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**THROUGH AN INDIGENOUS LENS FOOD SECURITY  
IS *FOOD SOVEREIGNTY*: CASE STUDIES OF MĀORI  
OF AOTEAROA NEW ZEALAND AND ANDEANS OF  
PERU**

**by**

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A thesis submitted in fulfilment of the requirements for the  
degree of

Doctor of Philosophy in Management and International  
Business

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## ABSTRACT

This dissertation reports on a cross-cultural study and analysis of two Indigenous<sup>1</sup> knowledge systems: Andean/Quechua<sup>2</sup> people of Peru and Māori<sup>3</sup> of Aotearoa - New Zealand. This study takes a novel approach by using the Traditional Ecological Knowledge (TEK) theory to examine the good-living philosophies of Allin Kawsay in Peru and Mauri Ora in Aotearoa in relation to food security. The aim is to understand food security through an indigenous lens, and potential contributions to food policy. This study contributes to food security by outlining an Indigenous ‘Food security policy framework’. Such framework resonates with conceptions of *food sovereignty*, while the dominant food security approaches do not.

An innovative Indigenous research framework referred to as the ‘Khipu’ model was used as a source of knowledge production and sovereignty guiding the development of an Indigenous research-based framework. To complement the Khipu model, the Yupana, an Indigenous analysis tool, was developed to aid the data analysis. The Khipu and Yupana offer distinctive contributions to research methods and analysis.

Case studies in both countries included semi-structured interviews, participatory action research, workshops, and talking circle sessions with elders, community leaders, and influential people engaged in traditional food production in Peru and Aotearoa. The substantive literature review on food security, food systems, and Indigenous worldviews, facilitated the crystallisation of results and analysis.

Based on the findings, this study highlights how TEK embedded in Indigenous peoples’ worldviews/cosmovisions influences their approaches to food security, and reveals that underpinning Quechua and Māori food security systems rest a core set of cultural and environmental indicators of food security. For Quechua communities; *Ayni*: reciprocity; *Ayllu*: community/collectiveness, *Yanantin*: equilibrium, and *Chaninchay*: solidarity. For Māori communities; *Tikanga*: a customary system of values and practices, *Kaitakitanga*: guardianship, *Koha*: reciprocity, and *Wairuatanga*: spirituality. In doing so, this study demonstrates how Indigenous worldviews/cosmovisions constitute the basis of paradigms that guide Māori and Andean peoples’ ways of knowing, being, and doing enacting a ‘Food security/sovereignty policy framework’ that warrants consideration in policy making.

This comprehensive research argues that new and innovative approaches to food security that value the contribution of Indigenous peoples’ TEKs, cultural and environmental indicators of well-being in agricultural systems are needed to democratically reform agriculture and food systems. Importantly, a major contribution of this study is the Quechua and Māori food security framework that affirms that, from an Indigenous perspective, food security is *food sovereignty*.

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<sup>1</sup> In this dissertation, I use the word ‘Indigenous’ with capital I when I refer to Indigenous, Aboriginal or Native people.

<sup>2</sup> In this research project, Andean and Quechua are used interchangeably to refer to the Quechua communities that took part of this investigation.

<sup>3</sup> In this study, the term Māori makes reference to the Indigenous peoples of New Zealand.

## DEDICATION

I dedicate this work to one of the most influential people in my life, my beloved grandfather **Agustín Huambachano**, who now lives in the spirit world. His love and warmth resonated like the sun and as the bright constellations in the sky, showing a clear path for me to follow in this PhD journey.

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I would like to acknowledge the financial support of the University of Auckland, and the Department of Management and International Business. The support of the University allowed me to travel and conduct my field research in Peru and Aotearoa, and also gave me the opportunity to travel and present my work at conferences and international workshops, and to meet other researchers. I would like to extend my gratitude to Kaumātua Rereata Makiha, Associate Professor Chellie Spiller, Associate Professor Manuka Hēnare, Professor Rod McNaughton, and Susan Sum for your ongoing support and encouragement.

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## GLOSSARY OF MĀORI AND QUECHUA TERMS

This glossary provides definitions for the Māori and Quechua words that are used throughout this doctorate. The meanings reflect the context in which the words have been used. Therefore, caution must be exercised when using the words in a different context. Definitions of the Māori words have been sourced from the Williams (1975) *A Dictionary of the Māori Language*, and from *Te Aka Māori-English, English-Māori Dictionary*<sup>4</sup>. Similarly, definitions of Quechua words have been sourced from Spanish-Quechua, Quechua-English Dictionary<sup>5</sup>

A definition of Māori and Quechua words is provided the first time the word appears in the body of this dissertation. When the definition is short it is provided in parentheses directly after the word. When the definition is long it is provided as a footnote so that the definition does not disrupt the flow of the sentence.

### **Māori words:**

aitua	Fate
ariki	leader, chief, priest
atua	spiritual beings with supernatural influences, spiritual powers
hapu	descendants of a common ancestor, tribe
hau	vital essence, reciprocity
hui	Gatherings
Io	supreme numinous being
iwi	tribe, nation
kaitakitanga	guardianship of the land, caring

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<sup>4</sup> <http://maoridictionary.co.nz/>

<sup>5</sup> Dictionary of Quechua – Español and Español – Quechua (Taqe, 2005).

karakia	ritual prayer
kaumātua	leader, elder
kawa	Protocols
koha	gift, contribution
kōrero	dialogue, conversations, talk
koru	fern frond unfolding
kotahitanga	solidarity, Maori solidarity
kuia	female leader
kupe	great navigator who was an early visitor to Aotearoa
mahinga	Gardens
mana	spiritual power, prestige, power, authority, sovereignty
mana hapu	dominant political and economic unit of Maori society,
mana hapu	tribal sovereignty
manaki	Respect
manakitanga	Hospitality
maoritanga	Māori culture
marae	communal or sacred meeting place
mātauranga	body of knowledge, wisdom

maui	great hero
Māui	great hero of Polynesian mythology
mauri	life-force, life itself
moana	sea, lake
ora	life, embodied mauri
pakeha	white people, people from England
papatūānuku	mother Earth in Māori language and mythology
pōwhiri	rituals of encounter
rangatira	Māori leader
ranginui	Māori sky father
rohe	sense of place, boundary
tāne	god of the forest
tangaroa	god of the sea
tangata whenua	people of the land
tangi	Weeping
tangihanga	funeral ritual
taonga	visible or invisible things considered valuable, material or immaterial treasures
tapu	sacred, being with potentiality

taro	a root vegetable
tipuna	Ancestors
turangawaewae	place to stand
tika	natural, right, true, correct, just, fair
tikanga	way in which something is tika, ethic, principle
tino rangatiratanga	absolute power and authority, Maori sovereignty
tōhunga	skilled person, priest
tuakana	elder sister or brother
uhu	reciprocity
ullucu	a plant grown in the Andes as a root vegetable
utu	the principle of equal return, satisfaction, reward, make a response
waiata	songs
wairua	spirit, numinous reality
wairuatanga	spirituality
waka	canoe, group of people with links to a canoe
wānanga	to meet and discuss, deliberate, consider
whaikorero	formal speeches



whakairo	thoughts
whakapapa	genealogy
whakatauki	proverbs
whanau	kin, extended family
whanaungatanga	kinship
whare	house, building, residence, dwelling,
whare wānanga	traditionally places where tōhunga taught the sons of rangatira their people's knowledge of history, genealogy and religious practices
whenua	land, placenta

#### **Quechua words:**

Altiplano	highlands of Peru, Andean ranges
ayllu	community/collectiveness
aymara	language of the Aymara people of the Andes
ayni	reciprocity
campesinos	peasants: campesinos (male) and campesinas (female)
chacras	small plot of land
chaninchay	solidarity
chaquitaqlla	a foot-plough tool technique usually made of wood and had a blade of stone and bronze metal
chicha de jora	a type of corn/maize beer which is made of fermented yellow maize referred to as jora
cuy	guinea pigs
k'uychi	rainbow god

kipucamayocs	accountants of the Inca empire
Mama Kilya	wife of the sun god Inti
Mama Occllo	sister-wife of Manco Capac
muña	a traditional Andean herb for digestion
pacha	world, cosmos of Inca mythology
pacha qhaway	cosmivision
paqos	healer, wise man
qañiwa	is a grain similar to the quinoa
qocha	lake or ponds of natural or artificial origin. The qochas are an ancient agriculture technique
qoyllur yachay	Astronomy
quilla	denotes both sun and moon used in the Inca calendar
quinua	sacred grain of the Incas
uqa	a tuber, root vegetable that grows in the Andes known in Spanish as <i>oca</i>
sach'mama	mother tree
tahuantisuyo	Inca empire
watapacha	calendar
yachay	knowing, <i>saber</i> es in Spanish
yanantin	duality/equilibrium
yupaykamay	mathematics

## PROLOGUE

*Allyllanchu*, Mariaelena Huambachano *sutiymi*, Peru *manta Kani*. My name is Mariaelena Huambachano, I am an Indigenous scholar originally from Peru, and my lineage stems from the coastal territories of the Wari civilisation and Andean people of Peru. On my mother's side, my bloodline is Andean and Wari. On my father's side, it is a mixture of Quechua, Spanish, Italian, and African. I was raised with an appreciation of cultural diversity.

I have been living in Aotearoa for the past eighteen years where I developed an admiration and love for the country and its people to the extent that I call Aotearoa home. In resonance with my Indigenous background, the philosophical stance I take in this investigation is rooted in an Indigenous research paradigm. Specifically, Quechua and Māori views of realities – epistemologies or cosmovisions.

To conform to the criteria about the structure of this research project, I begin this dissertation with the introduction of this study in a linear style, and I have endeavoured to continue with the same structure throughout this dissertation. However, because of the holistic nature of this investigation, some aspects of the literature review, findings and discussions are presented in a circular style. A circular approach reflects the view that when conducting research with Indigenous peoples there is neither beginning nor end. It is an evolving and continuing pathway of knowledge.

## CHAPTER I: INTRODUCTION

*“Iti noa ana, he pito mata”*

With care a small kūmara (sweet potato) will produce a harvest

*“Una semilla es vida ~ es un regalo de nuestra Madre tierra, y junto con todos nuestros familiares: montañas, lagos, animals, estrellas, el sol y la luna cultivamos las semillas, con mucho júbilo; cantando y bailando”.*

Seed is life, it is a gift from Mother Earth, and when we cultivate our seeds, we dance, sing and rejoice together with all our relatives: mountains, lakes, animals, stars, ancestors, sun, and moon.

*Quotes captured during the field work (Peru, 2014 and Aotearoa, 2015).*

This thesis investigates perspectives of food security of the Māori<sup>6</sup> of Aotearoa New Zealand and Andean/Quechua<sup>7</sup> of Peru. Its intent is to develop a better understanding of the dynamics and knowledge of food systems of these two Indigenous peoples, and of the importance of such knowledge in modern societies. The central question of this thesis is empirical in nature. It asks: *How can Indigenous peoples’ knowledge contribute to improving food security?*

The rationale for undertaking this study stems from previous research on the knowledge systems and agricultural sectors of both Aotearoa and Peru (for example, see Gray & Le Heron, 2010; Huambachano, 2011, 2012, 2015; Jay, 2007; Hutchins, 2015; Hēnare, 2003; Lajo, 2005, 2011; Yin, 2004), which indicated that there are relevant similarities between these two countries. For example, both are agricultural nations which have capabilities in agriculture and play a key role in international food production, and their Indigenous peoples still sustain Indigenous knowledge inherited by their ancestors, particularly in sustainable agricultural production. However, there appears to be a ‘knowledge gap’ between Peru and New Zealand’s potential contribution to food security.

Further, the need to feed an estimated 9.6 billion people by 2050, and the debate around the flaws of industrial food production in achieving food security urges for the study

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<sup>6</sup> In this thesis, the term Māori is useful to make reference to all the tribal people as well as their descendants living in rural areas who are natives of Aotearoa. However, the term Māori may also include Māori descendants who live in cities and still uphold their Māori traditional knowledge and approaches to food production, such as the ones I interviewed that belong to an Iwi in Auckland city.

<sup>7</sup> Andean people are referred to the people who once lived in the Tahuantinsuyo (Inca empire): Peru, Ecuador, Bolivia, Chile, and Argentina. Quechua is an ethnic group within the Andean people who predominantly live in Peru, Ecuador and Bolivia (Espinoza, 1987). In this dissertation, Andean and Quechua are used interchangeably to refer to the Quechua communities that took part of this investigation.

of alternative sustainable food systems (Agarwal, 2014; Altieri, 2016; De Schutter, 2014; Holt-Giménez, 2014; Sachs, 2015; United Nations Environmental Programme (UNEP), 2015; La Vía Campesina, 2015; McMichael, 2009a, 2014; Timmer, 2015).

Yet today's food security policies do not always draw from the experiences or the wisdom from of the past. Consequently, Indigenous peoples' knowledge and practices are often overlooked in scholarly literature, and national and international policy development (Agrawal, 2009; Altieri & Toledo, 2011; Breidlid, 2009; Bohensky & Maru, 2011; Kuhnle, Erasmus, Spigelski & Burlingame, 2013; Speranza, Kiteme, Ambenje, Wiesmann & Makali; 2010; International Planning Committee of Food Sovereignty (ICP), 2004; Sean, 2005; Geogestani, 2000; Woodley, Crowley, de Pryck, & Carmen et al. 2006). Māori and Quechua people are referred to as cases in point, highlighting the significance of their traditional wisdom in sustainable food systems and providing alternative food security approaches for safeguarding food security.

It is in this area that my doctoral dissertation is centred; this study investigates how the knowledge possessed by Indigenous peoples, Māori and Quechua, can contribute to improving food security, in contemporary society. A critically important characteristic of this study is that it provides the first comparative of two Indigenous worldviews, Quechua and Māori, in an in-depth study of their good-living philosophies of *Allin Kawsay* in Peru, and *te ātanoho* and *mauri ora* in Aotearoa. These guiding philosophies underpin Indigenous peoples' food security (Altieri, 2004; 2010; Briggs, 2005; Brokenshaw, Warren & Werner, 1979; Ishizawa, 2006; LaDuke, 2008; Whyte, 2016a; Whyte, Brewer & Johnson, 2016d). In addition, this study takes a novel approach by using the Traditional Ecological Theory (TEK), which studies Indigenous ways of knowing and being, and provides comprehensive insights into Indigenous knowledge systems.

I begin this study with an in-depth analysis of the global food security including key concepts such as food security, the Green Revolution, industrial agriculture. Additionally, a review of alternative food systems such as traditional, organic, agroecological approaches and the rise of food sovereignty are addressed to frame the theoretical and conceptual background of this research.

### **What is food security?**

The widely accepted definition of food security is derived from the World Food Summit Plan of Action held in Rome in 1996:

‘Food security implies that food is available, accessible and affordable thereby food security exists when adequate food is

available to all people on regular basis' (United Nations World Food Programme (UNWFP), 2007).

In the global food security arena, food is unavailable, inaccessible, and unaffordable to hundreds of millions of people. In fact, 868 million malnourished individuals constitute 12.5 percent of the world population (Food and Agriculture Organization (FAO), 2015a; World Health Organization (WHO), 2013). Greater progress in food security stems from industrial agriculture. Although this approach has succeeded in producing large volumes of food, problems of hunger, degradation of land, unhealthy ecosystems, and lack of accessibility to food persist (Bernstein, 2010; Consultative Group for International Agricultural Research (CGIAR), 2012; GRAIN, 2014; International Fund for Agriculture Development (IFAD), 2011; Tombe, 2015; United Nations Human Rights Office of the High Commissioner (OHCHR), 2015; Whyte, 2015; Woodhouse, 2010). Clearly the requirements to address food security are not being tackled properly and food security is a global major concern.

Food security is not only a problem for developing countries; it is also an issue for developed countries (European Commission Statistics (EUROSTAT), 2015; Godfray, 2015; Organization for Economic Co-Operation and Development (OECD), 2013a; Ministerio de Desarrollo e Inclusión Social, 2015). Food security is also a major concern for the Indigenous world populations (La Vía Campesina, 2015; International Work Group for Indigenous Affairs (IWGIA), 2016; De Schutter, 2014). For example, one in seven Māori lives in a household classified as having low food security (Statistics New Zealand, 2016a). In Peru, an estimated four million people, predominantly from Quechua, Aymara, and Awajún ethnic groups, who live in a very high state of food insecurity (Ministerio de Desarrollo e Inclusión Social, 2015).

The latest report of the International Panel of Experts on Sustainable Food Systems (IPES-Food), led by Olivier De Schutter, a former United Nations Special Rapporteur on the right to food, summed up the state of the current global food system:

“Today’s food and farming systems have succeeded in supplying large volumes of foods to global markets, but they are generating negative outcomes on multiple fronts: widespread degradation of land, water and ecosystems; high GHG emissions; biodiversity losses; persistent hunger and micro-nutrient deficiencies alongside the rapid rise of obesity

and diet-related diseases; and livelihood stresses for farmers around the world” (IPES-Food, 2016, p. 1).

The summary of the state of global food systems above signals that food is being treated as a commodity with the objective to feed the world population only (Altieri, 2015, Gliessman, 2015; La Vía Campesina, 2015, Patel, 2009, Rossett, 2015). Such a view is a concern that has increased over the past few decades, since the means of food production is largely owned by multinational food corporations (MNFC). Power and control of assets specifically of land use for agricultural purposes around the world have shifted massively from governments to the private sector (Borras, Saturnino, Edelman, & Kay, 2008).

Agri-food business<sup>8</sup> predominantly from Europe and North America has taken the lead in the ongoing transformation of agriculture and food production. For example, Quechua and Māori traditional livelihoods, Indigenous plant varieties, and their cultural-land/resource relationships that are fundamental to their well-being, are now endangered by the spread of large-scale commercialisation of agriculture (Quijano, 2000, 2002; FAO, 2016c; FAO, 2016g; Hutchings, Tipene, Carney, Greensill, Skelton & Baker, 2012; Lim, 2010; Muñoz & Viana, 2013; Statistics New Zealand, 2016b).

Subsequently, over the past four decades the ‘food sovereignty’ concept heralded by La Vía Campesina has taken centre stage in the struggles for a paradigm shift in agricultural food production. The concept of food sovereignty was coined in 1996 by La Vía Campesina to put the control of productive resources (land, water, seeds and natural resources) in the hands of those who produce food (La Vía Campesina, 1996). La Vía Campesina, an international organisation of Indigenous farmers, peasants, small producers, and farm workers, initiated the food sovereignty movement in 1996.

According to the 2007 Declaration of Nyéléni, food sovereignty encompasses:

“The right of peoples, communities, and countries to define their own agricultural, labour, fishing, food and land policies which are ecologically, socially, economically and culturally appropriate to their unique circumstances. It includes the true right to food and to produce food, which means that all people have the right to safe, nutritious and culturally appropriate food and to food-producing resources and the ability to sustain themselves and their societies. Food sovereignty means the primacy of people’s and community’s

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<sup>8</sup> Businesses in the agricultural and food industries (Prakash & Singh, 2011).

rights to food and food production, over trade concerns” (La Vía Campesina, 2007, p. 1).

The food sovereignty movement advocates for the ‘right’ of nations and peoples to define their own food and agricultural systems, and calls for fairer access to land, development of traditional food markets, and use of and respect for traditional knowledge, among others. The implications of the right to food are that it protects the right of all human beings to have available, accessible, and adequate food to feed themselves, either by producing their food or by purchasing it (La Vía Campesina, 2015; De Schutter, 2014; Pimbert, 2008). But key to these principles is not just giving back autonomy to farming peoples and producers over decisions that affect them (*voice*) but having the ability to influence the policy environments around them (*change*) (Desmarais, 2007; Borras, Edelman & Kay, 2008a), thus making this a movement that works at the global, national and local level framing the political part of the ‘right to food’ (Desmarais, 2007; Patel, 2009).

Scholars and scholar-activists argue that the increased emphasis on the current neoliberal food system has diverted investigation from a more environmentally and socially sensitive approach to agriculture production – rather than one based on traditional knowledge (see Agrawal, 2009; Altieri, Funes-Monsote & Petersen, 2012; Bello, 2009; Holt-Giménez, & Altieri, 2015; Holt-Giménez, Shattuck, Altieri, Herren & Gliessman, 2012; Kimmerer, 2013; Harris-White, 2010; Huambachano, 2015b; LaDuke, 2005; La Vía Campesina, 2015; McGregor, 2009; Nelson, 2008, 2013; Thompson & Scoones, 2009; Whyte, 2016a).

In this study, I argue that Quechua and Māori people who share a common cosmovision/worldview<sup>9</sup> about creation, ecology, ethics and custom towards Mother Earth are bearers of vital knowledge in relation to food security (Huambachano, 2015). Indigenous peoples’ cosmovisions denote a holistic view of nature encompassing knowledge systems and embedded in their cultural identity (Cajete, 2000a, 2000b; Deloria, 1995, 2003, 2005; Henderson, 2000; Little Bear, 1998, 2000; Tauli-Corpuz, 2001). Further, such Indigenous cosmovision is the bedrock of knowledge about good-living philosophies (Argumedo, 2010; Durie, 2001, 2009; Dávalos, 2008; Cunningham, 2010; LaDuke, 1999; Lajo, 2011; Hēnare, 2011; Huanacuni, 2010).

Good-living principles refer to the Indigenous peoples’ collectivistic, harmonious, and spiritual approach for the love of, respect for, and gratitude towards Mother Earth (Dávalos,

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<sup>9</sup> In this dissertation, I use *cosmovision* and *worldviews* interchangeably to reflect the fact that *cosmovision* as opposed to *worldviews* is widely used in the Andean world (Lajo, 2012).



2008; Durie, 2003; Cajete, 1994, 2000b; LaDuke, 1994, 1999; Hēnare, 2001; Jaramillo, 2010; Kimmerer, 2013; Nelson, 2008, 2013; Whyte et al., 2016). This good-living philosophy is also found in Indigenous peoples of the Arctic, the Pacific, and the Amazon, and has enabled them to develop a harmonious relationship with nature and the ecosystems for their sustenance (Agrawal, 2009; Berkes, 2012; Berkes, Colding & Folke, 2003; Becker & Ghimire, 2003; Davidson-Hunt & Berkes, 2003; Durie, 1994, 2001; Folke, 2004; King, 1992; Hēnare, 2011; Huambachano, 2015; Lajo, 2008, 2011, 2012; Kimmerer, 2002; McGregor, 2009; Mollo, 2011; Nelson, 2008; Pierotti & Wildcat, 2000, LaDuke, 1994, 1999, 2002, 2005; Whyte, 2016c).

Consequently, the central proposition of this study is that Māori and Quechua peoples' cosmovisions manifested in their good-living philosophies guide their holistic approach to land for food security and ultimately the right to food. This study implicitly engages in an Indigenous research approach that is exploratory and explanatory. Further, it generates, refines and extends theoretical and applicable research methods in order to advance the understanding of food security from an Indigenous perspective.

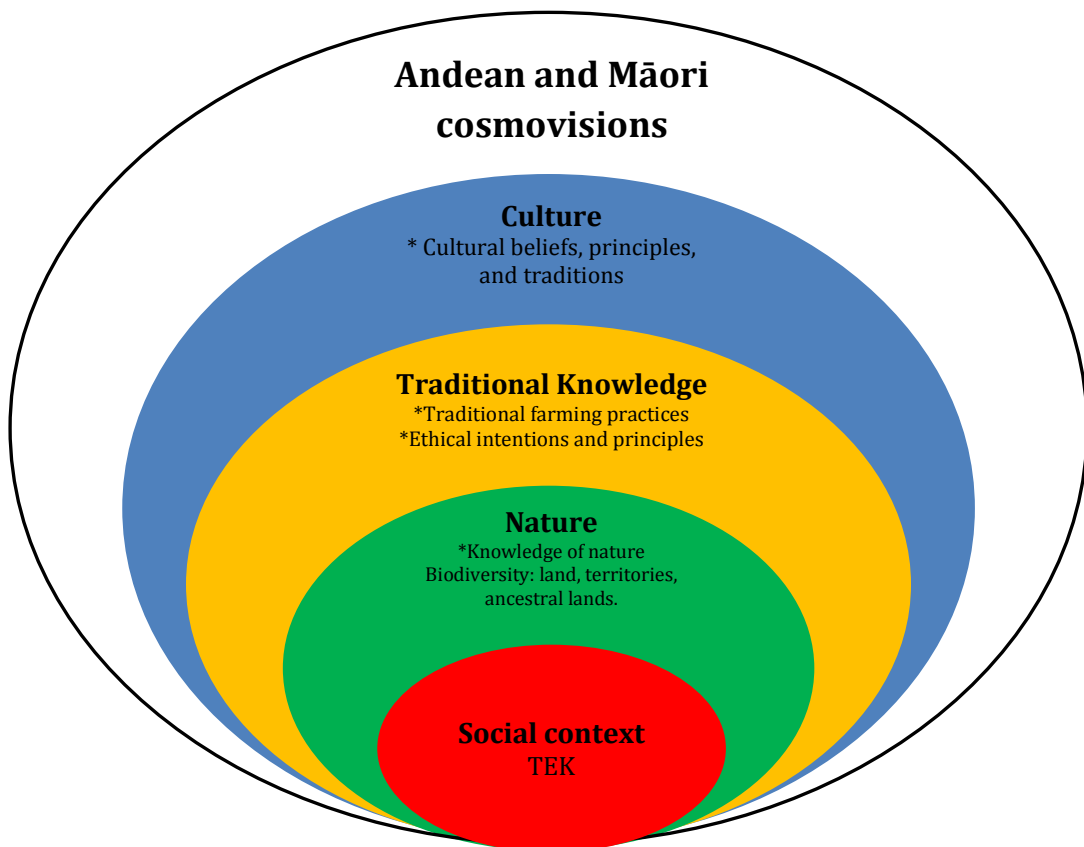
The impetus for developing a guiding Indigenous research framework is based on my experiences while conducting preliminary fieldwork in Peru. I observed a lack of explicit ethical principles and responsibilities involving researchers and host institutions when conducting research with Indigenous communities, which made salient the disconnection between Indigenous and Western research paradigms and methods. A lacuna of knowledge about what is the most appropriate research approach to Indigenous peoples was apparent.

The innovative Indigenous research framework, underpinned by Indigenous ways of knowing and being, was designed for this empirical study of food security in Quechua and Māori communities referred to as the Khipu model. Tuning into the Indigenous approaches of acquiring new knowledge, the aim of the Khipu is to seek knowledge by listening actively to the oral histories and storytelling of Quechua and Māori research participants. One of the key contributions of the Khipu is that it guides the selection of research methods that are culturally sensitive to Quechua and Māori communities. The Khipu is explained in detail in Chapter V.

To complement the Khipu, this study also designed an Indigenous data analytical tool named the Yupana (see Chapter VI). The analysis of the empirical evidence is through the lens of the TEK theory (Berkes, 1993; Berkes & Folke, 2002; Battiste, 2002; Cajete, 2000a; Deloria, 2005; LaDuke, 1994; Little Bear, 2000; McGregor, 2009; Pierotti & Wildcat, 2000; Whyte, 2003). This study is planned to contribute to the extension of the TEK theory.

Therefore, I customised a TEK framework for this study grounded on both Māori and Andean cosmovisions, and supported by the social context of TEK that encapsulates oral history, meta-themes, and spiritual relationships. Three sub-unit levels of analysis assisted me in the study of Quechua and Māori TEK's, which I classified as the dimensions of *nature*, *culture*, and *traditional knowledge*. Each dimension is analysed, and explained further in Chapters VII, VIII, and IV. The TEK framework provides me with more comprehensive insights into the world of these two Indigenous groups (see Figure 1).

**Figure 1: TEK framework that guides this study**



Source: Designed by the author, based on Altieri (2016), Berkes (1993), LaDuke (1994), Lajo, (2011), and Nelson (2008).

**Chapter VII: Dimension of nature**

This dimension refers to the Andean and Māori cosmovisions, knowledge of nature, and approaches to land for food security.

**Chapter VIII: Dimension of traditional knowledge**

These dimensions refer to Indigenous ways of being, knowing, traditional knowledge, and farming practices.

**Chapter IX: Dimension of culture**

This dimension focuses on Quechua and Māori cultural systems: beliefs, principles, and ethical considerations.

Such modification provides me with information that illuminates key themes and beliefs of Andean and Māori people. For example, reciprocity, and customary practices, which are valuable in the context of this research, are more clearly identified. This study considers climate change and globalisation which both pose a threat to achieving food security, but the primary focus is on the worldviews and guiding philosophies of these two Indigenous groups.

This chapter continues with an overview of the research approach, motivational factors for this study, and a summary of the contributions of this investigation, followed by the research questions, aims and objectives, and concludes with an outline of this thesis.

### **1.1 Research approach**

This study makes use of an innovative Indigenous research framework that recognises the holistic nature and extent of the research objectives. The Khipu framework enabled me to carry out the project successfully taking into consideration the culture, beliefs, and customary laws when collecting and analysing data of Quechua and Māori through the lens of the TEK theory. The analytical tool named the Yupana was designed to complement the functionality of the Khipu. The Khipu and the Yupana are tools that are culturally relevant and appropriate while satisfying the rigour of research. The research draws from secondary data, which enabled cross-checking of sources and extending understanding of empirical data. The research findings are empirically tested, and they were validated with both Quechua and Māori research participants.

### **1.2 Motivation and aspiration for this study**

The reason for this study is two-fold. It stems from the current debate on food security, which argues that increasing food production with an efficiency-based agricultural model, and scientific-technological approaches (see CGIAR; 2015; Bernestein, 2014; Collier, 2008; Trewavas, 2008; World Bank, 2012; Robin, 2013; Sharma et al., 2009) would solve the problem of catering for the food needs of current and future populations. However, this efficiency-based agricultural model has been questioned (De Ponti, Rijk & Ittersum, 2012; Bello, 2009; Desmarais, 2007; De Schutter, 2010; Fabricant, 2012, Woodley et al. 2006).

Another key reason stems from a strong connection to both countries as a native of Peru and a citizen of New Zealand that has led to my undertaking of previous research in the agricultural sectors of Peru and New Zealand (Huambachano, 2011 and 2012), as well as *in-*

*situ* research in April 2013 (Huambachano, 2015). These research findings, and in-depth literature review, proposed that there is a connection between New Zealand and Peru's Indigenous peoples' worldviews regarding sustainable food production.

However, an overlooked key element between these two countries was identified—and that is the 'traditional knowledge' gap with regard to their good-living philosophies in safeguarding food security. Accordingly, this research argues that a more ecological and traditional approach be adopted in agricultural production. Further, such an approach can be achieved within the realms of sustainability philosophies and complemented by the recognition of Indigenous peoples' knowledge for agriculture production, contributing to more enduring food production systems.

My strong cultural connections to both countries, my previous research findings, and my commitment to Indigeneity and sustainability, have played a key role in the conceptualisation of this doctoral research project. These commitments have sustained my motivation to pursue and successfully complete this doctoral programme.

My aspiration for this investigation is to provide a solid piece of research that will be published in international journal articles. Some chapters of this dissertation have been published in academic journals such as the *Journal of International Social, Economic and Environmental Sustainability* and *International Food studies*. Additionally, some material has been published in book chapters, such as in the book edited by colleagues from the University of Auckland, Associate Professor Chellie Spiller and Dr Rachel Wolfgramm, entitled *Indigenous Spirituality at Work: Transforming the spirit of business enterprise*. Moreover, material has appeared in the book edited by Associate Professor Gabriel Eweje from Massey University entitled *Corporate Social Responsibility: Emerging trends in developing economics*. I provide a detailed list of my academic publications in the next section.

Thus, my work aims to contribute to the growing body of scholarship exploring alternative food systems, Indigenous good-living philosophies, and sustainability practices by providing a review of the 'knowledge bank' of Aotearoa and Peru's Indigenous good-living philosophies of food production, which is a window into the world of Indigenous peoples worldwide. In terms of practical implications, this research aims to contribute to food policy implementations to address food security at regional and national levels in Peru and New Zealand, and ultimately in international food security.

### **1.3 Contribution of this study**

While the contributions of this study are manifold, the summarised key contributions are as follows:

- This is the first comparative research that examines Indigenous worldviews, and good-living philosophies of food security as seen through the TEK lens. Such cross-cultural analysis is vital and timely to aid decision-makers at country, regional and global levels to improve policy that recognises the knowledge contribution of Indigenous peoples in safeguarding food security, and to include their perspectives in the discourse of global food security.
- This study proposes an innovative food security model by using a TEK lens to contextualise economies of well-being, and management of food security. In the field of management and international business, this study provides an alternative paradigm to understand economic development. Such a contribution seen through the TEK lens is significant for, businesses to support the improvement of food and agriculture systems that optimize sustainable food production for both Indigenous peoples and wider global communities.
- Emerging conceptual findings, identification, evaluation of vital concepts, and core elements framing the theoretical and methodological approach of this study, which are very important. For example, the definition of food security does not resonate with the food security perspectives of Quechua and Māori people. Such findings have implications for the framing of future food policy-making in Indigenous communities.
- Design and development models that illustrate research requirements for the study of food security through an Indigenous lens, and as a result, the development of a theoretical framework that incorporates traditional knowledge in the study of food security guides this study.
- The design of the Khipu Model as an innovative Indigenous research framework that is culturally sensitive while complying with the rigour of investigation. The Khipu Model, based on an Andean indigenous knowledge-keeping system, from my country of Peru, is grounded in the ways of knowing and being of Quechua and Māori people. I adapted the Khipu Model to ‘hear, record and elucidate’ indigenous groups’ intergenerational accumulation of knowledge captured through the research methods (knowledge production); the Khipu Model also guides the research methods used with the

communities under study (knowledge sovereignty). Moreover, the development of an Indigenous data analysis tool named the Yupana that complements the Khipu model.

- This investigation positions Allin Kawsay as an exemplar of a recognised good-living philosophy to complement the body of knowledge that explores Indigenous peoples' philosophies in the field of food security in New Zealand and Peru. Correspondingly, this is the first time that Quechua and Māori cultural systems have been examined within the food security context.
- The drawing of knowledge from Quechua and Māori food security perspectives resulted in the conceptualisation of a food security policy framework as seen through an Indigenous lens. This model provides insights into how Quechua and Māori people govern their food systems, and I argue that this food security framework tool can be replicated and adapted for the in-depth study of other societies' food security interventions. Through its use as an analytic tool, we can garner better understandings and resilience strategies of food systems that can provide better evidence-informed policy making for the implementation of potential solutions to global food challenges.
- Finally, this study disseminates knowledge through a range of publications in journals, book chapters, and presentations in international conferences, and workshops as detailed below:

### **Journal articles**

1. Huambachano, Mariaelena. "The Khipu Model: An Indigenous-based research framework for knowledge production and sovereignty." In preparation for the *International Journal of Qualitative Methods*.
2. Huambachano, M. A., & Cooper, L. (2016). Making sense of sustainable land use policy: Reconnecting land and people. *Journal of Cleaner Production*. Forthcoming, Fall 2016.
3. Huambachano, M. A. (2015). Indigenous knowledge and food security, *The International Journal of Food Studies: An Interdisciplinary Journal*, 5 (3), 33-47.

