collaboration where each party is considered essential in maintaining crop diversity was developed. At this early stage, ANDES staff and a single university researcher specializing in native potato varieties worked together to develop a strategy to put this principle into practice. The group, Papa Arariwa (Guardians of the Potato) were formed to take a lead role in all aspects of maintaining potato diversity. The group is predominantly female and made up of community members with the highest level of knowledge and experience with potato varieties. The group played a central role in the relationship with CIP, supporting the return of repatriated varieties, the recording of traditional knowledge and the co-management program. The group was also involved in political actions opposing genetically modified organisms in the Cusco region, and more recently (2011) in collaborating with CIP to supply potato seed to the Svalbard Global Seed Vault in Norway.

David Tay, the leader of the Genetic Resources Division at the International Potato Institute (CIP) commented during a workshop in September 2009 that leading up to the signing of the repatriation agreement in December 2004, there was a definite split between those at CIP who supported the proposal and those that didn't, with only a small group believing that in situ – ex situ co-management was a valid research and conservation methodology. David said;

“The communities that created this wealth of crop diversity have been pushed aside, we’ve (CIP) collected over 4000 potato varieties from Mexico to Chile, which all came from communities like these in the Park. Just the samples were collected and the knowledge and practices associated with the varieties were ignored. But they are two sides of one coin, we need to understand and preserve the wealth of knowledge contained in those practices.”

David later commented that a major challenge for CIP staff was moving from the notion that the controlled environment of the institute was the sole place for preserving agro-biodiversity, to understanding that the preservation of agro-biodiversity can involve indigenous community – institute collaboration.

- II. Formal Agreement** – the formal agreement included statements pertaining to;
- a. Assumptions** – underlying principles upon which the agreement is founded, including maximizing agro-biodiversity, supporting continuity between in situ and ex situ activities, open and equitable sharing of knowledge and resources, and the promotion of community rights and responsibilities.
 - b. Objectives** – to maximize agro-biodiversity, ensure communities maintain custodial and guardianship roles over genetic resources and knowledge, oppose the application of intellectual property restrictions to genetic resources and knowledge, and maintain community principles and practices as central in the implement the agreement.
 - c. Scope** – the agreement was limited to activities related to maximizing agro-biodiversity, including the repatriation of potato varieties, ongoing participatory research and in situ/ex situ co-management of varieties.
 - d. Nature of the Agreement** – the agreement is an expression of mutual collaboration, with each party respecting the rights of the other party.

- e. **Compatibility with national and international regulations** – linking the agreement to national and international regulations such as the United Nations Declaration on Indigenous Peoples Rights, FAO International Treaty, UNESCO Universal Declaration on Cultural Diversity, Nagoya Protocol, Convention Concerning Indigenous and Tribal Peoples in Independent Countries, and the Convention on Biodiversity.
- f. **Responsibilities** – both parties (CIP and the Potato Park) are responsible for promoting and managing in situ conservation and its relationships with ex situ practices, sharing resources with third parties to promote extension of the ‘in situ model’, sourcing funding, publicity, maintaining communication, acknowledging each other’s contribution, benefit sharing, and integrating community activities into research and Development processes.
- g. **Confidentiality** – both parties agree to maintain confidentiality as requested by the other party, and in the case of financial matters, all transactions, rights and responsibilities will be reported through appropriate institutional processes.
- h. **Information regulation** – if information is supplied to a third party by one of the parties, the other will be notified. Peruvian state authorities will be notified of any relevant actions.
- i. **Distribution of benefits** – potential benefits should be directed toward developing and improving functions and services within the Park in the first instance, with the express aim of improving the quality of life in the communities.
- j. **Implementation** – ANDES will act as the first contact and representative for the Park. ANDES will ensure that communication between CIP and the communities will be conveyed quickly and accurately.
- k. **Validity, term and modification of the agreement** – the agreement will be for five years. The Agreement may be amended upon mutual agreement of both parties. Amendments will be in writing and signed by both parties.
- l. **Termination and fulfilment of the agreement** – the Agreement may be rescinded by either party with the provision of six months’ notice.

- m. Conflict resolution** – conflict resolution procedures will be established by the parties within six months of signing the Agreement. These will follow normal conflict resolution principles and a document outlining the procedures will be annexed to the Agreement.

The Agreement was signed by both parties on the 17th December 2004. The Agreement expired on the 17th December 2009. A new five-year agreement was signed at the CIP offices in Lima on the 6th December 2010.

Community Bio-Diversity Register – Integrating IK & Institutional Science

The development of a register of local bio-diversity in the Park was essential in implementing the Repatriation Agreement. An inventory was created, named “Registras Locales Khipus”, to record bio-diversity across the Potato Park’s ecosystems and provide a record of current and past potato varieties. As a living record of local bio-diversity the inventory recorded changes in bio-diversity within the memories of contributors, and the changes due to the repatriation process. The register therefore has multiple functions; acting as repository of local knowledge for use by the communities, as a foundation for collaboration between the communities of the Potato Park and research institutions, and as a platform for protecting community rights i.e. the register makes explicit the relationships between people and other living elements of the landscape (e.g. plants, animals, rivers, mountains) by recording oral local knowledge in written form.

The phases involved in developing the Community Bio-Diversity Register are described below. It was recognized that some restrictions regarding the sharing of information on the register with external organizations would need to be developed to limit the possibility of misuse of local knowledge (see phase three, “Establish Local Record”) such as occurs in bio-piracy (i.e. the use of indigenous knowledge of the natural environment to produce commercial products without informed community consent and appropriate reciprocal benefit sharing). For example, ANDES has been active in seeking the banning of genetically modified organisms (GMO) in the Cusco region, as GMO’s are viewed as a threat to local bio-diversity. In contrast the Peruvian government is pro-GMO. Sharing of the register within national government agencies would therefore put at risk ANDES anti-GMO stance i.e. if crop information in the register suggested potential for commercial gain through genetic modification, national government agencies or commercial interests could act on that information. The restrictions

built into the register are therefore protective measures to ensure the relationship between the children of Pachamama, people and plants, is maintained. As a core feature of the ayllu (community), the maintenance of ayni (reciprocity) based modes of relating is essential. The intrusion of commercial ontological assumptions (e.g. plants are objectified and controlled as if inanimate) and practices (e.g. restricting who can grow or consume a plant) into local worldviews and practices has a very real potential to disrupt these core features of local modes of relating and restrictions on local knowledge must therefore be applied.

The development of the register was described as involving the following steps;

1. **Develop a Legal Framework** – identify relevant elements of national and international law. Consult with the communities to identify local lore, rights, responsibilities, and institutions related to crops and wild plants. Develop a legal framework which integrates community lore, national and international law, and international conventions (e.g. the UN Declaration on the Rights of Indigenous Peoples, the UN Convention on Biological Diversity and the FAO's International Treaty on Plant Genetic Resources for Food and Agriculture).
2. **Pilot Register** – review of published literature and development of a bibliography of relevant sources; systematically contacting, interviewing and consulting local experts; identifying unique characteristics and features to use in registration system; proposing designs for the register and for community workshops.
3. **Establish Local Record** – train field team to conduct workshops, conduct workshops and record information, analyse and categorize information, create reports and publish. A system of information classification based on traditional principles which indicate the degree of caution required around specific knowledge (i.e. its degree of tapu) and concerns regarding bio-piracy was developed at this stage. The system classified information into three categories and used traffic light colours as indicators;
 - I. **Green** – available for all, there is a responsibility to promote and share information.
 - II. **Orange** – caution required as susceptible to bio-piracy and/or moderate tapu.
 - III. **Red** – excluded from register completely or access restricted to community experts.

4. **Transfer Records** – design workshops and presentations for sharing information within communities.
5. **Implement Register** – begin to integrate register information into ‘Life Plans’ and other projects.
6. **Preliminary Database Implementation** - selection of information for the database and develop, test proto-type and consult with communities, review literature and field observations.
7. **Active Database** – finalize the register/database, train locals in the use, maintenance and up-dating of register, create register manual, maintain and support software and hardware. Software was open source as ANDES felt the values which underpin the open source software paradigm fit well with community values. The final data base format is freely exchanged with others.

From this development and implementation stage further refinement of the register occurred. A five-step version process was developed for registering resources (see below) (Argumedo & Pimbert, 2006). The register was described as a ‘living document’ in which new information is recorded and integrated as part of knowledge processes within the communities. During my time at ANDES this recording and integration of information was a ubiquitous feature of ANDES work. At all events I attended and many of the meetings held at the Cusco offices documentation using video and photography occurred. At major events there was at least two people video recording; one was an ANDES videographer whose role was to recording information, store and disseminate information, the other/s would be local women who were being trained in data recording and management techniques. These women are part of a group known as the “Women’s Video Collective” whose work is integral to all of ANDES projects as video recording of IK and participatory practices is used extensively.

Simplified Registration of Agro-Biodiversity (adapted from Argumedo & Pimbert, 2006)

Step 1 Registration begins with a biocultural mapping of the area to identify what resources are to be entered into the register.

Step 2 Identified biocultural resources are evaluated using the Yapana matrix tool. This evaluation establishes the specific uses of the resource (medicinal, food, and ceremonial) and the level of restriction to knowledge.

Step 3 The resource is documented using photographs, maps, drawings, and any relevant history or folklore.

Step 4 The uses and practices associated with the resource documented on video. A clip, recorded in *Quechua*, is created that demonstrates (a) the various uses of the resource, alone or in combination with other resources, and (b) what is considered an appropriate use of the clip/information is described on video.

Step 5 Finally, all the information is entered into a digital database.

Written information recording
(using plant registration matrix)

Digital information recording



Yapana Matrix

Figure 17. Communal knowledge process integrating traditional and digital technologies.

A Plant Registration Matrix was developed as part of the “Registras Locales Khipus” (Community Biodiversity Register). The registration matrix integrates traditional and techno-scientific knowledge and was used as a data collecting tool in communal forums.

In practice the register’s development was iterative, with the five steps described above representing a general direction in the process of development. Together, the legal framework and the register of agro-biodiversity and associated practices provided a foundation for the repatriation of potato varieties to the Park communities and the development of the co-management agreement between the communities and the International Potato Centre (CIP).

At the core of the co-management model is the belief that maintaining the highest level of agro-biodiversity is essential to community well-being (Sumaq Kausay) as high agrobiodiversity represents a maximizing of communities' resource base, and that the communities and research institutes have complementary roles in achieving this. The *"Agreement on the Repatriation, Restoration and Monitoring of Agro-Biodiversity of Native Potatoes and Associated Community Knowledge Systems"* details the assumptions, obligation and right of the communities of the Potato Park and CIP in maintaining a high level of agro-biodiversity in the Park.

Developing a Model – from the vision a set of processes/actions were agreed upon to develop a model for in situ/ex situ co-management of crop diversity. This involved a broad cross section of community members. As noted earlier, there was significant institutional resistance within CIP to the notion that indigenous communities could make a positive contribution to preserving agro-biodiversity. This was described as a symptom of the broader societal level exclusion of indigenous peoples, their knowledge and their rights from institutional settings and the public sphere within Peru.

It was agreed during the early stages of the model's development that the process needed to be flexible, adaptive and iterative as it involved a high degree of novelty for both parties. By 2009 the co-management agreement was five years old and the processes had been refined. It was heralded by CIP as a major success and had begun to be implemented in other locations. CIP has commenced a project called Ruta Condor, "Route of the Condor", to create multiple in situ/ex situ co-management projects in areas of high agro-biodiversity. Below is a model of co-management presented by ANDES during a South-to-South workshop in Sept. 2009.

The model represents a broadly cyclic process with key steps in the model in bold text. After the returning (repatriation) of seed stock they are initially grown in **green houses** in the villages to allow crop re-acclimatization as the potato varieties have been grown at sea level in Lima at the CIP headquarters i.e. a period of adjustment to both the climate and altitude. After a season growing in the green houses the potatoes are **planted, grown and harvested** by families across the communities. The growers and location of planting of each variety is recorded, along with information regarding the growth cycle of each variety (e.g. general plant health, disease and pest impacts) and its response to conditions in the Potato Park. This recording occurs on a database operated by Papa Arariwas members and ANDES staff. This

recording allows information to be shared with CIP staff, and allows local variations in climate and their effect on individual varieties to be recorded and assessed. As a high-altitude site, the Park communities are considered indicator areas for climate change. The information gathered regarding climate variation and effects on crops is shared through international scientific and indigenous networks (e.g. through annual gatherings of the International Network of Mountain Indigenous People (INMIP) in Bhutan (2014) and Tajikistan (2015)).

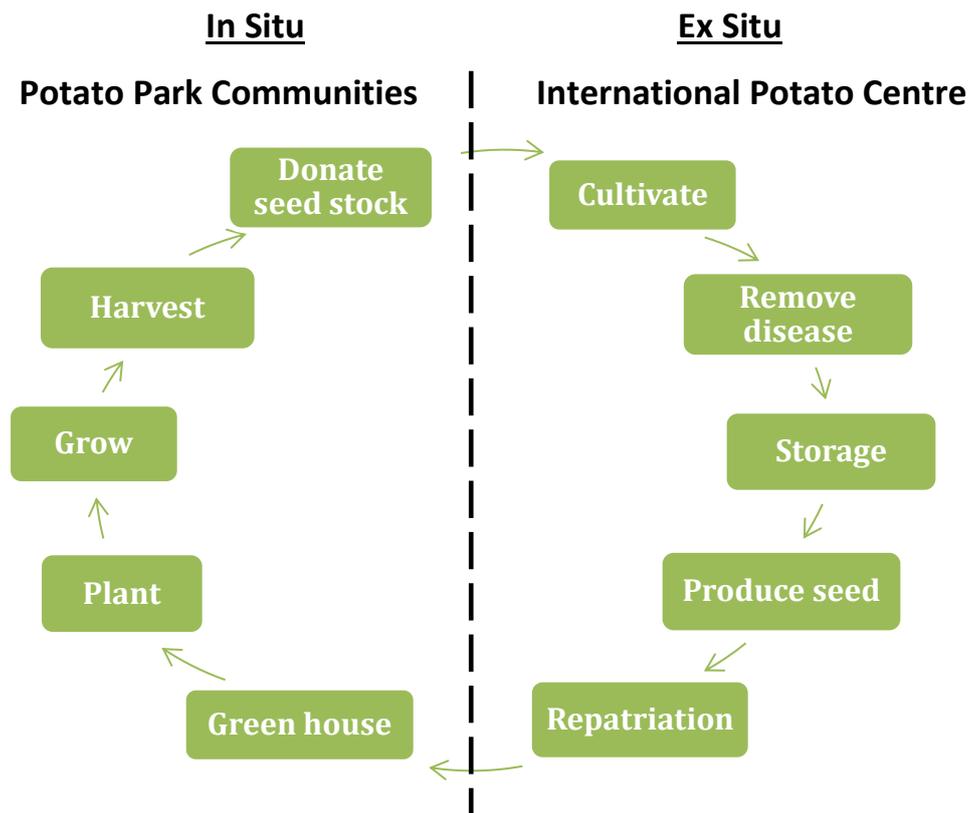


Figure 18. In situ - Ex situ co-management of native potato cycle.

When harvested a proportion of each variety is stored with each family for their use, some are placed in the communal storage facility in each village and a small number are **donated as seed stock** to CIP in Lima. The returning of seed stock to CIP typically involves an exchange of disease free varieties from CIP and samples from the Park. These events involve workshops and tours of CIP's facilities, which increase mutual understanding between CIP scientists and community members. After seed stock is received by CIP, genetic analysis occurs to confirm received varieties are not repetitions of other varieties held at CIP. In vitro plantlets are then grown while exposed to increasing heat levels which stop virus growth in the plantlets. Samples are taken and the process repeated until the plantlets are virus free. Varieties are

then **cultivated** as live stock and held in living storage as part of CIP's Potato Genebank. Varieties from the Genebank are then available for later **repatriation** to the Park. The in situ/ex situ conservation cycle is ongoing and reciprocal.

Within this model the exposure of potato varieties to 'natural' settings (in situ) allows normal environmental pressures to stimulate processes of adaptation and change. Exposure to the natural environment allows natural selection processes to stimulate adaption as well as farming practices which encourage crop adaptation. The Andean mountains are experiencing a period of climactic change which is thought to be the result of global warming. Exposure to naturally occurring environmental pressures is viewed by both the communities and CIP as a key strategy in ensuring food security as food crops must be exposed to the 'new climactic conditions' occurring across Andean communities, thereby allowing the crops to adapt to these new conditions.

Infrastructure Development

Spanning multiple funded projects, community infrastructure development was coordinated across all communities through mechanisms such as the Inter-Community Agreement & Trust Fund, and traditional communal relationships. By 2009 these projects included the restoration and/or construction of potato storage facilities in each community, the construction of a restaurant, an arts and crafts centre, numerous greenhouses, and a resource centre. The development of such significant infrastructure delivered tangible and usable benefits to communities. ANDES staff emphasised that Development should involve tangible and intangible (e.g. knowledge) elements. It was noted that agricultural Development has tended to focus on the transfer of intangibles (e.g. scientific knowledge) which provided a material benefit to the experts involved (i.e. contracted services), but rarely a material or tangible benefit to indigenous farmers. Delivering tangible and useful benefits from Development initiatives was therefore a priority for ANDES.

- a. ***Decision making process*** – as discussed previously prior to construction decision making processes involved, at times challenging, inter-community and community-ANDES processes of negotiation. As buildings were constructed and the benefits shared across the communities' inter-community cooperation improved between the six communities.

- b. **Construction** – construction provided paid employment and skill development for community members.
- c. **Building use** – All of the buildings are regularly used. The potato storage facilities provided a large central community storage facility. The restaurant, the arts and crafts centre and the resource centre are used almost daily by the communities where they are located and for hosting Park activities.
- d. **Knowledge processes** – the buildings provided a focal point for the integration of knowledge processes and technologies into community life. For example, the potato storage facilitates required formal data management systems where potato varieties are catalogued and written records of plant growth and crop quantity and quality kept. The restaurant provided a space to present both traditional and new dishes to the wider community and visitors. In mid-October 2009 a group of international chefs were to tour the Potato Park with a visit to the restaurant to taste authentic Andean cuisine. For the communities this was a chance to showcase both their traditional dishes and the new dishes they had developed in the Q’Achun Waq’achi project. The chefs’ tour provided an opportunity for the Parks communities to develop economic activity by supplying products (local crops) to the restaurant’s the chefs worked at and to highlight their cuisine as a unique cultural experience for visitors. Such exposure to visitors, within the familiarity of the restaurant and resource centre, also allowed visitors to share knowledge, practices and technologies, thereby creating spaces for multi-directional knowledge processes i.e. polycentric dialogue (Maffie, 2009).

PROJECT B

Q’Achun Waq’achi (the Weeping Bride) – Gastronomy Collective

This is a gastronomy group formed to preserve local cuisine and create innovative dishes. It was named after the potato varieties which is used in pre-marriage rituals involving the bride to be proving her worth as a prospective wife. The participants were all women and the project was led by an ANDES staff member who was a first language Quechan speaker and a tertiary trained agronomist.

Central to the projects was the idea that cuisine is an integral part of a culture and that having a robust and resilient food culture will support the repatriation of potato varieties and lead

to nutritional benefits amongst the communities. The project began with local women meeting to discuss traditional dishes. It was found the recollection of dishes occurred best while cooking and in communal situations. For example, one lady would begin cooking a dish her grandmother used to prepare. She would tell stories about her family and recall aspects of life at that time. Others present would recall aspects of their own lives at that time, and often variations in the same dish would be remembered. The ANDES staff member leading the group, a trained agronomist, would encourage these practices and present basic nutritional information e.g. information about carbohydrates, protein, minerals, vitamins, etc. From the base of recollected traditional dishes, the group began experimenting with adaptations to the dishes based on the nutritional information provided, and/or the inclusion of local ingredients which had been part of local cuisine, but which had slipped from regular use. For example, many of the women have husbands who work as porters on hiking trails in the area, most famously the Inca Trail to Machu Pichu. Dishes were adapted to increase carbohydrate levels for stamina and protein levels for recovery.

The traditional and adapted dishes were produced within the participants homes. The women commented that if their husbands did not like the dishes there would be resistance to the dishes being cooked at home. However, if the dish was introduced slowly and if the children liked the dishes, then the husbands could be won over i.e. husbands could act as barriers to cuisine change in the home, with children played a role in overcoming reluctance to cuisine change from fathers.

As a principle aim of the gastronomy projects was to facilitate change in cooking in the home the agronomist made regular home visits to observe the characteristics of cooking at home and how adapted dishes were cooked. The home was the primary site for producing and consuming local cuisine and it was therefore the site to which activities were directed. As word spread about the group, the ladies would be invited to prepare traditional dishes and the adapted versions at community events. At these community events the whole community would be exposed to the group's activities in reintroducing traditional dishes and adapting them. This positive communal exposure of the project generated wider interest and support and more women would attend sessions. At this stage distinct social pathways had been witnessed as the dishes had spread from project sessions, to homes, and then into communal settings. Through these diffusion pathways processes of IK revival and revitalization, and IK –

Eurocentric science interaction were evident, showing creative, locally appropriate and effective knowledge engagement processes.

Furthermore, the sharing of these traditional and adapted dishes within families, communities, and with Peruvian and international visitors shows the potential for generation and diffusion of cuisine innovation from indigenous communities to communities around the global via attendees at the South-to-South workshops and group like the visiting chefs mentioned earlier. This example is also particularly illustrative of the social and cultural embeddedness of appropriate participatory Development. The use of plants in the various dishes was included in the Community Bio-Diversity Register, and the Women's Video Collective was involved in recording the dishes.

PROJECT C

Natural Medicines & Cosmetics Project - Sipaswarmi Medicinal Plants Collective

This project involved recording traditional plant based medicines and cosmetics, creating medicinal and cosmetic plant gardens, developing medicines and cosmetics for sale, and holding an annual "Festival of Medicinal Plants". The natural medicines project was closely aligned to the gastronomy project with the ANDES staff member (an agronomist by training) who led the gastronomy project also leading this project. Again, there was a focus on integrating local plant and techno-scientific knowledge.

One aim of the project aimed to develop local economic activity by creating 'new' products for sale. The project therefore included market analysis, branding and intellectual property protection (a Potato Park logo was created to use on packaging as a marker of community intellectual property), marketing and sales. The Community Bio-Diversity Register featured strongly in this project as traditional plant knowledge was revived during the Register's development. The development of medicines and cosmetics involved experimentation by the participants and as such the project constituted a learning environment where there was interaction between IK and techno-scientific knowledge. All aspects of the project were documented using written and digital methods.

PROJECT D

Participatory Geographic Mapping

This was a mapping project which integrated local understandings of place with geographic information systems (GIS) data e.g. satellite imagery, topographic and hydrological data. The aims of the project were to map land use in the Park over time and create a culturally specific representation of the Park's landscape. The project involved four stages;

- I. **Cultural Mapping** – this mapping involved community members discussing and drawing their landscape, including any elements they felt important and excluding elements deemed inappropriate for the project. The principle elements in local conceptualizations of landscape are Pachamama (the living earth and mother of all things) and the Apu (sacred mountains). One community leader described a general hierarchy;

Apu → Elders → Community

The Apu vary in character, gender, history, significance and influence, however the mana of all Apu directly influences the communities. Important community activities are based on communication with Apu, with the Apu providing a mandate for all activities i.e. the mana of the Apu is greater than the communities and as such the Apu authorizes community activities. Other features of the relationship between Apu and communities included the notion that the principles values of the community (Ayni – reciprocity, Minka – communal work, Kaninchin – equality within the community, were given as examples) apply to the relationship between communities and the Apu. A female community elder described how people's feelings and emotions depend on their relationships to their Apu. For example, if someone is in a constant 'negative' mood, this was described as to be likely caused by the person having a poor relationship with their Apu.

Community elders were asked if the Apu are responsible for any misfortune that may occur to or within a community. They replied that the Apu are benevolent and as such they do not cause harm to communities. It is the community's responsibility to understand the nature of the Apu through regular communication, via community

elders. If misfortune occurs, it is because the nature of the Apu has been misunderstood. Misunderstanding of an Apu's nature occurs through poor communication with the Apu when a breakdown in the Apu – Elder – Community relationship occurs. This was described as occurring when Apu are ignored, the elder/s misunderstands the Apu, or the community misunderstanding or ignoring the elder/s. Community and individual misfortune are therefore seen as a breakdown in communication between people and the benevolent and powerful Apu.

Apu and rivers were typically the first features mapped. An old lady from one of the communities described how the Apu produce all the things that are valued, rivers flow from them, they attract rain clouds, and plants, animals and people live on their sides. The Apu are literally the source of life in this world and this is why they are of such significance to the communities and why they are the key features in 'cultural mapping'. The same lady further described the significance of a female Apu, Apu Warimsaya and a nearby male Apu. The two Apu were described as a good couple who gave good advice to the communities. The two Apu were both bountiful because they were together and complemented each other (i.e. yanantin);

“They (the two Apu) are a good couple, so they produce good things, the animals, the plants, the rivers. So we should be good couples too, a man and a women fit together, like those Apu.”

The old lady went on to say that we (people) must communicate with the Apu regarding important decisions as they have wisdom beyond that of humans.

Discussions regarding Pachamama, Apu, sacred sites, and local understandings of the origins of geological formations, provided a foundation for the mapping project's aims to integrate local and scientific conceptions of place. The discussions moved to land use as recalled by community members i.e. cropping patterns, settlement growth patterns and irrigation over time.

- II. **GIS Mapping** – 3D GPS data and satellite data showing land use and hydrology since the early 1960's was combined. Coloured images showed changes in land use patterns and hydrological features over time (watercourses, lake and dam sizes, glaciers). Different patterns were noted in the lower villages (rotation patterns based on individual families' use) while the higher villages had rotational patterns consistent

with communal land use management. Data also showed land use patterns moving between communities e.g. specific crops first grown in one community may over successive years be grown across a growing range of communities. Overall, the maps showed a reduction in the variety of land use since the 1970's and a reduction in fallow times for cropping areas, suggesting reduced crop diversity and increased pressure on available land.

- III. ***Integrating Cultural and GIS Mapping*** – here the information from the two maps were brought together, stimulating discussion and creative responses to weaving the layers of the map together and how the map could be used. In some instances, the GIS map showed variation in land use, but the satellite data did not indicate what the land use was, just that there were differences in land use in different locations. Information from the cultural map and community members own recollections allowed the specific uses of those areas to be identified, thereby enriching the GIS data. Likewise, the images of land use patterns from stimulated discussion and recollections about land use amongst community members.

The integrated map also clearly showed differences between the Park communities, with the upper communities being drier and having relatively low variety in land use, the mid altitude villages were wetter and have greater variety in land use, and the lower villages had the highest rainfall and numerous significant hydrological features. In these lower villages there was also a greater prevalence of both clay and sandy soils. The final step in integrating the cultural map and the GIS map was the construction of a 3-dimensional model of the Potato Park. The building of the model occurred during a workshop over two days involving people from all of the communities. The completed model is made up of six separate sections representing each community of the Park.

- IV. ***Integrated Maps*** – The participatory mapping project continues as a knowledge practice and representative model of Park activities i.e. new information regarding cropping patterns, hydrology dynamics, etc. are continually integrated into the project. The project created a set of processes where local understandings of landscape and techno-scientific understandings exist as complementary and dynamic knowledge processes.

The 3D model has proven a particularly useful tool. It provides a tangible physical representation of the landscape of the Park which community members find relevant and easy to use. I witnessed the use of the 3D model on numerous occasions by community members working at ANDES, taking great pride in pointing out their own community and surrounding areas.

PROJECT E

Agro-Tourism & Willaqkuna Tourism Guides Collective

Commencing in 2003 the agro-tourism project sought to provide tourists with an integrated experience of the unique bio-cultural elements of the Park. The project developed and linked traditional walking trails as a means to integrate the unique elements of the Park and ANDES various projects. The trails linked major infrastructure projects (e.g. the restaurant, resource centre, handicrafts workshop), archaeological sites (e.g. Inca ruins), areas of natural beauty and areas of high bio-diversity (wild and agricultural). This provided an opportunity for tourists to engage in a rich and relatively authentic tourism experiences.

Together the various trails draw tourists to remote communities, while the projects and infrastructure developed under the Potato Park mantle have allowed those communities to develop the capacity to supply products and services to visitors directly. In the case of the handicrafts workshop in Pampallaqta the workshop was intentionally built in that community to draw tourists to the area. 10% of all sales at the workshop go to the Park's trust fund to benefit all communities, while 90% goes directly to the artisan. This benefit sharing arrangement is part of the Inter-Community Agreement.

PROJECT F

Tika Tijillay Women's Video Collective

Video was identified as a useful tool for documenting and sharing IK as it allows a richness in information recording, it is accessible, and allows communities to take ownership of knowledge processes as they learn to edit footage, create databases, use computers and utilize video in community and family contexts. All formal Potato Park activities are documented by members of the collective, along with a dedicated videographer from ANDES.

During field work, video and photographic documentation was a ubiquitous feature of formal activities.

ANDES staff commented that the video collective was particularly important as it targeted a group (women) who have traditionally faced limitations in their educational opportunities. The collective has fostered the development of new skills (video and computer) and lead to paid work as the women are hired to document conferences, workshops, agricultural events and prepare video for publications and promotion.

It was common to see a group of women at events handling video cameras, usually giggling as they manoeuvred around an event to document it. When asked about this work a typical response was that it was fun, that important things were being recorded, and learning to use digital technologies was personally rewarding.

The use of 'participatory video' to record IK is a feature of many Development projects globally (the "Barefoot Filmmakers" of India being a well-known example). Participatory methods such as participatory video making, participatory GIS, crafts, and natural medicines and cosmetics projects, provide opportunities for direct indigenous-to-indigenous engagement, what ANDES termed South-to-South Knowledge Exchange (see following section). An example of this activity specific exchange occurred between the Women's Video Collective and a group from rural India. A week-long workshop was held with a group of Indian women visiting to share their experiences and teach skills relating to digital recording, editing and storage technologies. This workshop allowed relationships to develop, aspects of the Quechuan and Indian women's cultures to be shared, and specific skills relating to the use of digital technologies to be taught.

PROJECT G

South-to-South Knowledge Exchange

South-to-South knowledge exchange refers to an approach to sharing knowledge where indigenous communities communicate directly between themselves, and engage in IK to IK interactions. Through their involvement in indigenous networks, ANDES staff had witnessed the unique dynamics that occur between indigenous peoples, particularly when there are shared experiences of colonization, and that indigenous learners can be more responsive to

learning from or with other indigenous peoples, due to commonalities of experience. ANDES staff described witnessing the positive outcomes of knowledge sharing, where insight and solidarity were strengthened through such interactions. These positive experiences motivated ANDES staff to focus on direct interactions between communities of the Park and other indigenous peoples, and to develop a model for framing their approach to IK – IK dialogue i.e. South-to-South Knowledge Exchange.

From an IK perspective, the South-to-South exchange model represents an interaction between the IK of distinct groups, taking a polycentric epistemologies approach to knowledge processes. ANDES promotion of their experience with participatory and culturally grounded Development to other indigenous peoples occurs through publications, participation in international indigenous fora, presentations at conference, and via the websites of ANDES, the Potato Park and their partners, most noticeable the IIED website where a large number of publications can be accessed online (www.iied.org). Through this promotion of ANDES work and a desire to share directly between indigenous peoples, the South-to-South workshop approach was created. The promotion of ANDES work to indigenous peoples, and the hosting of workshops over 7 to 10-day periods represents a specific organizational response to the challenge of IK-to-IK engagement and collective indigenous empowerment.

An importance feature of the workshops was the idea of ‘walking’ workshops. The walking workshop idea meant limiting indoor presentations, and maximizing opportunities to interact within the landscapes and cultural and agricultural contexts of the Park communities. By creating learning opportunities within communal contexts, communal practices of welcoming and hosting were given priority, along with opportunities for inter-cultural sharing e.g. gift-giving, sharing of food, music and dance from each culture.

During field work I participated in ANDES third South-to-South Workshop in October 2009. The main guests at this workshop were a group of agronomists and tribal members from the highlands of southern Ethiopia. These guests came from a mountain area similar in altitude to Cusco, where a single crop, ensete (also spelt essete), is the staple. Like potato in the Andes, ensete production is central to community life, with the plant used as a food for people and animals, in construction (e.g. leaves use as insulation in housing), parts of the plant are used in rituals of birth (e.g. tying the umbilical cord) and death, in religious rituals (e.g. the leaves are used by Muslim community members for kneeling when praying to Mecca), specific

varieties are used medicinally, and the plant is central to the mythic traditions of communities (Haile, 2009).

The interaction between Ethiopian ensete growers and Quechuan potato farmers was one between peoples who had shared experiences as mountain people, and as peoples who had a dominant crop that had many varieties which provided food, while also meeting social, cultural, religious and health functions. Within this context of indigenous-to-indigenous dialogue, non-indigenous conceptual models such as complex systems modelling, provided important tools to bridge cultural difference and create conceptual mechanisms for mutual understanding, while ontological and practical commonalities provided a platform for relationship building and knowledge sharing.

An interesting development in the South-to-South model can be seen in the staging of recent events that focused on mountain communities and climate change. In 2014 and 2015 ANDES staff participated in two global indigenous climate workshops, the first in Bhutan and the second in Tajikistan. These workshops involved indigenous-to-indigenous dialogue between mountain peoples regarding climate change. Mountain communities are particularly susceptible to the effects of climate change, as variations in temperature and weather patterns effect mountain glaciers, a common source of water for these peoples, and affect agricultural conditions e.g. warmer temperatures can allow new plant diseases to flourish and affect traditional crops. Indigenous peoples' sensitivity to these variations, understood through the perspectives of their traditional ecological knowledge (TEK), thereby providing insight into the dynamics and effects of climate change, and contributing global discussion and responses to this issue. By engaging with indigenous and other knowledges, indigenous communities cultivate a broader knowledge base to respond directly to climate variations and the consequences they generate i.e. reduced water supply, variable seasonal rains, changes in plant diseases and pests, and the adoption of new plant varieties and species into local agriculture.

6.5. Development Benefits – Delivering on the Development Promise

ANDES staff and community members described Development projects as creating a broad range of positive outcomes relating to community rights, material and financial benefits, infrastructure, and individual, family and community opportunities and capacity

development. In discussing specific projects with ANDES staff, growers and members of supporting organizations (i.e. the IDCIs and research institutes), there was a consistent view that project benefits occurred for the communities and participating organizations. A sample of these benefits are listed below;

Community Benefits

- **Construction of buildings** – paid labour during construction, inter-community ownership and community use of buildings.
- **Repatriation of potato varieties** – increased agro-biodiversity has improved food security, and the repatriation and co-management processes have on-going benefits in terms of increased crop productivity and the increased visitors to the Park e.g. agro-ecotourism, visiting researchers and indigenous groups. The repatriation process also gave first-hand experience of, and organizational and legal mechanisms to assert indigenous rights.
- **Affirming culture** – the affirmation of local culture and the knowledge practices of the communities has seen the local culture maintain continuity with the past while invigorating local knowledge processes through the adaptation and integration of external knowledge, practices and technologies.
- **Affirming rights** – affirming the relationships, obligations and rights between communities, their territories and biocultural resources.
- **Local employment** – ANDES employment of community members has provided monetary rewards, as well as providing opportunities to develop skills through engagement with other cultures and places. Community members have been employed in building projects, filling roles in specific projects (e.g. as community technicians) and as service providers at formal events (e.g. working at the restaurant). The creation of the Agro-Ecotourism project has seen increased visitor numbers to the communities with benefits to service providers (accommodation, food and guiding) and an increase in purchasers of arts and crafts directly from community members within their own villages i.e. community producers had a

reduced need to travel to Pisac or Cusco, or to supply products to retailers in those centres.

- **Local production** – the Arts and Crafts Workshop, the Restaurant, and the Natural Medicines & Cosmetics Project have allowed community members to engage in the market through the production of products and provision of services. This engagement typically involves a portion of income being returned to the Park via the trust funded established under the Inter-Community Agreement, with the majority of income being directed to the producer/service provider.
- **Increased networks** – through ANDES and the Park, the communities are strongly positioned within global networks of indigenous action and knowledge development. From this perspective, ANDES and the Park’s success represent a significant contribution to a global movement amongst indigenous peoples to re-assert our rights.

Organizational Benefits

- **Institutional change & learning** – the repatriation of potato varieties to the Park communities from CIP and the ongoing in situ – ex situ co-management was described by CIP staff as resulting in significant organizational learning for CIP regarding participatory approaches to the maintenance of agrobiodiversity. The Potato Park example was replicated and expanded through the Ruta Condor program of multiple co-management sites across the Andean mountains. The benefits of the co-management process for CIP were described as technical, as the Park communities provided a living site for conservation of close to 1000 potato varieties, variety cultivation knowledge was generated, and as the Park was experiencing a warming climate, data from the field sites was used in understanding variety responses to climate change e.g. varieties were exposed to new pests and diseases as temperatures rose and pests and diseases established in higher altitudes. The co-management process was also described as positive for ethical reasons as interaction with the communities was described by CIP staff as morally right.
- **Global participation** - ANDES work contributed to global agrobiodiversity conservation efforts through FAO and the Svalbard Global Seed Vault, global

indigenous political and educational networks through South-to-South exchange, and global Development networks through work with major IDCIs.

Chapter 7. FINDINGS

7.1. Introduction

This chapter discusses the research findings and their theoretical implications. The discussion explores the relationship between IK promotion and organizational and contextual factors. The Aotearoa project demonstrated conflicting dynamics between participatory rhetoric of IK promotion and elements typical of classic and neoliberal paradigms. Inter-organizational relationships (IORs) were shown to be of significance, with the non-participatory relationship between funder, science provider and Māori participants reflecting a power imbalance between these three groups. The lack of participatory methodologies at the inter-organizational level meant the funder's principle relationship was with the science provider, limiting the Māori growers' contribution to project monitoring and evaluation, and subsequent decision making. The project also demonstrated the significance of context, not just as representing unique cultural attributes, but in terms of demographic shifts and their impact on IK vitality (Blaikie et al., 1997).

In contrast, the Peruvian project involved more diverse, complex, strategic and participatory relationships with the communities of the Park, IDCIs (funders, research institutes), national and regional governments, and other indigenous peoples nationally and internationally. The Peruvian project explicitly centred Indigenous cosmovisions within the NGO's organizational culture, integrated community governance models into organizational structures and practices, and developed a network of international donor organizations who provided support, resources and autonomy to develop diverse, creative and practice orientated approaches to IK promotion which in turn provided tangible benefits to the communities. The Peruvian case showed how intra and inter-organizational elements can combine to support divergence from institutional norms (institutional entrepreneurship), highlighting the unique forms of institutional work required within Development contexts to undertake novel forms of organizing, community engagement and agrobiodiversity preservation. In comparing the two cases, an argument is presented that context, power, meaning and practice provide a framework to consider multi-level participatory Development organizing.

Overall, the research highlighted the vastly different organizational dynamics which can occur under the banners of ‘participatory Development’ and ‘IK promotion’. By undertaking research from an indigenous centred position, and using indigenous and organizational theoretical models, multi-level factors which represent and influence the expression of participatory and emancipatory ideals, were revealed.

7.2. Aotearoa Case

Development & Indigenous Knowledge Literature

The Aotearoa case showed elements of multiple paradigms (Blaikie et al., 1996) within a single project. The project displayed a strong top-down approach to agricultural knowledge, external framing and resource control (*classic* paradigm), while focusing on economic Development from a market-centred perspective (*neoliberal* paradigm) and using organizational rhetoric of collaboration and IK promotion (*neopopulist* paradigm). The indigenous grower – state relationship involved formal structures, practices and conceptualizations typical of *classic* and *neoliberal* paradigms. The indigenous growers remained marginalized, with the state as funder and dominant science provider maintaining control over decisions of framing, resource control and project practice. The project, while enacted within the fields of Māori growers, was institutionally located within the state’s political sphere. The lack of divergence from institutional norms of state control demonstrated the strength institutional environments have to frame power relations and to confine understanding and the possibilities of practice (Lewis & Mosse, 2006), thereby maintaining at the project level the norms of Development discourse (i.e. *first-wave* Post-Development critique of Sachs (1992) and Escobar (1995)). Where engagement with mātauranga Māori was attempted, project practice was to compartmentalize it, conceptualizing mātauranga as something “that Māori do, not scientists”. The dominant discourse of Māori – pākehā relations and Eurocentric science – IK relations was maintained, with mātauranga Māori engagement limited to Māori.

In exploring Development paradigms, Blaikie et al described six types of ‘knowledge-interface’ as reflecting the ways in which disciplinary, professional, structural, practical and ideological factors influenced interactions between Iks and other knowledge traditions (see Table 4, p.70). The knowledge interface that was most closely represented in the Aotearoa project

was the knowledge appropriated/denied interface. This interface involves a general denial of IK validity by science practitioners, while concurrently seeking to extract (appropriate) knowledge from IK systems. This 'mining' of IK systems does not reflect a recognition of the validity of IK, but rather a belief that despite IK being perceived as inherently flawed, that there exist some rudimentary understandings which 'real science' can test, develop and utilize. In the Aotearoa case the use of IK occurred not as direct appropriation or extraction, but rather as what can be termed a symbolic extraction. Here mātauranga Māori facts, practices, notions of power or ontologies are not engaged with in a meaningful and genuine way, rather mātauranga Māori is used as a symbolic reference whose meaning is constructed by those who have power, and in ways that allows 'engagement with Māori' to be on the terms of the powerful, and for those exercising this power to control Development processes.

This process of de-contextualization of IK contributed to the communities being treated as sites to perform an 'indigenous engagement' narrative that was constructed by those naïve to the communities. The agricultural and social scientists performed their roles of well-meaning experts, but the projects inter and intra organizational aspects provided little conceptual, ethical or material incentive or methodology for the scientists and their organizations to address their own cultural and IK naivety. The lack of participatory monitoring and evaluation (PM&E) effectively silenced and disempowered Māori growers, as there was no formal or empowered means of shaping operational, strategic and resource allocation decisions. The growers were consulted but there was a lack of participatory and/or critical input into the evaluation and assessment of project practice. This meant the project managers, who were members of the science team, (self) evaluated the science team's performance, creating one-sided narratives of project performance which then informed a wide range of project decision making.

The Aotearoa case demonstrated that inter-organizational relationships (IORs) are a significant aspect of participatory Development. Within a tripartite relationship between indigenous communities, Development providers and funders, the provider – funder relationship is of considerable political, economic and ideological importance. Where there is a lack of participatory method, a binary relationship between provider and funder can dominate framing, assessment and evaluation, project practice and resource control and decision making. The funder, as the supplier of capital to undertake Development work, is in

a powerful position to influence the practices of Development professionals. The influence of funders on provider practice is well established in the literature, particularly in relation to demands from funders since the 1980s for Development to be participatory. What the Aotearoa case revealed is that there are strong normative, political and financial dimensions of the provider-funder relationship which can lead to rhetoric of participation, while intra and inter organizational elements maintain dynamics of indigenous marginalization. While the literature has given considerable attention to the local level of in-field interactions between locals and Development professionals (e.g. the use of participatory engagement tools), and the macro view of Development as discourse, this research argues that meso level organizational phenomena, particularly inter-organizational relations between funders and providers, require considered attention if authentic and empowering indigenous-centred participation is to occur. PM&E is therefore an essential aspect of participatory Development and IK promotion, particularly where there is a need for institutional divergence (entrepreneurship) as described by Lawrence and Suddaby (2005) as PM&E can represent a practice through which the 'institutional work' required to change institutions occurs.

Within the Aotearoa case there was a lack of PM&E, instead relying on the Development provider to 'self-assess'. These project (self) assessments revealed a heavy focus on processes, with limited attention to outcomes, and the use of terms which were faddish (buzzwords) or obfuscating (fuzzwords) in nature (Cornwall & Eade, 2010). As text has the power to frame, explain, control and construct Development meaning and practice (Bebbington et al., 2007), it can be argued that non-participatory binary relationships between funders and service providers provide an inter-organizational and institutional dynamic through which textual distortion can occur which informs and sustains indigenous community exclusion or marginalization. The provider and funder 'talk' between themselves, creating a narrative with little local input. In short, this case highlights the ways in which indigenous exclusion is enacted through institutional and inter-organizational relationships, and textual (mis)representations.

Of note in the Aotearoa project was the relationship between institutional context and the framing of mātauranga Māori. The project had specific goals of engaging with mātauranga Māori as it related to agriculture. To engage with a knowledge system requires personal, professional and organizational capacity to engage appropriately and competently with the

communities who practice that system. This means that either individuals and organizations have these capacities, or if they lack them, are willing and capable of developing them. Chambers (1997) describes Development funder criteria as often leaping ahead of Development actor capacity to undertake new practices. It could be argued that this was the case in the Aotearoa project, where the demand by funders for the project to engage with and promote mātauranga Māori was not matched by the professional or organizational capacity amongst the science providers.

The lack of individual and organizational capacity to engage with mātauranga Māori was partially recognized by the science team. However, the lack of participatory monitoring and assessment (i.e. from the growers/Māori communities) or a direct relationship between the funder and participating growers meant this capacity deficit was not communicated directly to the funder. This situation highlights the need for participatory practices which link all Development actors involved in specific projects. A funder – community relationship involving participatory practices could have connected the three main actor groups (growers, scientists, funder), revealing the lack of mātauranga Māori engagement, the capacity issues that limited engagement, while supporting formal actions to develop engagement capacity (e.g. initiating training for scientists and their organizations, creation of specialist roles) in support of the project aim of mātauranga Māori engagement.