### **Book chapters**

1. Huambachano, M. A. (2015). The Ayni principle: An Indigenous theory of value creation. In C. Spiller & R. Wolfgramm (Eds.), *Transforming the spirit of enterprise* (99-117). Charlotte: Information Age Publishing.

2. Huambachano, M. A. (2014). Business and Sustainability: The Camisea Project in the Peruvian Amazon Basin. Corporate Social Responsibility and Sustainability. In G. Eweje (Ed.), *Emerging Trends in Developing Economies: Critical Studies on Corporate Responsibility, Governance and Sustainability* (215-240). New York: Emerald Group Publishing Limited.

### **Presentations at international conferences and panels:**

- 2016 International Food Systems: New Zealand, Peru and First Nations People.  
Invited speaker at the Great Lakes Intertribal Food Summit – Michigan – United States.
- 2015 Indigenous Knowledge: A key for the development of a food sovereignty framework, Agrifood XXII. International Conference, December 2015, University of Otago, Queenstown-New Zealand.
- 2015 Indigenous Knowledge and Food Security: buen vivir/Allin Kawsay in the Andes and te ātanoho in Aotearoa New Zealand.
- 2015 Global Food Security Conference, October 2015, Cornell University, Ithaca – United States.
- 2015 The Ayni (Reciprocity) Principle: An Indigenous Theory of Value Creation. Doctoral Conference, September 2015, Auckland-New Zealand.
- 2014 Scaling up pathways of food sovereignty and climate change: A case study of Lares region of Peru. United Nations Climate Change Conference, December 2014, Marriot Hotel-Lima-Peru.
- 2014 Indigenous Good-living principles as a key for food security. International Food Studies Conference, October 2014, Prato-Italy.
- 2013 Indigenous knowledge is vital for the preservation of biodiversity for Food Security. United Nations Doctoral Workshop SDMG Post Agenda 2015, Columbia University, NYC United States.
- 2013 Indigenous Knowledge for Climate Change Resilience. Climate Change Conference, June 2013, Palmerston North, New Zealand.
- 2013 Indigenous Peoples' cultural values are fundamental for the advancement of sustainable development initiatives. International Business Conference, December 2013, Hobart, Australia.

## 1.4 Research objectives, and questions

The primary purpose of this research is to conduct a comparative study of the ‘Indigenous Knowledge’ of Quechua and Māori in the field of food security.

The interconnected research objectives of this study include:

- To explore Quechua and Māori worldviews, and good-living principles to identify and evaluate important characteristic that highlights the potential contribution of Indigenous peoples’ knowledge to the challenges of international food security.
- To review the contemporary context of global food security to determine causes which have urged the interest of sustainable approaches to food production.
- To craft, an Indigenous research methodology referred to as the Khipu model.
- To develop an Indigenous data analysis tool to complement the Khipu.
- To provide an in-depth understanding of the perspectives of Andean and Māori worldviews concerning food security.
- To examine the Andean and Māori peoples’ relationship with food to understand their approach to food production and significance of their traditional knowledge and practices of their food systems.
- To explore the role of Māori and Quechua’s good-living principles in enabling food security.

In order to address the research objectives, the overarching research questions is:

- **How can Indigenous knowledge contribute to improving food security?**

And also, eight ancillary questions:

1. How do their worldviews of land influence their approaches to food security?
2. What are the discrepancies between their approaches to land compared to the Western view?
3. How such discrepancies or conflicts threaten their food security?
4. How do they knowledge and practices guide their food systems?
5. What is their relationship between food and culture?
6. What are the similarities between Quechua and Māori people’s worldviews?
7. What are the values that underpin their way of life?
8. How are these values adopted in response to food security and implications?



Further, Table 1 lists the research goals developed specifically for this study, and shows in which chapter or chapters they are addressed. Table 1 also forms the basis for the next section, which provides an outline guide to the thesis as a whole

**Table 1: Research goals**

<b>Goals</b>	<b>Where addressed</b>
To explore Quechua and Māori worldviews, and good-living principles to identify and evaluate important characteristics that highlight the potential contribution of Indigenous peoples' knowledge to the challenges of international food security.	<b>Chapter 2: Indigenous worldviews/cosmovisions</b>
To assess the global overview of food security to determine causes which have urged the interest of sustainable approaches to food production.	<b>Chapter 3: Contemporary global food security.</b>
To craft, an Indigenous research framework referred to as the 'Khipu Model'.	<b>Chapter 4: Research Methodology</b>
To select the research methods for this study.	<b>Chapter 5: The Khipu Model: An Indigenous research framework and complementary research methods.</b>
To develop an Indigenous data analysis tool to complement the Khipu.	<b>Chapter 6: Yupana: Inca data analysis tool complementing the Khipu Model.</b>
To provide an in-depth understanding of the perspectives of Andean and Māori worldviews concerning food security.	Chapter 2: Indigenous worldviews/Cosmovisions  Chapter 3: Contemporary overview of food security.  <b>Chapter 7: Meta-Analysis of metha theme: Earth is Our Mother: We are the people of the land.</b>
To examine the Andean and Māori peoples' relationship with food to understand their approach to food production and significance	Chapter 2: Indigenous worldviews/Cosmovisions  Chapter 7: Earth is Our Mother: We are the

<p>of their traditional knowledge and practices of their food systems.</p>	<p>people of the Land.</p> <p><b>Chapter 8: Meta-Analysis of metha theme Food is Sacred: Traditional ways of knowing and being</b></p>
<p>To explore the role of Māori and Quechua’s good-living principles in enabling food security.</p>	<p>Chapter 3: Contemporary overview of food security.</p> <p>Chapter 7: Earth is Our Mother: We are the people of the Land.</p> <p><b>Chapter 9: Meta-Analysis of metha theme Honouring Mother Earth: Good-living Principles</b></p>
<p>To discuss the results of the analysis of the meta-themes in connection with the chapters below:</p> <p>Chapter VII: Meta-analysis engaging the meta-theme Earth is our Mother</p> <p>Chapter VIII: Meta-Analysis engaging the meta-theme Food is Sacred traditional ways of knowing and being.</p> <p>Chapter IX: Meta-analysis if the meta-theme Honouring Mother Earth – Good-living principles.</p>	<p><b>Chapter 10: Discussion of Results</b></p>

### 1.5 An overview of the thesis

This dissertation is structured as follows:

**Chapter II: *Indigenous Worldviews/Cosmovision*:** This chapter provides a comprehensive literature review of the main concepts: Quechua and Māori worldviews, traditional knowledge, TEK) and good-living philosophies. The aim is to contextualise the research philosophy, approach, and overall praxis of the study of Quechua and Māori worldviews within the context of food security. It concludes with a visual description of the conceptual framework guiding this study that will be used to inform and complement the research needs and requirements of this study in Section 3.4 (Problems, issues and requirements).

**Chapter III: *Contemporary Global Food Security*:** This chapter reviews the literature on the contemporary global food security including both the global and local<sup>10</sup> approach to food security. It includes a review of the concept of food security, and discussions about the role that the Green Revolution had in the industrialisation of agriculture, and the increased concentration of agri-food businesses. In addition, it considers alternative food production systems such as traditional, organic, agroecology, and food sovereignty, all of which are applied to contemporary society. The chapter concludes with a summary of the current problems, issues and requirements of food security, and how the potential contribution of Indigenous peoples' knowledge in food security can assist international food security efforts. This leads to the development of the methodological framework to carry out this investigation described in the next section.

**Chapter IV: *Research Methodology*:** This chapter reviews the literature on Western and Indigenous research methodologies to establish the philosophical foundation of the research framework for this study. The development of an Indigenous research framework was identified as the most appropriate research framework.

**Chapter V: *The Khipu model*:** This chapter describes the planning, design, methods, and execution of the Khipu as an Indigenous research framework. The study participants in both countries are experts in the field, and their aggregated opinions and insights complemented the development of the Khipu research methods. The Khipu is of exploratory nature to gain an understanding of the factors that are of particular importance in Quechua and Māori and for food security.

**Chapter VI: *The Yupana*** is an analytical tool, and this chapter explains the design and implementation of the Yupana. This enables an insightful dissemination of the living realities and experiences of Quechua and Māori people. This chapter also provides a preliminary analysis of the findings.

Based on the findings of this study, the next three chapters offer a meta-analysis of meta-themes: namely *Earth is our Mother*, *Food is Sacred*, and *Honouring Mother Earth*.

**Chapter VII: *Earth is Our Mother: We are the people of the Land*.** This chapter is an essential chapter of the dissertation. It focuses on the analysis of the cosmovisions of Quechua and Māori people concerning land. The first part deals with Māori narratives and analyses key aspects of a Māori worldview: whakapapa (genealogy), whenua (land), and wairua (spirituality). Similarly, the second part touches on Andean narratives and examines

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<sup>10</sup> In this dissertation the use of local refers to the local knowledge that people in a given community have developed over time, and continue to develop (FAO, 2015a).

the three fundamental features of an Andean cosmovision: Andean lineage, Pachamama (land) and mysticism or spirituality. Overall this chapter provides an in-depth examination of the most important characteristics of Māori and Quechua peoples' cosmovisions that influence their food security practices.

**Chapter VIII:** *Food is Sacred: traditional ways of knowing and being.* This chapter focuses on Quechua and Māori traditional knowledge and practices and their relationship to land for food security. This chapter examines the significance of the Inca and Māramataka solar-lunar calendars of these two Indigenous groups as the fountain of knowledge of the ecosystems and their intrinsic relationship between land and food.

**Chapter IX:** *Honouring Mother Earth: good-living principles.* This chapter scrutinises the salient characteristics of Quechua and Māori people in regards to their approaches to enabling food security. The first substantive section analyses the four essential features of Quechua cosmovision and the linkages with their good-living philosophy of Allin Kawsay. The second section is dedicated entirely to the study of the four main features of Māori worldviews and the influence of te ātanoho and mauri ora.

I note here that the examination of te ātanoho was given particular attention considering the acknowledgement of this good-living ideology in the Māori academic literature. Yet the concept of mauri ora emerged as the more widely accepted well-being concept among Māori research participants. Thus, this section also examines mauri ora. This chapter concludes with the principal characteristics underpinning the food security models of Quechua and Māori people.

**Chapter X:** *Discussion.* This chapter provides an in-depth discussion of the interpretations of the research analysis. Following from the discussion of this chapter, this study provides the food security framework of these two unique cultural groups. This food security model embodies important values that guide both Quechua and Māori traditional agricultural practices, which have enabled them to maintain a steady source of food for their population.

**Chapter XI:** This chapter provides a conclusion to this research, and outlines the distinctive contributions of this dissertation along with its limitations and the future direction of the research field.

## CHAPTER II: INDIGENOUS WORLDVIEWS/COSMOVISION

“A worldview is a set of assumptions and beliefs that form the basis of a people's comprehension of the world. The stories, symbols, analogies, and meta-themes that express a worldview in coded form are called mythology. Worldviews are conveyed via mythology in informal, formal, unconscious and conscious ways through family, community, art, media, economic, spiritual, governmental and educational institutions”

(Cajete, 2000a, p. 62).

### 2.1 Introduction

In this chapter, substantive literature on Quechua and Māori cosmovisions is reviewed. The purpose of this is to gain an in-depth understanding of the scope of good-living philosophies with respect to food security. This chapter has two sections designed to contextualise the research philosophy, approach and overall praxis of the study. First, key concepts such as Indigenous peoples, cosmovision, and traditional ecological knowledge (TEK) are detailed. Second, a profile of Quechua and Māori communities is provided. Finally, a summary of this chapter highlights the Indigenous research orientation designed to capture a deeper understanding of Quechua and Māori worldviews and knowledge of food security.

### 2.2 Framing the theoretical framework: key concepts

This section offers a literature review of Indigenous peoples, cosmovision, TEK and good-living principles. Of note, research findings indicate that the concept of Mauri Ora as opposed to Te Ātanoho resonates with the Allin Kawsay philosophy of the Quechua people. This study examines both te ātanoho and mauri ora in Chapter IV. For the purpose of this section, I review the literature on allin kawsay and te ātanoho.

#### 2.2.1 Indigenous peoples

For the purposes of this study, I use the working definition of Indigenous peoples expressed by Jose Martinez Cobo in his first UN Special Rapporteur report, widely known as the ‘Martinez Cobo Study’ on Indigenous peoples (Cobo, 1987).

This definition reads as follows:

“Indigenous communities, peoples and nations are those which, having a historical continuity with pre-invasion and pre-colonial societies that developed on their territories,

consider themselves distinct from other sectors of the societies now prevailing on those territories, or parts of them. They form at present non-dominant sectors of society and are determined to preserve, develop and transmit to future generations their ancestral territories, and their ethnic identity, as the basis of their continued existence as peoples, in accordance with their own cultural patterns, social institutions and legal system”

(Cobo, 1987, p. 2).

In essence, Indigenous people share the characteristics of:

- Distinct and individual culture, language and worldview
- Pre-colonial origins with a certain level of historical continuity
- Livelihoods and a strong identification linked to territories and the natural environment
- Unique social, economic and governance systems
- Self-identification as Indigenous people and recognition of ancestral environment and systems as distinct (United Nations Permanent Forum for Indigenous Issues (UNPFII), 2011)

By this understanding, it is estimated that the Indigenous population of the world is approximately 370 million and constitutes less than 6 percent of the world’s people. Indigenous people speak over 4,000 languages and live in every corner of the world, although predominantly in Asia, where an approximately 70 percent live, and in Latin America where they make up 11 percent of the region’s population (UNESCO, 2011).

Indigenous peoples practice unique traditions, and their social, cultural, and governance characteristics are often distinct from the dominant societies they are surrounded by (IWGIA, 2016). These Indigenous groups are especially exposed to land and environmental issues due to their continuing reliance on the natural environment and biodiversity for their livelihoods—often in the most fragile ecosystems (Berkes, 2012; Deloria, 2005; De Chavez & Tauli-Corpuz, 2008).

In the past century Indigenous peoples have endured the impacts of colonisation and post-colonisation intertwined with an evolving world economy; for example, globalisation and industrial production (Edelman, 1999; Mead, 1994b). The role of the United Nations

(UN, 2008) in safeguarding the well-being of Indigenous peoples has been highlighted since 1972 with the proclamation of a series of UN projects.

A number of examples are:

- The UN Special Rapporteur on the Rights of Indigenous peoples in 1972
- The UN Voluntary Fund for Indigenous Populations in 1985
- The International Labour Organization (ILO) Convention No. 169 on Indigenous peoples and Tribal Peoples in Independent Countries in 1989
- The UN Declaration on the Rights of Indigenous peoples in 2007.

Indigenous peoples have remained relatively consistent in their approach to sustainability practices and attitudes towards environmental preservation, despite Western economic ideologies such as capitalism and globalisation (Gibbs, 2005; Quijano, 2002; Mead, 1994a; 1996). Some scholars contend that such approach is a reflection of their worldviews (see Deloria, 1999; Durie, 2001; Jackson, 1993a; Hēnare, 2003; King, 1992; LaDuke, 1999; Mead, 1994a; Royal, 2009; Spiller & Wolfgramm, 2015).

### **2.2.2 Cosmivision or worldviews**

Indigenous worldviews are holistic in nature because Indigenous peoples fully acknowledge that all beings, humans and non-humans (sea, mountains, rivers, and the cosmos) are interconnected to the natural world (Best, 1986; Bishop, 2005; Cajete, 1994; 2000a; 2015; Deloria, 1999; Durie, 2009; LaDuke, 1994; Nelson, 2008; Whyte, 2013). Indigenous scholars (see Best, 1986; Cajete, 2000a; Durie, 2001; Esteva, 2015) suggest that Indigenous peoples' profound spiritual and respectful relationship with Mother Earth is central to Indigenous identity. Further, Indigenous cosmivision relates to holistic ways of knowing that influence how Indigenous peoples relate to the ecosystems. For example, traditional knowledge of biodiversity conservation and climate change resilience express their wisdom with regards to the conservation of vital ecosystems (Belaunde, 2001; Berkes, 2009; Charters, 2007; Chamlee, 1993; Gorgestani, 2000).

Worldview is further explained by Māori Reverend Marsden as follows:

“Cultures pattern perceptions of reality into conceptualisations of what they perceive reality to be; of what it is to be regarded as actual, probable, possible or impossible. These conceptualisations form what is termed the ‘worldview’ of a culture. The worldview is the central systemisation of conceptions of reality to which members of its culture assent and from which stems their value

system. The worldview lies at the very heart of the culture, touching, interacting with and strongly influencing every aspect of the culture”

(Marsden, 2003, p. 56).

Indigenous peoples share similarities in their worldviews (Cajete, 1994; 2000a, Hēnare, 2003; LaDuke, 2005; Wolfgramm, 2007; Lajo, 2012). For example, in the book *All our Relations: Native Struggles For land and Life*, Anishinaabe environmental activists Winona LaDuke (1999) argues that one of the main tenets that link Indigenous societies around the world is the principle of reciprocity<sup>11</sup>. To illustrate the reciprocity tenet of Indigenous peoples of North America:

“A hunter always speaks as if the animals are in control of the hunt. Animals are the one who decide as to whether they will be caught and therefore the hunter is successful only if the animal decides to make himself available. The hunters have no power over the game”

(Berkes, 1999, p. 107).

In this illustration, for Indigenous people animals are considered to be a person too and as such are assumed to have an intellectual capacity to identify the danger of being hunted. Therefore, if the animal was to be caught, it can also be assumed that it was its own decision to be caught (LaDuke, 1999; Deloria, 1999). Hence the meta-theme of the prey ‘giving itself to you’ (Berkes, 1993) is useful in understanding the concept of gratitude from the animal who gifted his life to the hunter, as well as the hunter honouring the death of the animal. Another commonality found among Indigenous groups is their resilient attitudes towards preserving their Indigeneity (Durie, 2009; Loomis, 2000; LaDuke, 2005; Mead, 1996, Walker, 1991).

One of the consequence of such a resilient attitude is the signing of treaty agreements with the settlers—for instance, in New Zealand, the Treaty of Waitangi recognises Māori as sovereign people of Aotearoa New Zealand (Ballara, 1998; Belich, 1996; Charters, 2007; Jackson, 1998; Mead, 2002; Orange, 1987; 1990b). However, not all Indigenous communities have treaty agreements with the settlers, such as the Indigenous peoples of Peru. Similarly, Indigenous communities in Africa and Australia lag behind in sovereignty

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<sup>11</sup> Reciprocity plays a key role in defining the ethical behaviours between human and non-humans within natural law. Indigenous peoples believe that non-humans deserve an appropriate ethical approach encompassing values of respect and gratitude, as well as a political approach including norms and structures concerning their actions and behaviour towards non-humans lives (LaDuke, 1994; 1999).



recognition (Australian Human Rights Commission, 2016; African Commission on Human and Peoples' Rights, 2013).

### **2.2.3 Indigenous good-living philosophies**

A good-living philosophy is a collectivistic, holistic, and spiritual approach to living in equilibrium and harmony among people, all living things of nature, and the sacred world (Belaunde, 2001; Lajo 2005; Dávalos, 2008; Gudynas, 2011, LaDuke, 1994; Nelson, 2008; McGregor, 2009). A knowledge belief system underpins Indigenous peoples' good-living philosophies, such as, for instance, the belief in interconnectedness between humans and non-humans (sea, mountains and rivers) (Becker & Ghimire, 2003; Berkes, 1993; Deloria, 1999; Little Bear, 1998; Pierotti & Wildcat, 2000). The storytelling of the Chisabi Cree People summarises this principle below:

“I had a fish net out in a lake, and at first, I was getting quite a few fish in it. But there was an otter in the lake, and he was eating the fish in the net. After a while, fish stopped coming into the net. They knew there was a predator there. So similarly game knows about the presence of hunters as well. The Cree people say: all creatures are watching you. They know everything that you are doing. Animals are aware of your activities. Their minds touch. The fisherman and the fish have a parallel knowledge, and they share that knowledge. So in a sense they communicate”

(Berkes, 1993, p. 5).

As LaDuke's (1994) reasons, this story explains that

“to be secure that one will be able to harvest enough involves more than skill; it also involves careful observation of the ecosystem and careful behaviour determined by social values and cultural practices”

(LaDuke, 1994, p. 128).

Over the last few years, the good-living philosophies of some Latin American countries such as Peru known as *Allin Kawsay* (living well), Ecuador and Bolivia referred to *Sumaq Kawsay* (Good-living) have begun to emerge as an alternative to a sustainable development approach (Huambachano, 2015b; Peña, 2004; Zapata, 2014; Zibechi, 2010; Walsh, 2010). Also, good-living philosophies are found in other Indigenous groups; for

example, in North America among the Anishinaabeg/Ojibwe and Cree people in the concept of *Minobimaatisiwin* or the good life (LaDuke, 1994; 2002; 2005; McGregor, 2004; 2005; Whyte, 2016a).

Others include Feng-shui or living in harmony with nature in China (Yu, 1996), *Laman Laka* or well-being principle of Nicaragua's Indigenous peoples (Cunningham, 2010; Jaramillo, 2010), and *Mauri Ora*, and *Te Ātano* (good life) in Aotearoa (Durie, 2001; Morgan, 2003; Hēnare, 2011). Cunningham (2010) argues that living well means living in a state of harmony with all the cycles of Mother Earth—for example, with the cycles of the cosmos and in complementary balance with all forms of existence.

According to Dávalos (2008), the *sumaq/allin kawsay* reinforces the views of a sustainable living ideology studied by social science scholars in the field of sustainability, ecology and economics. Some examples are *décroissance* or economy of degrowth written by Serge de Latouche (2003); *conviviality* by Ivan Illich (1973); *deep ecology* by Arnold Naes (1973). Also, Dávalos (2008) explains that the *Allin Kawsay* resonates with the debate about Indigenous decolonisation in Latin America raised by various influential sociologists. This is further supported by Peruvian Anibal Quijano (2000) and Brazilian Boaventura de Sousa Santos (1977). The concept also reverberates with the discussion about the renaissance of Māori culture and self-determination endeavours (see Durie, 1994; 2003; Jackson, 2000; 2007; Smith, 1999, and Mead, 2002; Walker, 1990; 1991).

Dávalos (2008) and Cunningham (2010) argue that for the good-living philosophies to be recognised as an Indigenous development approach, it is necessary for the principles imbued in such good-living philosophies to be understood within the legal framework of the UN Declaration on the Rights of Indigenous Peoples. Specifically, in Article 3: Indigenous Peoples' right to self-Determination, in Article 4: Indigenous peoples' right to autonomy, and Article 32, Indigenous Peoples have the right to regulate and establish priorities for the use of their territories for development. The governments of Ecuador and Bolivia have taken the lead in advocating the philosophy of *sumaq kawsay* as an alternative economic development to the current neoliberal economic model (Becker, 2011; Peña, 2008; SENPLADES, 2010; Zibechi, 2010).

One of the consequences of Indigenous good-living approaches is the fact that nature is seen as a part of them. It is a living being wherein all members of the natural world form multiple relationships with one another. Relational well-being is an essential component of Indigenous cosmovisions (LaDuke, 1994; Belaunde, 2001; Huanacuni, 2010; Nelson, 2008; Lajo, 2011). Indigenous peoples' knowledge systems have evolved over time, but the

essence of their Indigenous worldviews and good-living principles reverberates in today's world (Argumedo, 2010; Deloria, 2005, Jackson, 2007; Wolfgramm, 2007; Kimmerer, 2011; Smith, 2012; Spiller, Pio, Erakovic & Hēnare, 2011, Whyte, 2016a).

#### **2.2.4 Traditional Ecological Knowledge – TEK**

There is no universally accepted definition of TEK in the literature (Battiste, 2011; McGregor, 2004; Whyte, 2003). However, this dissertation fundamentally draws from an Indigenous perspective of TEK.

Anishinaabe environmental activist Winona LaDuke describes TEK as:

“the culturally and spiritually based way in which Indigenous people relate to their ecosystems. This knowledge founded on spiritual-cultural instruction from time immemorial, and on generations of careful observation within an ecosystem”

(LaDuke, p. 1994, p. 127).

Although TEK is of non-Indigenous origin, as a field, it studies the environmental knowledge of Indigenous peoples predominantly in the areas of conversation and sustainable management of natural resources (Berkes, 2002; Berkes, F, & Folke, 2002; Brokenshaw, et al. 1979; Berkes, et al. 2000; Johannes, 1989; Folke, 2004; Folke, 2006; Gadgil, Berkes & Folke, 1993). The intellectual roots of TEK are in human ecology and, particularly, ethnoscience.

Ethnoscience is the study of people's culture through an objective lens with a view to understanding the ecological and historical contributions of past societies, including the behaviour of individuals who have different forms of knowledge and beliefs (Rist & Dahdough-Guebas, 2006). The earlier studies of TEK were conducted by anthropologists. For example, Harold Conklin (1957) was a pioneer of research into Indigenous peoples' knowledge with regard to agricultural systems. In his study of the horticultural practices of the Philippines Indigenous communities of Hanunóo, detailed information of local plants totalling up to 1,600 plant species was documented.

Other empirical examples include the study by Lasserre & Ruddle (1983) which delved into documenting the best traditional resource-management practices of the coastal marine systems of the Indigenous Moken communities in Thailand. Additionally, the study undertaken by Gadgil, et al. (1993) focused on studying Indigenous peoples' knowledge of biodiversity conservation for the enhancement and resilience of biodiversity. This research gathered empirical evidence of the various levels of classification systems undertaken by

Indigenous peoples in biodiversity conservation. A detailed list of the taxonomy of plants and animals and the classification of traditional systems of resource-management conservation techniques was attained through the organisation and cooperation of Indigenous groups, such as hunters and fishermen, resulting in the enhanced biodiversity and resiliency of their ecosystems.

Pioneering studies have included the *Mythologiques* research project by anthropologist and ethnologist Levis Strauss (1971). Moreover, the *Kayapó* Indians of Brazil' research project by anthropologist and biologist Darrel Posey (1984 and 1985) focused on the study of the cultural belief systems of Indigenous peoples. This prompted Western researchers (see Berkes, 1999; 2005; Folke, 2004; Freeman & Carby, 1988; Lassere & Ruddle, 1983; Levis Strauss 1971; Posey, 1984) to recognise the validity of 'traditional or Indigenous knowledge' in Western sciences because it provided compelling insights into natural phenomena that could be applicable to address contemporary resource-management issues.

In the 1980s, TEK gained notoriety in various multidisciplinary fields of study, such as environmental sciences and ecology. As a result, the research approach undertaken by Western scientists moved away from documenting Indigenous peoples' biodiversity habitats to an emphasis on exploring the effective relationships and resilience of ecological mechanisms of Indigenous communities around the world, resulting in the emergence of contemporary TEK (Ford & Martinez, 2000; Berkes, Folding & Folke, 2003). In an attempt to conceptualise TEK from a Western perspective, Western scholars, for example Berkes (1999), Davidson-Hunt & Berkes (2003), Garibaldi & Turner (2004), and Pierotti & Wildcat (2000), contend that TEK is embedded in Indigenous peoples' worldviews of:

- connectedness and relatedness; all things on earth, both human and non-human, such as rivers and mountains are connected and related with one another, and should be treated with honour and respect
- spatial time; places and beings existed at a point in time, evolved and adapted with them over thousands of years but their sense of place is 'intact and long lasting'
- reciprocity; reciprocal relationships and responsibilities between humans and ecosystems are imperative for the harmonious relationship between human beings and resource-management ecosystems, inherited and handed down through generations.

At present, TEK is considered an interdisciplinary field that draws from social-cultural anthropology, biology, ecology, and resource-management fields such as fisheries,

wildlife and forestry (Berkes, 2003; Folke, 2004; 2006; McGregor, 2004; Pierotti and Wildcat, 2000; Pierotti, 2010; Whyte, 2003). However, there is a discrepancy between the Western and Indigenous view of TEK (Anderson, 2010; Battiste, 2002; Battiste & Henderson, 2000; Cajete, 2000b; McGregor, 2005; Whyte, 2003).

### **Indigenous view of TEK**

McGregor (2004), speaking from an Anishinabe perspective, points out the difference and argues that the Indigenous view of TEK manifests their intrinsic and holistic relationship with the environment as opposed to the Western view of TEK wherein colonial attitudes take precedence when acquiring knowledge of Indigenous peoples. She further adds that “to understand where TEK comes from one must start with Indigenous people and our own understanding of the world” (p. 386).

In discussing Indigenous peoples’ worldviews imbued in their TEK, the book *Native Science, Natural Laws of Interdependence* by Native scholar Gregory Cajete (2000a) provides insights into the fundamental values and methodology approaches of Native science.

Cajete states that:

“Native science is a broad term that can include metaphysics and philosophy; art and architecture; practical technologies and agriculture; and ritual and ceremony practised by Indigenous peoples both past and present. More specifically, Native science encompasses such areas as astronomy, farming, plant domestication, plant medicine, animal husbandry, hunting, fishing, metallurgy, and geology—in brief, studies related to plants, animals, and natural phenomena. Yet Native science extends to include spirituality, community, creativity, and technologies that sustain environments and support essential aspects of human life”

(Cajete, 2000a, p.3).

Cajete (2000a) argues that the distinctive Native science has its basis in the relational worldview of Indigenous knowledge; it is, he says, about “honouring the primacy of direct experience, interconnectedness, relationships, holism, quality and value” (p. 66).

While there are, various overlapping terms associated with TEK such as Indigenous knowledge, ecological knowledge and traditional knowledge (Berkes & Folke 2002;

Menzies, 2006), this investigation adopts the concept of *traditional knowledge*. This is because traditional knowledge is dynamic and evolves and flows within the knowledge system of each community and is closely related to the Indigenous view of TEK (Battiste and Henderson, 2000; Cajete, 2000b; LaDuke, 1999; Whyte, 2003; Wildcat, & Pierotti, 2000).

To explain further, traditional knowledge is rooted in Indigenous peoples' worldviews and is shared through stories and teachings acquired by both living and non-living beings (plants, water, and the moon) as well as from personal experiences, with all community members of the environment (Kimmerer, 2013; Meyer, 2008). It is akin to what different Indigenous researchers refer to as native storytelling (Berkes, 2012; Pierotti, 2010). In the literature of TEK, traditional knowledge is often interpreted as a subcategory of TEK (see Bohensky & Maru, 2011; Berkes & Folke, 2002). McGregor (2009) argues that traditional knowledge is place-based and therefore it cannot be subcategorised or confined to a specific source of knowledge.

Most of the definitions related to TEK, such as traditional knowledge, stem from Western science rather than from Indigenous peoples. In fact, this is one of the reasons why Indigenous peoples disagree with the use of TEK as a term used to denote their knowledge systems. In North America, Indigenous peoples are opting for alternative definitions that are more aligned with their unique and dynamic knowledge systems, such as Indigenous science and Indigenous knowledge (Battiste & Henderson, 2000; Cajete, 1994; Deloria, 1992), and *minobimaatisiwin* (LaDuke, 1994; 1999). These alternative TEK definitions highlight the importance of recognising the distinction between Western approaches to TEK and the Indigenous perceptions of it (LaDuke, 1993; Pierotti, 2010).

The discourse of TEK has existed in Indigenous societies since time immemorial. However, Indigenous knowledge still lacks recognition in modern society (see Battiste, 2001; Deloria, 1995; 1999; Cajete 2000a, 2005, 2015; Henderson, 2000; LaDuke, 1994, McGregor, 2009). Moreover, issues about scientific knowledge often take precedence over traditional knowledge and pose further challenges for TEK not being valued as highly as Western science (see Henderson, 2000; McGregor, 2004; 2005).

LaDuke comments on this fact, noting that “we who live by this knowledge have the intellectual property rights to it, and we have the right to tell our stories ourselves. There is a lot to learn from our knowledge, but you need us to learn it” (LaDuke, 1993, p. 37). Although LaDuke's statement may raise concerns about whether TEK can or cannot be used

to conduct research on Indigenous peoples, it expresses the frustration of Indigenous peoples towards scientific approaches to research.

From an Indigenous stance, LaDuke (1994) argues that Indigenous cultures are exemplars of today's sustainable living. However, they are always challenged by Western scientists to validate their ability to provide information on best practice for the management of natural resources, which erodes an appreciation for TEK. Notably, Indigenous scholars' work on TEK has been fundamental in validating the TEK theory from an Indigenous standpoint (see Battiste, 2011; Cajete, 2000a; LaDuke, 1994, 1999, 2002, 2005; Henderson, 2000, Kimmerer, 2002; Little Bear, 1998; Whyte, 2003).

I argue that the study of TEK is possible as long as research is conducted with the attitude to work *with* and *for* the benefit of Indigenous communities. It would also require the implementation of Indigenous methods. It is within this area that I endeavour to extend the TEK theory to the study of Quechua and Māori knowledge systems. This study supports the view of Indigenous scholar Kyle Whyte (2013) who argues that “the concept of TEK should be understood as a collaborative concept. It serves to invite diverse populations to learn continually from one another about how each approaches the very question of knowledge” (Whyte, 2013, p. 1).

Therefore, the aim of this study is to work in partnership with Quechua and Māori communities to establish whether their TEKs are solid, empirically-based, worthy of being considered a scientific body of knowledge, and possessing theory comparable to the Western model. Specifically, this study proposes to extend the TEK theory from an environmental preservation standpoint to the social/cultural aspects of Quechua and Māori people as seen through an Indigenous theoretical lens (Henderson, 2000; LaDuke, 1994; 2005).

The Andean and Māori cosmovisions and good-living philosophies representing their cultural landscape are a case in point, and they are explained further below.

### **2.3 Background of Quechua of the Andes**

*Pachamama qanpaqmi kay manaraq ujasqa ajata haywayki*

Mother Earth for you I pour the first sip of liquor

*hinaspiapas mosqoykunaq lachiwantapas*

And honey from the place where dreams emanate

*aswan sumaq mijunakunata chayraq rijurimuq khunan rurukunata*

The tastiest of dishes and the freshest first tubers

*aswan sumaq choqllokunata llasan rayku wikapaqta*

The numerous panicles, those who surrender because of their weight

*aswan sumaq t'ikakunaq raphinkunata, aswan k'anchar rimaykunata*

The petals of the most beautiful flowers, the most beautiful words

*runakaq aswan llanp'u sonqo hatun willakuq waqaychayninta*

The most tender, the most humane words that keep sublime and deeper meanings

*nanachiqkunata hinaspa hukaq puñuq yuyay riqch'arichiqta*

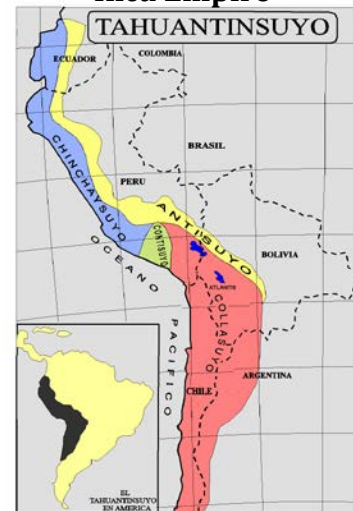
Those that hurt and others that awake from a state of lethargy

~Pachamama, challa – **Omar Aramayo**, A quechua poet~

### 2.3.1 Quechua people: Brief profile

The Andean highlands that stretch along the western coast of South America offer many examples of spectacular beauty. The same highlands are home to the Andean civilisation that dates back from approximately 16,000 BC, and comprise various Andean cultures such as Moché, Chavín de Huantar, and Inca. The Inca Empire in Peru was the largest and most influential of these cultures since these people expanded their Indigenous Andean worldviews over what now represents the countries of Bolivia, Ecuador, Argentina, Chile, and the South of Colombia – this Inca territory is referred as Tahuantisuyo: Inca Empire (Espinoza, 1987).