Community Context & IK Vitality

Blaikie et al. (1996) argued that rapid social, cultural and demographic changes within a group can affect both the relevance and resilience of a groups knowledge system. For the participating Māori communities, the post-World War Two urban migration involved social, economic and demographic changes which affected agricultural mātauranga. If the project's aims of promoting and engaging with agricultural mātauranga Māori were considered in light of these demographic factors, engagement with mātauranga would be viewed as requiring a focus on revitalization and education for community members and the science team. The declining state of agricultural mātauranga Māori was recognized by the project managers, however this situation did not raise questions regarding the appropriateness of science experts, who were predominantly not teachers, in addressing issues of multi-generation mātauranga loss. Given the science team's lack of cultural capacity individually and organizationally, both understanding and responding to the state of agricultural mātauranga

amongst the participating communities posed considerable challenges. Likewise, given the need to (re)learn lost mātauranga and establish a community of practitioners of agricultural mātauranga, it can be asked if a group of agricultural and social scientists had the professional and organizational capacity to develop, implement and manage a program of mātauranga revitalization? As mainstream agronomic scientists, 'Māori education' was not a feature of their professional backgrounds. It should be noted that some of the science team had educational experience, but not delivering Māori content to Māori students.

Given this situation the project undertook discrete activities that involved the sharing of agricultural mātauranga, for example, during multi-day events there were sessions on agricultural mātauranga where older community members would share their knowledge. This approach though lacked a systematic approach to learning-teaching, instead being intermittent, interesting, but limited in its ability to deliver educational outcomes that would arrest and reverse the loss of agricultural mātauranga i.e. maximizing the project's contribution to enhancing mātauranga capacity amongst community members.

Alongside these intermittent events, informal mātauranga processes occurred as event attendees discussed informally agricultural mātauranga and provided support and encouragement to each other. Given the \$700,000 per year funding of the project over 5 yrs., and the explicit objective of engaging with agricultural mātauranga, the development of a stronger educational dimension to the project would have been possible within the scope and resource availability of the project.

A number of factors can be seen as contributing to the science team's response to the loss of agricultural mātauranga. Firstly, the science team's lack of Māori cultural capacity meant they lacked an ability to understand mātauranga and to appreciate the nature of its decline with any sensitivity. Second, the science team were predominantly professional scientists, with little involvement in educational activities such as tertiary level teaching. This meant the science team lacked the conceptual and practical capacity to understand and frame processes of science diffusion and mātauranga engagement in educational terms appropriate to rural Māori communities. If the science team and project managers were Māori working in educational institutes (e.g. Māori agronomy lecturers), it is likely science team perceptions of the state of mātauranga Māori, the needs of the communities, and the practices required to

address these needs would have differed significantly. In short, the project highlighted that the cultural and educational capacity of science team members affected their ability to understand and engage with IK. Participatory goals of IK promotion are therefore directly affected by the level of indigenous cultural capacity amongst scientists and those who have power within projects. In a practical sense, indigenous scientists and researchers are more likely to have the necessary cross-cultural capacity and sensitivity to successfully engage with IKs and undertake the organizational and practical requirements to achieve IK promotion. When considered in light of the approach taken by Tāhuri Whenua, led by Māori agronomic scientist Dr. Nick Roskrige, the importance of cross-cultural capacity and its general paucity amongst pākehā scientists cannot be under-estimated.

The lack of community integration into formal project power structures highlighted that along with practices such as PM&E, there was a need for issues of power and cultural capacity to be considered concurrently, and for formal organizational measures to be applied within the project as a means of facilitating communication and shared decision making.

Māori Perspectives of IK & Organizational Dynamics

Mātauranga Māori Knowledge Framework

The Mātauranga Māori Knowledge Framework integrates Māori conceptual, theoretical and practical understandings within a broader context of interacting knowledges (polycentric global epistemology – PGE (Maffie, 2009)). As noted previously the project applied a top-down and externally framed approach. The science team had a limited understanding of Māori contexts and mātauranga Māori. The science team framed mātauranga Māori as something for Māori growers to practice, and something which empirical science could not engage with due to ontological and epistemological differences. In contrast, the growers did not perceive mātauranga Māori and empirical science as ontologically nor epistemological incompatible. Rather the growers saw practical benefits in each, could engage with both knowledge traditions, and evaluated empirical science based on its ability to address practical problems within the context of their lives. In considering the ontological-epistemological incompatibility argument presented by members of the science team, it was clear the argument was not based on a review of the literature, a consideration of how ontological and epistemological differences may be managed, experience of experimentation with models of IK-science interaction, nor a consideration of developing Māori cultural capacity amongst

science team members. In arguing for an incompatibility position some of the basic tenets of Eurocentric science are ignored i.e. review the literature fully, explore alternate hypothesis and provide empirical support for an argument. In considering alternate explanations, it is possible that the compartmentalization of mātauranga Māori and the science team’s enduring cultural ignorance occurred for ideological, psychological and/or institutional reasons.

Mātauranga Māori Knowledge Framework

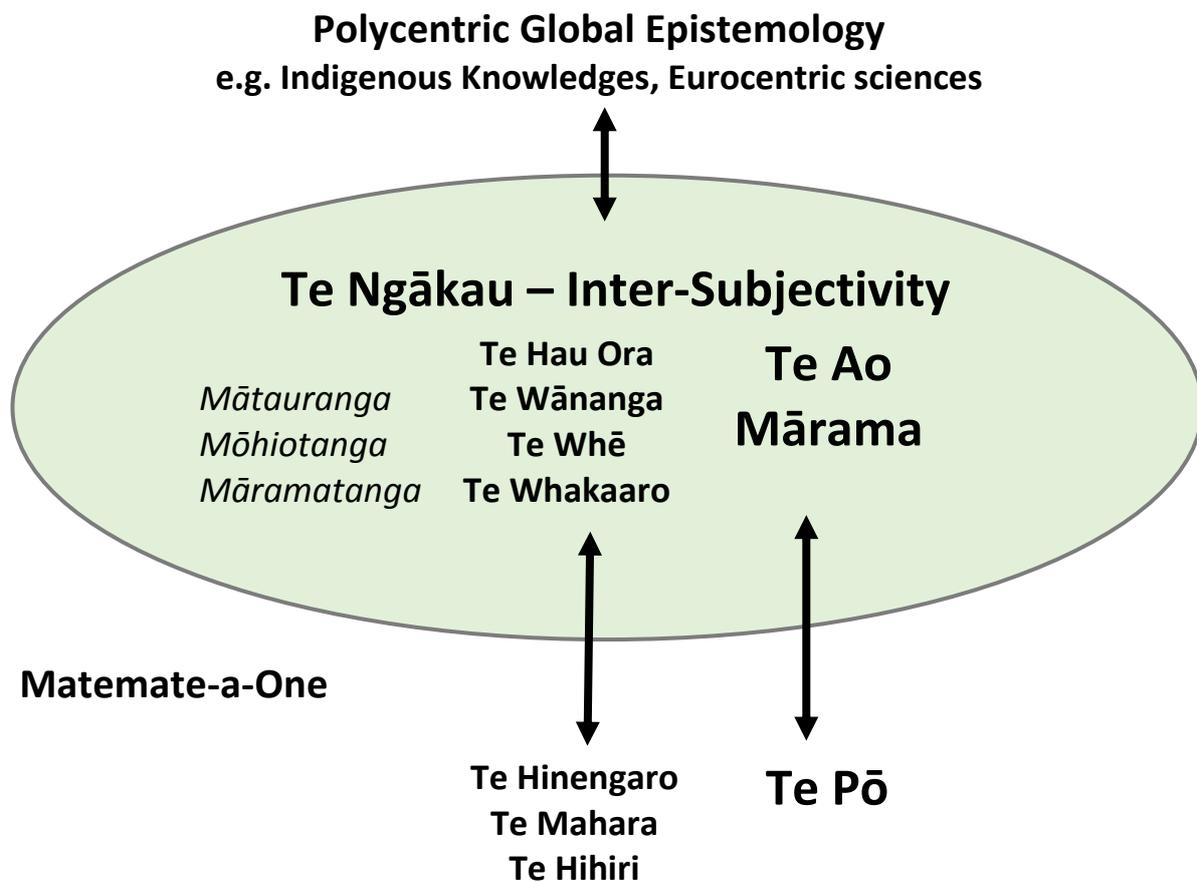


Figure 19. Mātauranga Māori Knowledge Framework

In terms of the Framework, the construction of mātauranga Māori as something ‘others’ do and something which empirical science cannot engage with, reflected a culturally naïve and discriminatory conceptualization. This conceptualization rendered impossible social patterns of complementarity and symmetrical (knowledge) exchange, the mana (agency and efficacy) and tapu (potency) of mātauranga was diminished, and the collaborative potential of wānanga and its ability to engage with other knowledge traditions was negated. This in turn

limited the potential for a state of hau ora to be achieved, and instead a form of 'epistemic coloniality' (Ibarra-Colado, 2006) occurred, with Māori growers engaging in IK processes on the periphery of the project.

The case did not demonstrate in a positive sense the importance of enacting Māori social patterns and values of complementarity and symmetrical exchange (Hanson & Hanson, 1983; Lambert, 2007). Instead, the absence of these patterns can be viewed as, in part, as contributing to the failure of the project. The project did create spaces for mātauranga, something which could be interpreted as representing participation and inclusion. However, when indigenous spaces are created, and scientists and Development managers fail to engage meaningfully in those spaces, misunderstanding and differentials of power are maintained, while dialogue, exchange and interdependence are limited or non-existent. In the Aotearoa case the creation of 'Māori spaces' did not occur in concert with the scientists and project managers developing bi-cultural capacity. An essential element of any pro-indigenous endeavour is a concurrent development by non-indigenous individuals and organizations of the capacity to undertake dialogue, exchange and shared work with indigenous peoples. In the Aotearoa case, the pro-Māori creation of space masked an exclusionary counter tendency of non-engagement, where Māori and non-Māori are both confined to constructed spaces (silos) between which only superficial engagement occurs.

Complementarity & Symmetrical Exchange

As noted previously, the conceptualizations of the dominant group within the project rendered ongoing *complementarity* and *symmetrical exchange* impossible. Lambert's (2007) discussion of reciprocity in research projects involving science-mātauranga engagement demonstrated *complementarity* and *symmetrical exchange* as contemporary Māori social norms which are required for successful IK-science engagement. Lambert outlines similar consequences to those described by Hanson and Hanson when violations of social norms occurs e.g. when reciprocal norms are violated a typical response is the severing of social relations.

Given *complementarity* and *symmetrical exchange* have been identified through analysis of historic narratives and contemporary research, the question can be asked, how does the relationship between the two principle Development actor groups, the growers and the science team, compare to the normative models of *complementarity* and *symmetrical*

exchange? From a *complementarity* perspective, the two groups were distinct, but they were not equals within the Development relationship. Organizational text describing equality and collaboration occurred but Development practice and power differentials within the project indicate this talk lacked veracity and significant inequality existed i.e. populist sentiments appeared as buzz words within organizational discourse (Cornwall & Eade, 2010). The internal relational dynamics of the project reflected a hierarchical relationship, with the science team dominating formal organizational relationships, with the growers positioned in a subordinate position. Hanson and Hanson note that complementary relationships can be hierarchical (e.g. parent/child, tuākana/teina (elder/younger sibling)), horizontal (e.g. woman/man) or based on geo-cultural positioning (e.g. tāngata whenua (local) and manuhiri (visitor)). Whichever form the relationship takes a necessity of interaction and a potential for mutual benefit for each party exists. The project's hierarchical relationship reflected a continuity of colonial relationships. Indigenous scholars and post-Development writers have described how hierarchical colonial relationships have been considered by colonizers as representing a form of benevolent paternalism (Escobar, 1995; Smith, 1999; Hindess, 2007; Helliwell & Hindess, 2011)). In Hanson and Hanson's model a union where inequality prevails results in 'negative consequences', including confinement of one partner, confinement of offspring, frustration, anger and disagreement. The fixed positioning of the science team as dominant and the growers as subordinate can therefore be considered as a form of 'partner confinement' where a subordinate position is maintained. In this situation mana and whanaungatanga are denied their fullest expression, and an exploitative relationship form is maintained. In terms of *symmetrical exchange*, the science team – grower relationship lacked the characteristics of cordial exchange, rather the growers were relegated to a 'beneficiary' position i.e. dependent upon the generosity of the project managers. For *symmetrical exchange* to occur an initial equivalence needs to be established between the parties. Within the project there was no assumption of equivalence from the science team to the growers. One location where complementarity and symmetrical exchange did occur was during marae visits. Here norms of tangata whenua – manuhiri interaction, expressed through rituals of encounter and practises of visitor hosting (manaakitanga) expressed these two relational patterns during the short period of marae hosting i.e. 2-3 days typically. Outside of this context *complementarity* and *symmetrical exchange* were not maintained.

Organizational Perspectives

Organizational Institutionalism

The project context was also notable in that a mix of political, economic and ideological trends from the late 1990s acted to produce and popularize the notion of 'knowledge as economic solution'. At this time the much vaunted 'knowledge wave' and a growing governmental acknowledgement of Māori appeared to coalesce and produce a 'mātauranga Māori as economic solution' ideal. If the ideological elements of this political-economic-research context are considered in light of the dominant ideologies of the main Development paradigms, *classic*, *neoliberal* and *neo-popular*, the Aotearoa context at the time displayed a mix of features of each paradigm's ideological foundations. *Classic* extension top-down approaches to knowledge process involving scientists and Māori farmers were the norm, neoliberal ideals had been embraced since the late 1980s and the research sector had been restructured in accordance with these ideals e.g. the dismantling of the Department of Science and Industrial Research (DSIR) in 1992 and establishment of the CRIs as state owned entities. With Māori rights being expressed through formal mechanisms e.g. the establishment of the Waitangi Tribunal, inclusion of the 'principles of the Treaty' in legislation (e.g. Section 4 of the Conservation Act (1987)), a growing popular push for increasing Māori rights occurred. This push was part of the same broader rights movements occurring across the English-speaking world (e.g. North American civil rights movements in the 1960s and 1970s). The social and political movements that influenced the neo-populist emergence globally had their equivalent in New Zealand, but what was unique in Aotearoa was the role a restructured corporatized research sector played in Development.

In Aotearoa through the 1980s and 1990s the neoliberal agenda saw the privatization of elements of the public sector, and the restructuring of others to align with market logics. In terms of indigenous (Māori) community Development work, there was not a reduction in government/public sector involvement with a subsequent increase in non-government organizations supported by international donors and Development cooperation institutions (IDCIs), as occurred in many other parts of the world through the 1970s and 80s. Where NGOs had formed and undertaken social service and Development type work within Aotearoa, they continued to be typically government funded. As formal state funded organizations, these NGOs were embedded within the public sector institutional context. In the case of agricultural

Development, state research institutes have remained the principle 'deliverer' of Development services through the period from the 1980s when neo-populist Development became popular in other countries and indigenous (Southern) NGOs funded by international donors began to play led roles in Development. Indigenous NGOs in Aotearoa are notable in their lack of direct engagement with IDCIs.

In terms of the positionality of indigenous communities within this institutional framework, the corporatization of the research sector placed greater emphasis on conducting cost neutral or profitable research. Within the corporatized research environment, participatory and collaborative processes represent 'costs', creating an economic incentive to not engage (reduce costs), while conversely, engaging with Māori communities and mātauranga Māori provide opportunities to secure research funding. Where long standing beliefs of the supremacy of Eurocentric science and the inadequacy of IK/mātauranga Māori exist, along with a lack of cultural capacity within research institutes, the re-structuring of the research sector to align with neoliberal ideologies can be seen as reinforcing institutional and ideological barriers to participatory engagement. Where the populist elements of Aotearoa's political and cultural environment give weight to improving state-Māori relationships, the institutional dynamics described above can act to distort and control this engagement so it aligns with colonial and neoliberal agendas.

Writers have noted the potential for top-down Development approaches to use *neo-populist* rhetoric without meaningful practical expression (Blaikie et al., 1997; Cornwall & Eade, 2010). This was the case in the Aotearoa project. Of note in the Aotearoa project though was that rather than this occurring simply as an appeal to populist sentiment, the structured relationship between funder, science provider and Development recipient marginalized the Development recipient, excluding them from addressing any divergence between project rhetoric and practice with a group in a strong position to address that issue i.e. the project funder. Given Māori growers were in a valuable position to assess mātauranga Māori promotion, this exclusion reflects a silencing of the communities concerned.

Three important points can be seen in the relationship between institutional context and the project's organizational dynamics. First, this case reinforces the criticism of *classic* and *neoliberal* paradigms, that both paradigms impose external understandings of indigenous

communities, frame community problems and potential solutions in scientific and economic terms, privilege Eurocentric sciences and market logics, and fail to allow local perspectives to significantly shape project practice. Second, the case highlights that inter-organizational relations (IORs), particularly between funders and (Development) service providers, represents an important level between the macro institutional and local individual organizational level. The Aotearoa case demonstrated when a binary relationship between funders/the state is privileged over a tripartite participatory relationship between community, funder/state and service provider, then the understandings and practices of the communities are marginalized or excluded. The service provider is thereby able to maintain the norms of the institutions and society they are part of. Within the organizational field of state funded indigenous Development in Aotearoa the inter-organizational level represents a nexus point from which hierarchical norms are maintained or potentially altered. Given that indigenous NGOs in Aotearoa rarely partner with IDCIs, and instead rely almost exclusively on state funding or are self-funded, there is a critical need for inter-organizational practices and structures which support effective and sustainable divergence from the status quo.

Third, the Aotearoa project highlighted the importance of understanding and responding to the societal and political context in which Development occurs (Bebbington et al., 2007). Bebbington et al. describe the historic, political, economic and sociological contexts within which organizations are embedded as greatly affecting project design and the organizational possibilities of Development. Project documentation, researcher observation and project participant reporting showed the project practice conformed to norms of the state, enacting a mix of *classic* and *neoliberal* Development paradigms, and translating and compartmentalizing IK promotion.

Proximity

Geographic, cultural (organizational and societal) and social proximity were identified as influential within the project. Proximity between the science team and growers in terms of geographic, cultural (organizational and societal) and social proximity was low. The findings of the research revealed an important consideration when applying the proximity construct, the proximity is not a singular construct, but rather those being compared provide distinct forms of reference for considering proximity. An example may help in illuminating this point. An objective view of cultural proximity may be based on the notion that the growers were

Māori and the science team were predominantly Pākehā. If we consider the relative proximity of each group, the high bi-cultural capacity of the Māori growers could be said to demonstrate that growers have relatively high proximity to the science team, as the Māori growers are able to 'cross-over' to the Pākehā world of the science team with relative ease as they spoke English, were familiar with Pākehā social norms, ways of organizing, legal system and economic models. In contrast the science team were not able to span the cultural difference between themselves and the Māori growers. The science team can therefore be described as having low cultural, both societal and organizational, proximity to the growers. Therefore 'cultural proximity' varied for each group, the Māori growers' proximity to the Pākehā scientists was relatively high, while the Pākehā scientists' proximity to the Māori growers was relatively low.

This suggests that theoretically, the concept of proximity when applied in cross-cultural settings should view proximity as a multi-directional construct, which varies based on the perspective of each group/organization/culture being compared. When applying the proximity construct to Development contexts, each organizational dimension considered in terms of proximity (i.e. geographic, cultural, organizational, technological, etc.) should be considered from the perspective of each Development actor group. Even the notion of geographic proximity should be considered from this multi-nodal and multi-directional perspective. If geographic proximity is based solely on physical distance, for example groups being within 10kms considered high proximity and those 500kms apart defined as low geographic proximity, then the relative experience of distance of each group being compared is ignored. To use a Development example, Development professionals may have easy access to transport (vehicles, air travel) while indigenous farmers may have limited access to transport. A separation of 100kms between a research institute and a Development project site may be perceived as relatively close (high proximity) by science team members and as a significant physical separation (low proximity) by farmers. Within the Aotearoa project the physical distance separating the science team and the growers was considerable (East Cape to Napier/Hastings or Auckland), but this distance was traversed relatively easily by the science team as they had access to vehicle and air travel, and travel costs were covered through project funding, while for the growers, travel beyond their communities was expensive and time consuming. The evidence from this research relating to cultural and

geographic proximity indicates the proximity construct and its application to distinct inter-organizational dimensions should be reconsidered as a multi-directional construct, with proximity being perceived in distinct ways by members of the groups or organizations involved.

7.3. Peruvian Case

Development Literature

ANDES and the Potato Park represent a particularly strong example of neopopulist Development where issues of power, meaning, context and practice are addressed concurrently. The projects of ANDES and the Park demonstrate the ability to address issues raised by the first-wave *Post-Development* writers (i.e. Development as colonial discourse) without abandoning Development, but instead cultivating relationship networks and organizational models that allow a political, epistemological and economic centring of the local, and a separation from hierarchical and subjugating relationships.

Furthermore, the ANDES and Potato Park model of participatory Development and IK promotion is emancipatory and transformative, addressing directly issues of power beyond the internal dynamics of project and Development network. Participatory Development has been criticized for de-politicizing Development by focusing on epistemologies and participatory tools, at the expense of issues of power (Mohan, 2007). This limiting of political action to within the project has allowed broader issues of citizenship to go unchallenged by Development practitioners (Hickey & Mohan, 2005). ANDES and the Park provide clear examples of addressing participation at the project level, while concurrently engaging in political issues at regional, societal and international levels.

The experience of ANDES and the Park aligns with Post-Development's *second wave* writers, who argue that transformative Development can be achieved through utilizing the networks and resources of Development, while reconceptualising fundamental assumptions (e.g. Gibson-Graham's notion of diverse economies) and power structures at multiple levels. However, the ANDES experience does highlight an important question with both practical and theoretical implications; does ANDES and the Park represent a unique case due to important contextual factors or do they provide practical and theoretical insight which are generalizable? Does their extremely high level of agrobiodiversity, proximity to major tourist

attractions (Cusco and Machu Pichu) and limited de-population combine to create a context in which a divergent form of Development could emerge? Have these factors combined to create a rare opportunity for research institute – indigenous community collaboration, and for diverse forms of community Development that draw on the tourist market to occur? And if so, do the lessons of ANDES and the Park have practical or theoretical relevance to other Development contexts/projects?

Organizational Literature

In considering the Peruvian case five themes stand out as characterizing the approach taken to participatory Development and IK promotion;

1. **Local centred** – the geographic space, worldviews (cosmovisions), values, social and economic practices and institutions of the communities were all centred in the Development initiatives that occurred. Practical examples of this could be seen in organizational language and conceptualizations at all levels, the integration of traditional and formal community governance structures into ANDES organizational structure, the creation of formal inter-community mechanisms, the centring of the communities within an in situ – ex situ co-management model of agrobiodiversity conservation and management, the use of territory and culturally based conceptual models (indigenous biocultural territory modelling), the establishment of indigenous territories (indigenous bio-cultural territories) and across a broad range of themed Development projects within the Potato Park.
2. **Relationally open** – ANDES approach to engaging with external organizations was to focus on relationships which allowed autonomy to enact creative and diverse approaches to local-centred Development and IK promotion. The case presentation featured a list of 20 international organizations that ANDES worked with from 1996 to 2006. As a locally based Southern NGO ANDES was able to provide a continuous institutional/organizational connection between international donor organizations and the Potato Park communities over multiple projects.
3. **Complementarity** – a fundamental assumption running through ANDES work was that ideological, conceptual, political, organizational and practice complementarities (yanantin) can occur between the communities and external organizations and groups, including other indigenous peoples (i.e. South-to-South exchanges).

4. **Holistic Development** - Development was considered as an activity that occurs across multiple dimensions and at levels ranging from the local to the macro (global). Systems and network based conceptual models were therefore used to reflect an assumption of interconnectedness, and to identify and work with patterns and principles across these systems/networks. The Indigenous Biocultural Heritage modelling and Indigenous Biocultural Territories were examples of this holistic approach applied to specific cultural-geographic spaces. At the organizational level the notion of 'complex systems' featured in organizational discourse and planning.
5. **Tangible Benefits** – the Park involved the creation of a wide range of tangible benefits for community members. The buildings created were owned by the communities collectively, with benefits shared across the communities through the Inter-Community Agreement for Equitable Access and Benefit Sharing. The potato repatriation provided tangible benefits as a large number of disease free varieties were provided to the communities, representing an increase in agrobiodiversity, a cultural reclamation and revival, and improved plant health across the communities' agricultural systems.

It should be noted that the analysis of the agrobiodiversity co-management project lacked the sensitivity that a native Spanish and Quechuan speaker might gain. A more nuanced analysis which explores the full range of processes at the various levels in which the co-management process occurred (between the growers at the inter-community, community and household levels, and between the growers, ANDES and the Potato Institute) may reveal specific strategies applied by actors at these various levels and across the range of formal and local groups and organizations.

The literature describes Development projects as often featuring a mix of ideological and practice elements from the *classic*, *neoliberal* and *neo-populist* paradigms. ANDES and the Potato Park show a strong positioning within the *neo-populist* paradigm with little indication of the more explicit elements of the other paradigms (e.g. top-down knowledge extension, market logics and a push for market integration). In centring the local in terms of power (governance, organizational structures, inter-community instruments) and meaning (conceptual models, Quechuan values), context (colonial history, high level of agrobiodiversity) ANDES is able to move from the explicit paternalism of *classic* and *neoliberal*

paradigms, and often implicit paternalism of *neo-populist* approaches, to a Development model based on enduring relationships between communities and the NGO, an integration of community and NGO structures (addressing issues of collaborative power) and a collaborative ethic between all Development actors (community, NGO and externals). The ANDES and Potato Park model therefore addresses a fundamental concern of the post-Development critique, demonstrating that Development (project) practice is not bound by Development discourse. Through the strategic engagement with international Development donors, a selective engagement with the State, an integration of traditional and formal community governance structures and organizational structures, a reconceptualising of terms such as knowledge, economics, conservation, and a demonstrated longevity, ANDES has re-configured power dynamics and differentials within d/Development, demonstrating that alternatives to Development can occur and that Development need not be abandoned completely.

Participatory Development as Institutional Divergence and Entrepreneurship

The institutional entrepreneurship literature describes processes of institutional divergence as challenging, requiring 'work' which is i) overtly political, ii) reconfigures belief systems (identities, normative associations, networks) and iii) alters abstract categorizations (Lawrence & Suddaby, 2005). The Peruvian case provides an example of institutional entrepreneurship within the context of Development. The case demonstrates each of the three types of 'work' identified by Lawrence and Suddaby, while providing detail of characteristics and dynamics necessary to disrupt the status quo, and potentially create and maintain new institutions e.g. disengaging from state funded Development and creating novel IORs/alliances with international supporters.

ANDES work was overtly political at levels beyond the inter-organizational formal project support level e.g. promoting indigenous rights relating to crops, creating novel inter-community models of decision making and resource control, enacting a complementary rather than hierarchical model of agrobiodiversity conservation. Central to this political dimension was community and inter-community power, and power in relation to biocultural resources. Belief systems were reconfigured at the community – organization, intra and inter-organizational levels through the creation and use of Indigenous Biocultural Heritage Modelling and Territories, the Life-Plans and the Inter-Community Agreement. The

reconfiguration of belief systems of participant groups also occurred more locally through the various projects undertaken (e.g. native potato repatriation, the Q'Achun Waq'achi Gastronomy Collective, the Natural Medicines & Cosmetics Project, participatory geographic mapping, the Agro-Tourism & Willaqkuna Guides Collective, the Tika Tijillay Women's Video Collective and South-to-South Knowledge Transfer). ANDES undertook these actions and projects in ways that sought to ease adoption by community members and science professionals alike. New concepts, practises and models (e.g. adapting complex systems mapping to the IBCH context) were created to facilitate the adoption of novelty, with a strong educational focus on culturally appropriate learning.

Examples of successful 'deviance' from Development norms, such as those displayed by ANDES, provide empirical evidence to build upon current organizational theory and for its development in response to the unique aspects of Development work. In this case the evidence suggests institutional entrepreneurship within Development is unique from the broader field, with the 'work' required to diverge and scale-up novelty being directed towards community and inter-community levels, and the embedding of indigenous ontologies, values and practices within formal organizational practice, strategically reducing state contact, while fostering complementary international relationships.

Quechuan Perspectives

Organizational Structures & Indigenous Knowledges

ANDES provides a clear set of examples where power differentials between communities and external agencies are dealt with to centre the communities, while cultivating an outward looking and collaborative orientation to external agencies. In their simplest form their approach involved firstly an integration of community members and community institutions into the formal organizational structure of the NGO, and secondly, the creation of multi-community governance, ownership and benefit sharing agreements. These two discrete formalizations of external agency (ANDES) – community relations address the issue of power differentials which has been at the heart of critiques of Development as discourse (i.e. Sachs, 1992; Escobar, 1995) and participatory Development's inability to consistently support and engage with IKs (Briggs, 2013). This structuring of formal relationships does not represent the sole method of addressing power differentials, but it is substantial and provides an

organizational platform for other community centring practices to occur. Within the literature the issue of re-configuring the relationship through which power is expressed is a perennial issue, with a broad range of theoretical and practical approaches applied to the issue of power e.g. institutional theory, dependency theory, and the Post-Development discourse critique. ANDES and the Potato Park offer examples of creating participatory/collaborative organizational structures at the project level, in this case within a formal single organization (Southern NGO) and across multiple participating communities which provide an explicit means of diverging from the institutional context of the Development's *organizational field*. Wooten and Hoffman (2008) describe Institutional Theory as typically exploring the relationship between the *field* and specific organizations. Wotton and Hoffman argue that dynamics between organizations influence patterns of conformity and divergence from the field, and therefore attention should be directed towards this 'intermediary' level of inter-organizational relations. ANDES and the Potato Park provide empirical evidence of complex multi-level dynamics which transcend the field – organization dichotomy. These dynamics occurred at inter-organizational and sub-organizational levels, and involve a range of formal and informal processes, which together facilitated a divergence from the normative institutions of Development e.g. an organizational structure that integrated community members at all levels and across all functional areas, the implementation of an inter-community agreement and the inter-community committee having power over Park decisions, implementation of an in situ – ex situ co-management of native potatoes model, the strategic use of international donor organizations and Development of South-to-South networks. If as Briggs (2013) argues, participatory goals of IK promotion have been of limited success, the *institutional theory* framework of *organizational field* or *Development discourse* offers insight into limiting cognitive or social factors in the efforts to promote IK. The evidence of this research then offers practical and theoretical considerations for individual projects to diverge from the norms of the Development *field*. In this case the techno-managerial logics of formal organizations do not act to exclude empowerment, rather formal organizing provides a means for 're-ordering' Development discourse. As noted earlier, one response to the empowerment successes of ANDES and the Potato Park is to ask if they represent an exception to the rule of the Development field/discourse? If we return to the examples of empowerment and collaboration that diverged from the norms of Development, there is no strong case to suggest that these

organizational processes and practices could not be applied in other contexts. For example, organizational structures that include community members and integrate community structures could be implemented more widely if there was a willingness for power holders within Development to move to collaborative approaches to power, or for Development funders to demand this. Likewise, strategically limiting state engagement and developing international donor networks that allow a broader range of Development and organizational choices to be enacted is possible, and it is a popular strategy amongst SNGOs. So, although a number of distinct contextual factors such as the areas high level of agrobiodiversity and proximity to a major tourist attraction (Cusco) may have provided ANDES and the Park with greater Development options, the intra and inter-organizational processes (i.e. collaborative organizational structures) that facilitated a 're-ordering' of power relations were not reliant on these contextual factors alone, instead individuals' commitment to dis-engaging from hierarchical relationships (with the state) and creating new relationships supportive of local empowerment were of vital importance.

Diverse Indigenous Knowledges

A second feature of IK promotion within the Park involved a conceptualization of IK systems as involving multiple interdependent facets (Antweiler, 1998). From this perspective agricultural, culinary, ecological, arts and crafts, construction, medicinal and organizational IK represent distinct domains of application, which are themselves interdependent. Where Development is led by external scientific agencies and is focused on specific issues of increasing production for example, IK promotion is unlikely to be holistic and integrative, instead focusing on the areas of specialization of scientists. While domains of knowledge may be practiced by discrete groups in industrialized societies, amongst indigenous agricultural communities, they are practiced within often single communities and within a specific landscape. The approach taken by ANDES was to consider agricultural IK, culinary IK, ecological IK, medical IK, organizational IK and arts and crafts IK as inter-dependent and the promotion of each likely to support others. This research therefore provides strong empirical support for the idea of re-considering IK as locally embedded practice that takes multiple forms, and that synergies can exist between these forms. Participatory Development's promotion of IK may therefore benefit from a less siloed view of IK, which may fit with scientific specializations or Development priorities, and to adopt a more holistic and

integrative conceptualization and practice of IK promotion, and IK-other knowledge interactions.

A central feature of Development is the goal of improving local economies. If IKs and the various aspects of community life they are expressed through have a relationship to diverse local economies (Gibson-Graham, 2002), then a holistic approach to IK promotion holds potential to stimulate a range of economic practises concurrently. The idea of promoting diverse indigenous knowledges and economies may then act to de-centre capital focused views of local economies, and instead promote IK application, and IK-other knowledge interaction, broadly across the local economy and its participants i.e. reaching a broader section of the community them may normally engage with external agencies in Development projects.

Quechuan Centred Development

When considering ANDES and the Potato Park from the perspective of the Quechuan literature two questions can be asked. Firstly, did the Development work allow for an authentic expression of Quechuan understandings, principles, practices and values to occur within this work, and if so, how? Second, if the Development work is viewed through the lens of Quechuan concepts and normative models, what is revealed of this work?

Regarding the first of these questions, the previous discussions highlighted the ways in which ANDES and the Potato Park's centred the local in terms of practices, power and knowledge e.g. the integration of community institutions into organizational structures, the creation of novel inter-community institutions, and the implementation of a wide range of IK promoting project. Central to these endeavours was the repatriation of potato varieties and establishment of a collaborative model of co-management of indigenous potato biodiversity between the Park and its communities, and CIP. This reconfiguration of a knowledge process/practice that had been centred on *ex-situ* and institutional conservation of biodiversity, to one where indigenous communities and *in-situ* conservation was centred, represented a major shift in science-centric knowledge paradigms, and a form of participatory-collaborative IK-science interaction that is an exemplar for research institute-indigenous community interactions globally. Where indigenous communities have been excluded from formal agrobiodiversity conservation management, the in situ-ex situ co-

management models offers a collaborative model that could be applied to a wide range of crops and indigenous communities. The global endeavour to maintain agrobiodiversity through a network of science institutes which excludes IKs is rejected. Instead, an alternative model which decentralizes, decolonizes and diversifies the protection of agrobiodiversity is offered. From this model the indigenous communities who are the creators of crop diversity maintain a central role as kin and kaitiaki to those crops. This role recognizes the cosmological and social underpinnings of creating and maintaining crop diversity, it fosters epistemic plurality within scientific institutes and indigenous communities, and explores the scope for reciprocity and complementarity within Development and knowledge processes.

The Development model utilized by ANDES allowed for understandings and values relating to Pachamama, apu, the centrality of ayllu and runa, and yachay (Quechuan IK) to be normalized within Development practice, and where necessary, formalized in organizational structures. This place-community centred approach allowed for *yachay* to be practiced in diverse fields (cuisine, agriculture, weaving, medicines) and to engage with other knowledges (i.e. a polycentric global epistemology) in locally appropriate ways. Within the organizational discourse Quechuan values including *ayninakuy* (reciprocity), *yanantin* (duality), *Sumaq Kausay* (well-living) were mentioned frequently. Of interest was the level of congruence between this talk and organizational practice i.e. the link between meanings/discourse and practice. In observing the more salient aspects of organizational practice, and considering this at macro, organizational and organizational-community interaction levels, there did appear to be a strong level of congruence between Quechuan centred 'talk' and organizational practice. Field observations and discussions with members of research institutes and international donors, showed reciprocal exchange (*ayni*) and complementary duality (*yanantin*) occurred as both conceptualizations of relational dynamics and through organizational practice. As noted previously though, my linguistic limitations as researcher mean that a more sensitive and revealing analysis could occur through immersive ethnographic research by native Spanish and Quechuan speakers.

7.4. Research Findings Summary

The research demonstrated that Development project organizing occurs in two general directions away from the organization itself, firstly towards the communities involved and

second, towards ‘external’ organizations, their networks, and the broader social fields they are embedded within (see Table 11 & 12). The Andean case demonstrated the power of rejecting conceptualizations and practices based on linear ‘centre/advanced’ to ‘periphery/deficit’ knowledge extension models. Instead diversity, complexity and value is recognized as located both within and external to communities. Furthermore, this perspective rejects traditional Development conceptualizations of indigenous communities as homogenous, discrete, idiosyncratic, impoverished and geographically small. By re-thinking Development in ways where both indigenous communities and the external field of Development actors are considered as complex, diverse and rich in elements which can contribute to Development, the purpose and practice of Development is re-configured. The purpose of Development practice should not be simply to move resources from the ‘wealthy’ to the impoverished, instead it is to act as an ethical, politicized conduit between groups and cultures.

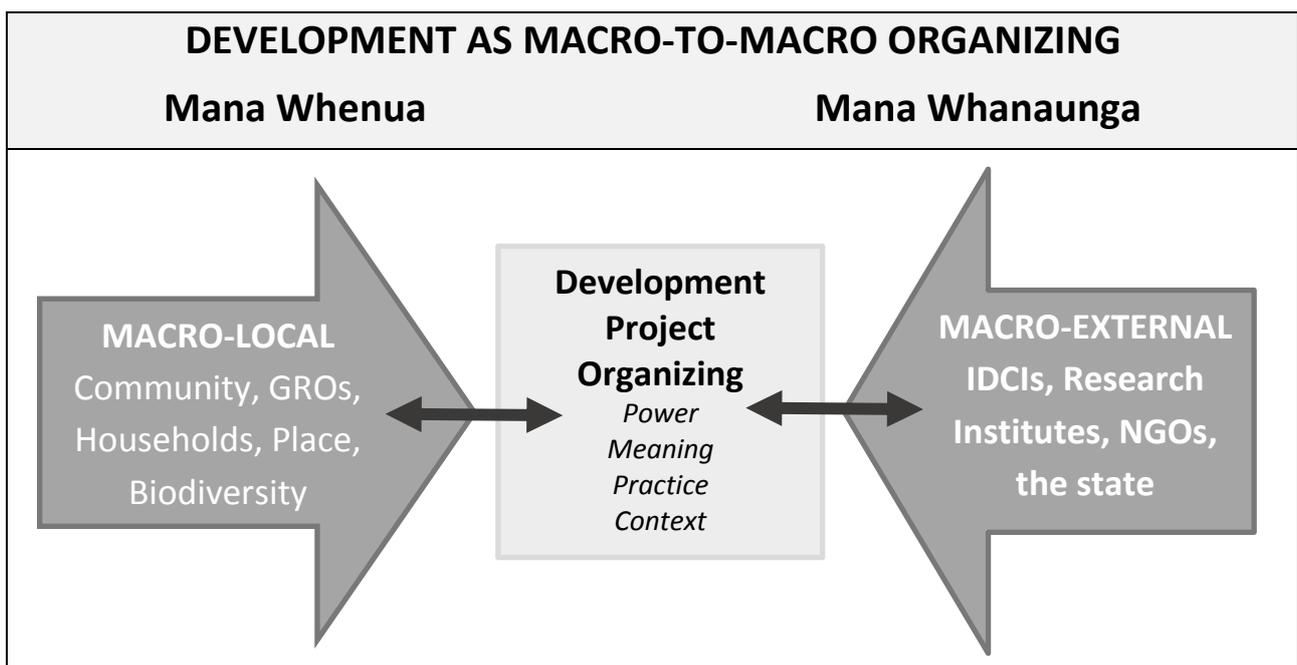


Table 10. Re-framing Development notions of scale and complexity.

In the English language terms such as context, translation, negotiation, complex practice, innovation, mediation, persistence express goals within this approach to Development as work between the macro local and macro external, between elites and marginalized groups. In te reo Māori terms such as mana whenua, whakawhanaunga, whakawhiti, mahi tahi, whakamārama, mōhiotanga and matemate-a-one express the ethical, affective, practices and

spiritual elements of this re-orientating of Development. Furthermore, indigenous peoples' cosmovisions present the world as multi-centred, with sacred mountains, places, rivers, forests and human communities constituting a myriad of interconnected 'centres' within a woven universe. From this perspective the ontologies of indigenous peoples present Development as polycentric and experienced as a constant process and experience of relating between human and other communities.

PARTICIPATORY DEVELOPMENT		
Multi-scale integration of power, meaning, practice & context		
COMMUNITY	DEVELOPMENT	EXTERNAL
<i>Community Context</i>	<i>Development Organization</i>	<i>Global, Societal, Institutional & Org. field</i>
	Organizing	
Considerations for Community Orientation	MĀORI Whakawhanaungatanga (kinship relationships), Mana-aki (efficacy and agency within Māori social norms), Māramatanga (mutual understanding), Matemate-a-One (love for people and place), Whakarite (organizing), He hua (tangible benefits)	Considerations for External Orientation
Community centred ethic Engagement & representation tools IK promotion Biocultural resources Tangible benefits Integrative structures between community & Development org. Centre community rights – emancipatory Holistic consideration of diverse local economies Community receptivity	QUECHUAN Ayninakuy (reciprocity), Yanantin (duality), Chaninchay (dynamic balance), Minka (communal work), Rakunawi (distribution model based on need and contribution), Sumaq Kausay (well-living), ORGANIZATIONAL Increasing SNGOs, indigenous org.s & indigenous professionalization Integrative org. structures with communities Strengths-based view of local context – biocultural resources Local cosmology, social norms, IKs Multi-lingual - Indigenous & other languages Political & ethical – emancipatory Polycentric Global Epistemology	Identification of supportive orgs. Use of participatory evaluation & assessment to inform decision making Integrative org. structures (e.g. NGO – community, state – community) 'Scaling up' involving supportive orgs. Bi/multi.-org. models Orgs. developing Indigenous capacity Institutional innovation National & International indig. rights movements e.g. South-to-South

Table 11. Participatory Development as multi-scale practice.

Development organizing also represents a relational glue that reaches from indigenous communities to research institutes and Development actors across the globe. It spans century old imperial and colonial dynamics, it connects diverse cultures, often separated

economically, politically, ideologically and physically. The formal aspects of Development organizing are therefore uniquely positioned to maintain these differences, or revolutionize them.

7.5. An Indigenous Centred Development Model – IK as ‘first-principle’.

In the preceding section elements of the research’s findings were presented in Tables 10 and 11. To further synthesize the research findings an Indigenous Centred Development Model (ICDM) is presented based on a polycentric indigenous approach to Development where social practices, forms of inter-subjectivity and power relations are reconfigured (Table 13). The model takes a ‘weak theory’ approach (Gibson-Graham, 2006b) where rather than reducing reality to limited and operationalized ‘variables’, research focuses on ‘heavy description’ which includes ontologies, understandings, practices and forms of sociality from all groups involved in the phenomena of study. This approach pays attention to groups who have been discredited, marginalized or ‘silenced’, while seeking to articulate diversity and complexity. Insights from weak theory approaches are therefore strongly descriptive, and conditional and contingent upon context.

From this ‘thick description – weak theory’ approach, Development organizing is viewed as representing a nexus between indigenous communities, Development actors, outside organizations and institutions, and the broader societies indigenous communities are part of. At this ‘nexus space’ of organizing, power, meaning, practice and context represent dimensions (Lewis & Opoku-Mensah, 2006; Bebbington et al., 2007) which shape Development practice and the multi-level inter-organizational relationships it involves. Within these diverse, politicized and multi-scalar relationships, the model centres indigenous peoples spatially, ontologically, epistemologically, practically and ethically, presenting a framework from which issues of indigenous vitality and colonization can be addressed, while affirming difference as positive and a foundation for respectful interaction.