**Figure 2: Tahuantisuyo: Inca Empire**



The Tahuantisuyo (see Figure 2) saw the rise of the Inca society which lasted for approximately 95 years (1438-1533 AD). The Inca society was based on the Andean productive agricultural system based on traditional crops grown at high altitudes. Further, Inca agricultural systems were complemented with innovative irrigation systems and traditional farming techniques. The four Quechua communities where I conducted my empirical research are nestled high in the southern Andes: at this altitude, one experiences a brown landscape because trees are not numerous with the exception of the ayllu of Choquecancha in the province of Lares. Nevertheless, I witnessed that the main form of subsistence in these Quechua communities is agriculture, based on traditional practices.



Altieri (1995, 2016) states that one of the country's competitive advantages in the agricultural sector is the Indigenous agricultural knowledge regarding traditional irrigation and vegetation systems, which are now considered sustainable farming techniques. Quechua peasants<sup>12</sup> for centuries have made use of their Indigenous agricultural heritage to develop varied and locally-adapted farming systems (Altieri, 1995; Scott, 2011; Salas, 2013). This agricultural knowledge has enabled them to gain community food security and the conservation of agro-biodiversity (Altieri, 2013; Mayer, 2002; Rengifo, 1998). For instance, the large-scale irrigation system of canals built up by Quechua peasants to divert water from rivers descending from highland areas to irrigate foothill slopes are clear examples of a sustainable traditional farming system.

Peru is one of the countries with the highest level of biodiversity in the world (ANDES, 2012, ETC Andes, 2011, FAO, 2016b, Scott, 2011). For example, Andean biodiversity comprises of over 2,500 varieties of potatoes, as well as other valuable Andean crops such as corn, tubers such as uqa<sup>13</sup> and quinoa<sup>14</sup>, and root crops like maca<sup>15</sup> (Argumedo, 2013; Altieri, 1995, Institute for Agricultural Research (INRA), 2014; Earls, 1991; Jacobsen, Mujica and Ortiz, 2003). However, Quechua communities in the highlands of Peru are one of the most vulnerable groups to food insecurity (FAO, 2015a; Ministerio de Desarrollo e Inclusión Social, 2015).

### **2.3.2 Andean cosmivision**

“Many Indigeneity elements, practices, strategies, and symbols both material and non-material, make up the sum of ‘Lo Andino’ (Andean worldviews)”

(Gade, 1999, p. 36).

The Andean cosmivision reflects a holistic condition of equilibrium and harmony with the cosmos and all their relations (humans and all non-living things) (Huanacuni, 2010; Gudynas, 2014; Lajo, 2005; Jaramillo, 2010). One overriding factor to take into account when learning about the Andean cosmivision is that it is mystic in essence (Espinoza, 1987; Dávalos, 2008; Lajo, 2012). Mysticism is the belief that stories or words distil values and beliefs that have an effect on how one connects directly with the sacred underlying nature of reality, and that it is that connection with the sacred that is of fundamental importance

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<sup>12</sup> Peasant is used in this thesis to mean a person who owns or rents a small piece of land and grows crops on it.

<sup>13</sup> Uqa in Quechua and Oca in Spanish is a yellow and purple tuber that grows in the Andean highlands (Mendoza, 1987).

<sup>14</sup> This crop has high nutritional value since its high protein content is higher than wheat or rice (Jacobsen, Mujica and Ortiz, 2003).

<sup>15</sup> Maca is a root crop that has its origins in the highlands of Peru; it is relatedly unknown in the food academic literature despite its high levels of proteins. It is also used as medicinal herb (Argumedo, 2013).

(Grimm, 1991). Another important aspect of Andean cosmovision is their basket of knowledge referred to as *yachay*<sup>16</sup> in Quechua (*saberes* in Spanish).

*Yachay* reflects Quechua people's cultural affirmation of being the inheritors of diverse and unique knowledge embedded in their cosmovision (Andean Project of Peasant Technologies (PRATEC); 2005; Grillo, 1991; Gonzales, 2015; Ishizawa and Rengifo, 2009). *Yachay*, like *tikanga* and *mātauranga Māori*, is about ways of knowing, rituals, ceremonies, and ways of life and living of Andean people (Apffel-Marglin, 2012; Lajo, 2011; PRACTEC, 2005).

Gonzales and Gonzales' (2010) offer valuable insights on *yachay*, designed to assist in understanding the unique epistemological viewpoint of the Andean people.

“In the Andean world, *los saberes* (knowing) is a result of the here and now, of living in conversation with and between everyone and everything. Conversing and cultivating are not the exclusive privilege of the human collective. Andean Indigenous culture is one of nurturance through a flowing and continual conversation among the three collectivities that comprise the local *pacha*. These three collectivities cultivate *ayllu* (natural collectivity) ... Knowing is dependent on what takes place in each *chacra*, where specific *saberes* are given”

(Gonzales and Gonzalez, 2010. p. 93).

Continuing with the description of the Andean cosmovision, there are three main worlds that govern the Andean cosmovision (Apffel-Marglin, 2012; Garcia, 2004; Lajo, 2005):

**Janaq patsa:** Upper world or cosmos

**Kay patsa:** real world, visible

**Ja-wa patsa:** intangible world: darkness, invisible forces.

Additionally, three central Andean tenets are considered to be the most significant obligations between humans and Pachamama and are ingrained in the *Allin Kawsay* (PRACTEC, 2005; Gonzales, 2015).

Lajo (2011) details the three principles that define the *Allin Kawsay* as:

***Allin Ruay:*** Means ‘do good deeds’ through ethical behaviour at all times.

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<sup>16</sup> The Quechua word of *yachay* (knowing) is used throughout this dissertation.

***Munay Allin***: Expresses the view that to co-exist in harmony with Pachamama and achieve 'good living', humans ought to deeply love non-humans (sea, mountains, and rivers).

***Allin Yachay***: This principle refers to thinking wisely or to being a wise person to ensure social fairness within communities.

Andean cosmovision is also linked to the study of astrology that plays a key role in Incan culture, particularly in agriculture, and is explained below (Earls, 1991; 1998; Mayer, 2002).

### ***The Milky Way seen through an Andean lens***

At the beginning of ancient times, long before the existence of Peru or the arrival of the Spaniards, the ñawparunakuna<sup>17</sup> observed and interpreted the immense dark sky illuminated by millions of stars and planets. The knowledge of the cosmos was imperative to the Inca culture, and Inca people built temples to worship their most sacred gods (Estermann, 2007; Lajo, 2008; Niles, 1999). The Inca built observatories where they captured the first and last rays of the sun through a series of specially placed windows referred to as Qurikancha<sup>18</sup>, which was covered completely in gold, and located facing the rising sun (Bauer & Dearborn, 1995; Grillo, 1991).

Andean people's close interaction with the constellations enabled them to identify not only planets such as the Qhatu Illa (Mercury); Ch'aska (Venus) Awqayuq (Mars); Phirwa (Jupiter); Hauch'a (Saturn) and Qoyllurkuna (stars), but also constellations such as Scorpio, and assigned them a purpose (Bauer & Dearborn, 1995; Urton, 1984).

Andean people highly regarded the constellations because they made use of their intimate knowledge of them to guide their agricultural system. For example, in the Andean world, when the Willkawara appears at its zenith at nightfall at the autumn equinox (March 21), and this symbolises the beginning of a good harvest season (Pacheco, Flores & Salazar, 2011; Urton, 1981; Zuidema, 1982). Andean wisdom is embodied in the concepts of Pacha Qhaway (cosmovision), Qoyllur yachay (astronomy), Yupaykamay (mathematics), and Watapacha (calendar), among others. These formed the basis for the flourishing and advancement of Andean civilisation, especially its agricultural systems (Estermann, 2007; Lajo, 2005).

Lajo (2011) and Estermann (2007) argue that the *wara wara jawira* (Milky Way) has a great influence on the Andean people's traditions, festivals and beliefs. In addition,

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<sup>17</sup> Andean forebears in Quechua

<sup>18</sup> Qurikancha in Quechua means 'quri' – gold and 'kancha' – enclosure. Qurikancha is the name given to the Inca archaeological sites that have a golden enclosure design.

Andean people believe that the *wara wara jawira* was a life-giving river in the heavens, and its earthly counterpart is the Urubamba River in the Sacred Valley, high up in the Andes Mountains, in what is now Peru (Bauer & Dearborn, 1995; Earls, 1998; Garcia, 2004; Pacheco, et al., 2011). Andean people studied and subsequently understood the winter and summer skies, each with their own constellations, and had myths and ceremonies to honour them (Apffel-Marglin & PRATEC, 1998; Espinoza, 1987; Urton, 1981).

The Sabios Andinos<sup>19</sup> discovered that in the Southern hemisphere, the constellations of Scorpio, Sagittarius, Argo Navis and Centaurus dominated the winter skies. The constellations of Orion, Taurus, and the Southern Cross among others dominated the summer skies (Ferreira & Dargent-Chamot, 2003; Malville, 2010). Mach'acuay (Serpent in Quechua) is one of the dark constellations that have the figure of the Serpent, and its location is between Canis Major and the Southern Cross.

An interesting fact about the Mach'acuay is that the shape of its body begins to take form from August and an appreciation of its full shape in February, which coincides with the Andean rainy season that takes place between the months of December to February (Pacheco, et al. 2011; Urton, 1981). Snakes are commonly found in the Amazon and to a lesser extent in the highlands of Peru. However, in the mythology of Andean people, the serpent referred to as *amaru* in Quechua is the symbol of wisdom, and is considered holy because in the Andean traditions *amaru* protects the Andes (Huamán, 2011). Peruvian historian Mendoza (1987) explains that Mach'acuay rises in the cosmos to oversee all snakes on Earth, protecting them and helping them to procreate.

Further, knowledge about the *wara wara jawira* enables Andean people to recognise one of the major bright constellations in the Southern hemisphere referred to in Quechua as the *Wak'a Jach'a Qhana*, or *chakana* (Andean Southern Cross) (Garcia, 2004; Lajo, 2012). The *chakana* is one of the most fundamental constellations in the Andean world (Garcia, 2004, Rengifo, 1998). The twelve corners of the *chakana* exemplify the twelve festivals of the Inca Calendar such as the *Inti Raimi* (Festival of the Sun) and *Capac Raimi* (Great Festival) (Bauer & Dearborn, 1995, Pacheco, et al. 2011). In Andean folklore, the *chakana* can be looked upon to shed insight into the study of the *pacha* (cosmos or temporal and spatial time), and has four important corners that symbolise the location of the north, south, east and west hemispheres. Although the interpretation of the *chakana* may vary in each *ayllu*, the essence of it as one of the most accurate natural indicators for their harvesting

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<sup>19</sup> Sabios Andinos: wise Andean men. Additionally, the word *paqos* is used in Peruvian folklore.

seasons is acknowledged in the Andean literature (Huamán, 2011; Lajo, 2012; Malville, 2010; Rengifo, 1998).

I will here expand on the concepts of temporal and spatial time, and subsequently on the meaning of pachatata and Pachamama imbued in Andean cosmovision.

### ***Temporal and spatial time: Pacha in Quechua***

Quechua is a polysynthetic<sup>20</sup> language; it has various forms of interpretation. For example, in Quechua, the term pacha (cosmos) has different connotations. Huanacuni (2010) explains that pacha is made up of the phrase ‘pa’ that comes from the words ‘paya’ (duality) and ‘cha’ derives from the word ‘chama’ (force). Lajo (2012) further describes pacha as temporal, spatial time, era, and date.

Therefore, pacha could be interpreted as two cosmic forces; visible and invisible seamlessly interacting with each other (Grillo, 1991; Zuidema, 1989, Lajo, 2005). This study acknowledges pacha as the place where space-time is sustained – cosmos (Lajo, 2012).

### ***Pachatata and Pachamama: A complementary duality in Quechua language***

For Andean people, the cosmos is the result of the fertilisation that began with two significant life forces (Mendoza, 1987; Web, 2012; Zapata, 2014). These two life forces, the masculine force of *Pachatata* or *Pachakana* – Father of space and time or Father Cosmos, and the feminine force of Pachamama – Mother of space and time or Mother Cosmos, encapsulate their principle of *yanantin* or duality and complementation (Apffel-Marglin, 2012; Proyecto Andino de Tecnologías Campesinas (PRATEC), 2005; Web, 2012).

The principle of *yanantin* (duality), forms the basis of the Andean cosmovision and plays an important role in the attainment of the good-living philosophy of Allin Kawsay (Argumedo, 2010; Dávalos, 2008; Lajo, 2011; Lorenzo, 2009).

### **2.3.3 Allin Kawsay: Buen vivir/good living in Peru**

In the Andean cosmovision, Allin Kawsay has been passed on from generation to generation through oral history (Espinoza, 1987; Lajo, 2012). The *sumaq* or Allin Kawsay (in the Quechua language) or *suma qamaña* (in the Aymara language) expresses *the good-living philosophies of practice* of the Indigenous peoples of Peru, Ecuador and Bolivia (Quijano, 2011; Lajo, 2012; Lorenzo, 2009).

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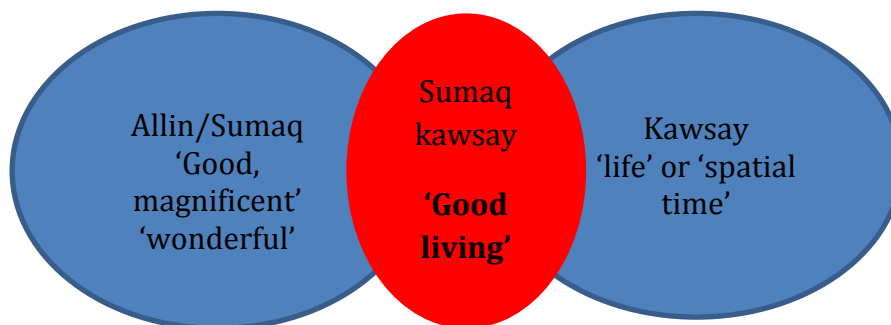
<sup>20</sup> Languages in which words are composed of many morphemes (word parts that have independent meaning but may or may not be able to stand alone) (Mendoza, 2010).

Notably, while Allin Kawsay is the Quechua term understood to be the good-living philosophy in the Peruvian highlands, it is *sumaq kawsay* in Ecuador and Bolivia (Gudynas, 2011; Lajo, 2011). Because this research was conducted in the Peruvian highlands, the Quechua phrase of Allin Kawsay will be used throughout this thesis to refer to the good-living philosophy of the Quechua people of Peru.

The Spanish translation of the Allin Kawsay is ‘buen vivir’ and the English translation is good living, and it represents the Andean worldview for the attainment of sustainable living (Cunningham, 2010; Lajo, 2005, 2011; Peña, 2008). The Allin Kawsay embodies the notions of living in harmony and equilibrium within oneself, within the community and with Pachamama (Lajo, 2011).

Academic literature about the Allin Kawsay concept in Peru is limited except for writing by the Peruvian Indigenous scholar, Javier Lajo (2008; 2011; 2012). Lajo (2008) reasons that the philosophical structure of the Allin Kawsay has its roots in the Quechua words of ‘Sumaq/Allin Kawsay’ specifically, from the phrase below:

**Figure 3: Illustration of the origins of Allin/Sumaq kawsay**



Source: Adapted from Lajo (2005).

As illustrated in Figure 3, the combination of these two Quechua words leads to the meaning of the Allin Kawsay concept and represents the well-being principle of both the Andean and Amazonian peoples of Peru (Association for Conservation of Nature and Sustainable Development (ANDES) Argumedo, 2013; Lajo, 2005; 2011). Moreover, the Allin Kawsay concept encapsulates three central Andean beliefs, which in the Andean worldview are considered to be the most important principles governing relationships between humans and Pachamama (Jaramillo, 2010). Lajo (2011) details the three beliefs that define the Allin Kawsay concept below.

### **The Three Beliefs that Define Allin Kawsay**

The Allin Kawsay concept embraces the Andean worldview of ‘collective knowledge’ represented in the tenets of reciprocity, duality and equilibrium (Dávalos, 2008;

Lorenzo, 2009). This Andean concept suggests that humans adopt the philosophy of 'equilibrium' and harmony within themselves and between themselves, which are explained briefly below.

**Ayninakuy (Ayni) – Reciprocity:** What is received must be returned in equal measure. Ayni is defined as mutual assistance, and can be applied both to people and to elements of nature. An illustration of this principle is in the seed exchanges among the communities and the distribution of agricultural work (Argumedo, 2010).

**Yanantin – Duality/Equilibrium:** This comprises rights and obligations from both men and women which, while differentiated, do not denote superiority or subservience, but mutual interdependence, with the view to achieving harmony and maintaining equilibrium. An example is in the transmission of 'knowledge' related to agricultural practices where they both work together on the land (Apffel-Marglin, 1998; Lajos, 2008).

**Rakinakuy: Harmony/Balance:** This refers to being in harmony and balance with Pachamama, the cosmos and among all living things. Examples are respect for nature, mountains, and the resolution of conflicts to restore social harmony. These are complementary, including between ecological niches (Lajo, 2008).

Although the Andean concept of Allin Kawsay has been practiced for centuries by Andean people, it is a philosophy of practice that has not been studied extensively in Peru, specifically linked to food security (Argumedo & Stenner, 2008; Lajo, 2011; Muñoz & Viana, 2013; Salas, 2013).

## 2.4 Background of Māori of Aotearoa

**Tihere – mauri ora!**  
I sneeze – it is life!  
**Whakarongo! Whakarongo! Whakarongo!**  
Listen! Listen! Listen!  
**Ki te tangi a te manu e karanga nei**  
To the cry of the bird calling  
**'Tui, tui, tuituia!'**  
'Unite, unite, be one!'  
**Tuia I runga, tuia I raro,**  
Unite above, unite below  
**Tuia I te here tangata**  
Unite in the brotherhood of man  
**Ka rongo te po, ka rongo te po**  
The night hears, the night hears  
**Tuia I te kawai tangata I heke mai**  
Unite the descent lines  
**I Hawaiki nui, I Hawaiki roa,**  
From great Hawaiki, from long Hawaiki,  
**I Hawaiki pamamao**

From Hawaiki far away  
**I hono kite wairua, kite whai ao**  
Joined to the spirit, to the daylight  
**Ki te Ao Marama**  
To the World of Light  
*~A patere – chant~*  
(Stirling & Salmond, 1980, p. 39)

#### 2.4.1 Māori people: Brief profile

The longstanding relationship that Māori have with food, including kaimoana (seafood), dates back to pre-colonial times (Schwimmer, 1991; Moeke-Pickering, et al. 2015). When Māori ancestors first arrived in Aotearoa, they had to adjust to the environment and climate conditions of the new land to grow crops that they had brought with them, such as yam, taro and kūmara (sweet potato) (Rubel & Rosman, 1971; Roberts, Weko & Clarke, 2006).

However, the cold temperatures in the new land proved to be a challenge to growing Polynesian crops. Only the kūmara was successfully cultivated throughout Aotearoa. Thus, the kūmara is regarded a sacred crop for Māori. Māori love and devotion for their kūmara resonates with Māori's folklore about the myth that God Rongomātāne despises war and violence and thus hides in the earth. His offspring are the kūmara. Additionally, the kūmara is highly regarded due to its nutritional value, and as an excellent source of vitamin A, vitamin C, fibre and potassium, as well as having a delicious taste (Simmons, 1976; Mahuika, 2012).

Māori traditional foods are taro, which was brought to Aotearoa from Polynesia, and according to Māori mythology Kupe left taro for his daughters who were living on the Wairarapa coast. These crops are best planted in the months of September through October. Yam, kōmata (cabbage tree), pūha (a green vegetable), pikopiko (fern shoots), and karaka berries are some other important edible plants. Some kaimoana such as īnanga (whitebait), karengo (seaweed), and koura (crayfish) are also dietary staples. Taewa riwai (Māori potatoes) are some of the most deeply treasured Māori foods available today. However, they are not native to Aotearoa but instead originate from the Andean highlands (Roberts et al., 2006; Ropiha, 2000; Rubel & Rosman, 1971).

The importance of land for Māori people's food sustenance is explained by Marsden (2003) below:

“Whenua was the term for the Natural Earth. It was also the term for ‘after-birth’ –placenta. This use of the term ‘whenua’



served as a constant reminder that we are born out of the womb of the primeval mother.” (p. 45).

Further, Best (1986) argues that Māori agricultural systems are governed by Māori worldviews, tikanga, and are also in connection with Matariki. Matariki is the Māori word to describe the cluster of many stars (the Pleiades) which appear just before dawn on the north-eastern horizon towards the end of Haratua (May). It also symbolises the beginning of the Māori New Year wherein celebrations for the next harvesting season take place (Best, 1986; Tapsell, 2002).

By the 1860s, a decline of traditional agriculture practices was evident with the loss of Māori land (Durie, 2003; Jackson, 1993b; Orange, 1987; Puckey, 2011; Kawharu, 2002; 2010; Walker, 1991). Almost a century later, in the 1950s, the traditional agricultural systems of Māori in the North Island experienced a process of change with the introduction of tobacco and kauri gum (Puckey, 2011). Presently, according to the Ministry of Business, Innovation and Employment (MBIE), the contribution of the Māori economy for the country represents approximately 37 billion, and fishing, forestry, and cattle production represent the largest source of income (MBIE, 2016).

Health and food security reports such as the Public Health Commission (1995) and Obesity Action Coalition (2009) report stated that the country’s food supply was in position to provide safe and nutritious food to its population, and this situation has not changed (Ministry of Social Development (2016). However, statistics show that the population of Aotearoa, specifically its Indigenous population, is experiencing a lack of food security (Hutchings, 2015; Stevenson, 2011; Rosin, 2013). Moeke-Pickering, Heitia, Karapu, & Cote-Meek (2015) and Hutchings (2015) argue that although the country has the competence to produce healthy food for Māori, dispossession of Māori from their land and the disintegration of cultural values tightly linked to the land, have threatened traditional food production and well-being for Māori.

#### **2.4.2 Māori worldviews**

According to Hēnare (2003), a Māori worldview describes “a belief in life forces, and their significance in society and nature and Māori see themselves as descendants of spiritual powers, and as such are partners with those powers in a physical and spiritual universe” (p. 47).

Marsden (2003) describes the meaning of a Māori worldview:

“Māori conceives of it (the universe) as a two-world system in which the material proceeds from the spiritual, and the spiritual which is of a higher order interpenetrates the material physical

world of Te ao Marama...In some senses, I suspect the Māori had a three-world view, of potentiality being symbolised by Te Korekore, the world of becoming portrayed by Te Pō, and the world of being, Te Ao Mārama” (p. 20).

The above quote distils the philosophical discourse on Māori worldview that embodies the holistic notion that the universe is a system consisting of a series of interconnected realms or worlds; natural, human, spiritual and sacred worlds (Best, 1982; 1986; Marsden, 2003; Wolfgramm, 2007; Reed, 1963). This section starts with a synopsis of key Māori concepts imbued in their worldviews: mātauranga Māori<sup>21</sup> (knowledge system), creation mythologies, whakapapa (genealogy), and traditional Māori religion. Each of these concepts is explained in-depth in the analysis in Chapter VI, revealing the subtleties that make the Māori worldview a unique one.

### ***Mātauranga Māori***

Mātauranga provides the knowledge foundation of Māori about their ancestral traditional bond with the ecosystems and governs how they see and interpret the world (Durie, 2009; Moko Mead, 2003; Royal, 2009; Walker, 1991). Further, key concepts that complement mātauranga Māori are Te Reo Māori (Māori language) and whakapapa (Best, 1986; Marsden, 2003; Pohatu, 2005; Royal, 2009; Salmond, 1997; Schwimmer, 1979; Walker, 1990; 1991).

In relation to a Māori knowledge system, while each tribe has slight variations in the myths of Māori creation, a common structure underlies all the Māori tribes, and that is the essence of mātauranga Māori. Mātauranga Māori represents the Māori Indigenous view whereby they see and interpret the world (Durie, 1998; Moko, Mead, 1986, Marsden, 2003, Royal, 2009, Best, 1973; 1982; Reed, 1963, Walker, 1990, Metge, 1976, Henry and Pene, 2001, Salmond, 1983).

### ***Mythology***

A cosmological community of divine beings (nga atua) performs a central role in Māori mythology (Wolfgramm & Waetford, 2015). This is highlighted in the creation account of Māori forebears Ranginui (Sky Father) and Papatūānuku (Mother Earth) whose offspring became the gods of the natural world, such as Tangaroa (God of the Ocean) and Tawhirimatea (God of the winds). It is captured in accounts of the atua Māui (great hero),

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<sup>21</sup> See extensive and comprehensive analysis of this in Te Kaimānga: Towards a new vision for Mātauranga Māori, (Royal, 2009). Also, see The Astronomical Knowledge of the Māori, Best (1986); Tikanga Māori: Living by Māori values (Moko Mead, 2003); Basic Concepts in Māori Culture, Metge, (1976); The Maori people of today, Ngata, Sir Apirana (1940).

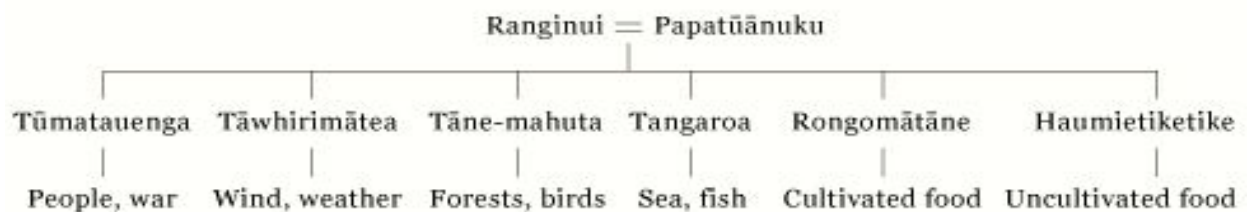
and Kupe (great navigator who first discovered Aotearoa) (Barlow, 1993; Moko Mead, 2003; Salmond, 1991; Stirling & Salmond, 1980; Walker, 1991). Māori mythology represents an instrument for the reciting of events in chronological order.

**Whakapapa – genealogy**

Wolfgramm & Waetford (2015) described whakapapa as “the layering of relationships across a relational cosmology” (p. 239). According to Salmond (1976), the genealogy of Māori begins in a time before creation. Once the Hawaiki was born, then the gods were made. Ranginui (Sky Father) and Papatūānuku (Earth Mother) had several children and all of them were supernatural beings (Bauer, 2006; Best 1976; Mead, 2003; Salmond, 1976).

The whakapapa chart below shows some of the children of Papatūānuku and Ranginui, who in Māori views are the ancestors of all parts of nature: peoples, forest, fish, winds and water (Salmond, 1980).

**Figure 4: Whakapapa: Papatūānuku’s children**



Sources: From Salmond (1991 p. 25)

The young gods lived so confined and restricted within the closeness and the darkness of the parental union that they conspired to separate them and create a world of light. Māori traditions recount how Tāne enlightened the world by forcing his parents apart so that they no longer embraced and clung together as a union. However, such actions by Tāne also brought family quarrels; for example, some of the children remained on and within Papatūānuku, while others followed and remained loyal to Ranginui (Salmond, 1978).

Tāne was also known as the origin and personification of trees and birds, and is believed to have made a woman from the earth known by several names, one of which was Hine, and he mated with her. All that Tāne had sought and hoped for he found in his relationship with Hine and from their mating humanity was born in Hawaiki, and a new era began (Salmond, 1976; Williams, 1975; Walker, 1991). According to this version of the

origins of mankind, the fruits of that union still exist. Tāne is the Māori world for man and wāhine for a woman (Best, 1982; Williams, 1975).

The importance of knowing one's whakapapa is imperative for cultural identity (Walker, 1991, Moko Mead, 2003). While there is no single exact measure of what constitutes Māori identity (Durie, 1994; 1997), determining the links between a Māori person's whakapapa with an iwi is necessary for affiliation to an iwi and the benefits of belonging to one (Bishop, 2008; Durie, 1997; Stirling & Almond, 1980).

### ***Traditional Māori religion***

The scholarly body of Māori studies (for example, see Best, 1982, 1973; Barlow, 1997; Durie, 1994; Hēnare, 2003; Marsden, 2003, Metge, 1976; Shirres, 1997, Smith, 1974) explored religious beliefs, rites and metaphysics highlighting that wairuatanga (wairua) (spirituality) was arguably the most fundamental feature of a Māori worldview. Māori saw the physical realm being immersed in and integrated with the spiritual realm (Barlow, 1991; Moko Mead, 2003). In Hēnare's (2011) view, foundational principles of a Māori worldview are embodied within a "corpus of cosmological and metaphysical knowledge" (p. 47) out of which a mystical matrix of principles of life and being emerge. Examples include mauri (life-force), mana (prestige), wairua (spirituality), tapu (sacredness), utu (the principle of equal return), and uhu (vital essence, vitality).

*Mauri:* is considered an elemental energy derived from the realm of Te Kore (the Void) out of which the universe is created. Marsden (2003) describes mauri as the life-force that generates and regenerates and upholds creation and is the bonding element that gives creation its unity in diversity. Further, mauri can also be referred to as the ethos of animate and inanimate things and the essence of people, lands, and forests and so forth. Examples are mauri o te tangata (mauri of a person), mauri o te whare (mauri of the house) and mauri o te kumara (mauri of the sweet potato) (Barlow, 1981; Durie, 1998; Marsden 2002; Walker, 1991).

*Utū:* there is a value placed upon utu as compensation, or revenge, or reciprocity (Durie, 1994). Life is kept in balance by the principal of utu (reciprocal exchanges) which operates in relations between individuals, groups and ancestors. The main purpose of utu is to maintain relationships (Metge, 2001). In the context of utu being linked with mana, utu is a human way of protecting mana. For instance, a person or group will reciprocate regarding what they receive, whether it is good or bad, because of the challenge such an act represents to the concept of mana (King, 1992; Moko Mead, 2003).

*Mana*: the meaning of mana includes spiritual influence, control, prestige and power (Williams, 1957). *Mana tūpuna*: people with this kind of mana draw their influence and power from their ancestors, and so mana could be inherited at birth (Marsden, 2003; Metge, 1976). *Mana tangata*: may be given to whole tribes of people because they have gained a reputation for excelling in some particular area such as war, marriage, or hosting and feeding visitors (Moko Mead, 2003). Mana can also be bestowed on charismatic people; for example, it can be given to a person with the ability to influence a whole range of others, including hapu (subtribes) (Hēnare, 2003). The psychic mana that is vested and passed down genealogically is the type of mana that can help people become released from tapu and give spiritual protection to their relationships. The mana of such people is referred to in Māori as *tōhunga*, and they are highly respected and valued. Mana permeates the ethos of Māori life in subtle ways and is associated with *aroha* (love) and *utu* (Salmond, 1991; Walker, 1991).

*Wairua*: It is the spirituality that connects the self and groups to a cosmological community of gods and divine beings (Shirres, 1997; Walker, 1991; Wolfgramm, 2007). A dominant belief in spiritual forces governed and influenced the way Māori interacted with the land (Durie, 2009; Hēnare, 2011; Tapsell, 2002). Wolfgramm (2007) provides a Māori epistemology of the word *wairua* offered by *tōhunga* Fraser Tawhai (Whakatōhea), in which he explains that in a metaphysical sense, “*wa*” refers to the eternal and dynamic interaction between light and movement, *i*, intimates the divine within, *u* (as in *ru*) refers to fulfilment without end, and *a* refers to the impact of light on growth (p. 85). For Māori, *nga atua* are common to all tribal areas and are often referred to in Māori tribal knowledge. However, each *iwi*, *hapu* and *whanau* may have their own interpretations of *nga atua* (King, 1992; Moko Mead, 2003).

*Hau*: Williams (1957) explains that *hau* is considered a spiritual power and interprets the word as “vitality of man, vital essence of the land, etc.” (p. 39), which is embodied in a person and transmitted to their gifts or anything they consider valuable. *Hau*, or vitality in this context, was needed to master the art of successful exchanges. *Hau* is also considered as reciprocal exchanges. For Māori, all forms of life had *hau*, including things and people. In the case of individuals, this included the *hau* of their ancestors’ gods, called up by the *tōhunga* at their birth and bound in them (Best, 1982; Hēnare, 2003; Moko Mead, 2003).

*Tapu*: References spiritual restriction, ceremonial restriction or putting something beyond one’s power. *Tapu* establishes social control and discipline and protects people and property (Hēnare, 2001; 2011; Stirling & Salmond, 1980; Rangihau, 1992; Shirres, 1982). An example is that fire can be regarded as *tapu* in food ceremonies, such as the ones held in honour of *Rongomātāne* (God of the *kūmara*). When the *kūmara* is planted, a Māori

kaumātua would perform a karakia (prayer) in the name of Rongomātāne, and when the God dwelt in the fire, then the kaumātua honours him through chants and asks him to bring a good harvest. A fireplace used for such purposes, but not an ordinary cooking fire, would be tapu (Smith, 1974; Salmond, 1999). Shirres (1997) argues that each tribe has its understanding of tapu and what one Māori writer from a one tribe could be referred to tapu, another could refer to as mana. Therefore, “different words are used for the same reality, and the use of the different words itself gives us a better understanding of that reality” (Shirres, 1997, p. 33).

Traditional Māori religion in post-colonial times specifically from the late 1820s experienced a period of adaptation in their belief system (Walker, 1991). The religion of Christianity was embraced by a large proportion of Māori people, resulting in the adjustment of moral practices, religious lives and political thinking. An example of post-colonial impacts on religion relates to the tribal interpretations of the Io tradition<sup>22</sup> (Hēnare, 2003; Reed, 1963; 2004). On the one hand, some iwi recognise the Io tradition as the one supreme God-creator derived from the Christian teachers of the Māori people. On the other hand, some iwi does not acknowledge the Io tradition as part of traditional Māori religion<sup>23</sup>.

I bring this section to an end by highlighting that a substantial body of literature argues that the essence of a Māori worldview is centred on key cultural components such as traditions, customs, beliefs, and practices in which infinite subtleties and distinctions are incorporated (for examples, see Awatere, 1984; Best 1976; 1982, Bishop, 1998; Barlow, 1993; Durie, 1998; 2009; Best, 1982; Hēnare, 2001; 2003; 2011; Henry and Pene, 2001; Jackson, 1993b; Moko Mead, 2003; Salmond, 1976; 1978; Metge, 1967, 2001; Spiller, Erakovic & Hēnare, 2011; Wolfgramm, 2007).