The model reflects a ‘deep participation’ where justifications for participation for *means* and/or *ends* reasons are transcended, and instead, indigenous peoples move from being participants in Development, to being the centre and foundation of Development, engaging in Development on our own terms as *tangata whenua*. The model considers IK, not as tool to be applied in Development, but as the expression of an ontology, as ‘ontology-in-motion’,

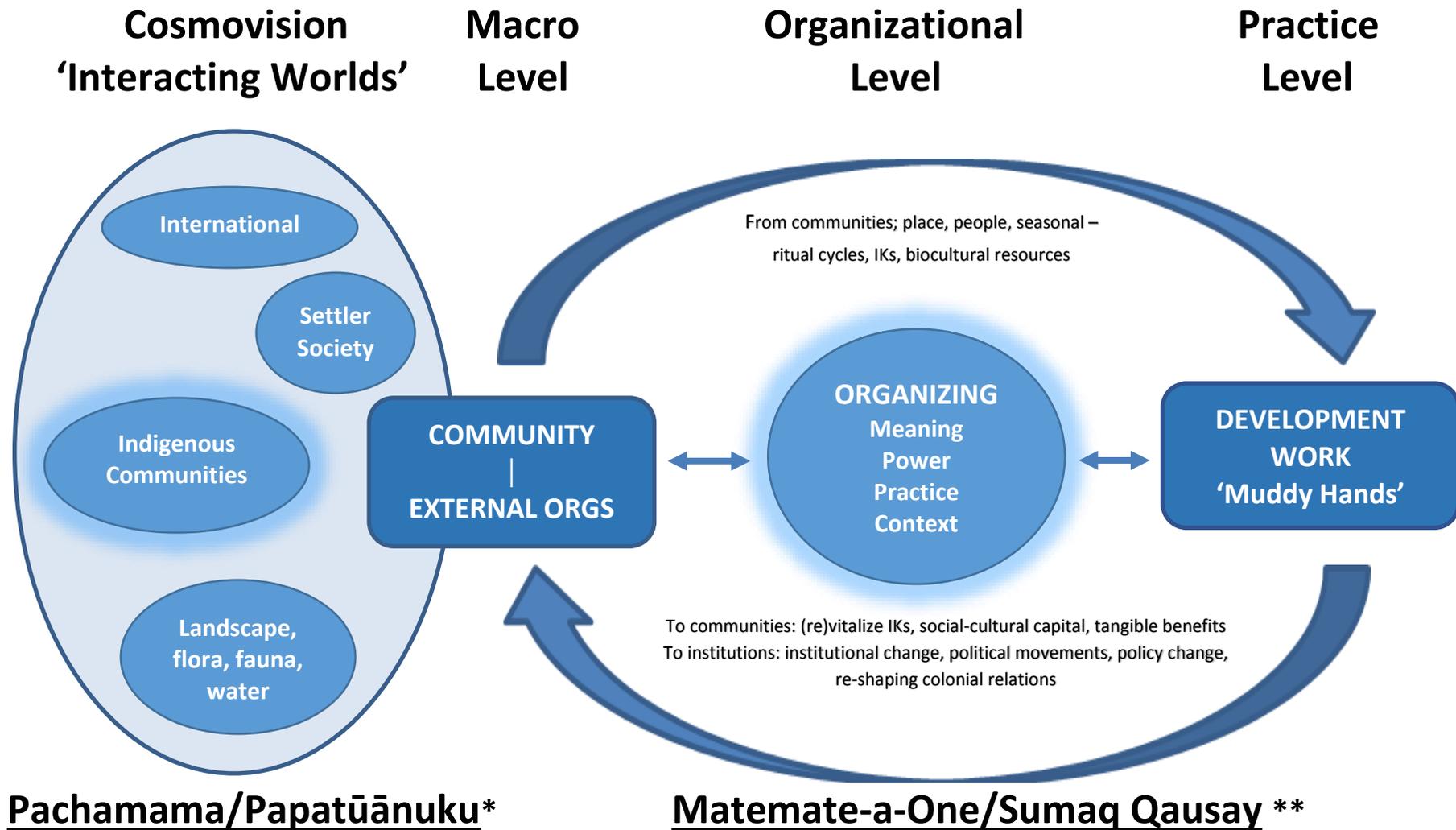


Table 12. Indigenous Centred Development Model based on interdependent populations and levels of action.

*An encompassing indigenous cosmology. Pachamama and Papatūānuku are used in reference to the indigenous communities involved in this research. Amend concept to suit context.

** Represents an ethical, affective and practical expression of aroha (love) for people and place as underpinning Development. Matemate-a-One and Sumaq Qausay are used in reference to the indigenous communities involved in this research. Amend concept to suit context.

where IK, as a mode of being and knowing, becomes a foundation of Development.

Cosmovision – ‘Interacting Worlds’

The model places indigenous ontological assumptions, ways of being, ways of knowing, and life-ways as a ‘first-principle’, an *a priori* of Development. This centres the model, with indigenous communities being the reference point from which issues are framed, engagement with Development actors occurs, and ‘projects’ are initiated and undertaken. Indigenous communities are positioned as naturally engaging of people, knowledge, technologies, and ways of organizing from outside of the communities, with engagement and dialogue occurring in ways distinct to the communities concerned (Hanson & Hanson, 1982; Lambert, 2007).

For both Māori and Quechuan peoples, the notion of ‘worlds’ is a familiar one when describing ourselves and colonial groups. The notion of interacting worlds gives a sense of autonomy and distinctiveness to groups defined along cultural, ethnic, kinship, social and geographic dimensions, while recognizing the mutualities, interdependencies and historic interactions between them. The nature of these relationships, how intersections of culture and differentials of collective power are expressed over time constitute the ‘macro level’ of social institutions. The model does not make essentialist claims regarding (interacting) ‘worlds’, these worlds are not internally homogenous nor are they discrete in any absolute sense. The concept of worlds is metaphoric and conceptual, providing a framework to explore difference and the cultural, social, geographic and ecological proximities of populations. Here ‘population’ refers to members of a species or common descent group (e.g. ‘iwi’ in Māori) as defined from within indigenous cosmologies, each with their own sense of Being-with, modes of communication, ways-of-knowing, forms of sociality and ‘work’ (economies), and interactions with other species (Gibson-Graham & Millar, 2015). From this ontological position plants, animals, people, rivers-water and elements of the landscape are each a population with their own languages, knowledges, economies (productive life-ways), and expressions of power and agency. Ontologically, the assumption of cosmogenic kinship integrates all worlds-populations into relationships of mutual dependence and generation with the exchange and flow of animating essences (e.g. sami (Quechua), hau (Māori)), constituting the ‘mutuality-of-Being’ (Shalins, 2011a). Ecological interdependencies and social interactions required for life, for example the relationships between ethnic or cultural groups,

plants, animals, air, water and soil are therefore the tangible and corporeal expression of kinship cosmologies.

These ontological assumptions are represented in the model by an encompassing ecological and spiritual sphere (Cosmovision – Interacting Worlds), with the terms Pachamama and Papatūānuku used in recognition of the two indigenous peoples involved in this research. Where a local concept or understanding exists which provides a cosmological or meta-framework, its application as a guiding model of Development should be explored. This should not be undertaken superficially as the centring of indigenous cosmologies, and working from within them, requires a fundamental and deep commitment to acting, feeling, understanding and being in ways which may be unusual to some Development actors. The challenge of participation is positioned as one addressed through formal organizing, the use of participatory techniques and tools, and, as a personal and collective challenge involving reflexivity, critique and transformation. The model places Development within a temporal context of changing societal social relations, increasing indigenous involvement and capacity in Development, the emergence of new approaches to organizing Development and the evolution of the field itself e.g. through the classic, neoliberal, neopopulist paradigms. The personal and collective change described above is therefore understood as involving incremental and collective processes where individual, community, intra and inter-organizational and institutional level elements interact to both limit and produce change.

The term ‘international world’ is applied to a diverse range of transnational social, cultural, political and economic fields within which Development occurs, and specific organizational networks which are engaged directly or indirectly in Development. Examples include globally dominant regions and countries (e.g. North America, Western Europe), areas of common colonial experience (e.g. the English and French colonial countries, Latin America), transnational institutes (e.g. UN, FAO), South-to-South indigenous networks, international development cooperation institutions (IDCIs), research institutes and other international Development actors. The main point regarding the ‘International’ world is that those included are geographically distant and culturally distinct from the sites of Development practice, they operate transnationally, and engage directly with, or influence less directly, Development practice. It should be noted that the local-international relationship is one in which indigenous individuals, their organizations and communities express agency as they engage

with and influence spaces beyond the local e.g. ANDES involvement with indigenous groups internationally, with international issues of indigenous intellectual property rights, collaborative work with FAO and the CGIARs, ANDES promotion of an International Year of the Potato, which occurred in 2008, and ANDES role in opposing the use of genetic modified (GM) crops within the Cusco region. Indigenous agency is foregrounded in the model, highlighting that interactions with settler societies and beyond are not passive, and that for indigenous centred Development to occur, non-local participants must understand and work constructively with indigenous people's expressions of agency. The 'settler society' world refers to the societies established by European colonial settlers on indigenous lands, and 'indigenous communities' refers to the specific communities involved in Development.

Macro Level

Macro is used as a multi-directional concept of scale, 'macro' refers to both the indigenous communities and their landscapes, and the 'non-local' actors, their organizations, networks, societies and the fields they constitute. By highlighting the local as macro, simplistic conceptualizations of communities and their economic, social and political life are rejected and considerations of project design re-orientated in fundamental ways.

Within the ICDM the organizational/project level is influenced by local and external macro contexts, while expressing agency and influencing the dual macro contexts of participating communities and external networks, fields, institutions and societies. The Andean case showed clearly that local Development work, via an indigenous NGO undertaking ongoing and coordinated projects, can have significant influence across communities (macro-local change) and across research institutes, IDCIs and Development networks (macro-external change). A key finding of this research was that individuals play a key role in driving divergence from both local and external Development norms by rejecting exploitative Development relationships and creatively exploring novel alliances, conceptual models and approaches to organizational design. The life history of ANDES shows how these elements came to be, while also revealing the influence from ANDES to the communities and across research institutes, IDCIs and indigenous networks, demonstrating processes where institutional and organizational norms can be disrupted and re-created (Lawrence & Suddaby, 2005).

Organizational Level

This level includes the inter-organizational, intra-organizational and organization-community processes undertaken by Development actors (grassroots organizations, research institutes, Southern and Northern NGOs, and IDCIs) when undertaking Development projects (see Table 11, p.271 for detail). A central finding of this research was that the concurrent consideration of context, meaning, power and practice across multiple organizational levels facilitates indigenous centred participatory Development. For example, ANDES used conceptual models such as the indigenous biocultural heritage modelling (IBCH), formal models which linked multiple communities and the NGO (e.g. the Inter-Community Agreement for Equitable Access and Benefit Sharing) and the 'Life Plans', to undertake indigenous community centred organizing across networks from the organizational to the macro. The agreement to repatriate and co-manage indigenous potato varieties is another organizational level example which linked macro level institutions and approaches to agrobiodiversity (i.e. limited to research institutes and involving Eurocentric sciences) with community practices in an adaptive, complimentary and novel ways. These are examples of multi-directional Development action at this 'organizational level' which represented divergence from institutional norms and participatory practice at the practice level i.e. institutional entrepreneurship through context (Development) specific forms of institutional work.

Practice Level

The final 'practice' level represents those spaces of direct interaction between peoples, the face to face work of Development, where individual and collective dispositions are expressed in the sociality of 'cross-cultural' engagement. This is the field, in its literal sense, of collaboration in growing crops, building structures, eating food, of work and life, where to coin a phrase from Watanabe (2014), everyone can, and perhaps should, end up "smelling like mud". It is at this level that specific methods such as 'participatory tools' are applied, and it is at this level that IK promotion occurs through face-to-face interactions.

Interacting Levels

The characteristics and dynamics of each of the levels, macro, organizational and practice, influences the others; the work of Development is shaped by, and shapes organizational level processes, which in turn can maintain and re-create institutions within specific fields (Lawrence & Suddaby, 2005) and more broadly across societies. These processes, from the

face-to-face work of community interaction, to the intra and inter-organizational levels can shape the macro level dynamics of social inequality and colonization. Revolutionary change can spring from 'small actions', growing, solidifying collective change, and reshaping the institutions of societies and governments i.e. people-centred Development can contribute to social, cultural and political transformation (Hickey & Mohan, 2004a; 2004b; 2005).

Ethical Orientation - Matemate-a-One

The final aspect of the model is the reference to an overarching ethical, practical and affective dimension which imbues all aspects of the model. The term *matemate-a-one* has been described previously as reflecting, 'a deep and profound affection for one's land and people, an affection that motivates one to maintain the intimacy of whakapapa'. *Matemate-a-one* acts to emphasize an inter-dependent kinship understanding of the human-nature relationship, giving primacy to the landscapes of indigenous peoples. The landscapes of indigenous peoples and human-place interdependencies represent spaces in which the *being* of people and place is generated through constant interaction within daily and seasonal cycles (Graddy, 2014). The emphasis on place, people, and regenerating eco-cultural kinship relationships provides Development with spatial, cultural and social scales of reference e.g. the landscapes of indigenous peoples becomes a principle scale of reference for Development not just a site within which Development occurs, the address of Development.

In conclusion, the levels of the model, their interactions, and the overarching ethical orientation should be considered in concert. Each element provides support to the other, and each element, if applied in isolation, is weakened, its tapu and mana diminished through its individuation and separation from its kinship relations. From this holistic cosmovision, Development organizing plays a significant role, representing a space where dialogue and practice can occur across diversity, acting to realign, reconnect, heal and sustain the abundance of Pachamama – Papa-tū-ā-nuku.

Chapter 8. CONCLUSION

8.1. Introduction

After discussing the key findings of the research and their relationship to the literature this chapter presents the researches' final conclusions, potential future research and the application of these findings. At the heart of the research was an exploration of indigenous communities' relationships with external agencies within Development projects, and how these relationships affect the practice of indigenous knowledge traditions. Within such projects the idea of 'participatory' Development practice has dominated the field since the mid-1980s. Central to the participatory movement has been an aim to reconfigure power differentials and to promote IKs and their engagement with other knowledge traditions. The literature indicates this aim has been achieved sporadically at best. While critiques remain of participatory Development as being embedded within a discourse of unequal power, of being poorly operationalized, largely rhetorical in nature (i.e. talk of participation is far more common than its practice), and in many instances failing to value, understand or practice IKs, there are more hopeful positions that provide strong conceptual, empirical and ethical arguments for considering pluralistic, just, effective and revolutionary Development as possible. This research takes this second position, arguing indigenous centred organizing offers ethical, conceptual and practical insights which can support the re-shaping of Development.

8.2. Summary of Research Findings: Practical & Theoretical Contributions

The research demonstrated specific organizational approaches to can maintain power differentials (Aotearoa case) and how those differentials can be re-configured to centre indigenous communities (Peruvian project). It is therefore argued that in seeking to undertake participatory Development and IK promotion, power should be central to the design and management of Development projects. Lewis and Opoku-Mensah (2006) and Bebbington et al. (2007) have argued that issues of context, practice, meanings and power be considered concurrently as they exist in relation to each other. This research supports the concurrent organizational consideration of these four aspects. Together these four areas provide a conceptual framework to better understand the relationships of multiple agencies and

communities engaged in Development. In developing an Indigenous Centred Development Model this research includes these four elements, placing them within a broader framework of ‘interacting worlds’ which links local practice, organizing and macro level processes with societal level patterns. The research identified inter-organizational level relations (IORs) as being of particular importance in enacting participatory Development, specifically in terms of alliances with supportive, often international, organizations, and through engagement in participatory monitoring and evaluation (PM&E) processes.

THEORETICAL INSIGHTS
<p>Participatory Development – models require explicit recognition of the role of inter-organizational relations (IORs), emphasizing relationships between funders and others. Participation is a function of IORs, and appropriate tools such as PM&E should be used.</p> <p>Development Organizing – multi-level process which integrates issues of power, meaning, context and practice.</p> <p>Knowledge Interfaces – demonstrating appropriation as a symbolic or rhetorical in nature and involving a split between project rhetoric and practice (Blaikie et al., 1996).</p> <p>Proximity – should be framed as a relative construct and viewed from the distinct perspective of each group/organization being compared.</p> <p>Institutional Entrepreneurship – reframing participatory Development as institutional entrepreneurship, contextualizing notion of entrepreneurial ‘work’ (Lawrence & Suddaby, 2005) to Development.</p> <p>Mātauranga Māori Knowledge Framework – proposes a novel model of mātauranga Māori.</p> <p>Indigenous Centered Development Model - proposes an indigenous centered development model that address key conceptual, organizational, ethical and political elements.</p>

Table 13. Main theoretical contributions of research.

It is argued that southern NGOs represent an organizational form and occupy positions across global Development networks that are particularly conducive to addressing issues of context, practice, meaning and power in collaborative and local/community centred ways. ANDES and the Potato Park offer powerful examples of this potential. By addressing issues of power at the organizational level, by integrating community governance structures into their organizational structure, a simple and clear option for reconfiguring power dynamics was created. Such approaches should not be seen as limited to NGOs, with state agencies and

research institutes also able to implement similar organizational structures. In conducting Development projects, state agencies and research institutes can, with operational, policy and legislative influence, create similar integrative power structures, for example forming joint or co-management structures to oversee projects. Within the Aotearoa context Treaty of Waitangi settlements offer a powerful means of enacting legislation which can reshape state, organizational and project level relationships with indigenous peoples.

The research also argues that organizational perspectives of Development offer theoretical and practical benefits to the challenges of improving the lives of indigenous peoples through purposeful actions such as Development. The organizational literature includes considerable insights into issues of power, practice, meaning, learning and knowledge, within institutional and societal contexts. This literature therefore provides Development practitioners and theorists with a broad, and potentially novel, range of theoretical and practical insights from global experiences of intra-organization, inter-organization, and organizational-community interaction.

This study showed that Development practice and research can occur from within indigenous cosmologies, and that these approaches can act to centre the local, address issues of colonial power differentials, while opening the Development field to a pluri-vocal approach. The call for collaboration for ethical and practical reasons, despite 30yrs of *neopopulist* Development, remains challenging. Together the two cases provided contrasting examples of what can occur under the name of participatory Development. Where the Aotearoa case represented many of the enduring problems associated with participatory Development; divergence of rhetoric and practice, poor promotion of IK, non-local Development actors profiting disproportionately from project funding, and poor organizational and personnel capacity to work with an indigenous people, the Peruvian project showed an impressive contrast. ANDES and the Potato Park offer a particularly powerful example of novel multi-level approaches to the organizational design of Development. This multi-level approach provided demonstrable benefits to a wide range of Development actors (indigenous communities, research institutes, funders, state agencies, and NGOs alike), and which has contributed to change across the Development field.

8.3. Future Research & Development Directions

This research contributes to a larger movement of indigenous peoples maintaining and (re)vitalizing our ways-of-knowing, and as such is an expression of whakapapa as a lived experience of Being-with the world. The relationships and understandings from this research have created future academic, cultural and political possibilities. This final section therefore offers a brief discussion of its findings in relation to three areas; Development training, state policy and agency recommendations, and future research.

Development Training

Development training represents a diverse field of formal and informal education and support of Development actors, their organizations and communities. To discuss Development training comprehensively would require more space than is available here. Instead, the discussion focuses on issues of political awareness and action, and cultural capacity.

Political Awareness & Action

It has been argued that Development has become increasingly de-politicized (Hickey & Mohan, 2005; Mohan, 2007). From an indigenous position Development is acutely political, and it is argued here that by focusing on singular de-politicized issues, Development actors will maintain practices within the status quo. To re-politicize Development there is a need for training/education to explore issues of power from the macro to interpersonal levels, with reference to historic patterns of interaction, the contemporary forms of inequality (e.g. exclusion, silencing) and the theoretical and practical means of expressing indigenous rights e.g. kaupapa māori theory, critical theory, language revitalization. This exploration should highlight the contested nature of relationships, and the processes of negotiation that occur. Institutional training/education provides an objective view of power, a conceptual training to engage in real life situations of contested power. It is therefore recommended that Development training encourage reflective and active participation in strongly politicized spaces involving indigenous peoples and/or indigenous issues. This could for example involve supporting local indigenous schools, engaging in ecosystem restoration projects, being an open advocate for indigenous rights and education of non-indigenous peoples, to more overt and oppositional forms i.e. direct protest.

Cultural Capacity

The literature and this research argue that for participatory Development to occur, individuals and organizations require the capacity to act skilfully within and between cultural contexts. It is therefore recommended that individuals and organizations develop capacity in two areas that would build cultural competency, flexibility and social networks amongst indigenous peoples. This training could be initiated within a Development practitioner training program, or it could be undertaken individually or within organizations;

- **Language learning** – language is central to participation in any cultural context. Language learning involves developing a specific skill, while also cultivating relationships and gaining exposure to the values, norms and practices of a culture i.e. language learning is culture learning. Indigenous language learning, and then speaking that language, immediately places an individual/organization within a broader ‘project’ of language maintenance and in many cases revitalization, and therefore the learner is engaged in an indigenous political movement. Indigenous language learning increases the social and cultural capital of the learner, and overtime contributes to the cultivation of an indigenous habitus within the learner i.e. being at ease and familiar within indigenous contexts.
- **Cultivating an Indigenous practice/skill** – the learning of a traditional indigenous practice provides the benefits described above from language learning, while developing a skill that is valued by indigenous peoples and which can be applied within indigenous contexts. A wide range of practices can be learnt, for example plant based medicines, growing of traditional crops or hunting by indigenous methods, methods of construction (e.g. house building, water craft), methods of producing materials and clothing, carving, performing arts, traditional navigation and sailing methods, tool making and martial arts. By learning any of these skills the learner will be able to participate in a valued communal practice, which will strengthen relationships and create trust and respect between the community and the individual concerned.

Learning an indigenous language and/or a valued indigenous practice requires an ongoing personal and/or organizational commitment over many years and often a type of ‘apprenticeship’ under a respected community member. Again, these factors of prolonged commitment and intimate relationships with community elders or experts, strengthen the

social and cultural capital of an individual or organization, and shaping their cognitive and behavioural dispositions (*habitus*) to align with those of the respective indigenous peoples.

There are a number of personal skills and qualities that facilitate Development work. These skills and qualities may relate more to aspects of an individual's personality and background than trainable skills. Training programs may however provide opportunities to develop these elements and give exposure to situations where their importance can be directly experienced, examples include;

- **Living outside your comfort zone** – a familiarity with life in isolated areas with minimal 'creature comforts' is often required in Development.
- **Manual labour** – an ability to actively participate in agricultural work requires physical strength, adaptability, and an openness or enthusiasm for 'getting muddy' and doing physical labour (Watanabe, 2014).
- **Practical skills** - having practical skills that can be applied in local contexts will immediately move the individual from being an outsider who is largely useless within local situations, to being a participant in local life. Useful skills might include being good with hand tools (using a shovel well is a recognizable and valued skill), using machinery, being able to drive and use a range of vehicles (motor bike, tractor, truck, 4 wheel-drive), understanding building construction and basic electrical wiring, etc.

A common feature of Development work is that is more than a 9-5 job, it involves a deep commitment to issues of indigenous justice, and an ability to work in culturally diverse and politicized contexts. Development work at the nexus of colonial relations typically involves constant pressures to conform to the status quo, which can take a heavy personal toll. My final recommendation is that Development training seek to cultivate a mindfulness of these challenges, and encourage future Development workers to maintain the support, insight and practices which allow one to maintain a sense of balance and purpose while engaged in supporting indigenous communities.

State Policy & Agency Recommendations

The function of states in shaping and enforcing political institutions within which Development is conducted has been discussed extensively in the literature. For ANDES, and particularly the individuals who created the NGO, the implications of state engagement were

very important. The constraints of state-led Development were a prime motivator in creating an indigenous NGO which could exercise autonomy from the state and engage strategically with IDCIs, research institutes and other indigenous peoples nationally and internationally. In contrast the Aotearoa case was firmly embedded in the state. The institutional context of the project involved conflicting elements where IK was promoted through RS&T funding priorities, while funded institutes lacked the personnel and organizational capacity to promote IK, or for scientists and IK practitioners to engage in meaningful dialogue and collaboration. This situation was not however solely one of a lack of capacity. The inter-organizational relationship between the three main parties, funder, service provider and local participants, was not participatory. Local participant involvement in monitoring and evaluation processes is an essential inter-organizational level participatory practice. Participatory monitoring and evaluation allows local concerns and priorities to be clearly voiced, for project practice to be modified in response to local insights, it provides direct evidence of Development practice to funders, and it provides a means of transforming power relations. In the Aotearoa case participatory monitoring and evaluation would have made salient issues of poor organizational and personnel capacity amongst the science team to engage with mātauranga Māori.