The Māori mystic belief system imbued in concepts such as of whakapapa, wairua, mana, mauri, utu and hau discussed above provides the reader with the background knowledge of what constitutes the basis of a Māori worldview. The following section provides a detailed overview of te ātanoho and the principles that underpin a “good life” philosophy of practice for Māori people.

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<sup>22</sup> See extensive and comprehensive analysis of this in *The Lore of the Whāre-wānanga* (Stephenson Percy Smith, 1913). Also in *The changing images of nineteenth century Māori society: From tribes to nation* (Hēnare, 2003, pp. 65-68).

<sup>23</sup> In *Tikanga Māori: Living by Māori values*, Moko Mead (2003) debates that there is little or no evidence in the Bay of Plenty that there was a supreme being above Ranginui and Papatūānuku. Nor does Io appear in the early accounts of Māori creation. Additionally, see *Te Tangata: The Human Person* (Michael Shirres, 1997, pp. 97-108).

### 2.4.3 Te ātanoho: The principle of a good life

Following from the essence of a Māori worldview, Hēnare (2011) reasons that the Māori principle of a good life (Te rongō me te ātanoho) is ratified in Te Tiriti o Waitangi 1840, which is the Māori version of the Treaty of Waitangi. He argues that the fundamentals of the Māori principle of ‘te ātanoho’ or ‘good life’ are to be found in the preamble for protection of the good life as defined in the Māori phrase ‘tonu hoki te Rongō’ (Ātanoho, meaning peace and continued life as a Māori people, which means good life), coupled with Article 1 of the *Tiriti* (right to self-determination or *kawanatanga katoa o rātou whenua* (governance forever of their lands)).

According to Hēnare, the British government representatives stated in the Māori text of Te Tiriti, “kia tohungia ki a rātou ō rātou rangatiratanga me tō rātou wenua, kia mau tonu hoki te Rongō ki a rātou me te Ātanoho hoki” (Hēnare, 2003, p. 229). This can be translated as its desire to preserve for them their full authority as leaders (rangatiratanga) and their country (tō rātou wenua), and that lasting peace (te rongō) may always be kept with them and their continued life as Māori people (ātanoho hoki). Highlighting the similarities between Allin Kawsay and te ātanoho, and where the Māori vitalism, humanism, and reciprocity parallels the Andean philosophy of ‘equilibrium, duality and ayni’, see Table 2 below:

**Table 2: Key tenets of Allin Kawsay and te ātanoho**

<b>Sumaq kawsay</b>	<b>Te ātanoho</b>
Duality	Humanism
Equilibrium	Vitalism
Ayni	Reciprocity

Source: From Hēnare (2011) and Lajo (2011).

Moreover, Hēnare (2011) contends that te rongō me te ātanoho reflects a unique Māori principle of economic development that is the principle of a ‘good life’, which encapsulates the Māori worldviews towards humanity and Papatūānuku. He further suggests that the Māori principle of a ‘good life’ still resonates in Aotearoa New Zealand (Hēnare, 2011).

Advocates of Allin Kawsay, for example, Argumedo (2013), Lajo (2011), and particularly the President of Bolivia Evo Morales (2010), question whether the Allin Kawsay provides the basis for an alternative ‘good-living’ approach. This is in the sense that the aim of Allin Kawsay is not economic development only—rather, it places an emphasis

on the Andean philosophy of ‘duality, equilibrium and reciprocity’, a holistic perspective based on enjoying and preserving the bounties of Pachamama. However, there is limited research on the Allin Kawsay and both te ātanoho and mauri ora specifically in the field of food security (Altieri, 2011; Argumedo, 2010; Hēnare, 2011); this space is where this research is positioned and poised to make distinctive contributions. The next section focuses on concerns facing Indigenous peoples in regards to the current global food security paradigm.

## **2.5 Chapter summary**

The forming of relationships with all living and non-living beings in the natural world is at the core of Indigenous worldviews and forms the conception of Indigenous knowledge. Indigenous peoples’ cosmovisions influence their determination to preserve their traditional knowledge for the sustainable treatment of ecological systems. Indigenous cosmovisions are unique because they reflect Indigenous peoples’ distinctive ways of knowing and being with Creation and all its beings. The profile of Andean and Māori people suggests that it is paramount to recognise that knowledge and the interrelationship with the land that frames the essence of their cosmovisions cannot be excluded from these two Indigenous groups’ holistic attitude towards nature.

One of the salient characteristics of Indigenous peoples is the practice of a good-living philosophy constructed on a collectivistic, holistic, and spiritual approach to preserving the resources found on Indigenous territories for their well-being. This study conforms with the argument made by Indigenous scholars, as discussed above, that each Indigenous group has their own unique TEK, reflecting their ways of knowing and being. In addition, the overview of Quechua and Māori good-living philosophies suggests that their good-living approaches do not solely focus on economic growth, but rather place an emphasis on Indigenous peoples’ cultural values, such as reciprocity and duality, that are fundamental for them to preserve the bounties of Pachamama, and safeguard food security.

I argue that it is in the distinctive Quechua and Māori peoples’ TEKs that the key lies to understanding their perspectives and practices for safeguarding food security. I further contend that their good-living philosophies represent an Indigenous principle for promoting food security. Accordingly, this study proposes the examination of the cosmovisions and knowledge systems of Quechua and Māori people through the TEK lens. Further, the research protocols to gather knowledge of these two Indigenous groups should be designed within Indigenous ways of knowledge creation and application.



The next chapter focuses on concerns facing Indigenous peoples in regards to the current global food security paradigm.

## CHAPTER III: CONTEMPORARY GLOBAL FOOD SECURITY

“Adopting and promoting sustainable production practices require concerted effort, something which in practice is too often missing or insufficient. Making this shift at the scale required demands forward-looking leadership in the public and private sectors alike.”

– *Helen Clark, UNDP Administrator*

### 3.1 Introduction

In this chapter, an exploration of key concepts such food security, sovereignty, and the rise of food sovereignty are reviewed to complement the theoretical and conceptual backgrounds of this research. In addition, a pictorial illustration of the theoretical background proposed in this study is presented. The first section focuses on scoping the contemporary context of food security including the historical context and approaches to the most widely accepted food security definition. I then turn to a description of the concept of food sovereignty, leading up to the review of pressing problems and issues that will inform the research requirements of this study.

### 3.2 Food security: A global overview

Food security is a global policy objective resting on four main pillars: availability, accessibility, adequacy and stability, which are explained briefly below (OECD, 2013; FAO, 2015a; FAO 2016c; Paarlberg, 2013; Pinstруп-Andersen; 2009; Timmer, 2015).

***Food availability:*** This suggests that there is sufficient availability of inputs (seeds, water, and land) and appropriate quality of food for people to be supplied through domestic production or imports.

***Food accessibility:*** This is manifested when individuals have access to affordable food in the marketplace. Additionally, individuals have adequate resources as well as the entitlements to acquire appropriate foods for a nutritious diet. According to Sen’s entitlement approach (1981), entitlements consist of all those alternative commodity bundles, in particular food, which a person is entitled to and can decide to consume.

***Food adequacy:*** This is expressed when food satisfies dietary needs and is safe for human consumption. Adequate food should also be culturally acceptable.

***Food utilisation:*** This is reflected in food safety, sanitation and nutrition. Thus, all individuals have access to safe, clean and nutritious food.

On the other hand, food insecurity exists when these conditions are not met; specifically, food insecurity implies problems with the availability, accessibility and affordability of food (Edelman, et al., 2016; Nah and Chau, 2010; FAO, 2015a; Timmer, 2015).

The existent literature on food security indicates that food security as a concept originated in the mid-1970s to address the international food supply problems of that decade. Consequently, the first World Food Conference was held in Rome in 1974 where attention was given primarily to food supply problems and issues of famine and hunger leading to the first food security definition. Earlier definitions of food security leading up to the most widely accepted definition of 1996 are illustrated in Table 3 below.

**Table 3: Earlier definitions of food security**

1985	A basket of food, nutritionally adequate, culturally acceptable, procured in keeping with human dignity and enduring over time (Oshaug, 1985).
1986	Access by all people at all times to enough food for an active, healthy life (World Bank, 1986).
1988	Food security exists when individuals have enough food to eat as a reflection of healthy food systems (Maxwell, 1988).
1996	Food security exists when all people, at all times, have physical and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life (FAO, 1996).

Source: from (Oshaug, 1985; World Bank, 1986; Maxwell, 1986; and FAO, 1996)

The notion of food security has predominated since the 1980s, dominating the international food security discourse (see Dreze and Sen; 1989; Reulinger, 1985; World Bank, 1986). Notably, the seminal study by Sen (1981) *Poverty and Famines: An essay on entitlement and deprivation* is usually credited with shifting the international discourse of the 1970s from food supply to demand in the 1980s. In his essay, he famously argued that a lack of entitlements, rather than a lack of food, was the most significant contributor to deaths from famine in Bengal, Ethiopia, the Sahel, and Bangladesh. Sen identified three main types of entitlements through which food security could be analysed. The approach focuses on household access or entitlements to food.

1. Individuals are entitled to what they produce – production-based entitlements;
2. Individuals are entitled to what they obtain from selling assets – trade-based entitlements;

3. Individuals are entitled to what they obtain through sale of their labour – labour-based entitlements.

Sean (1981) argued that one of the main issues with food security is centred on access by vulnerable people to food, and not availability. However, much progress in food security stems from the food availability-based view supported by agricultural technological change (Da Schutter, 2009a; Paarlberg, 2013; McMichael & Scoones, 2010; Woodhouse, 2010). Agricultural technology is associated with the introduction of plant breeding, chemical fertilisers and improved agronomic practices such as high-resolution crop sensors (Smith, 2013; Timmer, 2015). The result is an emphasis on food self-sufficiency strategies, such as increasing food production, to ensure that production volumes will be sufficient to feed the population (McMichael, 2009; Paarlberg, 2013; Pinstrip-Andersen, 2009; Wittman, et al. 2010).

Beyond definitions, two pressing issues further inform the global debate on food security. This research acknowledges the debate on the pressing challenges aggravating food security such as climate change and globalisation, and that there is an existing and extensive body of literature covering both (for example, see Hoffmann & Sgro, 2011; Heyd & Brooks, 2009; OECD, 2010; Fujisaka, Williams, Halewood, 2011; Indigenous Peoples Bio-cultural Climate Change Assessment Initiative (IPCCA), 2013; Leonard, Parsons, Olawsky, Kofod, 2013; Nah & Chau, 2010; Prakash & Singh, 2011; Pingali, 2007; Stiglitz, 2002; Reardon & Barret, 2000; United Nations Conference on Trade and Development (UNCTD), 2009; Vermeulen, Campbell & Ingram, 2012; Whyte, 2016a; Zaccai & Adams, 2012). Addressing these issues is not the primary focus of this research, but climate change and globalisation are mentioned below to illustrate the significant and considerable challenge that they pose to the achievement of food security.

### *Climate change*

Because climate change may lead to sizeable shortages of food production in many parts of the world, it represents one of the greatest concerns related to food security (Intergovernmental Panel on Climate Change (IPCC), 2014, 2016; Ho & Ching, 2008; Vermeulen, Campbell, & Ingram, 2012; Wheeler & Von Braun, 2013; Whyte, 2015). The United Nations Framework Convention on Climate Change (UNFCCC) defines climate change as “a change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable time periods” (UNFCCC, 2010, p. 26). The agricultural sector’s contribution to greenhouse emissions into the atmosphere is high, as

reported in the latest FAO (2015b) statistical report about the greenhouse gas emissions from agriculture. FAO indicates that developing countries experienced an increase of agriculture's greenhouse emissions from crop and livestock production due to an expansion of total agricultural outputs. Greenhouse gas (GHG) emissions from agriculture grew from 4.7 billion in 2001 to over 5.3 billion tonnes in 2011. In particular, activities producing substances such as methane from livestock and synthetic fertilisers are considered some of the largest contributors to GHG, as reported in the latest FAO's Statistical Pocketbook (2015d).

Bertram and Terry (2010) argue that the impact of variability of climate threatens the environmental sustainability of agricultural production. For example, the effects of climate change on biodiversity degradation are a threat to biodiversity hotspots such as the tropical Andes of Peru, and the island nation of New Zealand, and account for fifteen percent of the world's plant species losses (INRA, 2014; Myers, Mittermeier, Da Fonseca & Kent, 2000; Scherr & McNeely, 2008). The loss of biodiversity, such as the decline of native plant species, not only threatens the loss of the Earth's natural resources but also jeopardises the sustainability of food crops.

Furthermore, such loss of biodiversity has an adverse impact on the broader ecosystems that underpin the well-being of Indigenous communities worldwide (Beddington, 2010; Brooks, Mittermeier, Da Fonseca, Rylands, Konstant, Magin, 2002; Millennium Ecosystem Assessment (MES), 2005). However, no clear consensus has been reached on whether man-made activities in the agricultural sector, such as rearing livestock, can be attributed responsibility for the increase in greenhouse gases (FAO, 2012b). Yet the accumulation of carbon dioxide emissions (CO<sub>2</sub>) and GHG in the atmosphere—predominately from industrial and agricultural activities—has been identified as one of the causes of increased global climate change (IPCC, 2016; Grenon and Turner, 2007; World Bank, 2008).

Moreover, water resources are also under serious threat, due primarily to the impacts of climate change (Hoffmann, 2011; FAO, 2013a). Water scarcity represents a significant threat to food security. But water is also vital for the well-being of human life, whether it be for consumption, or energy, or for agricultural purposes, particularly the production of food (De Ponti et al., 2012; UNCTD; 2009; UN Water, 2013a; Winter, 2010). Agriculture requires approximately seventy percent of the world's freshwater resources, and eight percent for human consumption (see Table 4 for the latest statistical information on water use worldwide) (UN Water, 2016). Consequently, the food system's vulnerabilities entail

uncertainty about the availability of water for agriculture (OECD, 2012, 2013b; Ngigi, 2016; Perfecto et al., 2012; Woodhouse, 2012).

**Table 4: Statistical information of water use worldwide**

<b>Water Use Worldwide</b>			
	<b>World</b>	<b>Low- and middle-income countries</b>	<b>High-income countries</b>
<b>Domestic use</b>	<b>8%</b>	<b>8%</b>	<b>11%</b>
<b>Industrial use</b>	<b>22%</b>	<b>10%</b>	<b>59%</b>
<b>Agricultural use</b>	<b>70%</b>	<b>82%</b>	<b>30%</b>

Source: From UN World Water Report (2016, p. 15).

### *Globalisation*

One of the most widely accepted definitions of globalisation derives from Joseph Stiglitz’s book ‘Globalisation and its discontents’. “Globalisation is the closer integration of the countries and peoples of the world brought about by the enormous reduction of costs of transportation and communication, and the breaking down of artificial barriers to the flows of goods, services, capital, knowledge, and people across borders” (Stiglitz, 2002, p. 9).

Globalisation has brought about two main benefits for international trade. Economies of scale have enabled countries to gain a cost advantage from producing larger amounts of output to export overseas. Additionally, comparative advantage is created by specialising in products that a country can produce more efficiently than other nations (Grossman & Helpman, 2015; Payne, 2007; Soros, 2002; Wolf, 2004).

However, Lerche (2013) claims that the loss of agro-biodiversity caused by chemical inputs, water and soil degradation are characteristics of globalisation (see also Bello, 2006; Stiglitz, 2006). At the 2012 UN Sustainable Development Conference, several countries expressed serious concerns that globalisation is destructive to a country’s economy, culture and sovereignty, widening the gap between wealthy and poor (Escobar & Cavero, 2012; Fabricant, 2012).

These concerns emphasise that globalisation and international trade not only widen the inequality gap (Burnett & Murphy, 2014; Koo & Kennedy, 2005), but, in addition, that the over-exploitation of natural resources by industrialised countries further threatens the world’s fragile ecosystems (Argumedo & Stenner, 2008; Grady, 2013; FAO, 2015b; Tombe,

2015). This, in turn, contributes to food insecurity, which affects some eight hundred million worldwide (FAO, 2016b; Borras et al., 2008a; Beddington & Humphreys, 2011).

The next section describes current approaches to food security.

### **3.3 Approaches to food security**

In this section, I discuss traditional and industrial food production. I also cover alternatives to food production, such as agroecology, leading up to the concept of food sovereignty in order to scope the literature on the current state of food security.

#### **3.3.1 Traditional food production**

According to the International Fund for Food and Agricultural Development (IFAD), there are approximately 350 million smallholder farms around the globe who still farm their land with traditional and subsistence methods inherited from their ancestors (IFAD, 2016; UNEP, 2009). Traditional agricultural practices reflect the traditional knowledge of Indigenous peoples oriented in a low-resource agriculture approach. Low-resource agriculture entails cultivating a diverse variety of Indigenous crops and livestock as well as treating the soil and plants without chemical fertilisers or pesticides (Altieri, 2016; ANDES, 2007; Menezes, 2001; Wise, 2010). Traditional agriculture is still practiced worldwide, particularly by Indigenous peoples and peasants in many areas of the developing world where traces of traditional farming methods are found (Edelman, et al. 2016; Kuhnle et al. 2013, IWGIA, 2016; Ngigi, 2016).

An early example of research focusing on traditional agricultural practices was the pioneering work of Audrey Richards (1939) with the local knowledge of the African Bemba Indigenous group using citamene swidden practices. Swidden practices, or 'slash-and-burn' practices in which vegetation is cut and mulched on site rather than being discarded or burned, also include the multi-cropping technique. Further, landmark studies on the impacts of the slash-and-burn cultivation on the Costa Rican wet forest site (see Juo and Manu, 1996; Ewel, Berish, Brown, Price & Raich, 1981) and in the Amazon basin (see Kleinman, Pimentel & Bryant, 1995) suggested that the slash-and-burn method should be adopted as an alternative technique to counteract the concomitant degradation of our natural resources, especially land for agriculture.

Another Indigenous agricultural technology is the 'frijol tapado' agricultural system in Latin America, which has enabled Andean farmers to restore degraded soils through the cutting of bean seeds into mulch vegetation (Altieri & Nicholls, 2003; La Vía Campesina, 2011b; Meléndez, Ocampo, Herrera & Briceño, 1999). These bean seeds were later allowed to decompose and provided nutrients to the maturing bean seedlings (Altieri, 1995; Collins

& Qualset, 1998; Thurston, Smith, Abawi, & Kears, 1994). The experience of farmers in Latin America with the slash/mulch systems can be of great value to farmers in other tropical areas of the world, such as in Africa and Asia (Altieri, 2004, Bello, 2007; Gliessman, Garcia & Amador, 1981). Both types of sustainable agricultural techniques are still practiced by the African and Latin American people and are particularly convincing examples of the significant contribution of Indigenous peoples' knowledge of sustainable cultivation methods. Nevertheless, traditional food production is often subordinated to modern and specialised food production systems (Altieri, 1995; Fairbairn, 2010; Thurston, et al., 1994).

### **3.3.2 Industrial food production**

Industrial food production philosophy is based on the monoculture farming model, building on the assumption that soil fertility can be maintained and increased through the use of high-input technology, chemicals and pesticides, in order to generate higher yields, at a higher cost to the environment (Bello, 2007; Pimbert, 2010). The rise of industrial food production has its origins in the Green Revolution (Godfray, 2015; Paarlberg, 2013; Pinstrip-Andersen, 2009; Reardon & Barrett, 2000). The original Green Revolution involved an introduction of newly-developed wheat and rice seeds into Latin American countries and South-East Asia (Howard, 2009; Timmer, 2015). These seeds were more efficient and capable of producing much higher yields when harvested with adequate water and fertiliser. As a result, overall output in Asia grew at an annual rate of 2.9 percent during the 1980s and 1990s, compared with an annual rate of 2.1 percent before the new varieties were introduced in 1965 (Altieri, 2009; McMichael, 2010).

The economic success of the Green Revolution in producing basic grains to meet population demands has led to improving other varieties of root crops such as cassava (Patel, 2013; Woodhouse, 2012). Despite offering remarkable economic gains, the new seeds of the Green Revolution were surrounded by political controversy because, through the use of scientific resources, the biology of traditional seeds was altered (De Schutter & Vanloqueren, 2011; Friedmann, 2005). There were also environmental issues such as land degradation and soil erosion through excessive use of fertilisers and spraying of pesticides (Desmarais, 2007). All these concerns have laid the foundation for critics of the Green Revolution whose preferences are for traditional food systems (Borras & Franco, 2013; Fabricant, 2012; Holt-Giménez & Altieri, 2015; McMichael & Scoones, 2010; Lerche, 2013).



The majority of farmers in industrialised countries have adopted a Green Revolution approach that is reflected in their practice of large-scale, capital- and technology-intensive monoculture farming systems (Araghi, 2009; Baiphethi & Jacobs, 2009; United Nations Department of Economic and Social Affairs (UNDESA), 2015). Global food production has increased—particularly commodity crops such as soy beans, palm oil, and sugar cane—from 9 billion metric tons in 1979 to nearly 18 billion metric tons in 2016 (FAO, 2016f).

Additionally, official statistics from national agricultural census bureaus compiled by FAO Statistical Database (FAOSTAT) reported that monoculture tree plantations grew by over 60 percent from 95 to 154 million hectares between 1990 and 2010. The increase in crop production has mainly been a function of increases in yield due to increased irrigation and fertiliser use (Edmeades, 2003; De Ponti et al., 2012; FAOSTAT, 2016). However, this may change in the future towards more reliance on cropland expansion, at the cost of biodiversity (CGIAR, 2009; FAO, 2013b; Heinemann, Agapito-Tenfen & Carman, 2013).

### ***Current industrial food security approach***

Industrial agriculture encompasses factors such as innovative harvesting technology, the application of chemical fertilisers, and genetic modification of crops, with the objective of increasing productivity and efficiency (Beddington et al., 2012; Bernstein, 2014; McMichael, 2010, Patel, 2013). For example, scientific research projects from various science disciplines, such as food science, have been undertaken to improve the state of food security (see CGARR, 2009; FAO, 2015c; Sharma et al., 2009). Similarly, numerous highly technological and scientific research projects on food security have, for this same purpose, considered post-harvest technology (CGIAR, 2012a; Heinemann et al., 2013), biotechnological techniques (International Rice Research Institute (IRRI), 2013<sup>24</sup>), and genetically-modified organisms (GMOs) (Howard, 2009; Robin, 2013; Schwartz, 2013). Industrial agriculture has been recognised for improving agricultural productivity. For instance, global food production underwent a remarkable increase from 800 million tonnes to more than 2.2 billion tonnes between 1961 and 2000 (Koo & Kennedy, 2005; FAO, 2011).

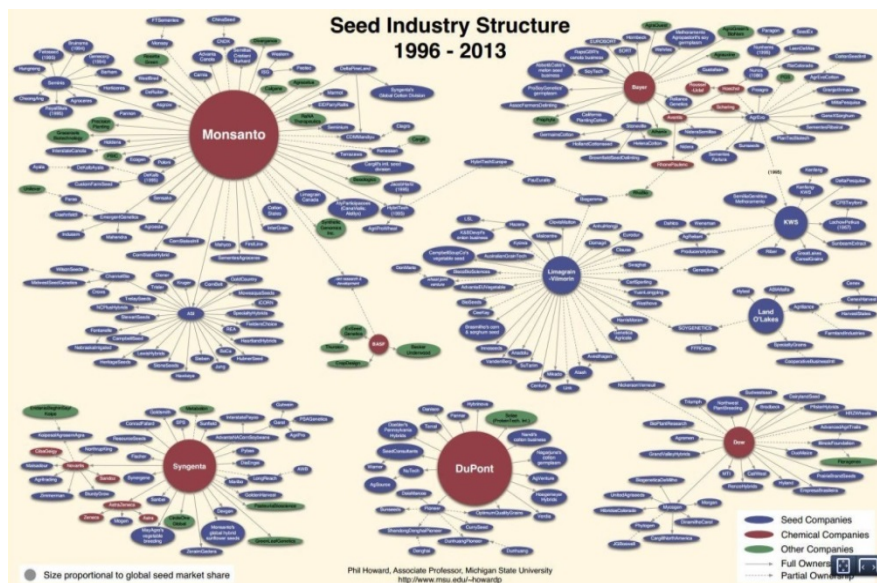
The current global food production is based on the concentration of a few large global food companies in the private sector controlling a significant portion of the food market (Bello, 2009; Dana, 2013; Holt-Giménez, et al., 2012; Koohafkan & Altieri, 2010). For example, firms such as Cargill (global trader and food processor) control the processing and distribution of grain (FAO, 2012a). Nestlé and Unilever (food manufacturers) dominate

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<sup>24</sup> C4 Rice Project: This project uses cutting-edge science and biological technologies to discover genes that will boost rice production. The Bill and Melinda Gates Foundation provide funds to the IRRI (IRRI, 2013). <http://c4rice.irri.org/>

the production and distribution of cereal production (Friedmann, 2006; Wittman et al., 2010; Prakash & Singh, 2010). In a comprehensive study of the global seed industry, Howard (2009) pointed out that the intensification of investments in GMOs among Indigenous food crops, such as maize, with the aim of increasing agricultural production, have shaped the seed industry wherein scientific and high-tech farming have come to dominate the global seed industry. Figure 5 depicts the current structure of the global seed industry (Howard, 2009; La Vía Campesina, 2011a; McMichael, 2010; Patel, 2013; Pimbert, 2009; Valletta, 2010).

**Figure 5: Seed industry structure 1996-2013**



Source: Howard (2009, p. 275).

Industrial agriculture is facing increasing issues with the quality of food and nutrition. This has led to the pursuit of alternative food systems, as in the case of organic food production and agroecology (Desmarais, 2007; Holt-Giménez & Altieri, 2015; Grunert, 2005; McMichael, 2009a). These two alternative food systems will be explained further below.

### 3.3.3 Alternative food systems

#### *Organic food production*

Organic farming refers to agricultural production systems that avoid or largely exclude synthetic fertilisers and pesticides. Organic farming adopts, among other techniques, crop rotations, crop residues, off-farm organic wastes, and mechanical cultivation. The aim of organic farming is to maintain soil productivity, and to supply plant nutrients in order to control insects, weeds, and other pests (Badgley, Moghtader, Quintero, Zakem, Chappell, Aviles-Vazquez & Perfecto, 2007; Weis, 2010). To achieve this, organic farmers use

modern equipment, certified seed, soil, and water conservation practices and the latest innovations in feeding and handling livestock (De Ponti, Rijk & van Ittersum, 2012).

### *Differentiating organic and industrial food production*

The most significant difference between organic farming and industrial agriculture is that organic farmers avoid or restrict the use of chemical fertilisers and pesticides in farming operations, while industrial farmers use them extensively (Badgley et al., 2007; Francis, 2009). Rigby and Cáceres (2001) argue that organic farming conserves natural resources and protects the environment far more than industrial farming. Increased public pressure to conserve soil and water and to protect the environment has generated increased worldwide interest in organic farming practices (Gómez, Martin, Gómez Cruz & Mutersbaugh, 2005; Leifield, 2012). As a result, the consumer market has played a vital role in the evolution of industrial production to organic food production as an attempt to improve the sustainability of the food system (Liefeld, 2012; Raynolds, 2004).

For example, Table 5 illustrates that the forecast for the United States organic food sales from 2010 to 2014 was predicted to amount to 42 billion U.S. dollars in 2014. The top five U.S. organic companies (Earth's Best, Amy's Kitchen, Green & Black's, and Organic Valley) have been included in this forecast.

**Table 5: Forecast for United States organic sales from 2010-2014**

<b>Year</b>	<b>Billion U.S. dollars</b>
2010	28.9
2011	32.1
2012	35.4
2013	38.7
2014	42

Source: Adapted by the author based on STATISTA (2014).

In the latest Eurostat data, the EU-27<sup>25</sup> had in 2013 a total area of 9.6 million hectares cultivated as organic, up from 5.7 million in 2002. In spite of the rise of the organic sector in the EU, the accessibility and affordability of these organic products have raised consumer concerns due to their high prices (Francis, 2009; Rigby & Cáceres, 2001).

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<sup>25</sup> The EU-27 country group includes EU-15 plus EU-N12 countries, i.e. the European Union between 2007 and 2013 (Eurostat, 2014).

According to Altieri (see 1995, 1999 and 2010) organic agriculture does not represent a substitution of the valuable knowledge of Indigenous peoples and their agricultural skills. Rather it combines traditional with modern technologies of food production (Altieri, 1995, 1999, 2010).

*Agroecology*

“Is defined as the application of ecological concepts and principles to the design and management of sustainable agroecosystems” (Altieri, 1995, p. 8).

Agroecology references traditional agricultural practices that have been implemented for decades in Peru, Ecuador, and Brazil as well as in other Latin American countries (Altieri, 1995, Holt-Giménez & Altieri, 2015; Gliessman, 2011). However, the concept of agroecology is a relatively recent addition to the contemporary Anglo-Western agricultural literature as an alternative sustainable farming system (Asociación Ecológica, Tecnológica y Cultura en los Andes (ETC Andes), 2014; Holt-Giménez, & Altieri, 2015). In most European countries, agroecology is not yet as well-established as organic farming (Gliessman, 2007). Nevertheless, various European scholars are extending their research from organic farming to agroecology, both in the social sciences and research, and in the education arena. An example is the case of France, where the Institute for Agricultural Research (INRA) recently announced that agroecology would be one of its main research priority projects (INRA, 2014).

*Organic food production and agroecology*

Organic farming shares some of the same principles as agroecology; however, agroecology is associated with traditional agriculture and is the application of ecological concepts and principles to the design, development and management of agricultural ecosystems (Altieri, 1995). The aim of agroecology is to achieve a sustainable agricultural system in all areas—economic, social and environmental—and to offset the negative ecological and socio-economic impacts of modern technologies (Altieri, 1995). Table 6 depicts the differences between organic farming and agroecology.

**Table 6: Comparative analysis of central attributes of organic farming and agroecology**

	<b>Organic Farming</b>	<b>Agroecology</b>
<b>Definition</b>	System of farm management and food production	Various e.g. Interdisciplinary study and design of agricultural and food systems

<b>Initial paradigms</b>	Soil fertility (and soil sciences)	Ecology (and entomology)
<b>Key concepts</b>	Farming system; value chain	Agroecosystem; food sovereignty
<b>Reference models</b>	Mixed livestock-cropping	Traditional multi-stratified systems
<b>Agricultural forms associated</b>	Biological, biodynamic, organic	Alternative, sustainable agriculture, integrated pest management
<b>Key actors</b>	Farmers, processors, consumers	Diversified small farmers
<b>Technologies</b>	Use of natural substances and processes; no GMOs	Nutrient cycling; biological crop protection; possibly chemical inputs
<b>Food</b>	Quality, content, health	Agri-food systems, sovereignty
<b>Biodiversity</b>	Impact oriented (effect of practices on biodiversity)	Resource oriented, enhancing agro-biodiversity
<b>Regulations</b>	Historical recognition, IFOAM principles, and national rules	No international standards acknowledged
<b>Certification</b>	Mostly third-party	Participatory guarantee systems

Source: From Altieri (2005); Gliessman (2007); Nelson et al. (2009)

As shown in Table 6, agroecology advocates for traditional agricultural practices. It is in civil society organisations and in Indigenous international associations such as the Centro de Culturas Indígenas del Perú (CHIRAPAQ) (2016), GRAIN (2014), and La Vía Campesina (2006) that agroecology is embraced in an attempt to express opposition to mainstream agriculture. For example, the Slow Food Movement, and La Vía Campesina (1996; 2011a) promote the adoption of agroecology because it reflects the importance of key values such as social justice (Patel, 2007; The Slow Food Movement, 2016).

In the 2010 and 2014 reports submitted by the former United Nations Special Rapporteur on the right to food, Oliver De Schutter, argued that agroecology can play a key role in improving the availability, accessibility and adequacy aspects of agricultural production, and can ultimately contribute to achieving sustainable food security (De Schutter, 2010, 2014). Agroecology greatly resonates with the concept of food sovereignty, and I explain the reason why below.

Agroecology recognises the importance of Indigenous knowledge in sustainable agriculture and appreciates the notion of food systems including the link between producers and consumers. Agroecology also advocates for food sovereignty oriented in strengthening the livelihoods of smallholders, eradication of hunger, and agroecosystems resilience, which is considered to be neglected in industrial food production (Altieri, 2016; De Ponti et al., 2012; Leifield, 2012; Menezes, 2001).

The need to search for alternative food systems to counteract the problems associated with the industrial model of food security has led to the concept of food sovereignty taking centre stage in the last two decades (Fabricant, 2012; Pimbert, 2010; La Vía Campesina, 2011a; Wittman, et al., 2010).

### **3.3.4 Food sovereignty**

The most up-to-date food sovereignty<sup>26</sup> concept developed by the International Planning Committee of Food Sovereignty (IPC) is as follows:

“Food sovereignty is the right of individuals, communities, peoples, and countries to define their own agricultural, labour, fishing, food and land policies, which are ecologically, socially, economically and culturally appropriate to their unique circumstances. It includes the true right to food and to produce food, which means that all people have the right to safe, nutritious and cultural appropriate food and to food-producing resources and the ability to sustain themselves and their societies”

(IPC, 2004, p. 1).

La Vía Campesina (1996), an international movement of peasants, small producers, farm workers and Indigenous communities, brought to the international stage the concept of food sovereignty so that it could be discussed at the Second International Conference of the Vía Campesina, in Tlaxcala, Mexico, in 1996. La Vía Campesina advocates for the right of nations and peoples to control their own food systems, food cultures and the environment, and demands a fundamental shift towards alternative agricultures such as organic and predominantly agroecology<sup>27</sup> (Altieri, 1995, 2009; Bello, 2009; Borras, Edelman & Kay,

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<sup>26</sup> The 2014 Food Sovereignty definition developed by the IPC is the one adopted for this dissertation

<sup>27</sup> Agroecology is the application of ecological concepts and principles to the design, development and management of agricultural ecosystems. The goal is to achieve sustainable agricultural systems balanced in all areas; this includes the socio-economic and the ecological or environmental and socio-economic impacts of modern technologies (Altieri, 1995).

2008b; De Schutter, 2010; Gómez, Martin, Gómez Cruz & Mutersbaugh, 2005; Holt-Giménez & Patel, 2012; ICP, Koochafkan, Altieri & Gimenez, 2012; Rosset, 2013).

Consequently, the term *food sovereignty* was coined for two main reasons: (a) to acknowledge the political and economic power dimension inherent in the food and agriculture debate, and (b) to take a stance against the neoliberal model of agriculture and trade (Fairbairn, 2008; Menezes, 2001; OECD, 2012; Pimbert, 2009; Wittman, 2011, Windfuhr & Jonsen, 2005). Further, La Vía Campesina highlights Indigenous peoples' knowledge and their contribution to food production (Agarwal, 2014; Agrawal, 2009; Desmarais, 2008; IPES-Food, 2016; Wittman, et al. 2011).