In both the Peruvian and Aotearoa contexts the state's ability to embrace participatory methods was poor. However, while the Peruvian case demonstrated a strategic disengagement from the state, the Aotearoa case reflected an embeddedness within the state and an inter-organizational model which at best only slightly diverged from a status quo of indigenous marginalization. As the Aotearoa project was funded and undertaken by state institutes, the possibility of the science team disengaging itself from its wider institutional context was limited. There was however a possibility to diverge from that context by prioritizing the development of cultural capacity amongst the science team, re-configuring inter-organizational relationships so that participatory monitoring and evaluation occurred, and creating formal structures that integrated community and organizational power. This would have required, and represented, a degree of organizational and institutional innovation (i.e. institutional work (Lawrence, Suddaby & Leca, 2009; 2011), where influential individuals led a prioritizing of novel values and organizational models and practices. At this final stage it is worth recounting the model of institutional work required to diverge from the status quo

and create new institutional norms as outlined by Lawrence and Suddaby (2005) and Lawrence, Suddaby and Leca (2009; 2011);

- **Overtly political work** – mobilizing political and regulatory support (*advocacy*), constructing rules that define status, identity and membership (*defining*), and creating rules that confer property rights (*vesting*).
- **Reconfiguring belief systems** – *constructing identities* that define the relationship between an actor and the field, *changing normative associations* between work and the moral and cultural foundations of those practices, and *constructing normative networks* where inter-organizational networks support and regulate novelty, creating new norms within the broader field.
- **Altering abstract categorizations** – associating taken-for-granted practices, technologies and rules with new work in ways that ease adoption (*mimicry*), developing new concepts, practices, and ideas of cause and effect (*theorizing*) and the educating of actors in the skills and knowledge necessary to support new institutions (*educating*).

In light of the empirical findings of this research, and the broader IK, Development and organizational literatures reviewed, the following recommendations are made with the strongest possible emphasis;

- all engagement with indigenous communities by state agencies should include;
 - participatory monitoring and evaluation (PM&E). This should be promoted as standard practice across all state agencies that work with indigenous communities.
 - integrative decision-making structures to ensure power is dispersed and expressed collaboratively.
 - be undertaken by people with appropriate levels of cultural capacity.
- all state agencies should develop organizational capacity to work with indigenous communities, including the normalizing of power sharing inter-organizational (state – indigenous) models.

- all state agencies should develop and implement indigenous language policies which ensure role specific language capacity. The application of these policies should involve senior staff acting as exemplars of policy implementation. Policy implementation should be incentivized through human resource processes such as monthly work and annual salary reviews, thereby demonstrating organizational commitment and providing tangible motivators and benefits and for personal and organizational change.

Future Research Directions

This research is positioned at the centre of indigenous researcher endeavours to re-frame, re-enact and re-present Development as indigenous centred, politically active and practically orientated. An area of potential future research which has not received significant attention within the Development literature, but which holds potential to contribute significantly to indigenous praxis-orientated research is the work of Bourdieu. In conversations with other researchers and in reviewing the literature, the work of Bourdieu seemed to be a constant, yet peripheral feature. This is not surprising as elements of his work have been adopted by English speaking researchers, especially the concepts of social and cultural capital (Bourdieu, 1986). Bourdieu's theoretical insights regarding individuals (e.g. habitus), social structure (the field) and power relations (the various forms of capital) offer potential for application to Development and organizational issues of enacting participatory ideals, IK promotion and interactions between knowledge traditions. Although Bourdieu's work has considerable theoretical potential, it does involve considerable methodological challenges, as it requires a high degree of cultural familiarity to be applied in research or practical contexts. Given the culturally diversity of Development, where indigenous, colonial society and international groups may be involved, the systematic application of Bourdieu's insights may only be possible by a small group of researchers and Development practitioners with the necessary cross-cultural skills.

The other area of potential future research involves conducting IK research from within the epistemological, ontological and eco-cultural context of Iks. Work such as Maffie's (2009) polycentric global epistemologies, growing indigenous-to-indigenous relationships, and the new participants in Development that the emergence of the BRIC nations has brought, reflect a global context where Iks are expressed within new relational and economic contexts. Given

the continued global loss of languages, IKS can be considered as equally under threat. As products of communities buffeted by, and embracing of, technological and social change, indigenous peoples face the challenge of maintaining and adapting our *ways-of-knowing* if they are to remain relevant. It is hoped the insights from this research are of some use in understanding and responding to these dynamics, and maintaining the vitality of indigenous *ways-of-knowing*.

Mauri ora!

8.4. Poroporaki

In closing this thesis, I would like to reiterate the thanks offered at its start. All those acknowledged in my mihi have been instrumental in completing this work and my gratitude towards each of you is heartfelt. It is normal to finish kōrero with a song, in this case a poem by Māori poet Hone Tūwhare is offered, as it expresses much of the sentiment that has lay behind this work. Noho ora mai koutou.

Rain

*I can hear you making
small holes in the silence
rain*

*If I were deaf
the pores of my skin
would open to you
and shut*

*And I should know you
by the lick of you
if I were blind:*

*the steady drum-roll
sound you make
when the wind drops*

*the something
special smell of you
when the sun cakes
the ground*

*But if I should not
hear
smell or feel or see you*

*You would still
define me
disperse me
wash over me
rain*

REFERENCES

- Agarwal, B. (2001). Participatory exclusions, community forestry and gender: an analysis for South Asia and a conceptual framework. *World Development* 29, 10, 1623–1648.
- Agrawal, A. (1995). Dismantling the Divide Between Indigenous and Scientific Knowledge. *Development and Change*, 26, 3, 413–439.
- Agrawal, A. (2002). Indigenous knowledge and the politics of classification. *International Social Science Journal*, 54, 173, 287–297.
- Ahorro, J. 2008. "The Waves of Post-Development Theory and a Consideration of the Philippines". Paper Presented at the Canadian Political Science Association 2008 Conference, Vancouver, Canada, 4–6 June. Accessed October 27, 2015. <http://www.cpsa-acsp.ca/papers-2008/Ahorro.pdf>
- Aikenhead, G. S. & Ogawa, M. (2007). Indigenous knowledge and science revisited. *Cultural Studies of Science Education*, 2, 539–620.
- Allen, C. (1981). To Be Quechua: The Symbolism of Coca Chewing in Highland Peru. *American Ethnologist*, 8, 1, 157–171.
- Allen, C. (2002). *The Hold Life Has*. Washington. Smithsonian Institution Press.
- Alvares, C. (1992). Science, in W. Sachs (Ed.), *Development Dictionary: A Guide to Knowledge as Power*. Zed Books. London, 1992, p. 219–232.
- Anderson, A. (ed). (1990). *Alternatives to deforestation*. Colombia University Press. New York.
- Anderson, K. & Reiff, D. (2005). *Global civil society: a sceptical view*. Chapter 1 in *Global Civil Society 2004/5*. Sage. London.
- Andolina, R., Laurie, N. & Radcliffe, S. (2005) Development and Culture: Transnational Identity Making in Bolivia. *Political Geography*, 24, 678–702.
- Andolina, R., Laurie, N. & Radcliffe, S. (2009). *Indigenous Development in the Andes: Culture, Power and Transnationalism*. Durham, USA. Duke University Press.
- Andrews, N. & Bawa, S. (2014). A Post-Development hoax? (Re)-examining the Past, Present and Future of Development Studies. *Third World Quarterly*, 35, 6, 922–938.
- Antweiler, C. (1998). Local Knowledge and Local Knowing. An Anthropological Analysis of Contested "Cultural Products" in the Context of Development. *Anthropos*, 93, 469–494.
- Apffel-Marglin, F., & Marglin, S. (1996). *Decolonizing Knowledge*. Oxford. Clarendon Press.
- Apffel-Marglin, F. (1998). *The Spirit of Regeneration. Andean Culture Confronting Western Notions of Development*. Zed Books. London.
- Argumedo, A. (2011). *Community Biocultural Protocols: Building Mechanisms for Access and Benefit Sharing among the Communities of the Potato Park based on Customary Quechua Norms. ANDES (Peru), the Potato Park Communities and IIED*. Published by International Institute for Environment and Development.
- Argumedo, A. & Pimbert, M. (2006). *Protecting Indigenous Knowledge against Biopiracy in the Andes*. International Institute for Environment and Development (IIED).
- Argumedo, A. & Stenner, T. (2008). *Association ANDES: conserving indigenous biocultural heritage in Peru. Gatekeeper Series, 137a*. International Institute for Environment and Development (IIED).
- Argumedo, A. & Yun Loong Wong, B. (2011). *The thriving biodiversity of Peru's Potato Park*. United Nations University. Retrieved 4th August 2011 from

<http://ourworld.unu.edu/en/the-thriving-biodiversity-of-peru-potato-park/#authordata>

- Argumedo, A., and B.Y.L. Wong. 2010. *The ayllu system of the Potato Park, Cusco, Peru*. The Satoyama Initiative. Accessed 1 March 2012 from http://satoyama-initiative.org/en/case_studies-2/area_americas-2/theayllu-system-of-the-potato-park-cusco-peru/
- Arnstein, S., R. (1969). A ladder of citizen participation. *Journal of the American Institute of Planners* 35, 4, 216–224.
- Ashby, J.A. (1996) cited in Neef, A & Neubert, D. (2011). Stakeholder participation in agricultural research projects: a conceptual framework for reflection and decision-making. *Agricultural Human Values*, 28, 179-194.
- Bala, A. & Joseph, G. G. (2007). Indigenous Knowledge and Western Science: the possibility of dialogue. *Race & Class*, 49, 1, 39-61.
- Ballard, C., Brown, P., Bourke, R. M, & Harwood, T. (Eds). (2005). *The Sweet Potato in Oceania: a reappraisal. Ethnology Monographs 19, Oceania Monographs 56*. University of Pittsburgh, Pittsburgh and University of Sydney, Sydney.
- Bargh, M. (2007). *Resistance: An Indigenous Response to Neoliberalism*. Wellington, Aotearoa-New Zealand. Huia Publishing.
- Bargh, M. (2011). Moving On: From a Developmental View of Humanity. *Alternatives: Global Local Political*, 36, 1, 79-85.
- Barlow, C. (1991). *Tikanga Whakaaro: Key Concepts in Māori Culture*. Oxford University Press. New Zealand.
- Basset, K., Gordon, H., Nobes, C. & Jacomb, C. (2004). Gardening at the edge: Documenting the limits of tropical Polynesian kumara horticulture in southern New Zealand. *Geoarchaeology*, 19, 3, 185-218.
- Bebbington, A. (1991). Indigenous Agricultural Knowledge Systems, Human Interests and Critical Analysis: Reflections on Farmer organizations in Ecuador. *Agriculture and Human Values*, Winter – Spring, 14-24.
- Bebbington, A. (1996). Organizations and Intensifications: Campesino Federations, Rural Livelihoods and Agricultural Technology in the Andes and Amazonia. *World Development*, 24, 7, 1161-1177.
- Bebbington, A. (Ed.) (2007). *Minería, movimientos sociales y respuestas campesinas: Una ecología política de transformaciones territoriales*. Lima: Instituto de Estudios Peruanos and Centro Peruano de Estudios Sociales,
- Bebbington, A., Lewis, D., Batterbury, S., Olson, E., & Siddiqi, M. S. (2007). Of texts and practices: Empowerment and organisational cultures in world bank-funded rural development programmes. *Journal of Development Studies*, 43, 4, 597-621.
- Bennet, C. (2012). Supporting the Posts in Development Discourse: Under-development, Over-development, Post-development. *Sociology Compass*, 6, 12, 974-986.
- Bentley, J. (1994). Facts, fantasies, and failures of farmer participatory research. *Agricultural and Human Values*, 11, 2-3, 140-150.
- Bentley, J. W. (2006). Folk Experiments. *Agriculture and Human Values*, 23, 451-462.
- Berger, P. & Luckmann, T. (1991). *The Social Construction of Reality*. London. Penguin Books.
- Best, E. (1941). *The Māori*. Wellington, New Zealand. The Polynesian Society.
- Best, E. (2005). *Māori Agriculture*. Wellington, New Zealand. Te Papa Press.
- Best, E. (2006). *Māori Religion and Mythology*. Wellington, New Zealand. Te Papa Press.

- Bhabha, H., K. (1985). Signs taken for wonders: questions of ambivalence and authority under a tree outside of Delhi. *Critical Inquiry*, *XII* (1), 89–106.
- Bicker, A., Sillitoe, P., & Pottier, J. (2003). *Negotiating Local Knowledge: Power and Identity in Development*. Pluto Press.
- Biggs, S. (1981). Institutions and decision making in agricultural research. *Agricultural Administration Discussion Paper. Series No.5*. London. Overseas Development.
- Billis, D. (2010). *Hybrid Organizations and the Third Sector*. London. Palgrave Macmillan
- Blaikie, P. (2000). Development, post-, anti-, and populist: a critical review. *Environment and Planning A*, *32*, 6, 1033-1050.
- Blaikie, P., Brown, K., Stocking, M., Tang, L., Dixon, P. & Sillitoe, P. (1997). Knowledge in Action: Local Knowledge as a Development Resource and Barriers to its Incorporation in Natural Resource Research and Development. *Agricultural Systems*, *55*, 2, 217-237.
- Blust, R. (2007). Proto-Oceanic *mana Revisited. *Oceanic Linguistics*, *46* (2), 404-423.
- Boje, D. M. (2001). *Narrative methods for organizational and communication research*. London. SAGE.
- Bolin, I. (1998). *Rituals of Respect*. Austin, Texas. University of Texas Press.
- Bourdieu, P. (1972). *Outline of a Theory of Practice*. Cambridge. Cambridge University Press
- Bourdieu, P. (1986). 'The forms of capital' in J. E. Richardson (ed.), *Handbook of Theory of Research for the Sociology of Education* (pg. 241-58). Greenwood Press.
- Bourdieu, P. (1990). *The Logic of Practice*. Stanford CA. Stanford University Press.
- Briggs, J. (2005). The use of indigenous knowledge in development: problems and challenges. *Progress in Development Studies*, *5*, 2, 99-114.
- Briggs, J. (2013). Indigenous Knowledge: a false dawn for development theory and practice? *Progress in Development Studies*, *13*, 3, 231-243.
- Briggs, J., Sharp, J., Yacoub, H., Hamed, H., & Roe, A. (2007). The nature of indigenous environmental knowledge production: evidence from Bedouin communities in southern Egypt. *Journal of International Development*, *19*, 239-251.
- Brown, D. E. (1991). *Human Universals*. New York. McGraw-Hill.
- Brinkerhoff, D. W., & Brinkerhoff, J. M. (2004). Partnerships Between International Donors and Non-Governmental Development Organizations: Opportunities and Constraints. *International Review of Administrative Sciences*, *70*, 2, 253-270.
- Bruges, M. (2006). *The Potential of Participatory Approaches for Sustainable Agriculture in New Zealand*. Unpublished Master's thesis.
- Bruges, M. & Smith, W. (2008). Participatory approaches for sustainable agriculture: A contradiction in terms? *Agriculture and human Values*, *25*, 13-23.
- Bruges, M. & Smith, W. (2009). Improving utilisation of Māori land: Challenges and success in the application of a participatory approach. *Kōtuitui: New Zealand Journal of Social Sciences*, *4*, 205-220.
- Brush, S. (1976). Man's Use of an Andean Ecosystem. *Human Ecology*, *4*, 2, 147-166.
- Burrell, G. & Morgan, G. (1979). *Sociological paradigms and organisational analysis*. Heinemann Educational Books.
- Burtenshaw, M. & Harris, G. (2007). Experimental archaeology gardens assessing the productivity of ancient Māori cultivars of sweet potato, *Ipomoea batatas* [L.] Lam. in New Zealand. *Economic Botany*, *61*, 3, 235-245.
- Cajete, G. (1999a). *A People's Ecology: Explorations in Sustainable Living*. Clear Light Publishers. Santa Fe. New Mexico.

- Cajete, G. (1999b). *Igniting the Sparkle: An Indigenous Science Education Model*. North Carolina. Kivaki Press.
- Cajete, G. (2000). *Native Science: Natural Laws of Interdependence*. Clear Light Publishers, New Mexico, USA.
- Callagher, L. J. (2011). *A multi-level exploration of learning and knowing for innovation in an emerging biotechnology industry*. Unpublished PhD thesis. University of Auckland.
- Campbell, J. (2007). *The Mythic Dimension: Selected Essays 1959-1987 (The Collected Works of Joseph Campbell)*. Joseph Campbell Foundation.
- Cerwonka, L. & Malkki, H. (2007). *Improvising theory: Process and Temporality in Ethnographic Fieldwork*. Chicago. University of Chicago Press.
- Chambers, R. (1983). *Rural Development: Putting the Last First*. Essex, England. Longmans Scientific and Technical Publishers.
- Chambers, R. (1997). *Whose Reality Counts: Putting the First Last*. Essex, England. Longmans Scientific and Technical Publishers.
- Chambers, R. (2014) Knowing in Development: A Radical Agenda for the Twenty-First Century. *Forum for Development Studies*, 41, 3, 525-537.
- Coenen, L., Moodysson, J. & Asheim, B. T. (2004). Nodes, networks and proximities: on the knowledge dynamics of the Medicon Valley biotech cluster. *European Planning Studies*, 12, 7, 1003-1018.
- Cohen, L., & Manion, L. (1994). *Research methods in education*. (4th ed.) London. Routledge.
- Collinson, M., P. (1972). *Farm Management in Peasant Agriculture*. New York. Praeger.
- Contu, A. & Willmott, H. (2003). Re-Embedding Situatedness: The Importance of Power Relations in Learning Theory. *Organization Science*, 14, 3, 283-296.
- Cook, B. & Kothari, U. (2001). *Participation: The New Tyranny?* Zed Books. London, UK.
- Cook, N. (1981). *Demographic collapse: Indian Peru, 1520-1620*. New York. Cambridge University Press.
- Cook, P., & Yanow, D. (1993). Culture and Organizational Learning. *Journal of Management Inquiry*, 2, 4, 373-390.
- Coronel-Molina, S. M. (2002). *Quechua Phrasebook: The Language of the Andes*. Footscray, Australia. Lonely Planet Publications Pty Ltd.
- Cornwall, A. (2003). Whose voices? Whose Choices? Reflections on gender and participatory development. *World Development*, 31, 8, 1325-1342.
- Cornwall, A. & Eade, D. (Eds.) (2010). *Deconstructing Development Discourse: Buzzwords and Fuzzwords*. Practical Action Publishing. Warwickshire. UK.
- Cowen, M. & Shenton, R. (1996). *Doctrines of Development*. London. Routledge.
- Cropper, S., Eber M. & Huxham, C. (2008). *The Oxford Handbook of Inter-Organizational Relations*. New York, USA. Oxford University Press.
- Cunningham, C. (2000). A framework for addressing Māori knowledge in research, science and technology. *Pacific Health dialogue*, 7, 1, 62-69.
- Denzin, N. K. & Lincoln, y. S (2000). *The Handbook of Qualitative Research*. 2nd Ed. London. Sage.
- Denzin, N., Lincoln, Y. & Smith, L. (Eds) (2008). *Handbook of Critical and Indigenous Methodologies*. Sage Publications. Thousand Oaks, California.
- Devine, S. (2003). A Systems Look at the Science Reforms. *New Zealand Science Review*, 60, 70-74.
- Dewulf, A., Craps. M. & Dercon. G. (2004). How issues get framed and reframed when different communities meet: A multi-level analysis of a collaborative soil

- conservation initiative in the Ecuadorian Andes. *Journal of Community Applied Social Psychology*, 14, 177-192.
- Diamond, J. M. (1997). *Guns, Germs, and Steel: The Fates of Human Societies*. Norton. New York.
- Dickson, M. (2009). The asymmetry between science and traditional knowledge. *Journal of the Royal Society of New Zealand*, 39, 4, 171-172.
- DiMaggio, P. J. (1988). Interest and agency in institutional theory. In L.G. Zucker (Ed.), *Institutional patterns and organizations: Culture and environment*: 3-22. Cambridge, Mass.: Ballinger.
- DiMaggio, P.J., & Powell, W.W. (1983). The Iron Cage Revisited: Institutional Isomorphism and Collective Rationality in Organizational Fields. *American Sociological Review*, 48, 2, 147-160.
- Donovan, K. P. (2014). 'Development' as if We Have Never Been Modern: Fragments of *Latourian Development Studies*. *Development and Change*, 45, 5, 869-894.
- Drahos, P. (2014). *Intellectual Property, Indigenous People and their Knowledge*. Cambridge.
- Drucker, P. F. (1995). *Managing in a Time of Great Change*. New York. Truman Talley.
- Durie, M. (2003). *Contemporary Māori development: issues and broad directions*. Hamilton, New Zealand. University of Waikato Press.
- During, S. (2005). *Cultural Studies: A Critical Introduction*. London. Routledge.
- Easterby-Smith, M. & Lyles, M. A. (2003). *Handbook of Organizational learning and Knowledge*. London. Blackwell
- Eastermann, cited in Stadel (1995). *Lo Andino: Andean Environment, Philosophy and Wisdom*. Conference paper from IV Simposio Internacional Desarrollo Sustentable en Los Andes, paper retrieved from <http://hoeger.com.ve/ama/sesion-andes.html> on 23rd July 2012.
- Eisenhardt, K. M. (1989). Building Theories from Case Studies. *Academy of Management Review*, 14, 4, 532-550.
- Eisenhardt, K. M., & Graebner, M. E. (2007). Theory Building from Cases: Opportunities and Challenges. *Academy of Management Journal*, 50, 1, 25-32.
- Ellen, R., & Harris, H. (1996) cited in Emirbayer, M. & Williams, E. M. (2005). Bourdieu and Social Work. *Social Service Review*, 79, 4, 689-724.
- Emirbayer, M. & Johnson, V. (2007). Bourdieu and organizational analysis. *Theory and Society*, 37, 1, 1-44.
- Emirbayer, M. & Mische, A. (1998). "What is Agency?". *American Journal of Sociology*, vol. 103, pp. 962-1023.
- Engel, E. (1970) Exploration of the Chilca Canyon. *Current Anthropology*, 11, 55-58.
- Engle, K. (2010). *The Elusive Promise of Indigenous Development*. London, UK. Duke University Press.
- Escobar, A. (1995). *Encountering Development: The Making and Unmaking of the Third World*. Princeton, NJ. Princeton University Press.
- Escobar, A. (1996). Imagining a post-development era, in J Crush (Ed.), *The Power of Development* pp 211-227. London. Routledge.
- Esteva, G. (1987). Regenerating People's Space. *Alternatives*, 12, 125-152
- Esteva, G. (1992) 'Development', in Wolfgang Sachs (ed.) *The Development Dictionary: A Guide to Knowledge as Power*. London, Zed Books.
- Firth, R. (1929). *Primitive Economies of the New Zealand Māori*. New York, USA. E. P. Dutton Publishing.