At the core of the food sovereignty concept rests the notion of the right to food. This right is a binding part of international human rights and humanitarian law, as laid out in the 1948 Universal Declaration of Human rights (Article 25) (Universal Declaration of Human rights (OHCHR), 1948). It is also an institutionalised human right recognised by the United Nations, and its implementation is supported by the Food and Agriculture Organization of the United Nations (FAO, 2016a). Article 11 of the 1966 International Covenant on Economic, Social and Cultural Rights (ICESCR) provides one of the primary legal bases for the right to food (ICESCR, 1966; Desmarais, 2007; UN, 2014; La Vía Campesina, 2011).

Article 11 of the ICESCR recognises two dimensions of the right to food:

- An element of an adequate standard of living (Article 11.1, ICESCR);
- A fundamental right to freedom from hunger (Article 11.2, ICESCR).

### ***The right to food***

For the previous United Nations Special Rapporteur on the right to food, the right to food is:

“The right to have regular, permanent and unrestricted access, either directly or by means of financial purchases, to quantitatively and qualitatively adequate and sufficient food corresponding to the cultural traditions of the people to which the consumer belongs, and which ensure a physical and mental, individual and collective, fulfilling and dignified life free of fear.”

(De Schutter, 2014. p. 1).

According to these legal dimensions, the implication of the right to food is that it protects the right of all human beings to have available, accessible and adequate food to feed themselves in dignity, either by producing their food or by purchasing it (De Schutter, 2009b;

OHCHR, 2016). The current Special Rapporteur on the right to food, Hilal Elver, supports De Schutter's view, as expressed in the latest 2015 Report on the right to food (OHCHR, 2015). The right to food is particularly supported by advocates of food sovereignty, highlighting the obstacles and challenges to securing the right to food of Indigenous peoples, who are dependent on the land to produce food for their nourishment (see La Vía Campesina, 2011b, 2015; Desmarais, 2007; Kuhnlein et al. 2013; De Schutter, 2014; Holt-Giménez; Bunch; Vasquez; Wilson; Pimbert; Boukary & Kneen, 2010).

### ***The rise of food sovereignty***

The food sovereignty concept strives for policy change in the social, political and environmental context, and supports Indigenous peoples' worldview, rights and self-determination to produce food in a sustainable manner for the next generations (La Vía Campesina, 1996; Patel, 2013). Food sovereignty advocates (see De Schutter, 2009a; Kloppenberg, 2010a; Lerche, 2013; Wittman, Desmarais, & Wiebe, 2010) highlight the importance of small-scale agriculture and Indigenous traditional ecological knowledge. Food sovereignty advocates for the shift away from large-scale farming and agricultural processing to smaller and more localised systems as well as protection of traditional knowledge and natural resources to become a priority (Menezes, 2001; Pimbert, 2009; Windfuhr & Jonsen, 2005).

Since the concept of food sovereignty was first included in international dialogue in 1966, it has been developing rapidly and is now considered a reference point for the discourse on food issues worldwide (Fairbairn, 2012; McMichael, 2009a; Wittman et al., 2010, Woodley, Crowley, de Pryck & Carmen, 2006). In regards to the conceptualisation of the food sovereignty as a concept, Fairbairn's (2010) book chapter entitled 'Food Sovereignty: Reconnecting Food, Nature and Community' provides a comprehensive study of its origins. She claims that food sovereignty has its roots in the 1974 'right to food' post-Second World War II food regime<sup>28</sup>. Table 7 below illustrates the chronology of significant food sovereignty developments.

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<sup>28</sup> The theory of food regimes was developed by Friedmann & McMichael (1989) as a "means of linking periods of capitalist accumulation to the international relations of food production and consumption that accompany them.



**Table 7: Chronology of major food sovereignty developments**

Year(s)	Development
1960s	The Green Revolution as the catalyst for the food sovereignty movement
1966	UN International Covenant on Economic, Social and Cultural Rights, 'right to adequate food'
1974	UN World Food Conference (Rome, Italy)
1970-1980s	Countries focus on food self-sufficiency
1993	Formation of La Vía Campesina
1996	World Food Summit: reaffirmation to right to food by participating governments, LVC coins term 'food sovereignty'
2000	UN Millennium Summit: establishment of the Millennium Development Goals
2007	Forum for Food Sovereignty, Declaration of Nyéléni (Sélingue, Mali)
2008	Ecuador includes food sovereignty in its constitution (Article 281)
2011	Meeting for the development of a European food sovereignty movement (Krems, Austria)
2013	UN Global Network for the Right to Food and Nutrition identifies detrimental hunger-generating policies, with the intention of eliminating them

Source: From Chaifetz & Jagger (2014), and Wittman, et al. (2010).

The Green Revolution of the 1960s laid the foundation for the food sovereignty movement (Desmarais, 2002; De Schutter & Vanloqueren, 2011; Friedmann, 2005; Koohafkan, Altieri, & Gimenez, 2012). Wittman et al. (2010) argue that the food sovereignty movement gained momentum with the world food crisis of 2007-2008, characterised by the sudden and dramatic increase in food prices which led to food scarcity, inflation, and a lack of purchasing power for the poor (Holt-Giménez & Altieri, 2015).

The global food crisis raised questions about the present model of agricultural development based on a neoliberal economic model, state deregulation introduced throughout the 1980s and early 1990s, and the concentration of food production by agri-business corporations (La Vía Campesina, 2015; McMichael, 2009; Patel, 2013). Subsequently, the Nyéléni 2007 Forum for Food Sovereignty, organised by La Vía

Campesina, recognised food as a fundamental human right, and is therefore considered a significant turning point for the global food sovereignty movement. Several national governments have integrated food sovereignty into their national constitutions; for example, Venezuela, Mali, Bolivia, Ecuador and Nepal (Holt-Giménez & Shattuck, 2011; Morales, 2010; Peña, 2008; Pimbert, et al., 2009; Rosset, 2003; Zibechi, 2010).

Ecuador is an example of the struggles of Indigenous farmers for food sovereignty, exemplified by strong social movements and political confrontations with the governments in power to respect their ancestors' good-living philosophies, which are being eroded by the neoliberal model (Quijano, 2000; Peña, 2008).

A good-living approach is oriented to Indigenous farmers regaining control, power, and autonomy in their food systems. This eventually resulted in the implementation of a food sovereignty policy framework recognised in the Ecuadorian Constitution of 2010 (Peña, 2008; SENPLADES, 2009).

In a recent publication entitled *40 years of dialogue on food sovereignty: A review and look ahead*, the evolution of the food sovereignty concept is summarised and discussed (Chaifetz & Jagger, 2014). The article argues that since the 1960s, the development and rise of the food sovereignty concept has taken centre stage in the discourse of global food security. However, this concept is understood as an “advocacy-oriented movement rather than a policy objective” (p. 5). The article concludes that for this concept to have an impact on global food security objectives and policies, a fully-fledged food sovereignty model is required (Windfuhr & Jonsén, 2005; Rosset, 2011).

The next section expands on problems and issues of global food security, before leading on to suggested investigation requirements for this study to undertake.

### **3.4 Problems, issues and requirements**

#### **3.4.1 Problems**

Food security is a major problem due to the global concerns about:

- (a) Childhood malnutrition, with about 2.5 million children, mostly living in developing countries, dying every year;
- (b) Population growth, with an estimated population of 9.6 billion people by 2050 increasing the challenge of feeding citizens worldwide without compromising fragile natural ecosystems;
- (c) Changes in diets towards greater consumption of meat and dairy products;

- (d) Undernourishment, hunger and malnutrition, which remain high in Southern Asia and Sub-Saharan Africa (UNEP, 2009; FAO, 2015b).

These challenges are a problem not only for developing countries where the vast majority of hungry people, 780 million people, reside. But also for developed countries where 15 million are estimated to be undernourished (Table 8) (Burnett & Murphy, 2014; Duncan & Barling, 2012; FAO, 2016c; Patel, 2010).

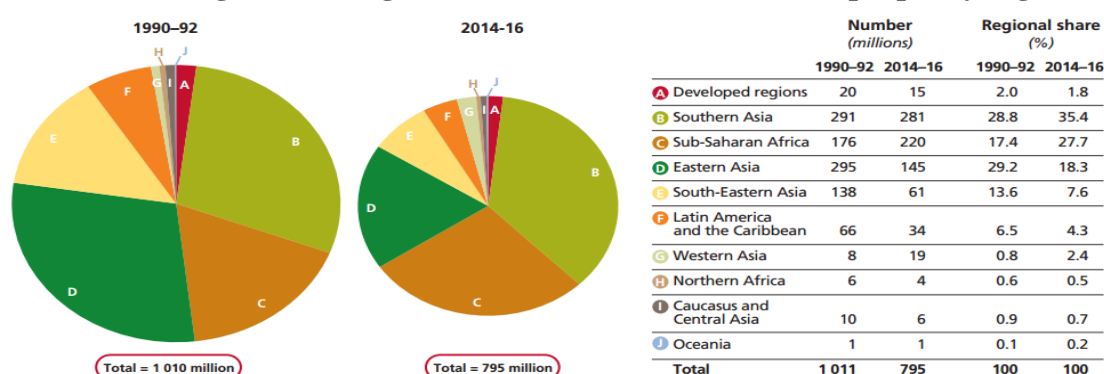
**Table 8: Undernourishment around the world, 1990-92 to 2014-16**

Years	Number (millions) and prevalence (%) of undernourishment				
	1990-92	2000-02	2005-07	2010-12	2014-16*
World	1,010.6 18.6%	929 15%	942 14%	820 12%	795 11%
Developed regions	20 1.9%	18 1.6%	17 1.2%	14 1.3%	13 1.4%
Developing regions	990 23.3%	908 18.2%	926 17.3%	805 14.1%	780 12.9%

Source: FAO (2016c p. 3)

There is both a long-term (chronic) and a short-term (transitory) aspect of food security. Chronic food security is a trend in food consumption that involves an inability to meet food requirements over an extended period. Transitory food security includes shocks that briefly push the level of food consumption into a deficit (Hoffmann, 2011; Koo & Kennedy, 2005; UNDESA, 2013a). According to the latest FAO Food Insecurity Report 2015, the regions of Africa and Asia are facing serious food security problems, and rely on external food assistance for survival (see Figure 6) (FAO, 2015a).

**Figure 6: Hunger in the world: Undernourished people by region**



Source: From FAO (2015a, p.10)

Aggravating the food problem is biofuels' competition for land and crops, food wastage, and climate change coupled with the increased use of land for the use of genetically-modified seeds and other agricultural modernisation techniques (Bernstein, 2010; Dana, 2013; De Schutter, 2009b; FAO, 2013b). Food security concerns will be further exacerbated by the need to feed an additional 2.4 billion people by 2050, who will mostly live in developing countries, particularly in the sub-Saharan Africa region where one-quarter of the population is currently undernourished (Dana, 2013; Pimbert, 2009; UNDESA, 2013b).

Efforts to address food security are wide-ranging: food security has been addressed by, for example, international development organisations, development agencies and humanitarian programmes (see FAO, 2012; OECD, 2013; World Bank, 2012; World Health Organization (WHO), 2003). The United Nations regarded nutrition and food security as one of its Millennium Development Goals (MDGs) targets to be achieved by 2015. These are still considered key goals to be achieved in the recently announced post-2015 agenda (Sachs, 2015; UNDESA, 2015). However, addressing food security often does not centre on increasing food production with a small quantity of rural labour. Instead, such an approach prefers industrialised methods characterised by large-scale farming, and the adoption of scientific-technological systems such as the use of GMOs (Bernstein, 2014; Dana, 2013; Pimbert, 2009).

### **3.4.2 Issues**

Over the past four decades, the focus when addressing food security has been on the food availability view (Alexandratos & Bruinsma, 2012; Devereux, 1988, Maxwell, 1996; FAO, 2016c; Timmer, 2015). The contemporary industrial food security approach has raised health and nutrition concerns (Allen & Kovach, 2000; Bello, 2009; Edmeades, 2003; FAO, 2011). Additionally, it has led to the commercialisation and industrialisation of food systems, with a few food corporations gaining monopoly control over food systems (see Reardon & Berdegúe, 2002). This process undermines local food systems and people's capacity for autonomy and self-determination (Borras et al. 2008a; Desmarais, 2007; Gliessman, 2015; La Vía Campesina, 2015).

Food sovereignty supporters contest the industrial approach, and argue that addressing food security through a 'Malthusian' lens<sup>29</sup>, based on increasing crop yields to feed the expected population growth with high-input technologies, will not solve the

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<sup>29</sup> Malthus (1798) argued that the capacity for population expansion could far outstrip increases in food production. He acknowledged the agricultural and industrial improvements taking place in his own era to cope with the inadequate supply of food, which we know as the age of the Industrial Revolution.

problem (Bello, 2009; Desmarais, 2007; De Schutter, 2010; De Schutter & Vanloqueren, 2011; Harris-White, 2010; Holt-Giménez & Altieri, 2013; La Vía Campesina, 1996; 2015). They further contend that the issue of food security is due not to a lack of food supply, but to a lack of purchasing power within countries where, over the past three decades, food sovereignty has been undermined.

Indigenous farmers, pastoralists and forest dwellers, engaged in local food systems, provide the foundation of people’s nutrition, incomes, ecologies and culture throughout the world (Pinstrupp-Andersen, 2009; Pimbert, 2009). However, despite their current role in and future potential for meeting human needs and preserving diverse ecologies, local food systems and the Indigenous farmers that govern them are endangered (De Schutter & Vanloqueren, 2011; Moeke et al., 2015; United Nations Environmental Programme (UNEP), 2015).

I summarised in Table 9 the literature on pressing issues concerning Indigenous peoples’ food security worldwide.

**Table 9: Main food security issues affecting Indigenous communities**

<b>Access to land</b>	Lack of water, fishing areas and other productive resources made available through redistribution (Desmarais, 2007)
<b>Local markets</b>	Lack of initiatives of food production for domestic and local markets with an emphasis on peasant and family farmer diversified and agro-ecological based production systems (Pimbert, 2009)
<b>Trade</b>	Struggles with ensuring fair prices and markets for farmers. A requirement is for national protection of internal markets rather than open global markets (with comparative advantage) and no to the dumping of low-priced imports (Bello, 2009)
<b>GMOs, biotechnology and industrial agriculture</b>	No protection of seeds for the free exchange and use of farmers, increase of patents on life or genetically-modified crops (Wittman, et al., 2010)
<b>Smallholder farming and local knowledge</b>	Lack of control of resources in local people’s hands and using their knowledge and practices to maintain productivity and natural resources. The focus is on private, corporate ownership and control over land, water and genetic resources that undermine traditional knowledge (Altieri, 2009; Desmarais, 2007; McMichael, 2008)
<b>Role of the State</b>	Lack of support for the productive activities of Indigenous farmers, and communities that erodes the aim of local control and production

	of food for domestic populations and local markets (Desmarais, 2007; Patel, 2007; McMichael, 2008)
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Source: Altieri (2009); Bello (2009); Desmarais (2007); Patel (2007); McMichael (2008)

### ***Food security concerns in Aotearoa and Peru***

In regards to the food security of Peru and Aotearoa, on the one hand, Peru possesses capabilities in agriculture such as rich biodiversity which provide the setting for numerous untapped crops such as quinoa and amaranth<sup>30</sup> (Brush, 2007; FAO, 2016b; International Institute of Environment and Development (IIED), 2005). Moreover, Peru offers much Indigenous agricultural knowledge of agro-biodiversity and conservation for food security, but faces food shortages affecting its approximately four million undernourished people (FAO, 2016g; LACEA, 2010; Instituto Nacional de Estadística e Informática (INEI, 2016). According to the latest food security analysis report on Peru by the WFP, an estimated 5.2 million Peruvians live in a very high state of food insecurity (WFP, 2015). Geography, climate, and vulnerability to recurrent natural disasters, international commodity market fluctuations and limited purchasing power contribute to food insecurity in Peru.

Further, in the latest food security statistical report released by the Peruvian Ministry of Health (2015), the food security situation of Peru is of concern. Statistics indicate that despite Peru’s good economic performance, seven million people live in poverty, and more than a million people who mostly live in rural communities are experiencing extreme poverty. Poverty affected 51 percent of its Indigenous population whose mother language is Quechua, Aymara or Amazonian, and who live in rural communities. On the contrast, only 25.8 percent whose mother language is Spanish and live in urban areas are affected (Ministerio de Desarrollo e Inclusión Social, 2015).

Aotearoa New Zealand, on the other hand, has the capabilities to meet the country’s food supply as well as to meet the dietary requirements of the country as a whole (Public Health Commission, 1993). The country possesses the specialised pastoral technology, developed infrastructure and Indigenous peoples’ knowledge. To a lesser extent than in Peru, food insecurity is faced by Aotearoa. However, comparable to the wider New Zealand population, the prevalence of food insecurity is more notable in Māori households with low income (Ministry of Health, 2016). Additionally, the country faces challenges to meet the increasing demand for sustainable agricultural products, and its population is exposed to

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<sup>30</sup> Quinoa and amaranth are Andean cereals with a differentiated nutritional quality, found in the Andean region of Peru (Denevan et al., 1984).

health issues, such as obesity and diabetes (Jay, 2007; Parnell et al., 2001; Parnell, 2005; Rosin, 2013).

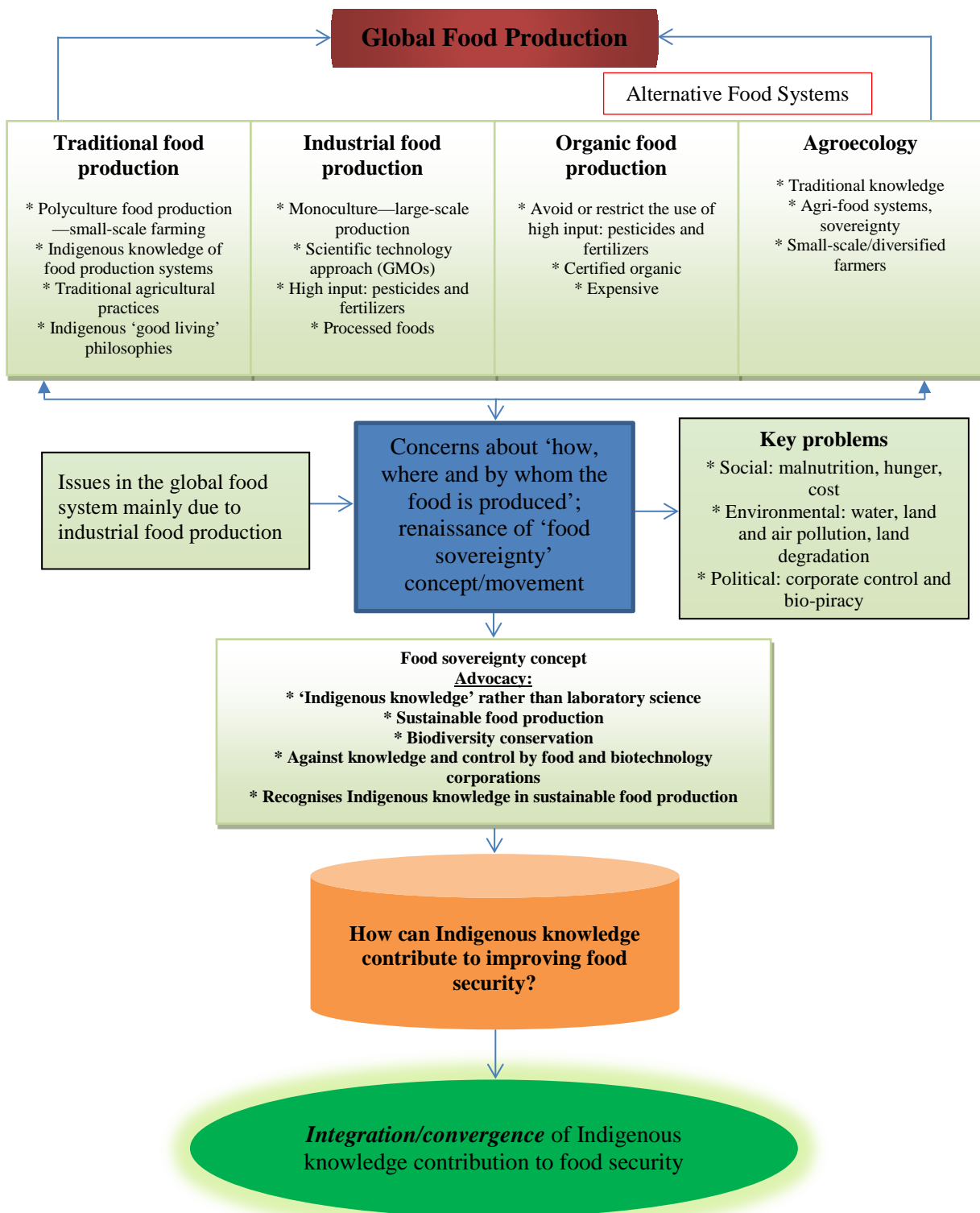
### **3.4.3 Requirements**

The literature review on the state of food security, Indigenous knowledge, and food sovereignty leads me to posit the argument that there is a ‘knowledge gap’ about the potential contribution of Indigenous peoples to improving food security. New insights into Indigenous peoples’ traditional knowledge of food production are required to address issues raised in 3.4.2 and to contribute to solving the problems identified in 3.4.1. Quechua and Māori cosmovisions (a community-based, culturally sensitive knowledge systems approach) are essential for the preservation of food security.

This is an approach that could very well serve to guide new insights into more resilient economies and sustainable food systems. Further, this approach can lead to constructive, respectful, and fruitful dialogue between key actors in food systems, from the local harvesters, producers and sellers at the national, regional and international levels to State institutions and policymakers. Because of the need to find effective, culturally relevant and ecologically sound food security solutions, this study will investigate Quechua and Māori peoples’ potential contribution to the field of food security.

The theoretical framework (Figure 7) over the next page exemplifies my reasoning for a study of food security integrating Indigenous peoples’ knowledge, which forms the basis of my investigation.

**Figure 7: Conceptual framework of food security: Integrating Indigenous knowledge**





### 3.4.4 Chapter summary

Food security is a major concern, given the need to feed an estimated 9.6 billion people by 2050 (FAO, 2015b; UNDESA, 2013a, 2015). The food security literature reveals that in the last two decades, industrialised and technical approaches to address food security have predominated over traditional approaches to food security. Yet despite global food security policies and international efforts, humanity struggles to ensure access to this vital necessity of life—food, especially among marginalised populations across developing and developed countries (Escobar & Cavero, 2012; Fabricant, 2012; World Food Programme (WFP), 2013; Oxfam, 2011). Both Aotearoa and Peru face challenges of food security. On one hand, in Peru there is the issue of food shortages and malnutrition, mainly in rural communities where the majority of Indigenous peoples reside. On the other hand, in Aotearoa, problems with obesity affect underprivileged Māori and Pacific people in Aotearoa.

Clearly, requirements and challenges in the current food security debate are not being tackled properly. The debate around the flaws of industrial food production in achieving food security is widely discussed in the food sovereignty literature (see; Borras & Franco, 2013; Edelman, Saturnino & Borras, 2016; La Vía Campesina, 2006, 2011a, b; Holt-Giménez & Altieri, 2015; Patel, 2007, Menezes, 2001; McMichael, 2009b; 2010; Pimbert, Barry, Berson, Tran-Thanh, 2010; Wittman, 2011, Whyte, 2016b). However, Indigenous peoples' knowledge and good-living principles are neither recognised nor adopted in the contemporary food security context (Altieri, 2010; Rosset, 2011; La Vía Campesina, 2007).

Localised food systems based on traditional production systems, and supported by the food sovereignty concept, have gained much attention in the developing world in the last four decades (Altieri, 2016; Chaifetz & Jagger, 2014; De Schutter & Vanloqueren, 2011; Desmarais, 2007; Scoones, 2012). The requirement to consider alternative sustainable food systems oriented in traditional food systems has been widely recognised by consumers, companies and government bodies (Edelman, 2002, 2013; Oxfam, 2010; Altieri, 2012; De Schutter, 2009, 2010; Grunert, 2005; Patel, 2007). At this critical juncture, my research investigating Indigenous peoples' traditional knowledge of food security is well-positioned to provide answers regarding how their knowledge systems can contribute to safeguarding food security.

## CHAPTER IV: RESEARCH METHODOLOGY

“...Here nothing remains static. This is why a theory of the world or a methodology does not belong here. Here the only thing that belongs is an open and continuous conversation, with the active participation of all those who are the Andean World...”

**Fernández on the Andean worldview (1998, p. 141)**

“Te manu ka kai i te miro, nōna te ngahere. Te manu ka kai i te mātauranga, nōna te ao.

The bird that partakes of the miro berry, reigns in the forest.

The bird that partakes of knowledge, accesses the world.

Te whai au te tira haere

That I should join in this journey”

**Tūhoe composer of the 19<sup>th</sup> century**

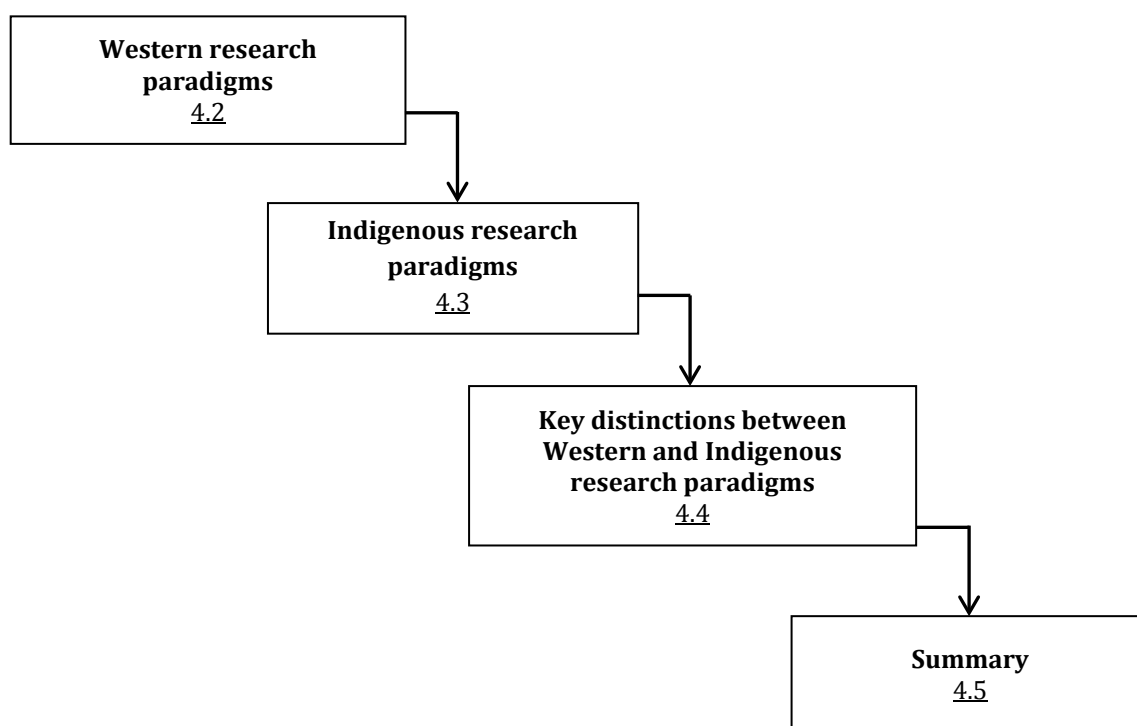
**Mihi-ki-te-kapua (Black, 2000, p. 1)**

### 4.1 Introduction

Chapter III scoped the literature concerning food security. This chapter provides a comparison between Western and Indigenous methodologies. Methodology refers to the framework, including the methods and analysis, that researchers adopt in a particular field of study in the search for knowledge. Research paradigms, strategies and techniques form the structure of a research methodology (Bryman, 1988, Bryman and Bell, 2011; Eisenhardt, 1989; Collis & Hussey, 2003; Guba, 2000).

Understanding the essence of a research methodology, and being conscious that all peoples have distinct beliefs about what ‘knowledge is’ and what ‘knowing entails’, has urged me to reflect on how a Westerner might experience and interpret the world compared to how an Indigenous person may view it. Moreover, since both interpretations matter, it is a critical point to make. To answer this question, I undertook a substantive review and analysis of the literature on Western and Indigenous research methodologies. Distinctions between Western and Indigenous research approaches are highlighted, and the chapter concludes with an overall summary. Figure 8 describes the structure of this chapter.

**Figure 8: Structure of the scope of research methodologies**



## **4.2 Western research paradigms**

Paradigms are working theories or sets of underlying beliefs that guide actions and are used to facilitate the activity of study and research within various scientific domains (Bryman & Bell, 2011; Lee & Cassell, 2013). Bryman and Bell (2011) state that paradigms are grounded in different philosophical assumptions. These philosophical assumptions include the way we understand reality (ontology), how we think about or know this reality (epistemology), and the set of ethics and morals grounding the research (axiology) (Bryman & Bell, 2011; Crotty, 1998; Guba, 1980; Morgan, 1980).

Western science describes a paradigm as “a cluster of beliefs and dictates which for scientists in a particular discipline influence what should be studied, how research should be conducted, and how results should be interpreted” (Bryman, 1988, p. 4). There are two recognised research paradigms. On the one hand, there is the positivist paradigm, which is associated with quantitative research, and deductive reasoning. On the other hand, there is the interpretivist paradigm, usually connected to inductive reasoning and qualitative research.

In addition, there are several philosophical assumptions informing aspects of inquiry. The literature covering this topic is extensive (see Bryman & Bell, 2011; Bryman, 1998; Cresswell, 2009; Collis & Hussey, 2009; Denzin & Lincoln, 2011; Donmoyer, 2000, 1991, 2007; Eisenhardt & Graebner, 2007; Guba 1990; Guba & Lincoln, 1994; Kirk & Miller, 1986; Lee & Cassell, 2013; Prasad, 2005; Merriam, 2009; Morgan & Smircich, 1980; Perry,

1998; Strauss & Corbin, 1990; Yin, 2009). Table 10 outlines the key features of these two paradigms, and their philosophical assumptions.

**Table 10: Characteristics of philosophical assumptions**

<b>Assumptions</b>	<b>Positivist/Quantitative</b>	<b>Interpretivist/Qualitative</b>
<b>Ontological</b>	Reality is objective	Reality is subjective as seen by participants
<b>Epistemological</b>	Researcher is independent from that being researched	Researcher interacts with that being researched
<b>Axiological</b>	Values-free and unbiased	Value-laden and biased
<b>Methodological</b>	Deductive approach Cause and effect Generalisation leading to prediction Accurate and reliable through validity and reliability	Inductive approach Mutual simultaneous shaping of factors Patterns and theories developed for understanding Accurate and reliable through verification

Source: Guba and Lincoln (1994) and Collis and Hussey (2009)

In Table 10 above, distinctive differences can be seen between the positivist and interpretivist paradigms. Additionally, there is considerable discussion about the dichotomy between qualitative and quantitative research approaches (Bryman, 1998; Collis & Hussey, 2009; Denzin & Lincoln, 2011; Creswell, 2009; Collis & Hussey, 2009; Eisenhardt & Graebner, 2007; Guba & Lincoln, 1994).

Teddle and Tashakkori (2003) suggest most quantitative research involves theory verification, while an exploratory approach is adopted in qualitative research, which often involves theory generation (Mayers, 2007). According to Rossman and Rallis (2012) the benefit of utilising an interpretive research paradigm as opposed to the positivist paradigm is that interpretive research “tries to understand the social world as it is (the status quo) from the perspective of individual experience, hence an interest in subjective worldviews” (p. 43). On the other hand, a primary aim of positivist research is to develop a law-like generalisation of human behaviours (Morgan & Smirdch, 1980; Mayers, 2007).

Creswell (2009) argues interpretive research is guided by an empathetic and subjective approach which attempts to take into account understandings of the intentions and

meanings of the people being studied. It is through capturing emergent meanings and intentional human behaviour that the researcher is able to elucidate knowledge. Denzin and Lincoln (2011) describe qualitative research as multi-method, involving an interpretive, naturalist approach to its subject matter, and Bryman and Bell (2011) claim that a qualitative research methodology is a suitable strategy for an interpretive research paradigm.

There are various methods of collecting data in qualitative research ranging from Grounded Theory methods<sup>31</sup>, interviews, case studies, to shadowing. There is a vast literature discussing these methods (see Charmaz, 2000; Denzin & Lincoln, 2011; Eisenhardt, 1989; Lee & Cassell, 2013; Yin, 1999). For example, according to Yin (2009), the distinctive need for case studies arises out of the desire to understand complex phenomena, and it is the researcher's objective to gain rich accounts of the event under examination. Each case must therefore be selected carefully so that it either "predicts similar results – *a literal replication* – or constrains results – *a theoretical replication*" (Yin, 2009, p. 54). Case studies allow an investigation to retain the holistic and meaningful characteristics of real-life events (Bryman & Bell, 2011; Lee & Cassell, 2013; Yin, 2009).

Collis and Hussey (2009) discuss that the overall aim of the interviews is to explore "data on understandings, opinions, what people remember doing, attitudes, feelings and the like, that people have in common" (Collis & Hussey, 2009, p. 144). Yin (2009) adds that interviews are the best method of data collection when the researcher's main purpose is to gain rich accounts of the phenomenon under examination (Yin, 2009). In regards to case sampling techniques, they range from snowball, random to purpose and each has its own practicality depending on the research approach. An example is the purposive sampling technique, in which cases are selected according to the researcher's own knowledge and opinions. Thus, this enables the researcher to select participants that are more appropriate to the topic area (Creswell, 2009).

In Eisenhardt's view (1989) a "random sampling is neither necessary, nor preferable" (p. 537), and Bennett and Elman (2007) argue that a case should not be selected on the basis of being the most interesting, but the researcher should have certain criteria in mind that make the case most suitable for the research. The extensive literature on Western research paradigms suggests that it is the widely preferred research study approach.

The next sections reviews literature on Indigenous research paradigms.

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<sup>31</sup> Common methods used in Grounded Theory are: interviewing, participant observation, and the use of texts and artefacts used for the study of a particular individual group or culture. For a detailed explanation of Grounded Theory, see pages 509-535 of Charmaz (2000). Additionally, a substantive description is found in Chapter 3 (History of qualitative inquiry) in the book edited by Denzin and Lincoln (2011).

### 4.3 Indigenous research paradigms

An Indigenous research paradigm focuses on Indigenous ways of knowing, being and doing (Battiste, 1996; Bishop et al. 2002; Kovach, 2005; Henry & Pene, 2001; McGregor, 2004; LaDuke, 1999; Smith, 1999; 2012; Smith G. H., 2005; 2007; Wilson, 2001, 2008; Wolfgramm, 2007). Indigenous scholars (see Henry & Pene, 2001; Kovach, 2009; LaDuke, 2005; McGregor, 2005; Smith 1999; Wilson, 2008, Vaioleti, 2006) argue that Indigenous peoples have distinctive forms of constructing, validating and acquiring knowledge. For example, language plays a key role in articulating Indigenous peoples' understanding of the world as well as their transmission of knowledge which they predominately share through oral histories (Cajete, 2000b; Deloria, 2005; Estermann, 2007; Little Bear, 2000; LaDuke, 1993; Lajo, 2012).

In addition, Anishinaabe scholar Deborah McGregor states that, in the “Aboriginal worldview, knowledge comes from the Creator and from Creation itself” (p. 388). She adds that Indigenous peoples' knowledge is acquired by ‘doing’, making reference to the unique Indigenous ways of experiencing, feeling and relating to the natural world that influences their intimate relationship with their ecosystems (McGregor, 2004). As pointed out by Indigenous scholars an Indigenous research paradigm is in line with the Indigenous view of TEK (Battiste, 2002; Henderson, 2010; McGregor, 2004; Whyte, 2003).

In the years between 1994 and 2004, also known as the *Decade of the World's Indigenous Peoples*, Western epistemologies and methodologies were heavily criticised by Indigenous scholars who suggested a process of Indigenising Western methodologies (Battiste, 2002; Smith, 1999; Battiste & Henderson, 2000; Wilson, 2001; Smith, 1999). Māori scholar Linda Tuhiwai Smith (1999) eloquently argued in her book *Decolonising Methodologies* that Western scientific research is explicitly linked to colonialism, which in her view was a deliberate attempt to isolate Indigenous peoples from their cultures and ways of knowing. Smith (1999) argues that research that is qualitative or quantitative *is scientific* because the observation, participation or interviewing of Indigenous peoples is conducted through an objectivistic research approach, and does not provide an accurate representation of the epistemologies of Indigenous peoples.

Supporting Smiths' argument are Indigenous scholars who have a desire to give voice to Indigenous epistemologies within qualitative research (Battiste & Henderson, 2000; Bishop, 1998; Cajete, 2000b; Esteva, 2002; Gonzales, 2015; Henry & Penne, 2001; Kovach, 2005; 2009; Pihama et al. 2002; Wilson, 2001, 2008; Smith, 1999, 2012, Vaioleti, 2006).

For example, Indigenous scholar Shawn Wilson (2008) suggests that Indigenous researchers need to move beyond dependence on Western research.

From an Indigenous perspective, the approach to research has predominantly been influenced by an attempt to weld Indigenous methods to existing bodies of Western methodologies. The result has led to confusion and methodological floundering when selecting research methods (see Henry & Penne, 2001; Kovach, 2009; Deloria, 1999; Wilson, 2008). There is a growing critical mass of literature by Indigenous scholars who attest to the interpretative nature of Indigenous knowledge (Little Bear, 2000; Henderson, 2000; Deloria, 2002; Cajete, 1994). Wilson (2008) argues that those who attempt to fit tribal epistemology into Western cultural and conceptual rubrics face the complexities of conducting research across these two knowledge standpoints (see also Kovack, 2009, p. 45)

Indigenous scholars (See Battiste, 2000; Bishop, 1999; Delgado & Escobar, 2006; Pihama et al., 2002; G.H. Smith, 1997; Henderson, 2000; Henry & Pene, 2001; Smith, 2012) contend that to conduct research on Indigenous peoples, accepted research methodologies first need to be decolonised. Decolonising methodologies focuses on the best means of acquiring and interpreting knowledge about the world by confronting the limitations of Western research practices such as ethical standards and customary protocols (Kovach, 2009; Hamza, 2004; Smith, 2005; Wilson, 2008). A Kaupapa Māori research approach and the Biocultural Protocol of the Andean people are examples of Indigenous research frameworks, and I expand on them below.

#### **4.3.1 Kaupapa Māori**

Kaupapa Māori is a research framework that supports Māori culture, values and traditions, and challenges researchers to understand the Indigenous way of knowing and being when conducting research with Indigenous communities (Bishop, 1999; Henry & Pene, 2001; Meyer, 2004; G.H. Smith, 1997; Smith, 1999; 2012; Pihama, Cram & Walker, 2012; Smith, Hoskins, & Jones, 2012; Wilson, 2008). Furthermore, Kaupapa Māori supports the revitalisation of Māori cultural aspirations through the value of customary practices that relate to Māori ways of being and doing (Walker, 1990; Smith, 1996; Smith, 2000). Kaupapa Māori emerges from the discourse of proactive theory as development of conscience, transformation and praxis, designed to provide a platform for cultural based revitalisation in Māori communities (G.H. Smith, 1997; Smith, 1999, 2012).

The Kaupapa Māori movement grew further in the 1970s and, by the late 1980s, it had developed as a political consciousness among Māori people.

As G. H. Smith (1997) explains,

“Māori communities armed with the new critical understandings of the shortcomings of the state and structural analysis began to assert transformative actions to deal with the twin crises of language demise and educational underachievement for themselves” (p. 171).

For Māori, the specific intention of the Kaupapa movement was to achieve “increased autonomy over their own lives and cultural welfare” (Smith, 1992, p. 12). In effect, this call for autonomy is operationalised in a Kaupapa Māori approach as self-determination (tino rangatiratanga) by and for Māori people (Bishop, 2005; Durie, 1994; Pihama et al., 2002; G.H. Smith, 1997; Smith, 1999; Smith et al., 2012). Self-determination, in Durie’s (1995) terms, “captures a sense of Māori ownership and active control over the future” (p. 45). Durie (1995) argues that the Treaty of Waitangi supports Māori rights to self-determination in order to conceptualise their governing policies and to engage in policy implementation oriented to well-being in their own affairs.

Mātauranga Māori discussed in section 2.3.1 complements the philosophy of praxis which is at the heart of Kaupapa Māori research. Māori scholars (see Bishop, 2005; G.H. Smith, 1997; Smith, 1999) argue that being Māori, identifying as Māori and as a Māori researcher, is a critical element of Kaupapa Māori research.

The Kaupapa Māori framework encourages a set of principles that researchers should adopt when conducting research (G.H. Smith, 1997; Pihama et al. 2002; Pohatu, 2005; Smith, 1999, 2012). Four essential Kaupapa principles are described below:

***Rangatiratanga: Autonomy/Self-Determination:*** Literately, rangatiratanga means chiefly control, but has increasingly taken on its figurative meaning of self-determination, which is the right to determine one’s own destiny (Mead, 1997; Durie, 1995).

***Principle of Āta:*** This principle is concerned with the growing of respectful relationships (Pohatu, 2005). It is important to build and nurture relationships because in this way we not only learn, but also develop and evolve knowledge by creating respectful spaces and corresponding behaviours. Āta is the Kaupapa Māori principle that deciphers the purpose of each action and each interaction we have with our interviewees. Thus, it provides a collective sense of human approach and sense of belonging together. According to Pohatu (2005), “Āta is a vital cultural tool created to shape and guide understandings of relationships and well-being” (p. 5).



**Māutaranga and tikanga Māori:** Mātauranga Māori is established by the use of whakapapa, which is necessary for Māori society because it serves as the systematic instrument to track down Māori cultural roots and therefore understands their world and relationships (Moko Mead, 2003; Wolfgramm, 2007). In such a framework, whakapapa is both a vehicle for and expression of mātauranga Māori. Kaupapa Māori highlights māutaranga and provides guidelines for conducting appropriate research that connects with “Māori aspirations, politically, socially, economically and spirituality” (Smith, 1997, p. 23).

**The principle of ako:** The principle of ako stems from the pedagogical concept of ako that describes a reciprocal teaching and learning relationship (Pere, 1982; Pihama et al., 2002). Ako is grounded on the principle of reciprocity and is exemplified in the statement below:

“In a reciprocal learning relationship teachers are not expected to know everything. In particular, ako also suggests that each member of the classroom or learning setting brings knowledge with them from which all are able to learn”

(Keown, Parker & Tiakiwai, 2005, p. 12).

The principle of ako then argues that research needs to respect Māori culture and recognise traditional ways of learning and knowledge exchange (Pere, 1982). Based on my understanding of ako, this principle resonates with my research approach, because it prompts researchers to inform their research methods within the learning and experience methods of Indigenous groups. For instance, conversational methods such as face-to-face interviews are preferred among Māori people, because seeing someone in person is a sign of respect (Smith, 2012).

Kaupapa Māori provides an Indigenous research methodology framework from a Māori perspective and provides the basis for Indigenous researchers to adopt it as a guiding research methodology framework (Smith, 2012). It provides the background knowledge for the extension of the development of other Indigenous research methodologies, as in my case.

#### **4.3.2 Biocultural Protocol in the Peruvian Andes**

In 2010, the Potato Park Biocultural Protocol (PPBP) was developed by the non-for-profit organisation named ANDES under the leadership of its director Alejandro Argumedo and members of the communities of the Potato Park. The concept of ‘Biocultural Protocol’ is derived from a collectivistic/Indigenous approach to biocultural heritage (Argumedo, 2010). In Argumedo’s (2010) view, biocultural protocols provide parameters for discussion within communities, and between communities. The aim of the PPBP is to assist Indigenous and

local communities to protect their rights over their biocultural heritage in agreement with their customary laws and practices (Argumedo, 2010).

Māori has a recognised research framework referred to as Kaupapa Māori. Peru does not have a recognised Indigenous research methodology (T. Stenner, personal communication, 10 August, 2013, and A. Argumedo, personal communication, 16 October, 2013). However, the Potato Park Biocultural Protocol provides me with the basis for the development of such a model in Peru. Table 13 describes the main ethical principles adopted in my study.

#### **4.4 Distinction between Western and Indigenous research paradigms**

Although not exhaustive, this substantive literature review of Western and Indigenous research paradigms highlights that Indigenous peoples have their own forms of knowing influencing their view of reality. Therefore, the way of learning, and how knowledge is acquired from an Indigenous research paradigm is distinct from Western research paradigms.

In distinguishing between these two research paradigms, this study highlights three fundamental features of an Indigenous research paradigm. These central features became salient during my multiple attempts to conceptualise this research paradigm of this study using a Western framework. However, it was while I was engaged in preliminary ethnographic research in Peru that I fully realised that this study would need to be positioned and operationalised within an Indigenous research framework.

Three main features of an Indigenous research methodology are described below:

***Indigenous cosmovisions:*** An important characteristic of Indigenous peoples is their unique cosmovisions, and explained in detailed in section 2.2.2. Indigenous cosmovisions emerge from a holistic cultural and spiritual ontology (way of being) embodied in Indigenous peoples' *relationships* with all living and non-living things in the environment (Cajete; 1994; LaDuke, 1994, 1999; McGregor, 2004).

***Indigenous and tribal Language:*** Indigenous forms of knowledge are dynamic and embedded in language (Cajete, 1994, 2000a; Kovach, 2009). Indigenous knowledge has fluidity and motion, which manifest themselves in the distinctive structure of tribal languages, and thus presents particular challenges in communicating meaning (Wilson, 2008). Further, Indigenous peoples resist the culturally-imbued constructs of a foreign language. From this perspective, Western research and Indigenous inquiry are set apart (Kovach, 2009; Smith, 2012, Vaiolenti, 2006). In fact, speaking from personal experience, it

is a significant difficulty for all those (Indigenous and non-Indigenous) who do not speak a tribal language to inquire into the nature of tribal knowledge.

**Traditional knowledge:** Traditional knowledge is holistic, experiential and dynamic; it encompasses distinctive ways of knowing (McGregor, 2005; Pierotti & Wildcat, 2000). The following quotations describe the Indigenous academic view of traditional knowledge: “Aboriginal understandings tend to focus on relationships between knowledge, people, and all of Creation (the natural world as well as the spiritual)” (McGregor, 2004, p. 75). “Capturing a single aspect of traditional knowledge is difficult. Traditional knowledge is holistic and cannot be separated out from the people. It cannot be compartmentalized like western scientific knowledge” (Wavey, 1993, p. 13). From a Western stance, Nakashima (1993) states that traditional knowledge is simply “the knowledge of Native people about their natural environment” (p. 99). Maria Battiste (2002), Mi’kmaq educator, contends such a view and points out that traditional knowledge transcends the Western understanding of Indigenous ways of knowing and acquisition of knowledge.

This study argues that these core features are distinctive in Indigenous research paradigms. Further, there is growing evidence for the need of social science research to respect Indigenous peoples’ forms of living, as well as to create spaces for inquiry within Indigenous contexts (Bishop, 1999; Esteva, 2002; Guba & Lincoln, 2005; Gonzales, 2015; Kovach, 2005; Pihama et al. 2002; McGregor, 2004; Meyer, 2001; Smith, 1999; Steva, 2002). For example, Guba, (1990) speaking from a Western perspective, argue that social science research “needs emancipation from hearing only voices of Western Europe, emancipation from generations of silence, and emancipation from seeing the world in one color” (Guba & Lincoln, 2005, p. 212).

With this awareness, this study supports the view of the need to amplify Indigenous voices within research, and that a change in the research process is critical. It is in light of the need to move beyond a Western research paradigm to one that reflects Indigenous ways of knowing that has led me to the develop the Khipu. The next chapter focuses entirely on providing an explanation of the Khipu as an Indigenous research framework which I developed to guide this study.

#### **4.5 Chapter summary**

The literature reviewed on the concepts above have been useful for this study to grasp how research conducted from a Western paradigm differs from that conducted from an Indigenous perspective. Knowledge systems, whether Western or Indigenous, have each their own ways to construct knowledge.

While I understand, and acknowledge the Western research approach, this study argues that adopting a Western research paradigm when conducting research with Indigenous peoples does not always provide the best fit to elucidate knowledge. Cosmovisions, tribal language and traditional knowledge are salient characteristics of Indigenous research paradigms. These features can arguably contend that Indigenous peoples have their own philosophies reflecting their distinctive ways of knowing and being entrenched in their Indigenous cosmovisions, and this is not understood correctly by Western researchers and academics.

This study makes a case for the development of an Indigenous research framework placing Indigenous cosmovisions at the heart of the inquiry into Quechua and Māori peoples' knowledge of food security. This research framework is better suited to the Indigenous ways of acquiring knowledge.

In this investigation, the Khipu framework is developed to provide a distinctive contribution to the burgeoning body of literature on Indigenous research, such as Kaupapa Māori in Aotearoa, and the Biocultural Protocol of the Andean people.

The intention is not to criticise or judge any Western research methodology as being better or worse than Indigenous research frameworks, but only to demonstrate that Indigenous or non-Indigenous researchers can have an alternative method to the dominant Western research methodology. The Khipu framework is explained in detail in the next chapter.

## CHAPTER V: THE KHIPU MODEL: An Indigenous Research Framework and Complementary Research Methods



The Khipu, referred to as the *talking knots*, is an Andean Indigenous knowledge-keeping system (Urton, 2003)

### 5.1 Introduction

The previous chapter compared Western and Indigenous methodologies, and made a case for the development of an Indigenous research framework. This chapter provides specific details on the original Indigenous-based research framework crafted for this investigation, based on a traditional Andean Indigenous concept, the Khipu. This chapter begins with the philosophical approach underpinning the Khipu framework, followed by the background of the history of the Khipu. Subsequently, a detailed description of the conceptualisation and operationalisation of the Khipu is provided, and the chapter concludes with the explanation of the research methods selected in this study.

### 5.2 Philosophical position

In framing the Khipu model, the philosophical position that I take in this investigation is rooted on an Indigenous research paradigm. As mentioned in the previous chapter, Indigenous peoples have distinctive forms of constructing, validating and acquiring knowledge. Therefore, the Khipu honours the ways of knowing, being and doing of Quechua and Māori people, and upholds their worldviews/cosmovisions and knowledge systems or TEKs. Further, this study adopts a Participatory Action Research (PAR) approach to highlight the importance of selecting Indigenous research methods that are respectful and culturally attuned to Indigenous knowledge, values, and ethics. PAR approach is described in-depth on page 99. In this regard, the conceptualisation, development, articulation and operationalisation of the Khipu model is rooted on an Indigenous research-based paradigm and represents a new methodological model of Indigenous research and knowledge sovereignty, and that in itself is novel.

Based on the preliminary ethnographic experience I had in Peru in 2011 and 2012, and subsequent field research trips to the Amazon and Andean regions of Peru over the past four years (2012-2016), I observed that some Western researchers displayed a lack of best practice regarding interviewing techniques and customary protocols when conducting research with Indigenous Peruvian communities.

I cannot adequately describe the disheartened feeling that I experienced when I observed that some Western scientists were not informing Indigenous peoples about the nature of their research, nor of the benefit for the communities. I also noted that no rapport between Indigenous research participants and interviewers was established before or after a study is conducted. Indigenous peoples had neither control over whom they would be disclosing their knowledge to, nor who would benefit from the disclosure or any reciprocal contribution. Further, protocols regarding their rituals and customs were non-existent. These events highlight the lack of protection of Indigenous peoples' knowledge and sovereignty over their cultural and intellectual property.

Consequently, in resonance with the Indigenous research-based and participatory approach of this study, the building of reciprocal and trusting relationships, and considerations of working *with* and *for* Indigenous peoples takes precedence, the ultimate goal of the Khipu is to elucidate the voices of the ancestors (knowledge production) and to guide the research methods of this study (knowledge sovereignty). The Khipu model is different to a Western research paradigm, as it distinguishes key values and principles of Māori and Quechua peoples that are unique to them. These principles include:

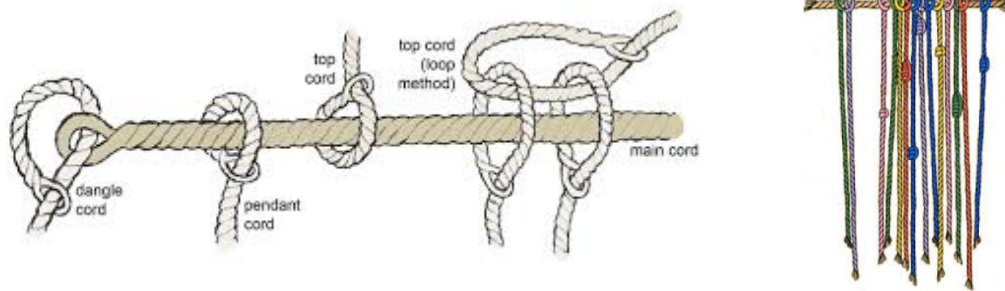
- Indigenous worldviews;
- Storytelling;
- Tribal/community ways of gaining knowledge;
- Tribal/community values, rites, and ethical principles.

Given that the foundations of the Khipu research framework derive from Andean and Maori ways of knowing and being, the philosophical orientation of this research is further developed throughout this chapter.

### **5.3 The Khipu or talking knots: Background**

Andean people developed an oral record-keeping device named Khipu or talking knots. Hence, I find it appropriate to name my Indigenous research framework the Khipu model in honour of my Indigenous ancestors, the Incas, and to also acknowledge other Indigenous peoples around the world. Figure 9 describes the taxonomy of the Khipu.

**Figure 9: Taxonomy of the Khipu**



Source: From Urton (2003 p. 5)

The Khipu (or talking knots) is a complex and colourful system containing knotted cords. A Khipu composes of one long ‘primary cord’, which is one centimetre thick, woven from llama or alpaca wool laces, and with a series of subsequent pendant cords attached to it. Each pendant cord had a particular colour, spin and knot. These pendant cords contain encoded information in the form of carefully placed knots, as well as additional knot-bearing and subsidiary pendant cords (Salomon, 2004; Urton, 2003). The literature on Peruvian history describes that early mention of the invention of the Khipu system was recorded in the 17th century by Indigenous Peruvian chroniclers such as Inca Garcilazo de la Vega and Felipe Guamán Poma de Ayala. These Peruvian historians were able to interpret the Andean peoples’ oral histories and translate them from Quechua to Spanish (Barrenechea, 1946).

According to anthropologists (see Mayer, 2000, 2002; Urton, 2003; Urton & Brezine, 2005), the Khipu is a remarkable and innovative record-keeping and communication system because of the complexity in understanding the thread colours, spin and knot direction as well as the decimal and non-decimal notation. The Khipu is one of the most exceptional and sophisticated communication and accounting systems that humanity has ever invented (The Harvard University Khipu Database Project, 2012; Salomon, 2004; Urton, 2003; Mayer, 2000; Urton & Brezine, 2005). For example, in Inca times, the Khipu had the capacity to encode  $2^6 \times 24$  (for the 24 colours) = 1,536 distinct information units which corresponded to detailed information about goods and services, natural resources, taxes, statistics and historical events (Argumedo & Pimbert, 2011; The Harvard University Khipu Database Project, 2012).

#### **5.4 Conceptual framework of the Khipu**

The Khipu model draws substantially from the literature on the Kaupapa Māori research approach and the Potato Park Biocultural Protocol that were discussed in the previous chapter. The Khipu acknowledges the four essential kaupapa principles described in detailed in Chapter IV: Rangatiratanga: Autonomy/Self-Determination, the principles of āta, māutaranga and tikanga Māori, and the principle of ako. Specifically, the Khipu incorporates

some of the fundamental principles of āta that better suit this Indigenous research framework. To grasp key insights into what constitutes the principle of āta, and subsequently to select the most appropriate research principles for this study, I reviewed the work of Smith (2012) and Pohatu (2005). As a result, Table 11 below outlines the key elements of the principle of āta embedded in the Khipu framework.

**Table 11: Key elements of the principle of āta included in the Khipu framework**

<b>Key elements of āta</b>
<b>1. Safe space:</b> Relationships are formed and a set of respectful mutual boundaries are established
<b>2. Reinforce values:</b> Encourage our values, actions, customs and culture to practice at all times as a reminder of behaving in a respectful and nurturing manner when engaging with our relationships, and the environment
<p><b>3. Strengthening of relationships:</b> “Peoples’ perceptions are strengthened in the following areas</p> <ul style="list-style-type: none"> <li>• It demands effort and energy of participants</li> <li>• It conveys the notion of respectfulness</li> <li>• It conveys the notion of reciprocity</li> <li>• It conveys the requirement of reflection, the prerequisite to critical analysis</li> <li>• It conveys the requirement of discipline</li> <li>• It ensures that the transformation process is an integral part of relationships” (Pohatu, 2015, p. 5)</li> </ul>
<b>4. Research planning:</b> The planning of the field work for example research access must be conducted with due diligence and in conjunction with Indigenous groups. Therefore, before doing field research or fieldwork, informed consent to carry out research from both the host university and Indigenous communities is required
<b>5. Research strategy:</b> The research strategy to be used in the investigation determines the approach that we take towards research ethics. Therefore, a clear understanding of how the research will be conducted and how this aligns with research ethics is paramount to ensure that we are complying with the ethical principles of each Indigenous group we are studying

Source: Based from the work of Smith (2012) and Pohatu (2005).



Pohatu (2005) suggests that from a Māori standpoint, these five āta principles are reflected in the phrases below, and each of these āta phrases is regarded as a unique basket of knowledge giving us options on how to start, continue, and exit relationships. Therefore, for the purpose of my research, understanding and inclusion of the principle of āta in the Khipu model is necessary for the discovery and understanding of relationships subtleties when interacting with Andean and Māori peoples.

**Table 12: Māori phrases reflecting the meaning of āta**

<b>Āta-haere</b>	Be deliberate and move with respect and integrity. For example, the act of moving with an awareness of relationships, their environments and requirements
<b>Āta-whakarongo</b>	To listen with reflective deliberation. This requires patience and tolerance. It gives space to listen and communicate to the heart, mind and soul of the speaker
<b>Āta-kōrero</b>	To speak with clarity with one another. Therefore, preparation of what is to be communicated is required
<b>Āta-tuhi</b>	To write and speak eloquently within a safe space. A reflective approach must be undertaken throughout the research process
<b>Āta-mahi</b>	To work diligently and with the conviction that what is being done is correct and appropriate to the issue and relationships involved
<b>Āta-noho</b>	Empathy towards people. To hear their issues, and respect them at all times. It is important to conduct research in the most respectful manner—with open hearts
<b>Āta-whakaaro</b>	Allow time to develop questions and a space for open communication enhancing creativity and reflection

Source: Pohatu (2005).

The previous chapter highlighted the absence of an established Indigenous research framework in Peru in comparison to Aotearoa. Of note, in 2010 the PPBP was developed in an attempt to develop an Andean research protocol outlining Andean people’s values and customary laws, for the strengthening of the relationships between the ANDES NGO, Quechua communities, and other actors<sup>32</sup>. The PPBP relates in particular to access to

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<sup>32</sup> ‘Other actors’ makes reference to Western researchers being given research consent by the NGO Andes on behalf of Quechua communities.

biocultural resources and sharing of benefits derived from local biocultural heritage (T. Stenner, personal communication, 10 August, 2013; Argumedo, 2010). Subsequently, the Khipu model incorporates some of the key elements of PPBP. Table 13 describes the main ethical principles adopted in my study.

**Table 13: Key Bicultural Protocol ethics incorporated in the Khipu Andean Model**

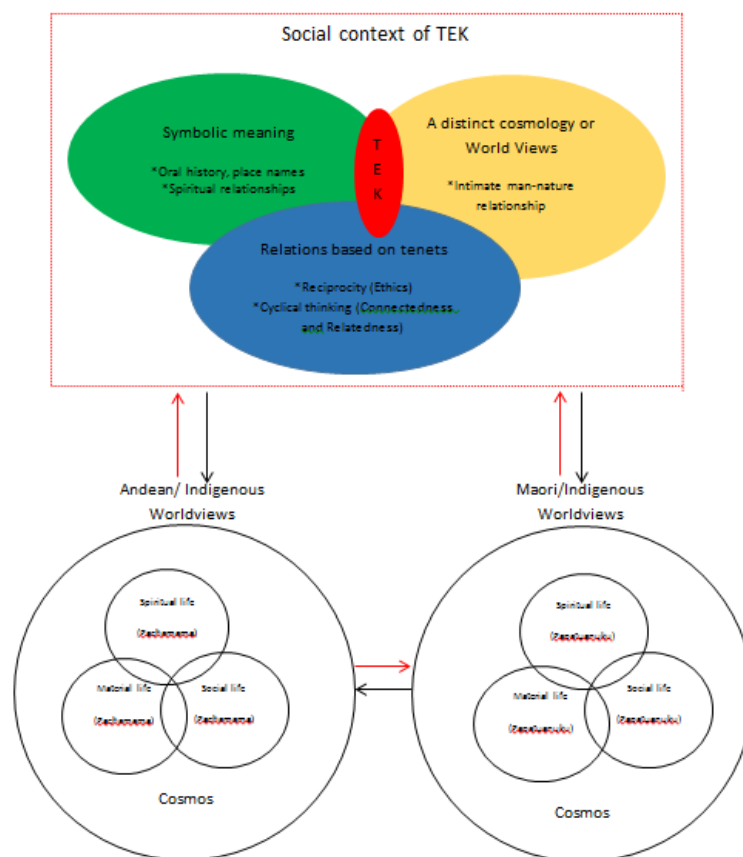
<b>Methodological approaches</b>	<ol style="list-style-type: none"> <li>1. PAR methodologies: work together with community members to develop research methods that re culturally sensitive</li> <li>2. Indigenous methodologies: rooted in Indigenous cosmovisions, conceptual frameworks and ways of life</li> </ol>
<b>Research planning</b>	<ol style="list-style-type: none"> <li>1. Research planning to identify the most appropriate set of cultural norms and customary practices for each community under investigation</li> <li>2. Knowledge and practice of customary Quechua laws and norms to identify potential principles and practices relevant to the investigation</li> </ol>
<b>Research strategy and techniques</b>	<ol style="list-style-type: none"> <li>1. Participant observation is an important approach to research, and was selected for my research because the customary laws of the Quechua people are not written down, but are embodied in everyday actions</li> <li>2. Focus groups are an important method for my research because holding in-depth discussions on themes identified in thematic working groups played a key role in having a good grasp of Andean cultural concepts. The focus groups also created capacity among community members and provided valuable input into the project research on Indigenous concepts</li> <li>3. Consultation, discussion and revision of findings with each community. The primary objective was to increase community participation to discuss findings and seek their approval of findings</li> </ol>

Source: Based on Argumedo (2010).

Framing the conceptual framework of the Khipu Model is the PAR approach. This investigation supports the PAR bottom-up approach that regards the people being studied as research partners. Quechua and Māori were involved in the planning stages of this investigation, during it and at the conclusion of the research. The Khipu prioritises local interests and ways of knowing, and research questions and objectives were addressed in a culturally responsible manner.

Further, the conceptual formulation of the Khipu has its basis in the incorporation of the TEKs of Quechua and Māori people that imbues their worldviews, principles and belief systems (Figure 10).

**Figure 10: TEK lens to guide this research**



Source: Designed by the author from Berkes (1993), Lajo (2011) and Hēnare (2011).

For example, the TEK as the theoretical lens emphasises:

- Quechua and Māori distinctive worldviews wherein all things on earth (human and non-human) are living entities connected to one another, and therefore should be treated with honour and respect;
- Symbolic meaning of oral histories that communicate Indigenous peoples' intrinsic connection with places and beings which existed at a point in time,

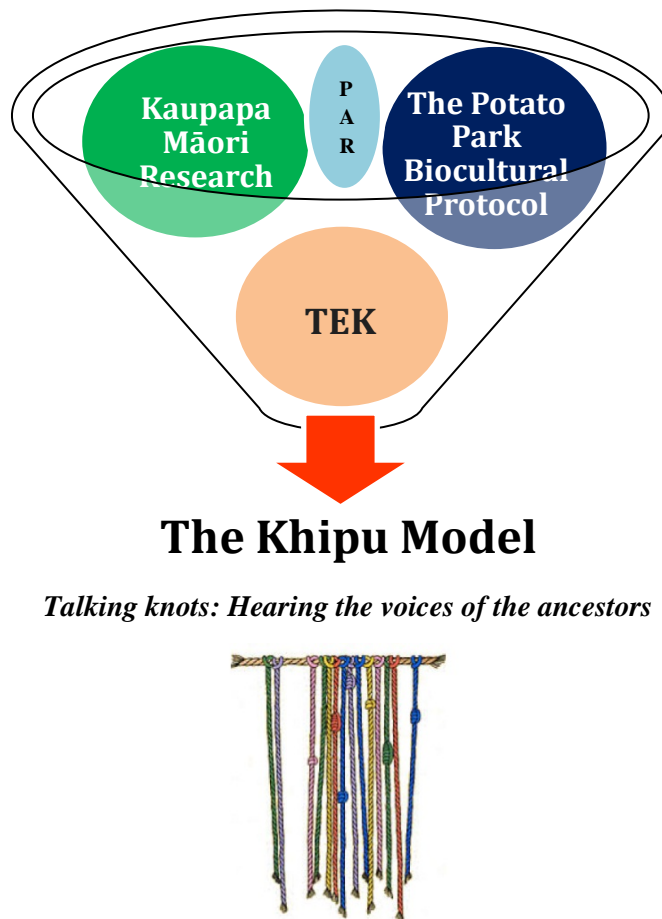
evolved and adapted with them over thousands of years, but that Indigenous peoples' sense of place is 'intact and long lasting';

- Principles and beliefs such as reciprocity; reciprocal relationships and responsibilities between humans and ecosystems are imperative for the harmonious relationship between human beings and resource-management ecosystems, inherited and handed down through generations.

The incorporation of the TEK theory has been made because it resonates with the ways of knowing and being of Quechua and Māori people. Thus, it enables a more comprehensive theoretical lens to illuminate themes, capture the richness of data, and reveal knowledge through an Indigenous perspective.

Figure 11a depicts the conceptual framework of the Khipu grounded in an Indigenous research paradigm.

**Figure 11a: The conceptual framework of the Khipu**



The ultimate aim of the Khipu, as a cross-cultural Indigenous research framework, is to address the central research question—*how can Indigenous peoples' knowledge contribute to improving food security?* The Khipu addresses the objectives of this research study as outlined in Table 1 (Research Goals) on pages 14 to 15, and complement the Yupana analytical tool. Thus, the aim and objective of the Khipu Andean Model is three-fold:

- To disseminate ‘knowledge’ in a correct and successful manner while upholding the appropriate customary laws concerning the Andean and Māori worldviews;
- To ‘hear and record’ substantive information with regards to these two Indigenous philosophies of ‘good life’ in order to explore ways that this ‘good life’ philosophy can contribute to improving food security;
- To collect, document and complement the Yupana analytical tool.

After having described the conceptual background of the Khipu model, I explain the operationalisation of the Khipu research framework in this study.

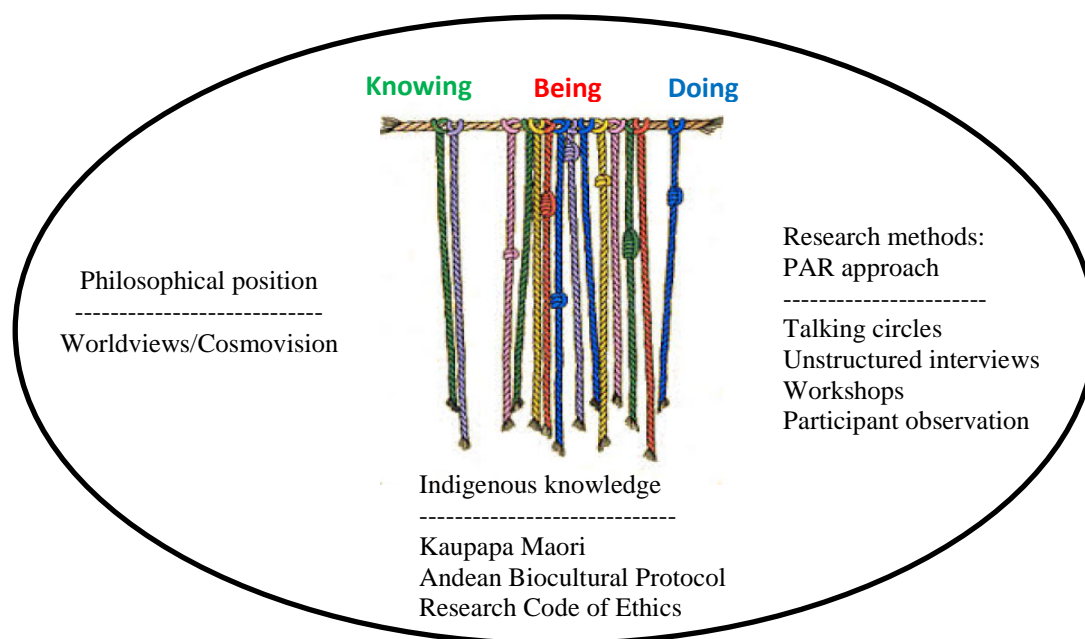
### **5.5 Operationalising the Khipu: Three fundamental threads of knowledge**

Three fundamental threads of knowledge that derive from Quechua and Māori TEKs structure the operationalisation of the Khipu:

1. *Knowing*: philosophical position;
2. *Being*: Indigenous research frameworks and ethical principles;
3. *Doing*: research methods.