- Firth, R. (1940). The Analysis of Mana: An empirical approach. *The Journal of the Polynesian Society*, 49, (4), 482-510.
- Fiske, S. T. & Taylor, S., E. (1991). *Social Cognition*. London. Addison-Wesley.
- Fligstein, N. (1997). Social skill and institutional theory. *American Behavioural Scientist*, 40: 397-405.
- Flyvberg, B. (2006a). Five Misunderstandings About Case-Study Research. *Qualitative Inquiry*, 12, 2, 219 – 245.
- Flyvberg, B. (2006b). Making Organizational Research Matter, chapter in *The Sage Handbook of Organizational Studies* (Clegg, S. R., 2006). London. SAGE.
- Foucault, M. (1984). *The Foucault Reader*. P. Rabinow (Ed.). London. Penguin.
- Frank, A. G. (1969). *Latin America: Underdevelopment or Revolution: Essays on the Development of Underdevelopment and the Immediate Enemy*. New York. Monthly Review Press.
- Freire, P. (1970). *Pedagogy of the Oppressed*. New York. Continuum.
- Gabriel, Y., Fineman, S., & Simms, D. (2000). *Organizing and Organizations* (2nd Ed). London. SAGE.
- Gade, D. W. (2012). Cultural geography and the inner dimensions of the quest for knowledge. *Journal of Cultural Geography*, 29, 3, 337-358
- Galan, B., P. (2001). Authorities and ethnic territory. The ritual "Linderaje" in an Andean community. *Anthropologica*, 19, 19, 365-382.
- Garcia, M. (2005). *Making indigenous citizens: identities, education, and multicultural activism in Peru*. Stanford USA. Stanford University Press.
- Graddy, T. G. (2014), Situating In Situ: A Critical Geography of Agricultural Biodiversity Conservation in the Peruvian Andes and Beyond. *Antipode*, 46, 426–454.
- Geertz, C. (1973). *The Interpretation of Cultures*. New York. Basic Books.
- Gelfand, M. J., Erez, M., & Aycan, Z. (2007). Cross-Cultural Organizational Behaviour. *Annual Review of Psychology*, 58, 479-514.
- Gibson-Graham, J. K. (2002). 'Beyond Global vs. Local: Economic Politics Outside the Binary Frame', in A. Herod and M. W. Wright (Eds) *Geographies of Power: Placing Scale* p. 25-60. Oxford. Blackwell Publishing.
- Gibson-Graham, J. K. (2005a). Surplus possibilities: Postdevelopment and Community Economies. *Singapore Journal of Tropical Geography* 26, 1, 4–26.
- Gibson-Graham, J. K. (2005b). Traversing the Fantasy of Sufficiency. *Singapore Journal of Tropical Geography* 26, 2, 119-126.
- Gibson-Graham, J. K. (2006a). *The End of Capitalism (As We Knew It): A Feminist Critique of Political Economy*. Minneapolis. University of Minnesota Press.
- Gibson-Graham, J. K. (2006b). *A Postcapitalist Politics*. Minneapolis. University of Minnesota Press.
- Gibson-Graham, J. K. (2008a). Diverse Economies: Performative Practices for Other Worlds. *Progress in Human Geography* 32, 5, 613.
- Gibson-Graham, J.K. & Miller, E. (2015). "Economy as Ecological Livelihood" in Katherine Gibson, Deborah Bird Rose, and Ruth Fincher (Eds). *Manifesto for the Living in the Anthropocene*. Brooklyn, NY. Punctum Books.
- Godoy, R. (1991). The evolution of common-field agriculture in the Andes: A hypothesis. *Society for Comparative Study of Society and History*, 33, 2, 354-414.
- Goldman, M. (2001). The birth of a discipline: Producing authoritative green knowledge, World Bank Style. *Ethnography*, 2, 2, 191-217.

- Graddy, G. (2013). Regarding biocultural heritage: in situ political ecology of agricultural biodiversity in the Peruvian Andes. *Agriculture and Human Values*, 30, 4, 587-604.
- Graddy, G. (2014). Situating In Situ: A Critical Geography of Agricultural Biodiversity Conservation in the Peruvian Andes and Beyond. *Antipode*, 46, 2.
- Graham, E. (2005). Philosophies Underlying Human Geography Research, in Flowerdew, R. and Martin, D. *Methods in Human Geography: A Guide for Students Doing a Research Project*. Essex. Pearson Education Limited.
- Granovetter, M. (1985). Economic Action and Social Structure: The Problem of Embeddedness. *American Journal of Sociology*, 91, 3, 481-510.
- Granovetter, M. (2005). The Impact of Social Structure on Economic Outcomes. *Journal of Economic Perspectives*, 19, 1, 33-59.
- Granovetter, M. & Swedberg, R. (2001). *The Sociology of Economic Life 2nd Ed.* Boulder, Colorado. Westview Press.
- Graves, C. (Ed.). (2001). *The Potato – Treasure of the Andes: From Agriculture to Culture*. International Potato Centre, Lima, Peru.
- Graham, J. (2009). Nā Rangi tāua, nā Tūānuku e takoto nei: Research methodology framed by whakapapa. *MAI Review*, 1, 3.
- Greene, S. (2004). Commentary on “Agricultural Hybridity and the ‘Pathology’ of Traditional Ways ...”. *The Journal of Latin American and Caribbean Anthropology*, 9, 2, 269-272.
- Grove, N., & Mead, H. M. (2001). *Ngā Pepeha a ngā Tīpuna: the Sayings of the Ancestors*. Wellington. Victoria University Press.
- Guba, E. G. & Lincoln, y. S. (1994). Competing paradigms in qualitative research. In Denzin, N. K. And Lincoln, Y.S. (Eds). *Handbook of Qualitative Research*, 105-117. SAGE Publications, thousand Oaks.
- Gudynas, E. (2011). Good Life: Germinating alternatives to development. América Latina en Movimiento. Retrieved 14th September 2012, from <http://alainet.org/active/48054&lang=es>
- Guijt, I., & Kaul Shah, M. (1998). Waking up to power, conflict and process. In I. Guijt, & M. Kaul Shah (Eds.), *The myth of community: Gender issues in participatory development*. London: Intermediate Technology Publications.
- Gurney C.M. (1997). “... Half of me was satisfied”: Making sense of home through episodic ethnographies. *Women’s International Forum*, 20, 3, 373-86.
- Hammel, J. & Dufour, S. Fortin, D. (1993). *Case Study Methods: Qualitative Research Methods Series 32*. London. SAGE Publications.
- Handley, K., Sturdy, A. Fincham, R., & Clark, T. (2006). Within and Beyond Communities of Practice: Making Sense of Learning Through Participation, Identity and Practice. *Journal of Management Studies*, 43, 3, 641-653.
- Hanson, F. A. & Hanson, L. (1983). *Counterpoint in Māori Culture*. London. Routledge & Kegan Paul.
- Harris, M. (2007). *Ways of Knowing: New Approaches in the Anthropology of Experience and Learning*. New York. Berghahn Books.
- Harrison, R. (1989). *Signs, songs, and Memory in the Andes: Translating Quechua Language and Culture*. Austin. University of Texas Press.
- Hart, G. (2001). Development critiques in the 1990s: culs de sac and promising paths. *Progress in Human Geography*, 25, 649–658.
- Hass, J. & Creamer, W. (2006). Crucible of the Andean Civilization: The Peruvian Coast from 3000 to 1800 BC. *Current Anthropology*, 47, 5, 745-775.

- Haydn, G. (1980). *Uncaptured Peasantry*. London. Heinemann.
- Hayward, C. Simpson, L. & Wood, L. (2004). Still left out in the cold: problematizing participatory research and development. *Sociologica Ruralis*, 44, 1, 95-108.
- Hawkes, J. G. (1999). The evidence for the extent of N.I. Vavilov's New World Andean centres of cultivated plant origins. *Genetic Resources and Crop Evolution*, 48, 2, 163-168.
- Hellin, J & Dixon, J. (2008). Operationalising participatory research and farmer-to-farmer extension: the *Kamayoq* in Peru. *Development in Practice*, 18, 4-5, 627-632.
- Helliwell, C. & Hindess, B. (2011). The Past in the Present. *Australian Journal of Politics & History*, 57, 3, 377-388.
- Henry, E. & Pene, H. (2001). Kaupapa Māori: Locating Indigenous Ontology, Epistemology and Methodology in the Academy. *Organization*, 8, 234-242.
- Hernandez, A. A. (2002). *Andean Culture and Sustainable Human Development in the Andes*. Retrieved from <http://www.mtnforum.org/sites/default/files/pub/939.pdf> on 12th September 2012.
- Hickey, S. & G. Mohan (Eds) (2004a). *Participation: From Tyranny to Transformation?* London. Zed Books.
- Hickey, S. & G. Mohan (2004b). 'Relocating Participation within a Radical Politics of Development: Insights from Political Action and Practice', in S. Hickey and G. Mohan (Eds) *Participation: From Tyranny to Transformation?* p. 159-74. London. Zed Books.
- Hickey, S. & Mohan, G. (2005). Relocating Participation within a Radical Politics of Development. *Development and Change* 36, 2, 237-62.
- Hilhorst, D. (2003). *The Real World of NGOs: Discourses, Diversity and Development*. London. ZED Books.
- Hilhorst, T. & Guijt, I (2006). Participatory monitoring and evaluation: a process to support governance and empowerment at the local level. *World Bank: TF055592*.
- Hindess, B. (2007). The Past Is Another Culture. *International Political Sociology*, 1, 325-338.
- Hinings, C. R., & Greenwood, R. (2002). Disconnects and consequences in organization theory. *Administrative Science Quarterly*, 47, 411-421.
- Hintz, D. J. & Hintz, D. M. (2014). The evidential category of mutual knowledge in Quechua. *Lingua*, vol.186-187, 88-109.
- Howard, R. (2002). Yachay: The Tragedia del fin de Atahualpa as Evidence of the Colonisation of Knowledge in the Andes. Chapter in *Knowledge and Learning in the Andes*. (Stobart & Howard, 2002). Liverpool. Liverpool University Press.
- Hyden, G. (1980). *Beyond Ujamaa in Tanzania: underdevelopment and an uncaptured peasantry*. London. Heinemann.
- Hyden, G. (1983). *No Shortcut to Progress: African development in perspective*. London. Heinemann.
- Ibarra-Colado, E. Organization Studies and Epistemic Coloniality in Latin America: Thinking Otherness from the Margins. *Worlds & Knowledges Otherwise*, Fall, 1-24.
- Imas, J. M. and Weston, A. (2012) 'From Harare to Rio de Janeiro: The Kukiya-favela Organization of the Excluded'. *Organization*, 19, 2, 204-26.
- Inglis, J. (1993). *Traditional Ecological Knowledge: Concepts and Cases*. International Development Research Centre. Canada.
- Isendahl, C. (2007). Landscape, Memory and History: Anthropological Perspectives. *Culture & Agriculture*, 29, 1, 51-52.

- Ishizawa, J., & Grillo, E. (2002). Loving the world as it is: Western abstraction and Andean nurturance. *ReVision* 24 (4), 21-30.
- IIED, (2014). *Guardians of Diversity: International climate exchange in the Potato Park, Peru*. YouTube, retrieved 10th November 2014, <https://www.youtube.com/watch?v=aLI2KySC9-U&feature=youtu.be>
- IUCN (International Union for Conservation of Nature), (2011). *Potato Park and ANDES protest new GMO law in Peru*. <http://www.iucn.org/about/union/commissions/ceesp/?8001/Potato-Park-and-ANDES-protest-new-GMO-law-in-Peru> accessed 27 June 2012.
- Jennings, J. (2003). Inca Imperialism, Ritual Change, and Cosmological Continuity in the Cotahuasi Valley of Peru. *Journal of Anthropological Research*, 59, 4, 433-462.
- Keelan, J. T. (2009). The Māuipreneur. Paper was first presented at *the Tauria-a-Māui Symposium*, Te Whare Wānanga o Raukawa, Otaki, New Zealand, 11-13 November 2009.
- Kerckhoffs, H. (2006). *Development of organic farming in distant rural Māori communities in New Zealand*. Retrieved 1st March 2009 from Organic e-prints. <http://orgprints.org/7389/>
- Kerckhoffs, H. & Smith, W. (2010). *Reaching distant rural Māori communities in New Zealand through successful research partnerships*. 9th European International Farming Systems Association (IFSA) Symposium, 4-7th July 2010, Vienna, Austria.
- King, D, Goff, J. & Skipper, A. (2007). Māori Environmental Knowledge and Natural Hazards in Aotearoa-New Zealand. *Journal of the Royal Society of New Zealand*, 37, 2, 59-73.
- King, M. (2003). *The Penguin History of New Zealand*. Wellington, New Zealand. Penguin Publishing.
- Kirch, P. V. (1994). *The wet and the dry: irrigation and agricultural intensification in*
- Knoben, J. & Oerlemans, L. A. G. (2006). Proximity and inter-organizational collaboration: a literature review. *International Journal of Management Reviews*, 8, 2, 71-89.
- Kothari, U. (2005). Authority and Expertise: The Professionalisation of International Development and the Ordering of Dissent. *Antipode: A Radical Journal of Geography*, 37, 3, 425-446.
- Kovach, M. (2009). *Indigenous Methodologies: Characteristics, Conversations, and Contexts*. University of Toronto Press. Toronto, Canada.
- Kramsch, C. (1998). *Language and Culture*. Oxford. Oxford University Press
- Krugly-Smolka, E. (1992). A cross-cultural comparison of conceptions of science. In G. L. C. Hills (Ed.), *History and philosophy of science in science education* (Vol. 1, pp. 583–593). Kingston, Ontario, Canada: Faculty of Education, Queen's University.
- Kuhn, T. (1970). *The Structure of Scientific Revolutions*. Chicago. The University of Chicago Press.
- Labarthe, G., B. (2001), Ritual boundaries: limiting and recreating the group and its territory.
- Lambert, S. (2007). The Diffusion of Sustainable Technologies to Māori Land: A Case Study of Participation by Māori in Agri-Food Networks. *MAI Review*, 1, 4, 1-10.
- Lambert, S. (2014). Indigenous Peoples and urban disaster: Māori responses to the 2010-12 Christchurch earthquakes. *Australasian Journal of Disaster and Trauma Studies*, 18, 1, 39-48.
- Lambrou, Y. (2001). *A typology: Participatory research and gender analysis in natural resource management research*. Working document No. 15. Cali, Colombia: CGIAR

- Participatory Research and Gender Analysis Program, CIAT (Centro Internacional de Agricultura Tropical).
- Laurie, N., Andolina, R. & Radcliffe, S. (2003). Indigenous Professionalization: Transnational Social Reproduction in the Andes. *Antipode*, 35, 3, 463-491.
- Lave, J., & Wenger, E. (1991). *Situated Learning: Legitimate Peripheral Participation*. Cambridge University Press. Cambridge, UK.
- Lave, J., & Wenger, E. (1998). *Communities of Practice: Learning, Meaning, and Identity*. Cambridge. Cambridge University Press.
- Lawrence, T. B. & Suddaby, R. (2006). "Institutions and Institutional Work" in Clegg, S; Hardy, C; Lawrence, T. *Handbook of Organization Studies (2nd Ed.)*. London. Sage. p. 215–254.
- Lawrence, T.B., Suddaby, R. & Leca, B. (2009). "Introduction: Theorizing and studying institutional work". In Lawrence, T.B.; Suddaby, R.; Leca, B. *Institutional work: Actors and agency in institutional studies of organizations*. Cambridge, UK: Cambridge University Press. pg. 1–27.
- Lawrence, T. B., Suddaby, R. & Leca, B. (2011). Institutional Work: Refocusing Institutional Studies of Organization. *Journal of Management Inquiry*, 20, 1, 52–58.
- Lewis, D. (1998). Development NGOs and the Challenge of Partnership: Changing Relations between North and South. *Social Policy & Administration*, 32, 5, 501-512.
- Lewis, D. (2001). *The Management of Non-Governmental Development Organizations: An Introduction*. Routledge. London, UK.
- Lewis, D., Bebbington, A., Batterbury, S., Shah, A., Olson, E., Siddiqi, M., & Duvall, S. (2003). Practice, Power and Meaning: Frameworks for Studying Organizational Culture in Multi-Agency Rural Developmental Projects. *Journal of International Development*, 15, 541-557.
- Lewis, D. & Mosse. D. (2006). Encountering Order and Disjuncture: Contemporary Anthropological Perspectives on the Organization of Development. *Oxford Development Studies*, 34, 1-13.
- Lewis, D., & Opoku-Mensah, P. (2006). Moving Forward Research Agendas on International NGOs: Theory, Agency and Context. *Journal of International Development*, 18, 665-675.
- Lewis, M. W. & Grimes, A. J. (1999). Metatriangulation: Building Theory from Multiple Paradigms. Academy of Management. *The Academy of Management Review*, 24, 4, 672-690.
- Ling, L.H.M. (2014) *The Dao of World Politics: Towards a Post-Westphalian, Worldist International Relations*. London: Routledge.
- Maffie, J. (2009). 'In the end, we have the Gatling gun, and they have not': Future prospects of indigenous knowledges. *Futures*, 41, 53-65.
- Mallon, F. (2011). *Decolonizing Native Histories: Collaboration, Knowledge, and Language in the Americas*. Duke University Press.
- Mahuika, A. (1973). Ngā Wāhine Kai-Hau o Ngati Porou: The Female Leaders of Ngati Porou. MA Thesis, University of Sydney.
- Mannheim, B. (1986). The Language of Reciprocity in Southern Peruvian Quechua. *Anthropological Linguistics*, 28, 3, 267-273.
- Marsden, M. (2003) in Royal (Ed.). (2003). *The Woven Universe: Selected Writings of Rev Māori Marsden*. Otaki, Aotearoa New Zealand. Published by the estate of Rev. Māori Marsden.

- McGregor, A (2009). New Possibilities? Shifts in Post-Development Theory and Practice. *Geography Compass*, 3, 5, 27-31.
- Mead, H. M. (1996). *Tāwhakai: the deeds of a demi-god*. Reed Publishing.
- Mead, H. M. (2003). *Tikanga Māori. Living by Māori Values*. Wellington, Aotearoa New Zealand. Huia Publishing.
- Meghani, Z. (2008). Values, technologies, and epistemologies. *Agriculture and Human Values*, 25, 25-34.
- Mendelsohn, E. (1976). Values and science: A critical reassessment. *The Science Teacher*, 4, 1, 20-23.
- Mika, C. (2012). Overcoming 'Being' in Favour of Knowledge: The fixing effect of 'mātauranga'. *Educational Philosophy and Theory*, 44, 10, 1080-1092.
- Mikaere, A. (2010). *Māori Critic and Conscience in a Colonising Context - Paper by Ani Mikaere*. Retrieved online, 22/12/2010, <http://whaaingawahine.blogspot.com/>
- Mikaere, A. (2011). *Colonising Myths Māori Realities: He Rukuruku Whakaaro*. Te Wānanga o Raukawa Publishing.
- Miller, E. L. (2011). *Rethinking economy for regional development: Ontology, performativity and enabling frameworks for participatory vision and action*. Unpublished Master of Science thesis. University of Massachusetts Amherst.
- Mistry, J. (2009). Indigenous Knowledges. In R. Kitchin R & N. Thrift (Eds.) *International Encyclopedia of Human Geography, Volume 5* (p. 371-376). Oxford, England. Elsevier.
- Mitlin, D., Hickey, S. and Bebbington, A. (2007) 'Reclaiming development? NGOs and the challenge of alternatives'. *World Development* 35, 10, 1699-1720.
- Mohan, G. (2007). Participatory Development: From Epistemological Reversals to Active Citizenship. *Geography Compass*, 1, 4, 779-796.
- Mohan, G. & Stokke, Kristian (2000). Participatory development and empowerment: the dangers of localism. *Third World Quarterly*, 21(2) pp. 247-268.
- Moon, P. (2003). *Tohunga: Hohepa Kereopa*. Auckland, N.Z. David Ling Publishing.
- Moon, P. (2005). *A Tohunga's Natural World: Plants, Gardening and Food*. Auckland, N.Z. David Ling Publishing.
- Mouly, V. S. & Sandarkan, J. K (1995). *Organizational Ethnography: An Illustrative Application in the Study of Indian R&D Settings*. London. SAGE.
- Mura, J. V. (1984). *Andean Societies*. Annual Review of Anthropology, 13, 119-41.
- Murphy, N. (2011). *Te Awa Atua, te Awa tapu, te awa wahine: An examination of stories, ceremonies and practices regarding menstruation in the pre-colonial Māori world*. Unpublished thesis. University of Waikato.
- Neef, A & Neubert, D. (2011). Stakeholder participation in agricultural research projects: a conceptual framework for reflection and decision-making. *Agricultural Human Values*, 28, 179-194.
- Newell, S., Robertson, M., Scarbrough, H. & Swan, J. (2002). *Managing Knowledge Work*.
- Nonaka, I. (1994). A Dynamic theory of Organizational Knowledge Creation. *Organizational Science*, 5, 1, 14-37.
- Nonaka, I. (2001). *Knowledge Emergence: Social, Technical, and Evolutionary Dimensions of Knowledge Creation*. Oxford University Press USA.
- Noor, M., Douma, M., van der Haar, G. Hilhorst, D., van der Molen, I. & Stel, N. (2010). Multi-Stakeholder Processes, Service Delivery and State Institutions: Theoretical Framework and Methodologies. *Working Paper No. 00030 produced for the Peace, Security and Development Network*.

- Nustad, K.G. (2001). Development: The Devil We Know? *Third World Quarterly* 22, 4, 479-489.
- Orata, A. (2001). Remembering the Ayllu, Remaking the Nation: Indigenous Scholarship and Activism in the Bolivian Andes. *The Journal of Latin American Anthropology*, 6, 1, 198-201.
- Orbell, M. (1975). The Religious Significance of Māori Migration Traditions. *The journal of the Polynesian Society*, 84, 3, 341-347.
- Oritz, O. (2006). Evolution of Agricultural Extension and Information Dissemination in Peru: An Historical Perspective Focusing on Potato-Related Pest Control. *Agriculture and Human Values*, 23, 477-489.
- Oritz, O., Frias, G., Ho, R., Cisneros, H. Nelson, R., Castillo, R., Orrego, R., Pradel, W., Alcazar, J. & Bazan, M. (2008). Organizational Learning through Participatory Research: CIP and CARE in Peru. *Agriculture and Human Values*, 25, 419-431.
- Orlove, B., Chiang, J. & Cane, M. (2000). Forecasting Andean Rainfall and Crop Yield from the Influence of El Niño on Pleiades visibility. *Nature*, 403, 68-71
- Orlove, B., Chiang, J. & Cane, M. (2002). Ethnoclimatology in the Andes. *American Science*, 90, 428-435.
- Ostrom, E. (1990). *Governing the Commons: The Evolution of Institutions for Collective Action*. London. Cambridge University Press.
- Ostrom, E. (2000a). Collective Action and the Evolution of Social Norms. *Journal of Economic Perspectives*, 14, 3, 137-158.
- Ostrom, E. (2000b). Reformulating the Commons. *Swiss Political Science Review*, 6, 1, 29-52.
- Oswick, C., Grant, D., Marshak, R. & Cox, J. (2010). Organizational discourse and change: positions, perspectives, progress and prospects. *The Journal of Applied Behavioural Science*, 46, 1, 8-15.
- Overing, J. & Passess, A. (2000). *The Anthropology of Love and Anger: The Aesthetics of Conviviality in Native Amazonia*. London. Routledge.
- Padron, M. (1987). Non-governmental Development Organizations: From Development Aid to Development Cooperation. *World Development*, 15, 69-77.
- Paerregaard, K. (1992). Complementarity and Duality: Oppositions between Agriculturalists and Herders in an Andean Village. *American Anthropologist, New Series*, 100, 2, 397-408.
- Paerregaard, K. (1998). The Dark Side of the Moon: Conceptual and Methodological Problems of Studying Rural and Urban Worlds in Peru. *American Anthropologist*, 100, 2, 397-409.
- Parker, P. (2008). *Webster's Quechua - English Thesaurus Dictionary*. Icon Group International.
- Parque, de la Papa. 2010. *Indigenous biocultural heritage area*. http://www.parquedelapapa.org/eng/03parke_01.html accessed 12 September 2010.
- Patton, M. Q. (2002). *Qualitative Research and Evaluation Methods*. London. SAGE.
- Pendergrast, M. (1987). *Te Aho Tapu, The Sacred Thread: Traditional Maori Weaving*. Auckland, N.Z. Reed Publishing.
- Pentland, B. (1999). Building process theory with narrative: From description to explanation. *Academy of Management Journal*, 24, 4, 711-724.
- Pere, R. (1994). *Ako: concepts and learning the Maori tradition*. Wellington: Expo

- Petrie, H. (2002). *Colonization and the Involution of the Māori Economy*. A paper for Session 24 of the XII World Congress of Economic History, Buenos Aires, July, 2002.
- Petrie, H. (2006). *Chiefs of industry: Māori tribal enterprise in early colonial New Zealand*. Auckland, N. Z. Auckland University Press.
- Pettigrew, A. M. (1990). Longitudinal Field Research on Change: Theory and Practice. *Organizational Science*, 1, 3, 267-294.
- Phillips, C. (2000). *Waihou Journeys: The Archaeology of 400 years of Maori Settlement*. Auckland. University of Auckland Press.
- Pieterse, J. (2000). After Post-Development. *Third World Quarterly*, 21, 2, 175-191.
- Polanyi, K. (1957). *The great transformation: the political and economic origins of our time*. Beacon Press, New York.
- Polanyi, M. (1967). *The tacit dimension*. London. Routledge.
- Pretty, J. (1995). Participatory learning for sustainable agriculture. *World Development*, 23, 8, 1247-1263.
- Probst, K. (2002). *Participatory monitoring and evaluation: A promising concept in participatory research? Lessons from two case studies in Honduras*. Weikersheim. Margraf Publishers.
- Randall, R. (1982). Qoyllur Riti'i, an Inca Fiesta of the Pleiades: Reflections on Time & Space in the World. *Bull Institute*, no. 1-2, 37-81.
- Reedy, A. (1993). *Ngā Kōrero a Mohi Ruatapu, Tohunga Rongonui o Ngāti Porou*. Christchurch, N.Z. Canterbury University Press.
- Reedy, A. (1997). *Ngā Korero a Pita Kapiti. Teachings of Pita Kapiti*. Christchurch, N.Z. Canterbury University Press.
- Reedy, A. (2011). *Waka Huia – Māori Oriori*. New Zealand. Television New Zealand. Retrieved on 20th October 2012 from http://www.youtube.com/watch?v=00Og1nd9_Hc
- Reedy, K. P. (1986). Extension systems interaction with research and client systems: an intersystem analysis. *Journal of Extension Systems*, 2, 2, 36-42.
- Reij, C. & Waters-Bayer, A. (2001). *Farmer Innovation in Africa: A Source of Inspiration for Agricultural Development*. London, UK. Earthscan Publications.
- Richards, P. (1985). *Indigenous Agricultural Revolution: Ecology and Food Production in West Africa*. London. Hutchinson.
- Rist, G. (1997). *The History of Development: From Western Origins to Global Faith* (1st Ed.). London. Zed Books.
- Rist, G. (2002). *The History of Development: From Western origins to global faith* (2nd Ed.). London. Zed Books.
- Rist, G. (2007). Development as buzzword. *Development in Practice*, 17, 4-5, 485-491.
- Rist, G. (2009). *The History of Development: From Western Origins to Global Faith* (3rd Ed.). London. Zed Books.
- Rist, S. & Dahdouh-Gubas, F. (2006). Ethnoscience – A Step Toward the Integration of Scientific and Indigenous Forms of Knowledge in the Management of Natural Resources for the Future. *Environment, Development and Sustainability*, 8, 467-493.
- Ritchie, J. & Lewis, J. (2003). *Qualitative research practice; a guide for social science students and researchers*. SAGE. London.
- Roberts, M., Haami, B., Benton, R., Satterfield, T., Finucane, G., Henare, M. & Henare, M. (2004). Whakapapa as Māori Mental Construct: Some Implications for the Debate over Genetic Modification of Organisms. *The Contemporary Pacific*, 16 (1), 1-28.

- Roberts, M. (2013). Ways of Seeing: Whakapapa. *Sites: New Series*, 10, 1, 93-120.
- Roskruge, N. (2010). Traditional Māori horticultural and ethnopedological praxis in the New Zealand landscape. *Management of Environmental Quality: An International Journal*, 22, 200-212.
- Royal, T. C. (2003). *The Woven Universe: Selected Writings of Rev Māori Marsden*. Published by the estate of Rev. Māori Marsden. Otaki, Aotearoa New Zealand.
- Royal, T. C. (2004). *Mātauranga Māori and Museum Practice: A Discussion. Version 3*. Retrieved 3rd January, 2011. <http://www.med.govt.nz/upload/1921/charles-royal-discussion.pdf>
- Royal, T. C. (2006). *Online report for the Ministry of Research, Science and Technology (MoRST)*. Retrieved 21st January 2011. <http://www.morst.govt.nz/current-work/vision-matauranga/what-is-maori-research/nature-of-knowledge/>
- Royal, T. C. (2007). *Creativity and Mātauranga Māori: Towards Tools for Innovation*. Published by the Hui Taumata Taskforce.
- Royal, T. C. (2008a). *Discussion forum, Waipapa Marae, University of Auckland*. 15th May, 2008.
- Royal, T. C. (2008b). *Te Ngākau: He Wānanga i te Mātauranga*. Mauriora-ki-te Ao/Living Universe, Te Whanganui-a-Tara.
- Ruthenberg H. (1968) *Farming Systems in the Tropics 3rd edition*. Clarendon Press. Oxford.
- Sachdev, P. S. (1989). Mana, Tapu, Noa: Māori cultural constructs with medical and psycho-social relevance. *Psychological Medicine*, 19, 959-969.
- Sachs, W. (Ed.) (1992). *The Development Dictionary: A Guide to Knowledge as Power*. London. Zed Books.
- Sachs, W. (ed.) (2010). *The Development Dictionary: A Guide to Knowledge as Power*. London. Zed Books.
- Salgado, F. (2010). *Sumaq Kawsay: The birth of a notion?* *Cadernos Ebabe*, 8, 2, 199-208. Retrieved 2nd June 2011 from <http://www.scielo.br/pdf/cebape/v8n2/v8n2a02.pdf>
- Salmond, A. (1978). Te Ao Tawhito: A Semantic Approach to the Traditional Māori Cosmos. *The Journal of the Polynesian Society*, 87, 1, 5-28.
- Salmond, A. (1975). *Hui: A Study of Maori Ceremonial Gatherings*. New Zealand. Reed.
- Salmond, A. (2013). Anthropology, ontology and the māori world. *Up Close and Personal: On Peripheral Perspectives and the Production of Anthropological Knowledge*, 58-72.
- Santos, F. M & Eisenhardt, K. M (2005). Organizational boundaries and theories of organization. *Organization Science*, 16, 5, 491-508.
- Schultz, M. & Hatch, M. J (1996). Living with multiple paradigms: The case of paradigm interplay in organizational culture studies. *Academy of Management Review*, 21, 2, 529-557.
- Schwimmer, E. (1990). The Māori Hapū: A Generative Model. *The Journal of the Polynesian Society*, 99, 3, 297-317
- Sen, B. (1987). NGO Self-evaluation: Issues of Concern. *World Development*, 15, 161-171.
- Sen, B. (2005). Indigenous knowledge for development: Bringing research and practice together. *The International Information & Library Review*, 37, 375-382.
- Senge, P. (1996). *The Fifth Discipline: The Art and Practice of the Learning Organization*. New York. Double Day.
- Shafritz, J. M., Ott, J. S., & Jang, Y. S. (2005). *Classics of Organization Theory* (6th ed.). Belmont, CA. Wadsworth.

- Shalins, M. (2011a). What is Kinship (part one). *Journal of the Royal Anthropological Institute*, 17, 2-19.
- Shalins, M. (2011b). What is Kinship (part two). *Journal of the Royal Anthropological Institute*, 17, 227-242.
- Shava, S., Krasny, M. E., Tidball, K. G., & Cryone, Z. (2010). Agricultural knowledge in urban and resettled communities: applications to social-ecological resilience and environmental educations. *Environmental Education Research*, 16, 5-6, 575-589.
- Shepherd, C. J. (2005). Agricultural development NGO's, anthropology, and the encounter with cultural knowledge. *Culture and Agriculture*, 27, 1, 35-44.
- Shepherd, C. J. (2006). From In Vitro to In Situ: On the precarious extension of agricultural science in the indigenous 'third world'. *Social Studies of Science*, 36, 3, 399-426.
- Shepherd, C. J. (2010). Mobilizing Local Knowledge and Asserting Culture: The Cultural Politics of In Situ Conservation of Agricultural Biodiversity. *Current Anthropology*, 51, 5, 629-654.
- Shirres, M. (1997). *Te tangata: The human person*. Auckland. Accent.
- Sillitoe, P. (1998). The development of indigenous knowledge: A new applied anthropology. *Current Anthropology*, 39, 2, 223-252.
- Sillitoe, P., Biker, A. & Pottier, J. (2002). *Participating in Development: Approaches to Indigenous Knowledge*. Routledge. NY, USA.
- Sillitoe, P. & Marzano, M. (2009). Future of indigenous knowledge research in development. *Futures*, 41, 13-23.
- Simmel, G. (1950). *The Sociology of Georg Simmel*. New York: Free Press.
- Simpson, P. G. (2000). *Dancing Leaves: The Story of New Zealand's Cabbage Tree, Tī Kōuka*. Christchurch. Canterbury University Press.
- Simpson, R. & Gill, R. (2007). Design for Development: A Review of Merging Methodologies. *Development in Practice*, 17, 2, 220-230.
- Six, C. (2009). The Rise of Postcolonial States as Donors: a challenge to the development paradigm? *Third World Quarterly*, 30, 6, 1103-1121.
- Smith, C. W. (2000). Straying beyond the boundaries of belief: Māori epistemologies inside the curriculum. *Educational Philosophy and Theory*, 32, 1, 43 – 51.
- Smith, G. (2003). *Kaupapa Māori Theory: Theorizing indigenous transformation of education & schooling*. 'Kaupapa Māori Symposium', NZARE/AARE Joint Conference, December 2003, Auckland, Aotearoa/New Zealand.
- Smith, G. (2013). Nga Tini Ahuatanga o Whakapapa Korero. *Educational Philosophy and Theory*, 31, 1, 53-60.
- Smith, L., Bratini, L., Chambers, D., Jensen, R. V. & Romero, L. (2010). Between idealism and reality: Meeting the challenges of participatory action research. *Action Research*, 0, 0, 1-19.
- Smith, L. T. (1999). *Decolonizing Methodologies: Research and Indigenous Peoples*. London. Zed Books Ltd.
- Smith, T. (2009). Indigenous knowledge in the Pacific: Knowing and the Ngākau. *Democracy and Education*, 17, 2.
- Smith, T. (2009). *Traditional Maori Growing Practices: A Literature Review*. May 2009. Unpublished.
- Souter, M. (2008). *The Price of Citizenship: C Company 28 (Māori) Battalion 1939 – 1945*.
- Spiller, C. (2009). *How Māori cultural tourism businesses create authentic and sustainable well-being*. Unpublished doctoral thesis. University of Auckland.

- Spiller, C., Pio, E., Erakovic, L. & Henare, M. (2011). Wise up: Creating organizational wisdom through an ethic of Kaitiakitanga. *Journal of Business Ethics*, 104, 223-235.
- Stage, F. K & Manning, K. (Eds). (2003). *Research in the College Context: Approaches and Methods*. New York. Brunner-Routledge.
- Stake, R. E. (1995). *The Art of Case Study Research*. Thousand Oaks, London, New Delhi. Sage Publications.
- Staller, J. E. & Stross, B. (2013). *Lightning in the Andes: Pre-Colombian, colonial, and Contemporary Perspectives*. New York. Oxford University Press.
- Starn, O., Degregori, C. I., & Kirk, R. (2005). *Peru Reader: History, Culture, Politics*. Duke University Press.
- Steffenson, V. (2007). *Traditional Knowledge Revival Pathway (TKRP) Training – Laura*, Queensland. June 14-21, 2007.
- Stewart, P. & Strathem, A. (2003). *Landscape, Memory and History: Anthropological Perspectives*. London. Pluto Press.
- Stobart, H. (1994). Flourishing horns and enchanted tubers: Music and potatoes in highland Bolivia. *British journal of Ethnomusicology*, 3, 35-48.
- Stobart, H. (2008). In Touch with the Earth? Musical Instruments, Gender and Fertility in the Bolivian Andes. *Ethnomusicology Forum*, 17, 1, 67-94.
- Stobart, H. & Howard, R. (2002). Knowledge and learning in the Andes: Ethnographic perspectives. Liverpool. Liverpool University Press.
- Stremlau, C. (1987). NGO Coordinating Bodies in Africa, Asia, and Latin America. *World Development*, 15, 213-225.
- Subedi, B. (2006). Theorising a 'halfie' researcher's identity in transnational fieldwork. *International Journal of Qualitative Studies in Education*, 19, 5, 573-593.
- Sumberg, J., J. Thompson and P. Woodhouse. (2013). Why agronomy in the developing world has become contentious. *Agriculture and Human Values* 30(1): 71-83.
- Suri, S. (2005). *ANDES- Potato Park-CIP Agreement*. GRAIN website. January. <http://www.grain.org/bio-ipr/?id=429>. Accessed 12 June 2010.
- Sutherland, O., Parsons, M. & Jackson, M. (2011). *The Background to WAI 262*. Retrieved 2nd October 2012 from, http://wai262.weebly.com/uploads/7/4/6/3/7463762/history_wai_262.pdf
- Swanson, B., E., Bentz, R. P., & Sofranko, A. J. (1998). *Improving Agricultural Extension: A Reference Manual*. FAO Corporate Document Repository. Retrieved 16th March 2013 from; <http://www.fao.org/docrep/W5830E/w5830e00.htm>
- Swartz, D. (1997). *Culture & Power: The Sociology of Pierre Bourdieu*. Chicago. The University of Chicago Press.
- Tapsell, P. & Woods, C., (2008). Potikitanga: indigenous entrepreneurship in a Maori context. *Journal of Enterprising Communities: People and Places in the Global Economy*, 2(3), 192-203.
- Tāwhai, W. (2008). *Mātauranga Māori Lecture – Te Whānau-a-Apanui ki Tamaki Hui*, 19-20 April 2008.
- Tāwhai, W. (2013). *Living by the Moon. Te Maramataka o Te Whānau-ā-Apanui*. New Zealand. Huia Publishing.
- Te Awekotuku, N., & Nikora, L. (2003). *Ngā Taonga o Te Urewera. Ngāi Tūhoe Report*. Retrieved from <http://www.ngaituhoe.com/files/NgaTaongaOTEUrewerra.pdf> on 12th July 2012.

- Temara, P. (2012). *Whakatauki Episode 2, Series 2* [Television Broadcast]. Aotearoa. Māori Television.
- Theisen, K. (2006). *International Potato Center: World Potato Atlas*. Retrieved from <https://research.cip.cgiar.org/confluence/display/wpa/Peru> 12th September 2012.
- Thomson, B. (2011). Pachakuti: Indigenous perspectives, buen vivir, suma qawsay and growth. *Development*, 54, 4, 448 – 454.
- Thrupp, L. A. (1989). Legitimizing Local Knowledge: Scientized Packages. In D Warren, L. Jan and S. Titilola (eds), *Indigenous Knowledge Systems: Implications for Agriculture and International Development*. Iowa State University.
- Tomlinson, M. & Makihara, M. (2009). New Paths in the Linguistic Anthropology of Oceania. *Annual Review of Anthropology*, 38, 17-31.
- Tsoukas, H. (2002). Do we really understand tacit knowledge? Chapter in Easterby-Smith and Lyles (eds), *Handbook of Organizational learning and Knowledge*. London. Blackwell.
- Tsui, A. S. (2004). Contributing to Global Management Knowledge: A Case for High Quality Indigenous Research. *Asia Pacific Journal of Management*, 21, 491-513.
- Turnbull, D. (1997). Reframing science and other local knowledge traditions. *Futures*, 29, 6, 551-562.
- Unruh, D. (1979) Characteristics and Types of Participation in Social Worlds. *Symbolic Interaction*, 2, 2, 115-129.
- Urton, G. (1981). Animals and Astronomy in the Quechan Universe. *Proceedings of the American Philosophical Society*, 125, 2, 110-127.
- Van de Fliert, E. & Braun, A. R. (2002). Conceptualizing integrative farmer participatory research for sustainable agriculture: From opportunities to impact. *Agricultural and Human Values*, 19, 25-38.
- Van Meijl, T. (1995). Māori Socio-Political Organization in Pre- and Proto-History. *Oceania*, 65, 4, 304-322.
- Waglé, S, P Shah. 2003. Participation in public expenditure systems. note no. 69. Washington, D.C., World Bank. Social development notes.
- WAI 262 Submission. Submission to Waitangi Tribunal for claim WAI 262.
- Wald, N. (2015). Anarchist participatory development: a possible new framework?' *Development and Change*, 46(4): 618-643.
- Walker, R. (1990). *Ka Whawhai Tonu Mātou: Struggle without End*. Auckland. Penguin.
- Walter, R.K., Smith, I.W., & Jacomb, C. (2006). Sedentism, subsistence and socio-political organization in prehistoric New Zealand. *World Archaeology* 38, 274-290.
- Watanabe, C. (2014), Muddy Labor: A Japanese Aid Ethic of Collective Intimacy in Myanmar. *Cultural Anthropology*, 29: 648–671
- Webb, H. (2012). Yanantin and Masintin in the Andean World. Complementary Dualism in Modern Peru. University of New Mexico Press.
- Webber, M. (2011). *Identity matters: Racial-ethnic representations among adolescents attending multi-ethnic high schools*. Unpublished PhD thesis. The University of Auckland.
- Weick, K. E. (1995). *Sense Making in Organizations*. SAGE. Thousand Oaks, CA.
- Whatmore, S. (2002). *Hybrid geographies: nature, cultures, spaces*. London. Routledge.
- Whittaker, D. H., Zhu, T., Sturgeon, T., Tsai, M. H. & Okita, T. (2008). Compressed Development. *MIT IPC Working Paper 08-005*. Industrial Performance Center, Massachusetts Institute of Technology Working Paper Series.

- Williams, H. W. (2010). *Dictionary of the Māori Language*. Wellington, New Zealand. Printlink.
- Williams, P. R. & Nash, D. J. (2006). Sighting the Apu: A GIS Analysis of Wari Imperialism and the Worship of Mountain Peaks. *World Archaeology*, 38, 3, 455-468.
- Wilmshurst, J. Anderson, A. Higham, T., & Worthy, T. (2008). Dating the late prehistoric dispersal of Polynesians to New Zealand using the commensal Pacific rat. *Proceedings of the National Academy of Sciences of the United States of America*, 105, 22, 7676-7680.
- Winiata, P. (2012). *Whakatauki Episode 2, Series 2* [Television Broadcast]. Aotearoa. Māori Television.
- Wolcott, H. F. (1999). *Ethnography: A Way of Seeing*. Oxford. Altamira Press.
- Wooten, M. & A. Hoffman. (2008). Organizational fields: Past, present and future. In R. Greenwood, C. Oliver, K. Sahlin, & R. Suddaby (Eds.), *The SAGE handbook of organizational institutionalism* (pp. 130-147). London: Sage.
- World Bank. (1999). *World development report 1998/1999: Knowledge for development*. Retrieved 5th February 2016, from <http://www.worldbank.org/afr/ik/ikrept.pdf>
- Wyuyts, S., Colomb, M. G., Dutta, S. & Nooteboom, B. (2005). Empirical tests of optimal cognition distance. *Journal of Economic Behaviour & Organization*, 58, 2, 277-302.
- Yen, D. (1961). The Adaption of Kumara by the New Zealand Māori. *The Journal of the Polynesian Society*, 70, 3, 338-348.
- Yen, D. (1963). The New Zealand kūmara or sweet potato. *Economic Botany*, 17, 31-41.
- Yin, R. K. (2003a). *Case Study Research: Design and Methods (3rd Ed.)*. London. SAGE.
- Yin, R. K. (2003b). *Applications of Case Study Research (2nd Ed.)* London. SAGE.
- Yin, R. K. (2009). *Case Study Research: Design and Methods (4th Ed.)*. London. SAGE.
- Zhang, D., Cervantes, J., Huamān, Z., Carey, E. & Ghislain, M. (2000). Assessing genetic diversity of sweet potato (*Ipomoea batatas* (L.) Lam.). *Genetic Resources and Crop Evolution*, 47, 659 – 665.
- Zimmerer, K. S. (1996). *Changing Fortunes: Biodiversity and Peasant Livelihood in the Peruvian Andes*. Los Angeles. University of California Press.
- Zuidema, R. T. (1983). Hierarchy and Space in Incaic Social Organization. *Ethnohistory*, 30, 2, 49-75.
- Zukin, S. & DiMaggio, P. (1990). *In Structures of Capital: The Social Organization of the Economy*. Cambridge. Cambridge University Press, 1-36.