These three threads of knowledge provide the Quechua and Māori perspectives of acquiring knowledge. Thus, describes the knowledge platform for the selection of the most culturally sensitive research tools for this study. Figure 11b outlines the three threads of knowledge. I deliberately did not use arrows or directional lines to depict these three threads but rather used a circular design. This is because rather than a linear process, this research followed a more circular approach. I explain how the three threads operate in more detail in the next sections.

**Figure 11b: The Khipu: Three threads of knowledge**



*The Knowing Thread:* This thread is one of the most important because it establishes the philosophical position adopted in the research and such philosophical orientation permeates throughout the Khipu framework.

*The Being Thread:* This thread relates to the cultural identity of Indigenous peoples, recognising and respecting their ethical values and principles.

*The Doing Thread:* This thread connects the knowing and being thread to inform the research methods of this study. These research methods acknowledge the holistic and relationship-based worldview of Quechua and Māori peoples.

The following sections of this chapter explain in detail each of these three threads.

### **5.5.1: The Knowing Thread: Hearing the Voices of the Ancestors**

In the *knowing* thread, I use the meta-theme of ‘hearing the voices of the ancestors’ to convey the important role that Indigenous cosmovisions play in Indigenous research paradigms. Complementing the *knowing* thread is the recognition of Indigenous autonomy and ontomy (Gonzales, 2015; Blaser, de Costa, McGregor, & Coleman, 2010; Esteva, 2002). Esteva (2015) sheds light on the distinction between Indigenous ontomy and autonomy. Ontomy is a set of regulations that emanate from within one’s own culture, such as from tradition.

“One of the best traditions of Indigenous communities is that of changing culture in a conventional manner. This provides historical continuity – communities and continues being the same but at the same time, they remain highly dynamic, which has ensured their survival and allowed them to update their norms continuously”

(Esteva, 2015, p. 120).

Autonomy is a set of rules provided by the current generation of community members and in doing so modifies traditional norms (Esteva, 2002; Gonzales, 2015). From an Indigenous perspective, an autonomy approach implies respect and appreciation for the knowledge possessed by Indigenous peoples (Blaser et al., 2010; Esteva, 2002).

### **5.5.2 The Being Thread: Honouring the voices of the Ancestors**

The *being* thread of knowledge adopts the meta-theme of honouring the voices of the ancestors, because the Khipu recognises the distinctive TEKs of Quechua and Māori people inherited from the ancestors. This study incorporates the Kaupapa Māori and Biocultural Protocol as described in sections 4.3.1 and 4.3.2. Additionally, the Khipu incorporated the three R's philosophy of Weber-Pillwax when conducting research with these two Indigenous communities. The three Rs are; Respect, Reciprocity and Relationality (Cora Weber-Pillwax, 2014).

This investigation went through a rigorous Human Ethics Review Committee at the University of Auckland in Aotearoa to obtain consent to undertake research on Quechua and Māori communities. In addition, I submitted an undertaking to the ethics committee where I explicitly detailed that through the development of the Khipu, I aim to abide by the Peruvian customary local laws in my capacity as both an Indigenous researcher of Peru and a New Zealand citizen while in Peru. See Appendix II for the Research Ethics Approval and a copy of my undertaking.

### **5.5.3 The Doing thread: walking in the footprints of the Ancestors**

The *doing* thread weaves both the *knowing* and *being* threads to guide the research tools of this study. In this sense, the Khipu acts as a 'knowledge sovereignty' tool by selecting the most culturally sensitive research techniques from the Quechua and Māori way of knowing and being. Thus, the Khipu is distinct from a Western research because although the Khipu may appear to have elements that are similar to a Western approach, (for example, focus groups and talking circles), talking circles in the Khipu framework distinguish the rituals and protocols underpinning the ceremonial performance when conducting research sessions for Quechua and Māori communities. In the analysis chapters, I describe how the protocols and traditions of talking circle ceremonies were performed in Quechua and Māori communities.

I use the meta-theme of '*walking in the footprints of the Ancestors*' to articulate the aim of this thread, oriented on Indigenous methods that are configured within Indigenous cosmovision and knowledge systems. Therefore, the research methods of this study include

talking circles, workshops, unstructured interviews and participant observations. Details of these techniques can be found in section 5.7 entitled *Research Methods*.

The following section outlines the data universe of this study including case study locations and data collection.

## **5.6 Case studies, sampling and summary data collection**

Peru and Aotearoa share significant connections, namely Indigenous worldviews, and both countries are known for the richness of their culture, history and traditions. Moreover, these two countries are agricultural nations and have a high degree of knowledge of agro-biodiversity conservation for food security. Based on Chapters II and III addressing the literature review about the debate about global food security and alternative food security approaches, this study argues that there is a ‘knowledge gap’ concerning the potential contribution of Indigenous peoples in improving food security, and makes a case for an in-depth study of Indigenous peoples’ traditional knowledge of food production to gauge their potential contribution to improving food security (see sections 3.3.1 and 3.3.2 of Chapter III). Hence, the empirical research of this study examines through the TEK lens the knowledge systems of Quechua and Māori to understand their respective good-living principles and how they enable food security, which has not been done before.

In this study, case studies comparing Quechua and Māori communities adopted a purposive sampling technique, in which cases were selected according to the researcher’s own knowledge and opinion about which research participants were the most appropriate to the topic area (Creswell, 2009). Bennett and Elman (2007) argue that a case should not be selected on the basis of being the most interesting, but the researcher should have certain criteria in mind that make the case most suitable for the research. As a result, Quechua and Māori research participants were chosen on the basis of a purposive sampling.

In resonance with the PAR approach of this study, the building of reciprocal relationships that began during the preliminary ethnographic research in 2011 helped in the sample selection stage. Additionally, sampling selection took place during the introductory workshops, talking circles, and from my personal observations when interacting with potential research participants. During the sampling stage, key individuals with in-depth and accurate ‘knowledge’ on cultural values, environmental knowledge, and sustainable food production systems in Peru and Aotearoa were invited to be part of this study.

Research participants in these two countries were selected based on the characteristics below:



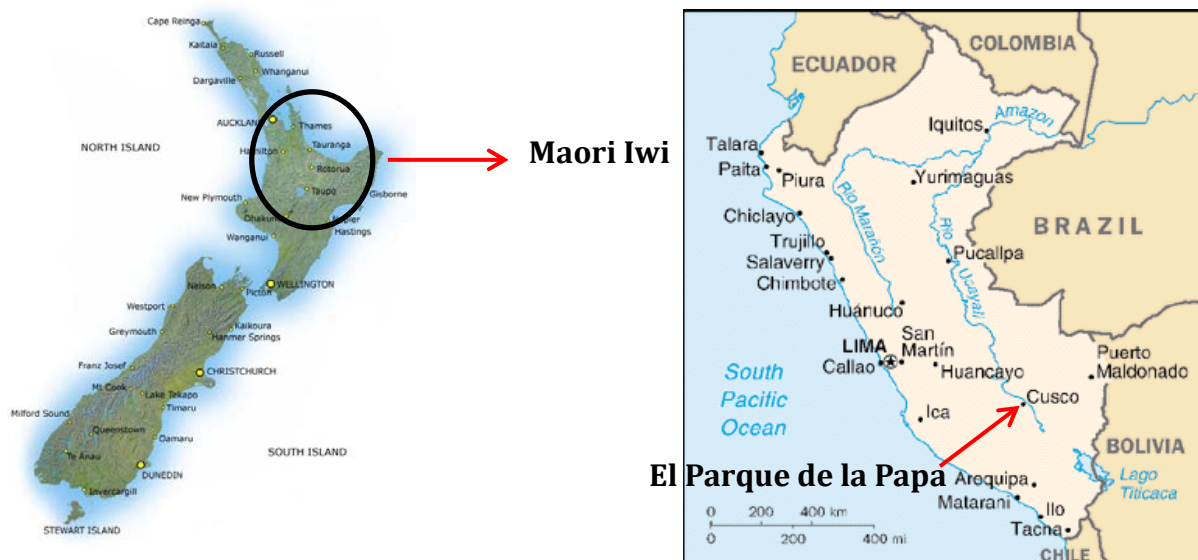
1. Respectable elders of the community, who had an active participatory role in traditional food production systems;
2. Community leaders who were at least two generations old were considered in the purpose sampling technique. This is because they would still be able to recount information on the traditions and cultural values of their ancestors with regards to food security;
3. People who had proficient knowledge of cosmovisions, agricultural practices and who were respected by community members.

The next section describes the data collection process.

### 5.6.1 Case study locations

These locations were based on the preliminary ethnographic research carried out in Peru and New Zealand in 2011 and 2012, and the building of reciprocal relationships with the study communities engaged in traditional food practices over the past four years. In Aotearoa, the iwi of Ngāti Porou, Ngāti Tūwharetoa, Ngāti Ākarana, and Ngāti Hine were selected. In Peru, the Quechua communities of Sacaca and Pampallacta in the Potato Park (Parque de la Papa), and Choquecancha and Rosaspata located in the District of Lares were selected for this empirical research.

**Figure 12: Case study locations: Peru and Aotearoa**



### 5.6.2 Iwi/Tribes in Northland – Aotearoa

In Aotearoa, empirical research was conducted among the iwi of Ngāti Porou, Ngāti Tūwharetoa, Ngāti Ākarana, and Ngāti Hine. As noted earlier, it was a challenging process to have research access in Aotearoa, and it took me almost four years to be able to form

trusting and close relationships with important Māori people engaged in traditional food production, Indigenous food systems, and knowledgeable of Māori worldviews.

**Figure 13: Iwi/Tribes case studies**



### 5.6.3 The Potato Park (Parque de la Papa) and Lares region in the highlands of Peru

The Potato Park and the District of Lares are located in the highlands of Peru and are a community-managed and environmental conservation area near Cusco in Peru. The park is at an altitude of approximately 3,900 meters above sea level, covers more than 12,000 hectares of land, and is home to six Quechua communities. Lares is situated in the province of Calca, in the Cusco Region. The Quechua farmers in both the Park and Lares grow more than 1,400 types of crops. The traditional knowledge and practices that remain in rural communities are primarily based on the Andean cosmivision. This presents a valuable case study with potentially far-reaching implications.

Research in the past has confirmed that agricultural knowledge has enabled rural communities to gain community food security and the conservation of agro-biodiversity (Altieri & Nicholls, 2012; Altieri, 2004; Reardon & Vosti, 1995; Rutherford, 2006; Swinton

& Quiroz, 2003). Therefore, these communities are ideal for investigating the role of Andean good-living philosophies, particularly cultural values in food security.

Within the park itself, the research was conducted in two Indigenous Quechua village communities: Sacaca and Pampallacta (see Figure 14). In Lares, the research was conducted in the Quechua communities of Choquecancha and Rosaspata. These communities were chosen because of their food systems, traditional livelihoods, and culture.

**Figure 14: Parque de la Papa – The Potato Park**



All Indigenous communities that took part in this research were located in remote areas of the highlands of Peru with the exception of Sacaca. Sacaca was the only community more readily accessible compared to the others in Lares (Argumedo & Stenner, 2008). These communities are part of a large population of similar Indigenous groups across the tropical South American Andes, and while these cannot be accepted as being homogeneous, precise analyses can be used to draw comparable lessons for these groups collectively.

#### 5.6.4 Data collection

Following on from the purposive sampling methods, data was collected using the following research methods: unstructured interviews, participant observation, workshops, talking circles, and secondary data. Data collection took a period of fourteen months, and in total, there were forty-five recorded interviews. Of note, the methods used during the data collection process were used in a circular fashion wherein data was collected and recorded

along the continuum throughout the empirical research phase. The active approach of working *with* and *for* Quechua and Māori communities took precedence. In this regard, preliminary workshops with community members took place in both countries to inform the formulation of questions and research topics, to identify research participants and for data collection purposes. The research methods of this study are explained in detailed in section 5.7. A total of forty-five recorded interviews were collected in this study. Tables 14 and 15 provide the summary of data sources collected according to country and communities/Iwi.

**Table 14: Aotearoa – Summary of data sources**

<b>Communities in North Island of Aotearoa</b>	<b>Formal interviews</b>	<b>Participant observation</b>	<b>Workshops</b>	<b>Talking circles</b>	<b>Total number of interviews recorded per community</b>
Ngāti Hine	3	Yes	No	10 people attended but data was collected from 4	7
Ngati Porou	3	Yes	13 people attended but data was collected from 5 participants.		8
Ngāti Tūwharetoa	2	Yes	NO		2
Ngāti Ākarana	1	Yes	9 people attended but data was collected from 4 participants.		5
<b>Total</b>					<b>22 interviews</b>

**Table 15: Peru – Summary of data sources**

<b>Communities in Peru</b>	<b>Formal interviews</b>	<b>Participant observation</b>	<b>Workshops</b>	<b>Talking circles</b>	<b>Total number of interviews recorded</b>
Sacaca	1	Yes	13 people attended but data was collected from 5 participants.		6
Choquecancha	1	Yes	15 people attended but data was collected from 7 participants.		8
Pampallacta	2	Yes	No		2
Rosaspata	3	Yes	No	10 people attended but data was collected from 4 participants	7
<b>Total</b>					<b>23 interviews</b>

In every workshop, talking circle, and interview, I prepared and delivered a presentation to the full group of interviewees that detailed the study's aim and approach. Members acknowledged me as an Indigenous scholar and as a learner of their culture with a passion and fascination for Indigeneity and sustainable development. In Peru, before the interviews took place, I met with community leaders from the four villages at the ANDES NGO Headquarters in Cusco city, where a preliminary workshop was organised to discuss and refine the research questions and translate the research questions from Spanish to Quechua.

In Aotearoa, I approached the first the kaumātua or rangatira of each iwi to ask permission to conduct interviews in his/her iwi and subsequently organised a subsequent meeting with a group of participants. At other times, however, because of my close relationships with iwi members, I approached each one directly and proposed my research. In both countries, I worked closely with community leaders and elders, to frame the Khipu and to gather information on traditional Māori and Quechua teachings on food and culture. These leaders also helped me to formulate questions and topics that would inform my research. Analysis of the data took place soon after the study period, but I honed my methods during the data collection as I came to understand the issues, people, and contexts. In total, I conducted 45 formal interviews with the primary informants.

In Aotearoa, although the majority of the responses were in English, there were instances where Māori spoke in Te Reo Māori. The majority of Quechua people had an intermediate to high level of fluency in the Spanish language. Similarly, the majority of Māori research participants were fluent in English. Additionally, I had Quechua and Māori interpreters with me at all times during my interviews in Peru and Aotearoa that enabled me to record all Quechua interviews in Spanish and Te Reo Māori interviews in English.

Being fluent in Spanish and English languages assisted me in the transcription and translation of the audio recordings from Peru. Therefore, I transcribed and translated the recordings from Spanish to English. Similarly, I transcribed the recordings of Māori participants in English. Although it was a lengthy process, I preferred to transcribe all recordings myself and ensure that the most accurate narratives were captured in my investigation.

The domains covered in the interviews included the individuals' roles in food production, knowledge of biodiversity preservation, and cosmovision. Halfway through the study, recurring answers related to the Indigenous view of land, cosmovisions and traditional practices were provided by principal informants (individuals directly involved in many of the issues). Consequently, I expanded my interview structure to investigate further

problems and events related to the ownership of land and cultural values. In interviews conducted immediately after an important meeting, I often asked certain questions related specifically to the discussions of that meeting, before broadening out the questions to follow up on other matters.

In addition to the audio recordings, transcriptions, and translation of the interviews, I kept all field notes throughout the investigation period. Data capture extended when I conducted a large number of informal meetings; these often took place in hui, workshops, symposia and during the long hiking journeys to the Quechua communities in the highlands of Peru. The going back and forth to reach out to the Quechua communities provided opportunities to expand on some topics with some research participants. Similarly, in Aotearoa, for instance, I would discuss further with Māori people over lunch what had just happened at the hui.

Additionally, I had observed Māori and Quechua peoples' attitudes and behaviours soon after I conducted either a talking circle session or workshop, which always ended with either lunch or dinner. The sharing of food facilitated further insights into particular group dynamics such as the teaching of elders and parents to the children about seed preservation and pollination. There were moments that I had the impression that the informal setting, and possibly the lack of a voice recorder, led individuals to talk more candidly than they might otherwise. I noticed this when, in both countries, I would follow up on a topic with a research participant over a casual lunch: their body language was typically more relaxed and their narratives more extensive.

## **5.7 Research methods informing the Khipu Framework**

In this section, the research methods of the PAR approach, workshops, talking circles and participant observations adopted in this study are described.

### **5.7.1 Participatory Action Research Approach (PAR)**

PAR is a research methodology that challenges conventional research by arguing that people's views and knowledge must be included in the research process for it to be of benefit of the group being studied (Reason & Bradbury, 2008; Swantz, 2008). One of the main features of PAR is the bringing together of theoretical and analytical processes for understanding a development problem, combined with action for social change (Kemmis, 2001). Further, PAR argues that theory and practice should complement each other through research methods being carried out between research participants and the researcher in a collaborative manner (Kemmis & McTaggart, 2005). Because PAR researchers work closely

with their study communities, an inter-subjectivity attitude between researcher and informed participants takes place (Reason & Bradbury, 2008; Stinger, 2007).

The underlying goal of PAR is emancipation. Emancipatory development emerged from the work of neo-Marxist scholars such as Paulo Freire (1986) who argued for empowerment and the liberation of education as central to the process of development of the marginalised. Stinger (2007) refers to a similar approach that he refers to community-based action research and stresses the social values that underpin it to make the research process democratic, just, liberating and enhancing for all participants.

In this study, PAR facilitated a process that empowered dialogue, providing a safe space for linking traditional knowledge with science. This process was attuned to building common knowledge and innovative solutions for the benefits and of Quechua and Māori communities.

### **5.7.2 Workshops**

In both Peru and Aotearoa, several workshops were held with the study communities to build rapport with the research participants, to frame the interview protocols, select the themes and open-ended research questions, and to gauge the level of knowledge of research participants. Overall, workshops served as research tool to collect data. During these workshops, I discussed with Quechua and Māori participants the various topics that I was interested in expanding with them. The aim of hosting a workshop was three-fold. First, I wanted to frame the interview protocols and questions so as to ensure my research was respectful of customary protocols, and subsequently identify who were the best people to invite to take part of my study. Secondly, building rapport with potential research participants was of great importance to me to set up the platform for reciprocal and trusting relationships with the study communities. Thirdly, I wanted to collect data during the workshops by interviewing identified research as well as record all interactions with research participants in my capacity of participant observant.

For example, I conducted two workshops, one with Ngāti Porou on 10<sup>th</sup> April 2015 entitled *Māori kai*, and the other one entitled *He kai kei aku ringa – the food is in my hand* with Ngāti Ākarana on 14 July 2015. I recorded my personal observations about marae etiquette rooted on tikanga practices, strengthening of relationships with members of Ngāti Porou, and Ngāti Ākarana, and selected a total of nine research participants from these two iwi.

**Photo 1: Workshop with Ngāti Porou**



The workshop approach in Peru was the same as in Aotearoa. For example, in the highlands of Peru, the first workshop was entitled: *A good life philosophy or Sumaq/Allin Kawsay*, and was held in the Indigenous community of Sacaca at an altitude of approximately 3,800 meters above sea level. This workshop gathered thirteen potential research participants including elders and community leaders of both genders who attended the morning workshop. The aims of the workshop were the same as with the Māori iwi mentioned above.

**Photo 2: First workshop in the Quechua community of Sacaca**



Photo 2 shows the selected five research participants from the Quechua communities of Choquecancha, Rosaspata, Sacaca and Pampallacta who have vast knowledge of Allin Kawsay, food production practices and traditional knowledge. Additionally, in these workshops we discussed that having a set of open-ended questions (unstructured interviews) would work best with them because they would be able to provide rich accounts of information through oral stories. Of note, the five selected participants were invited to take part of the afternoon workshop where the conduction of personal and group interviews took place. The workshop started at 1pm and ended at 7pm.

The second workshop was entitled *Food security in the Andes* and was held on 23<sup>rd</sup> July 2015 in Choquecancha. Fifteen potential research participants attended the workshop.



**Photo 3: Second workshop in the Choquechancha**



The same workshop style was adopted. I note that after conducting very enlightening conversations with each of them, I then decided that the age group of my research participants should be between forty and seventy years old. The reasoning behind this decision was that some elders aged between sixty and eighty were not able to remember key events in their lives such as harvesting rituals performed by their grandparents and agricultural techniques. After the conclusion of each workshop a total of seven research participants were selected.

We then had a lunch break where we indulged in a hearty Andean soup and drank *chicha de jora*. After the lunch break, I began the second part of the workshop. In this workshop, I engaged in in-depth interviews in the form of unstructured interviews with selected research participants about various topics such as Allin Kawsay, key cultural values underpinning this good-living philosophy, traditional rituals, food practices, seed sovereignty and food security strategies.

### **5.7.3 Talking circles: Talking and learning together**

Talking circles sessions were conducted with a group of four community leaders in each country. Talking circles explored key research themes and collected data on Quechua and Māori's cosmovisions, food security perspectives, traditional practices, and experiences that they have in common. The talking circles may share similarities with focus groups. For example, focus groups consist of a selected group of people who are brought together to discuss a particular theme or topic and whose responses can be used as a representation of the group (Bryman & Bell, 2011). However, from an Indigenous perspective, 'talking circles' go beyond the Western understanding of using focus to collect data.

From the Indigenous viewpoint, talking circles are an Indigenous method for elucidating and sharing knowledge with a collectivistic and spiritual approach (Wilson, 2008). The Khipu model highlights the key difference between the Western and Indigenous interpretations of talking circles by distinguishing the cultural and spiritual ceremonial elements imbued in talking circles, such as ceremonial welcome rituals and ending with prayers.

#### **5.7.4 Unstructured interviews**

The overall aim of the interviews is to explore “data on understandings, opinions, what people remember doing, attitudes, feelings and the like, that people have in common” (Collis & Hussey, 2009, p. 144). It is argued that interviews are the best method of data collection when the researcher’s main purpose is to gain rich accounts of the phenomenon under examination (Yin, 2009).

An unstructured interview approach was used in this study because an unstructured interview favours open-ended questions, allowing for more flexibility and freedom to seek knowledge (LeCompte & Preissle, 1993). This is especially useful for this research project due to the different interpretations of research participants. As discussed earlier, the interview questions were designed in an open-ended manner with the study communities, and such an approach enabled interviewees to share oral history accounts and express any issues on the topics of study. Unstructured interviews are useful for this research project due to the individual participants’ different interpretations. For this purpose, the open-ended questions are beneficial in order to avoid any bias from the interviewer and to get an accurate answer from the interviewees. Refer to Appendix I to see the list of interview questions used in Aotearoa and Peru.

#### **5.7.5 Participant observations**

Observation works well with interviews because together they provide a greater understanding of the context investigated (Cohen et al., 2000). Observation allows the researcher to collect data and develop an in-depth understanding of what goes on in-situ (Cohen et al., 2000). Because this study adopts a PAR approach, my role was of a moderate participant observer. Such an approach allowed me to participate to some extent in the data collection process by observing what was going on around me without losing perspective of my role in this study. For example, having a moderate level of participation allowed me to observe the various rituals, traditional practices and agricultural techniques in food production of these two Indigenous groups.

My role as a participant observer started from the early conceptualisation stages of my investigation and continued throughout the empirical research stage in both countries. Observations occurred during the talking circles, unstructured interviews and workshops. To provide more clarity about my moderate role as a participant observer, my involvement with the study communities begin during my preliminary ethnographic research, where I first became familiar with their natural settings. Subsequently, the gathering of empirical research took place in a variety of the study communities’ natural environments such as at

the marae in Aotearoa and the ayllu in the highlands of Peru, where the majority of workshops and talking circles took place, as well as at community leaders' chacras (small plots of land), community gathering halls, and homes. I recorded my observations using different tools including observation notes, ongoing notes, descriptions of activities, observation charts, sketches and diagrams, photographs, maps, and personal reflective journals (Cohen et al., 2000).

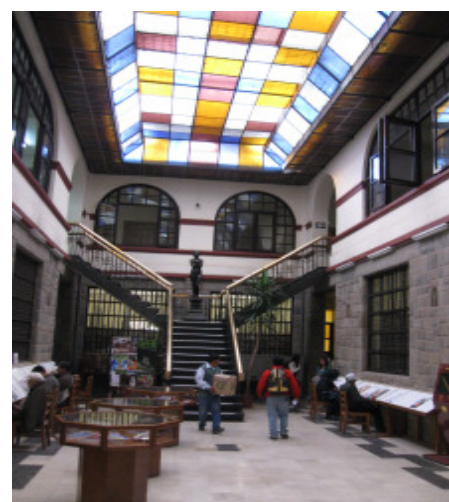
### 5.7.6 Secondary data

I obtained secondary data in the form of archival text records, and data documenting Indigenous peoples' knowledge, traditional agriculture, history, and cultural values, among other topics related to the thesis' research topic. Various trips to Peru and Bolivia's National Libraries provided vital secondary data that was used to complement the Yupana analysis and also the meta-analysis of key themes from Chapters VII to IV. In Peru, I visited the main public library in Cusco, located at an altitude of 2,200 meters above sea level.

The location of the library is in between the charming colonial and mestizo<sup>33</sup> buildings that intermingle across the hills of the city. From the central plaza, cobbled streets give way to stone staircases leading to the picturesque San Blas town, which is within walking distance of the library. Fittingly, among all these beautiful buildings, the Cusco public library has one of the most magnificent research rooms, full of archival data.

The library was founded in the 1800s and was in several different places until it moved to its current location in 1993. The library holds over 6,000 volumes on a variety of subjects, especially Andean history. The stained-glass windows and ceiling, intricate ironwork, octagonal display cases and pristine tiled floors make quite an impression. Bronze bannisters frame a magnificent imperial staircase.

**Photo 4: Main Library in Cusco**



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<sup>33</sup> Of Indigenous and Spanish lineage.

**Photo 5: Main Library in Sucre-Bolivia**



From Cusco city in southern Peru, I travelled to Bolivia, specifically to the city of Sucre, a twenty-seven hours' bus ride from Cusco city. Sucre is home to the National Archive and Andean library. The National Archives and Library of Bolivia were established in 1836 and hold around 114,000 volumes and relevant documents dating from the time of the high imperial court (from 1530 to 1804).

In these two libraries, I was able to find information about the Andean philosophy of Allin Kawsay, Peruvian Andean history prior to and during the post-colonisation period as well as information on food systems.

## **5.8 Chapter summary**

I found it very challenging to write the methodology section of my thesis, because I had to find the best possible research methods to seek knowledge and interpretation that complies with a Western research paradigm. However, in doing so, I was faced with the challenge that a Western research methodology lacked the understanding of how, from an Indigenous standpoint, knowledge is acquired, collected and shared. Therefore, the developing of the Khipu model represents an original methodological model of Indigenous research and knowledge sovereignty, and that in itself is novel.

Indigenous societies often use oral histories, stories and meta-themes as a way to transmit knowledge, and allow listeners to draw their conclusions and to gain lessons about life from a more personal perspective (Weber-Pillwax, 2004). In this thesis, I use meta-themes to reveal knowledge, and I elucidate such knowledge through storytelling and a narrative analysis approach that is more culturally appropriate for Indigenous research. For example, the knowledge obtained in my interviews was not presented to me in a structured and objective Western-style form but rather in an Indigenous circular style, wherein knowledge was disseminated through the use of metaphors and storytelling.

My impetus for developing the Khipu model as a knowledge-based research framework reverberates through the body of Indigenous scholars articulating Indigenous ways of knowing, being, and doing in research. The Khipu is grounded within the body of scholars who have been unified in their call for the revitalisation of Indigenous methodologies, and is influenced by my Indigenous beliefs and values. The way the Khipu was framed, which included the PAR approach and strongly guided the research methods of

this study, enabled me to form trusting, reciprocal and respectful relationships with Andean and Māori communities, and to collect data in a culturally sensitive manner. The Khipu model thus resonates with the Indigenous ways of knowledge production. I further argue that the Khipu is also a knowledge sovereignty tool because it represents a model wherein Quechua and Māori had full autonomy in the research process.

To illustrate my argument, the three threads of knowledge, *knowing, being and doing*, embody the epistemology, ontology and ethical principles of Quechua and Māori. These threads of knowledge were fundamental in the selection of the research methods of this study, ones that are culturally sensitive while providing research rigour. For example, the Khipu adopts a set of principles encompassing respect, responsibility for communities' members, and ethical principles.

Further, Quechua and Māori people have been principal partners in my research and I acknowledge their valuable insights and suggestions in the framing of the Khipu model. Upholding the notion of working *with* and *for* the benefit of Indigenous communities has assisted me greatly in selecting the most appropriate research methods for this study. For example, talking circles, workshops and in-depth interviews were considered fundamental methods of acquiring knowledge from Quechua and Māori perspectives.

While key components of the Khipu framework, such as the Kaupapa Māori, Biocultural Protocol, and TEK may be relatively well-known to Western researchers, this is the first time that they have been adopted in the design of an Indigenous-based research framework, rooted on Indigenous worldviews. Further, having established ethical protocols and cultural guidelines when interacting with Indigenous peoples may seem obvious to many researchers. However, they have not, in many instances, been followed through when conducting research with Indigenous peoples in the past. Therefore, the Khipu can be a model for the design of research frameworks and methods that succinctly explain the criteria and methods for how to carry out research with Indigenous peoples, and one that is vital for the recognition and respect of Indigenous science.

In the next chapter, I describe the Yupana analysis that complements the Khipu research framework.

## CHAPTER VI: YUPANA: Inca data analysis tool complementing the Khipu

### 6.1 Introduction

*‘To see them use another kind of Khipu with maize kernels is a perfect joy. In order to carry out a very difficult computation for which an able accountant would require pen and ink...these Indians make use of their kernels’*

*(De Acosta, 2008, p. 211).*

Figure 15: The Yupana



Yupana refers to the robust tool I developed and engaged for the data analysis phase of this study. Yupana complements the Khipu research framework. This chapter provides the conceptual foundations of the Yupana as an analytical tool, describes the five analytical phases underpinning the Yupana that supports the examination and interpretation of data. The processes included; transcribing, note taking, transcription of recordings, and the validation of findings through a series of discussion with research participants. This chapter also provides a synthesis of the results of the research.

### 6.2 The Yupana

The Yupana is an Indigenous innovation counting device developed by the Incas (Wassén, 1990). It consisted of a table containing beans, corn, pebbles and grains, and these elements could be moved around the table, thus facilitating the execution of distinct mathematical operations (Pareja, 1986). Figure 15 above, depicts the Yupana in Inca times.

Indigenous chronicler Guamán Poma de Ayala provided illustrations about the khipucamayocs<sup>34</sup> holding the Khipus when reciting information to the Inca (Urton & Brezine, 2005). However, one key feature that Guamán Poma de Ayala overlooked to explain was the counting table sitting at the feet of the khipucamayocs this table was indeed the Yupana. Such finding was noted by Henry Wassén who many centuries later, in 1931, studied the Yupana for the first time (Wassén, 1931). While the Khipu served as the authoritative talking knots revealing the recording of historical and statistical information. The Yupana complements the Khipu by analysing the statistical information recorded in the Khipu cords (see Mayer, 2000; Locke, 1923, Wassén, 1990). It is because of this complementary use of the Yupana and Khipu to organise, record and analyse information,

<sup>34</sup> Khipucamayocs: Accountants of the Inca Empire (Espinoza, 1987).

that I extend the use of the Yupana to an analytical tool for this study. In this study, the Yupana examines both the secondary and empirical data to unravel the fundamental research question underpinning this investigation, and the empirical results are crystallised with participants. Research questions addressed in this dissertation were considered before both data collection and analysis began (see sections 1.4). Also, throughout the analytical process, there was an ongoing reflexive dialogue on my part as the inter-subjective researcher.

After outlining the rationale for the use of the Yupana as an analytical tool in this study, I now explain in detail how this research extends the application of the Yupana from an accounting technique to an innovative analytical tool.

### **6.3 Extending the application of the Yupana within an Indigenous context**

The Yupana and its corresponding recording device, the Khipu, were the main technologies that organised the Inca government. They were used to control the distribution of goods and labour responsibilities (Mayer, 2002, The Harvard University Khipu Database Project, 2012). The interpretation of the Yupana as a counting device is supported by ample documentation of the existence of such a device in numerous colonial chronicles and texts (De Acosta, 2008; Espinoza, 1987). The Spanish missionary Jose de Acosta describes (without understanding) the Inca counting system:

“These Indians make use of their kernels. They place one here, there and eight I do not know where. They move one kernel here and three there and sure enough, they are able to complete their computation quickly without making the smallest mistakes. As a matter of fact, they are better at calculating what each one is to pay or give that we would know how to check with pen and ink. Whether this is not ingenious and whether these people are wild animals let those judge who will! What I consider as certain is that in what they undertake they have great advantage over us”

(De Acosta, 2008, p. 211).

In Keith Basso's book entitled *Wisdom sits in places*; he alludes to the significance of sites that play a significant role in the conceptions of Indigenous peoples' wisdom, beliefs, customs and history (Basso, 1996). Subsequently, the Yupana not only analyses key threads (codes) in the Khipu, but also all the other threads around it because all those threads between the knots trigger and complement each other, forming and signalling vital

relationships. Each theme and relationship works in conjunction with one another and recites the story to the Khipu. The Khipu reveals the analysis of the research findings conveyed in a story telling approach in Chapters VII, VIII, and IX. Ultimately, the Khipu in complementation with the Yupana outline the research results in Chapter X.

#### 6.4 The Yupana: Using it as an analytical tool

The Yupana analysis tool comprises of five stages, and these five stages of analysis are summarised in Table 16.

**Table 16: The Yupana: five main Stages**

Stages	Description of process
1. The koru approach: Familiarise yourself with your data in an iterative way to hear the voices of the ancestors.	Constant reflection and revision of the data collected to enable knowledge to emerged and evolved organically throughout all phases of the data analysis.  Transcription and translations of recordings. An in-depth review of the data. Exploring initial ideas and thoughts.
2. Creating initial codes	Coding in a systematic manner and across the entire data according to characteristics about a particular topic.
3. Searching for themes	Refinement, re-grouping and ultimately gathering all codes into potential Meta-themes.
4. Reviewing of final themes	Checking whether the themes correlate to the coded narrative extracts (Level 1) and the entire data set (Level 2). This enabled the generation of a mind map of the analysis. I also continued with the refinement of each theme. So I could be able to have clear insights of each theme and a clear understanding of the overall story of the analysis.
5. Reviewing, defining and naming of final themes	After reviewing all of the themes, each was given a specific Meta-theme name.

The research questions guided the analysis process. In the data analysis process, general themes, subthemes and key cultural values were identified. However, before offering an extended explanation of how this occurred, I first define key terms used throughout this



section such as data corpus and data sets. I then outline my reasoning in terms of what counts as a theme; and my data analysis approach.

### ***Definition of terms used throughout the Yupana analysis process***

***Data corpus*** refers to all data gathered in this investigation, and data sets are all data from the corpus used for analysis. The way I chose to analyse my data sets depended on whether a particular pattern was present, and on my interest in investigating that specific topic in the data. For instance, when I was interested in how the Indigenous agricultural calendar worked, my data set consisted of all information across my entire data corpus that had some relevance to Māori and Quechua's seasonal harvesting systems.

***Data item*** refers to each piece of data that I collected in this study and together form the entire data corpus. A data item in this research is individual interviews, a historical piece of information or a journal article.

Finally, ***data extract*** refers to an individually coded chunk of data, which is identified within, and extracted from, a data item. My data analysis has many data extracts, taken from throughout the entire data corpus. But I include a selection of the most illustrative extracts for analysis and to also feature in this dissertation.

### ***What counts as a theme?***

During the conceptualisation stage when I considered how the Yupana could capture the key ideas for this study. I asked myself two critical questions: what counts as a pattern/theme and what 'size' does a theme need to be? The reason for asking these was because they are critical to addressing regarding both the spaces within each data item and of prevalence across the entire data set. For example, there were many instances where a particular theme across the data was prevalent such as culture identity.

In the Yupana, a theme was either given a considerable space in some data items, little space, or no space at all. In some cases, a theme appeared in relatively few of the data sets. Therefore, I had to be consistent in my judgement of determining what theme I should focus on, and how I capture my main ideas. In this research, a theme captures relevant information about the data linked to the research questions. A theme represents some level of patterned responses or meaning within the data set.

***Meta-themes*** refer to the set of themes captured into one global theme. In this study, three Meta-themes are used to describe the analysis of results based on the Yupana analytical tool.

## Stage 1 - Translation, transcription, and reviewing of data.

For the initial analysis phase, the Māori koru fern illustrates the iterative nature of this research process. The process included constant reflection and revision of the data collected, an experience that enabled knowledge to emerge and evolve organically throughout all phases of the data analysis. In this way, I was able to hear and understand the voices of the ancestors embedded in the empirical data.

**Figure 16: The Koru of knowledge**



Source from Royal (2009)

During the data collection process in Peru and Aotearoa, I began to notice, and looked for, patterns of meaning and issues of potential interest. In addition, my field work notes assisted me in recording patterns and significant issues to be expanded during the data analysis. As a result, from the pool of forty-five recorded interviews; I selected twenty-four interviews that contained substantive data patterns. On average, each of the twenty-four recordings were approximately two and half hours.

Also, I made use of a journal in which I wrote down my experiences for each interview such as the interview setting, customary protocols, and the sense of place that I experienced. As an Indigenous scholar, I am aware of the notion of 'sense of place' that is important for Indigenous peoples because as mentioned earlier it reflects a connection with all our relations. Therefore, I added to the data analysis, a description of my experiences when conducting interviews: for example, I provided the narrative of how a welcome ceremony was performed during each of my interviews in both countries.

Although the process of transcribing, translating (from Quechua to Spanish and then Spanish to English), writing field notes, and other related administrative matters were at times an overwhelming process due to a large amount of data. However, it was an excellent way to familiarise myself with the data, thus providing a rich source of knowledge to convey

through storytelling the analysis and results of how Māori and Andean people safeguard food security through an Indigenous lens.

I immersed myself in the data to the extent that I was familiar with the depth and breadth of the content. I started listening to the interviews repetitively whilst actively reading the transcriptions and all my field notes on an ongoing basis. I was soon very familiar with all aspects of the data. I read the entire data set several times before I began the coding process. I then started searching for meanings and patterns to elicit the voices of the ancestors through the interviewee’s responses, which I found enlightening. I started perceiving, feeling and seeing their realities through the data, and so I started taking notes and marking ideas for coding with different colours.

### **Stage 2 - Generating Initial Codes and capturing narratives**

After I had read and familiarised myself with the data (audio recordings, field notes and transcripts notes), I generated an initial list of recurring themes based on what was in the data.

Table 17 below, is an illustrative example of how I analysed the data by reimagining the Yupana counting table used in Inca times. I used some of the data extracts to group them and then to code them, which enabled me to identify patterns and themes. The data extracts were then assigned a unique code identifier. I then started grouping the data extracts within the identifier codes using specific colours, which are the equivalent to the use of corns and beans used in Inca times. Thus, simulating the Yupana instrument. For example, I captured data extracts (narratives) that described the Quechua and Māori cosmovisions, traditional knowledge, and good living principles.

**Table 17: Examples of the data extracts and coding**

<b>Data extract</b>	<b>Coded for</b>	<b>Basic Theme</b>	<b>Organising themes</b>	<b>Initial themes</b>
① Mother Earth is my mother! I respect all my relations such as rivers, sea, mountains. I have to respect them so we could all live in a state of harmony.	① Love and respect for Mother Earth.	○ Traditional knowledge and cultural identity ○ Crop diversity vs Mono agriculture	▪ Peoples of the land ▪ Culture resilience ▪ Recognition of traditional	Earth is our Mother: Land, culture and biodiversity

			knowledge	
<p>② How I think, feel and act upon land is a mixture of my tikanga and cultural identity. Because, we aim to have a healthy Māori population and self-sufficient Iwi and hapu.</p> <p>‘Reciprocity is a spiritual relationship engrained in my Māori indigeneity. Principles like this and tikanga dictates. How I exploit Mother earth’s natural resources’.</p>	<p>② Traditional knowledge and principles passed down from one generation to the other.</p>	<ul style="list-style-type: none"> <li>○ Learning to live with the rhythm of tides</li> <li>○ Tikanga as key for guiding our ethical intentions</li> <li>○ Reciprocity (Guiding spiritual principle)</li> <li>○ Indigenous knowledge systems</li> </ul>	<ul style="list-style-type: none"> <li>▪ Connection between people and land.</li> <li>▪ Ethical principles</li> <li>▪ Cultural values and beliefs</li> </ul>	<p>Indigenous good living principles.</p>
<p>③ A kinship system is important for us because that is how I trace my lineage and that is my safe space too.</p> <p>I don’t have ownership of the land, I live on the land, but I don’t owe it</p>	<p>③ Indigenous cultural system</p>	<ul style="list-style-type: none"> <li>○ Guardians of the land</li> <li>○ Collectivistic approach</li> <li>○ Food is not a commodity</li> </ul>	<ul style="list-style-type: none"> <li>▪ Indigenous peoples’ rights.</li> <li>▪ Self - determination</li> <li>▪ Environmental, social and economic protection.</li> </ul>	<p>Honouring Mother Earth</p>

Subsequently, I developed a list of participants’ meta-themes that communicated important messages and reflected issues that will be analysed further. An example is a meta-theme, ‘*We learnt to live with the rhythm of the tides and moon*’. Based on Māori responses, this meta-theme alludes to the Māori lunar calendar for planting and fishing – Maramataka Māori, which has been very influential in advising the agricultural, fishery and hunting

activities of Māori to procure food. However, the use of Maramataka Māori has declined following European settlement.

Another important meta-theme is *Earth is our Mother* capturing Quechua and Māori's cultural identity and bond with the land. This meta-theme also provides insights of the Māori and Andeans' concerns about the industrial food model, wherein land is seen as a commodity and strips away their cultural and spiritual connection with their Mother Earth. Also, using a manual system, I noted down initial ideas and patterns, and I classified every pattern found in the transcripts within code. I used highlighters and coloured pens to indicate possible patterns, and post-it notes to identify the segments of data in the entire data corpus.

In the next section, I discuss the incorporation of the *NVivo10 Qualitative Data Analysis* tool to the Yupana.

### ***NVivo10 Qualitative Data Analysis tool***

In this study, the Khipu and the Yupana exemplify the Indigenous research and analytical framework. However, I was faced with the challenge of having available to me two modes of interpretation: (a) one oriented on the application of the Yupana as an Indigenous analytical tool developed through my intellectual efforts, and (b) tools such as *NVivo10 Qualitative Data* which do not derive from an Indigenous research approaches. This led me to raise a set of questions:

- *Could I adopt a Western technique to serve my data analysis purposes?*
- *Is it legitimate for me to use it?*
- *Can I use it in a way that is not offensive to my Indigenous approach?*

To unpack my answers, I first have to acknowledge that, as discussed in Chapter II, there is a high level of praxis within Indigenous research. Therefore, I wondered if using NVivo10, which is a Western scientific data analysis programme to analyse and validate traditional knowledge systems, would pose a risk of distorting such knowledge systems.

Second, the recurring issue of using both Western and Māori methods in an Indigenous research has been considered by Indigenous scholars (see Smith, 2012; Wilson, 2008 and Kovach, 2008). To illustrate this point, I use an extract of a discussion held between Indigenous Canadian Scholar Margaret Kovach and Māori scholar Graham Smith published in Kovach's book entitled *Indigenous Research Methodologies* (Kovach, 2008).

In the interview, Smith mentioned that the example of Gramsci's hegemony helped him to understand this point: 'the critical notion of hegemony is a great tool for

understanding how Indigenous peoples become complicit in forming their oppression and exploitation. It helps us to understand how common sense itself can become co-opted. As such, it is a useful tool to allow this insight, and to understand that both Western and Indigenous knowledge” (p. 91).

I extend Smith’s point by raising the questions above to reason that if one takes a radical view, then Western tools such as NVivo10 cannot be used or adapted for an Indigenous research data analysis. There is a constant proviso that in doing so, one’s result is not the same as the one from Indigenous ways of knowing, because one can only understand such knowledge by understanding the cultural conditions in which the investigation is being carried out.

Taking into account the observations above, I argue that Indigenous cultures are dynamic systems that evolve knowledge over time and are still doing so. Therefore, I adopt the use of NVivo 10 data analysis program to serve as a complimentary tool to the Yupana Indigenous tool. NVivo10 allowed me to capture the large volume of narratives and verbatim data that I gathered from my interviews, and to organise them.

For example, I manually started with a total of 138 codes in Peru and 128 in Aotearoa as shown in the screenshot in Figure 17 below. NVivo 10 enabled me to refine the coding in a more timely and efficient manner.

**Figure 17: List of Initial themes**

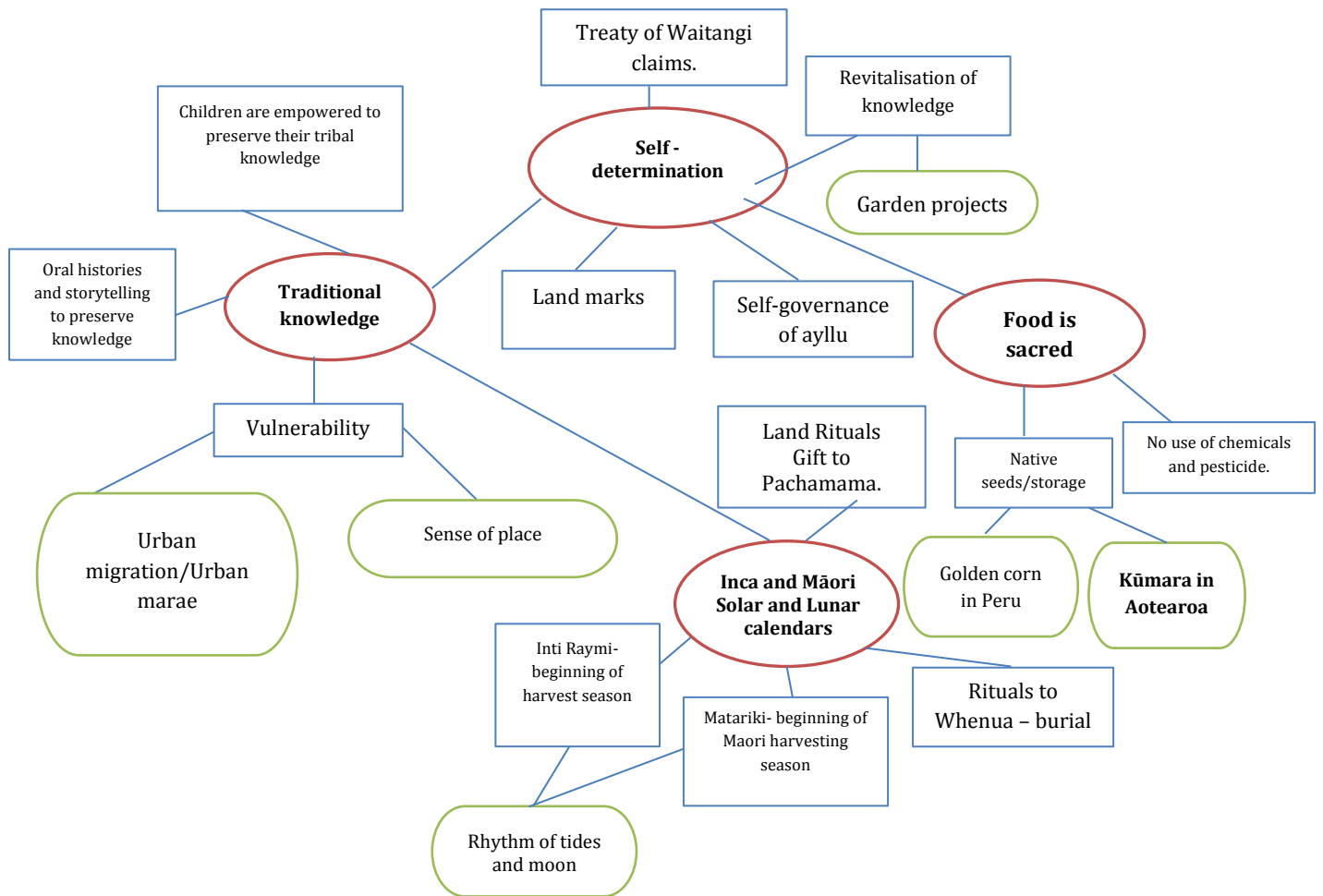
Name	Sources	References	Created On	Created By	Modified On	Modified By
Allin Kawsay reflects the Andean Cosmision		2	5 11/02/2016 1:11 p.m.	MH	5/08/2016 8:16 p.m.	MH
Andean Agriculture Innovations		1	3 11/02/2016 1:23 p.m.	MH	11/02/2016 5:41 p.m.	MH
Andean Traditional Practices to fight plant diseases		2	5 11/02/2016 7:19 p.m.	MH	5/08/2016 8:50 p.m.	MH
Fullege_Biell		1	1 11/02/2016 7:37 p.m.	MH	11/02/2016 7:38 p.m.	MH
Rancho is a big concerning plague		2	4 11/02/2016 7:20 p.m.	MH	11/02/2016 7:38 p.m.	MH
Bartering system efficient for food security		1	1 11/02/2016 1:30 p.m.	MH	11/02/2016 5:41 p.m.	MH
Bartering should be encouraged or revitalised		1	1 11/02/2016 7:39 p.m.	MH	5/08/2016 8:52 p.m.	MH
Climate Change impacts on Food security in the Andes		2	2 11/02/2016 7:36 p.m.	MH	5/08/2016 8:50 p.m.	MH
Climate change resilience in the Andes		1	1 13/02/2016 1:53 p.m.	MH	13/02/2016 1:53 p.m.	MH
Culture identity		3	29 11/02/2016 1:23 p.m.	MH	11/02/2016 5:41 p.m.	MH
Food is sacred		2	7 11/02/2016 5:28 p.m.	MH	13/02/2016 2:01 p.m.	MH
Native seeds		1	1 11/02/2016 7:40 p.m.	MH	11/02/2016 7:40 p.m.	MH
Staple Andean diet		2	6 11/02/2016 7:34 p.m.	MH	11/02/2016 7:34 p.m.	MH
Food resilience		1	1 13/02/2016 8:30 a.m.	MH	5/08/2016 8:50 p.m.	MH
Chulfo Sustainable Processed Potatoes		0	0 13/02/2016 8:31 a.m.	MH	13/02/2016 8:31 a.m.	MH
Collective knowledge		0	0 13/02/2016 8:33 a.m.	MH	13/02/2016 8:33 a.m.	MH
Indigenemus economies		0	0 13/02/2016 8:34 a.m.	MH	13/02/2016 8:34 a.m.	MH
Traditional practices		1	1 13/02/2016 8:33 a.m.	MH	13/02/2016 8:33 a.m.	MH
Food Security Strategies		3	14 11/02/2016 5:28 p.m.	MH	13/02/2016 2:01 p.m.	MH
Barter systems		2	4 11/02/2016 7:23 p.m.	MH	11/02/2016 7:42 p.m.	MH
Dry and store main crops: Chulfo, moraya and com		2	2 11/02/2016 7:24 p.m.	MH	13/02/2016 12:54 p.m.	MH
Knowledge sharing		1	1 11/02/2016 7:21 p.m.	MH	11/02/2016 7:42 p.m.	MH
No Food Scarcity in the Andes		2	6 11/02/2016 5:39 p.m.	MH	13/02/2016 12:55 p.m.	MH
Traditional knowledge to fight diseases		1	1 11/02/2016 7:21 p.m.	MH	11/02/2016 7:42 p.m.	MH
Food sovereignty		3	11 11/02/2016 9:27 a.m.	MH	11/02/2016 12:03 p.m.	MH
Autonomy		2	3 11/02/2016 9:28 a.m.	MH	13/02/2016 1:09 p.m.	MH
First our families, community and the rest for bartering		2	2 11/02/2016 7:31 p.m.	MH	13/02/2016 10:16 a.m.	MH
Healthy food diet		1	1 13/02/2016 10:31 a.m.	MH	13/02/2016 10:32 a.m.	MH
Improved seeds last 3 months		1	1 11/02/2016 1:14 p.m.	MH	11/02/2016 1:14 p.m.	MH
Investment back to the community		1	1 13/02/2016 8:28 a.m.	MH	13/02/2016 10:16 a.m.	MH
Lack of control of land, law and regulations		0	0 11/02/2016 1:36 p.m.	MH	11/02/2016 1:36 p.m.	MH
Golden Corn is a sacred crop in 1 aas		2	2 11/02/2016 5:34 p.m.	MH	13/02/2016 7:01 p.m.	MH

### Stage 3 - Searching for Meta-themes

After the data corpus had been initially coded and collated, I had a long list of the different codes that I had identified across the data set. I then started sorting the codes into potential themes, and collated all the relevant coded data extracts within the identified themes and sought meaning in them. In essence, I started to analyse my codes and consider how different ideas might differ from an overarching theme.

For this phase, I used both tables and mind maps to code and group all interesting verbatim data related to the particular pattern. In the beginning, I had 27 main themes in Peru and 25 in Aotearoa. Also, Figure 18 illustrates an example of my mind mapping, showing four main themes.

**Figure 18: An example of mind mapping, showing four initial Meta-themes**



In this stage, I analysed the relationship between codes, between themes and between different levels of themes such as central overarching themes and sub-themes within them. For example, some initial codes formed central themes, where others formed subthemes or and were discarded. In this phase, I also ended up with a set of codes that did not seem to belong anywhere, and so I created a theme called “miscellaneous” to be able to house those codes.

At the end of this phase, I ended up with a collection of themes and sub-themes, and all the extracts of data that had been coded concerning them. It was at this point that I started to have a sense of the significance of the initial themes. However, I didn’t disregard anything at this stage, because without looking at all the extracts in detail, I would have been uncertain as to whether the themes held as they were, or whether some needed to be combined, refined, separated, or discarded. Table 18 below, provides some examples of how I coded and grouped the initial meta-themes adopting the Yupana coding style.



**Table 18: Some examples of coding initial meta-themes**

Codes	Basic Theme	Organising Themes	Initial Meta- Themes
<p>① Love and respect for Mother Earth: holistic approach with all relations (living and non-living things – spirituality)</p> <p>② Preserve natural resources: Only take what is needed.</p>	<p>Quechua and Māori share a collectivistic view.</p>	<p>Peoples of the land</p>	<p>We are the people of the land</p>
<p>① Rituals to Pachamama and Papatūānuku -Mother Earth</p> <p>② Mauri Ora as the life essence of all crops</p> <p>③ Allin Kawsay brings a state of happiness and equilibrium in our farms.</p>	<p>Rituals, protocols and customs</p>	<p>Fundamental cultural values</p>	<p>Allin Kawsay and Mauri Ora: Good living principles.</p>
<p>④ Self-determination: Land settlements issues in Aotearoa – Waitangi Tribunal.</p> <p>⑤ Ancestral Ayllu system: Lack of land sovereignty recognition in the Andes</p>	<p>Treaty with settlers: advantage for Māori but can preclude the sovereignty of land for Indigenous groups that do not have a treaty in place. Example: Quechua</p>	<p>Treaty of Waitangi is a partnership agreement between Māori and British crown</p>	<p>Treaty of Waitangi in Aotearoa vs No Treaty in Peru</p>

***Stage 4 - Reviewing and compacting Meta-themes***

Because as previously stated there were 138 initial themes found in Peru, and 128 in Aotearoa, in this phase I continued with the refinement of themes, I began to reduce the themes by reviewing every code in my data corpus. Consequently, I realised that there were a few themes that did not fit the criteria for a theme. Other themes collapsed into each other, for example, land claims in Aotearoa in the 1970s and self-governance of ayllu formed one

theme. Other themes had to be broken down into separate sub-themes. I found it useful in this phase to have three levels of reviewing, refining and analysing of themes.

**Level one:** I reviewed all the data at the level of the coded data extracts. In this sense, I read all the collated excerpts for each theme, and I considered whether they appeared to form a coherent pattern or not. Once a set of themes seemed to create a consisting pattern, then I grouped them into a potential Meta-theme. And, I moved on to the second level of this phase. Also, there were occasions that, I had themes that did not fit anywhere, so I had to rework the themes and created a new Meta-theme folder. In this folder, I located the ones that did not fit into an already-existing Meta-theme.

**Level two:** This level involved a similar process, and I considered not only the validity of individual themes with the data set, but also where my mind map accurately reflected the meaning evident in the data corpus.

In this phase, I re-read my entire data corpus for two purposes:

(a) To ascertain whether the themes worked concerning the main meta-themes, and (b) to code any additional data within the themes that could have been overlooked in earlier coding stages.

**Level three:** I began by listing and reviewing all themes captured in Level one and two that provided me with a set of specific meta-themes connected to the research questions. I then reduced this list to a comprehensive set of *common topics* mentioned by Andean and Māori peoples.

Four criteria for *common topics* were used:

1. First, a theme had to have arisen in the entire data corpus. Meeting this standard relied on a process of data reduction (Strauss & Corbin, 1998) in which I grouped the issues relating to a theme into a broader meta-theme. For instance, I arranged into one meta-theme the common topic of Ayni (reciprocity) of Quechua people with the topic of utu (reciprocity) of Māori, into the meta-theme of good living philosophies because in the majority of Andean and Māori interviews these two topics expressed how important spiritual values and ethical principles play in the cultural systems of these two Indigenous groups.
2. The second criterion for inclusion in the Meta-themes was that, data/verbatim should be available from multiple sources and primarily gathered as the subject matter unfolded during the study period, rather than retrospectively.

3. The third criterion was that participant members should consider the topic to be of real significance.
4. The fourth criterion was that, together, the Meta-themes should address the research questions and objectives of this study. Thus, provide a solid piece of empirical research.

This stage concluded with seven Meta-themes:

1. Food is sacred: it is our right to food
2. Strong cultural identity: customs and traditions
3. Self-determination and land rights
4. Traditional knowledge
5. Ethical principles for food security
6. Indigenous innovation systems
7. Sustainability

#### **Stage 4 - Reviewing, defining and naming of final Meta-themes**

Re-coding was a necessary and ongoing organic process, one that I immersed myself in. I spent a considerable amount of time in this stage re-reading, reviewing and refining my coding until I had devised a satisfactory set of meta-themes. Because the more I refined the specifics of each theme, it was easier to cluster them into main Meta-themes and generate precise narratives and definitions for each of them.

I also took time to reflect on how the themes fit into the broader overall story that the data was telling, and whether it was answering the research question, and addressing the research objectives. I wanted to ensure there was not too much overlap between themes. To make sure that the themes clearly embodied the essence of my story, I tested myself by describing the scope and content about specific topics within each theme in a couple of sentences. If I could not do this, then it indicated that further refinement of that theme was needed. In this way, I was able to understand the overall story that the analysis was telling me.

Consequently, I re-grouped and assigned a final name for each Meta-theme. In this stage three Meta-themes were created from the Yupana tool. Table 19 provides the names of the three Meta-themes that will be further use in the analysis of secondary data in Chapters VII, VIII and XI.

**Table 19: The three main meta themes used for this dissertation**

Chapter VII Earth is our Mother: We are the people of the land	Chapter VIII Food is sacred: traditional ways of knowing	Chapter IV Honouring Mother Earth: Good living philosophies
<p style="text-align: center;">①</p> <p style="text-align: center;">② ③ ④</p> <ul style="list-style-type: none"> <li>▪ Cultural identity</li> <li>▪ Cosmovisions</li> <li>▪ Discrepancies between Western and Indigenous view of land</li> <li>▪ Land rights</li> </ul>	<p style="text-align: center;">②</p> <p style="text-align: center;">⑤ ⑥ ⑦</p> <ul style="list-style-type: none"> <li>▪ Relationship of people and land.</li> <li>▪ Food security resilience (Inca and Maramataka calendars)</li> <li>▪ Recognition of traditional knowledge</li> <li>▪ Environmental, social and economic protection.</li> </ul>	<p style="text-align: center;">③</p> <p style="text-align: center;">⑧ ⑨ ⑩</p> <ul style="list-style-type: none"> <li>▪ Allin Kawsay, te ātanoho and Mauri Ora.</li> <li>▪ Cultural values guiding food security</li> <li>▪ Legal frameworks and Indigenous peoples. Peoples</li> <li>▪ Food sovereignty is a pre-condition for food security</li> </ul>

The next stage describes the analysis process of the Yupana tool, followed by the crystallisation process, and summary of research findings.

### Stage 5 - Meta-Themes Analysis Process

In this stage, I explain the analysis process of the Yupana as follows:

Firstly, following Eisenhardt and Bourgeois (1988), I developed a narrative between 5 and 25 single-spaced pages related to each of these three Meta-themes. For example, I chronicled Māori and Andeans' agricultural systems in post-colonisation times. Also, narratives about Quechua and Māori peoples' TEK in relation to their good living principles, cultural values, innovations systems such as the Inca and Māori calendar that influence their knowledge on food production practices.

Secondly, I constructed a set of 27 narratives describing traditional Indigenous practices for food production by tracing through all the chronologically ordered raw data for each interview that was identified every time a given issue arose. Also, I recorded the values that underpinned such traditional practices through quotations from a combination of interviews, meeting transcripts, archival documentation, secondary data, and field notes. At

the end of this phase, I had a substantial amount of empirical data informing the initial themes, how they fitted together, thus heralding the overall story of this investigation.

Thirdly, once I had sets of narratives for all themes, I then examined historical accounts, secondary data related to the themes, activities, stories, and metaphors for each of them. For example, in the narrative below:

*“We are bringing back our traditional practices slowly, but we are. We are practicing spirituality in the garden because we need to acknowledge our Atua (spirituality)’ and Germany, Switzerland, and all other countries had a strong inclination for the organic concepts. In my deep analysis and use of the practice of organic food production, there were still something lacking, and what I couldn’t sort of capture at the time. I asked myself was is lacking? So, I did some compatibility in terms of the traditional ways and practice of organic food. And based on my analysis, then I was asked to be part of a process of setting up the New Zealand Minimum Standards, you know, for organic food in Aotearoa”*

The narrative above suggests that there is a difference between traditional and organic food production practices from a Māori perspective. Therefore, I analysed such narrative with second data about organic food production in both countries. Similarly, further examination about Māori revival of their traditional food practices as implied in the narrative warranted secondary data analysis. I engaged in an iterative, cross-case study analysis, building up broader meaning to the quotations and metaphors between these two groups. For example, I not only examined what are the key traditional practices of Maori’ agricultural systems but the Quechua people too, and the implications of their knowledge of food security.

Finally, secondary data on the main topics within each Meta-theme such as the history of Quechua and Māori people, traditional food practices, food security, food sovereignty and industrial food production supplemented the Yupana analysis tool. In the next page, Figure 19 illustrates the three Meta-themes being captured in the Khipu knots. Thus, the analytical role of the Yupana complements the record-keeping functionality of the Khipu.

**Figure 19: The Khipu recording the Yupana's three Meta-Themes**



The next section explains the crystallisation of results.

### **6.5 Crystallisation/Validation of Results**

The validation of results is twofold:

- (a) It involved the gathering of research participants to discuss the research findings. In both countries, a series of power point presentation was prepared and presented to the study communities describing the summary of the major research findings. Because of the remote locations of Quechua communities, I spent approximately three weeks living in each community. I reside in Aotearoa so it was easier for me to go back and forth to the iwis where I spent an approximate of three days in each one. Participants' feedback coupled with moderate observations and note takings were used to source data on specific issues found in the research analysis.
- (b) I participated in a series of events about Indigeneity specifically about Māori and Quechua culture, traditions, and food security initiatives. For example, I attended the Mautaranga Māori workshop held in July 2012 by the NgāPae o te Māramatanga (New Zealand's Māori Centre of Research Excellence (CoRE)).
- (c) In 2014, I travelled to the United States to take part of the Food Sovereignty Summit held in New York City. In addition, in August 2015, in my capacity of scholar-activist, I was invited by Percy Tipene, and members of the Papatūānuku marae to publicly acknowledge the approval of the Papatūānuku marae as an organic Māori urban garden. Recently, in May 2016, I was part of the Food Sovereignty Workshop organised by the Mira Száscy Research Centre held at the University of Auckland, where I presented and discussed the research findings of

my study. I took notes of responses, and discussions which helped me significantly with the continued revision and crystallisation of my results.

To conclude this section, all mentioned above is the validation method that I used to provide authenticity and credibility of my study. It also provides evidence of the meaningful and substantial reciprocal relationships I built with my research participants.

Following from the crystallisation of results, I describe a summary of the results in the next section.

## **6.6 Summary of research findings**

The outline of the results of the research is as follows:

Firstly, this comparative investigation concludes that Andean and Māori food security framework challenges the notion of the current food security concept, and argues that culture systems are and should be part of the food systems. In resonance with this statement, this study shows that there are three sets of interrelated relationships between Quechua and Māori in response to food security:

- collective/buen vivir system
- food is sacred: knowledge and practices,
- self-determination
- a holistic sustainable approach

Each interrelationship reflects the reciprocal culture-land/resource relationships that are fundamental to Indigenous Peoples' food and livelihood systems and their well-being. This is a critical finding because if this is neglected, then the resulting policies risk to be inadvertently reproducing and deepening the damages they intend to redress.

Secondly, Quechua and Māori food security models resonate with the food sovereignty and the right to food concepts. The Quechua and Māori framework ensures both the right of individuals and human right to food are achieved without compromising the sustainability of the ecosystems such as land and water. In addition, such framework supports human well-being such as malnutrition, and respects the natural habitat of farming people. It is within the understanding of the differences of food security and sovereignty coupled with the analysis of previous chapters that supports the argument that understanding of safeguarding food security from Quechua and Māori perspectives is linked to the notions of the concept of food sovereignty.

Thirdly, this research project concludes that it is impossible for Quechua and Māori people to safeguard food security outside the framework of food sovereignty, and finds the current global food security framework does not resonate with the realities and worldviews of Indigenous communities. Quechua and Māori cosmovisions contest the current discursive global food security approach by highlighting the importance of considering an Indigenous holistic food security criteria being presented in this study that reflects and prioritises their cultural system. Fundamental cultural values of Quechua people: *Ayni* (reciprocity), *ayllu*: (collectiveness), *yanantin*: (equilibrium), and *chaninchay* (solidarity). Similarly, for Māori *Kaitakitanga* (guardianship), *whakapapa* (kinship), *tikang* (ethics), and *wairuatanga* (spirituality) play a vital role as cultural and environmental indicators that influence their agricultural practices for the attainment of food security and well-being.

Collectively, the findings of my investigation demonstrate the importance of the TEKs of Indigenous peoples and reflect their struggles to be part of the current global responses to address the food problem. Further, findings encourage a paradigm shift in food security implementation policies. A shift that entails moving away from a myopic Western approach of food security towards the conceptualisation of a holistic view of safeguarding food security that integrates Indigenous peoples' knowledge and innovation practices to find common ground pathways to tackle other pressing issues affecting food security and humanity such as climate change. The summary of this proposed paradigm shift based on this investigation is below.

Based on the research findings mentioned above it is evident that the Yupana data analysis tool has served its purposes of providing substantive analysis of the empirical and secondary data. To describe the analysis of this empirical investigation in a coherent and descriptive manner. The next three chapters are dedicated entirely to the providing a Meta-analysis of the data. I engage three meta-themes to do this across three chapters, VII, VIII and IX. This is followed by a discussion of the findings and then the conclusion chapter.



## **CHAPTER VII: META-ANALYSIS OF META-THEME: EARTH IS OUR MOTHER: WE ARE THE PEOPLE OF THE LAND**

“I am tangata whenua – I am the people of the land”

“Pachamama is my mother: I sing and dance for her every day in my farm”

Gathered from Māori and Andean peoples’ data collection process in

Peru and Aotearoa (July 2014 to August 2015)

### **7.1 Introduction**

This chapter provides an analysis on how Andean and Māori cosmovisions influence their relationship with the land and the environment. This chapter has two sections. Part 1 refers to Māori narratives and Part 2 to Andean stories, concluding with the summary section of this chapter.

*The main objectives of this chapter are:*

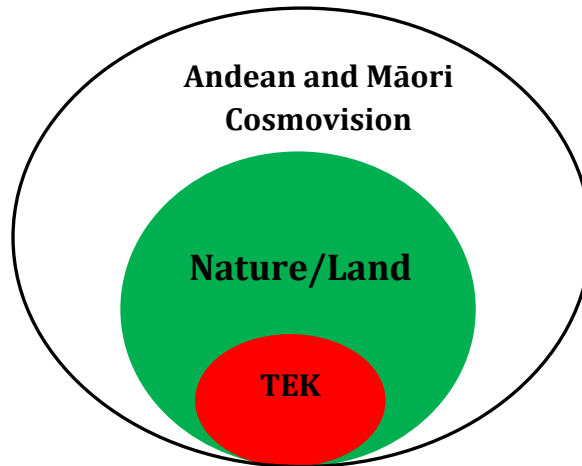
- To provide an in-depth understanding of the perspectives of Andean (Altiplano Andes) and Māori (North Island) peoples’ worldviews concerning food security.
- To investigate the significance of land (Pachamama and Papatūānuku) for Quechua and Māori through the TEK lens.
- To gain insights into the discrepancies, grievances and implications of Quechua and Māori views of the land.

### ***TEK Theoretical framework***

Figure 20 outlines the TEK framework to address the following questions.

- How do their worldviews of land influence their approaches to food security?
- What are the discrepancies between their approaches to land compared to the Western view?
- What are the main causes of grievances and conflicts threatening their food security?

**Figure 20: TEK: Nature/Land Dimension**



Source: From Berkes (1993) and Lajo (2011)

## **7.2 Earth is our Mother**

The meta-theme ‘Earth is our Mother’ emerged in this investigation. In alignment with my research approach and methods, I convey Quechua and Māori research participants’ voices embedded in this meta-theme using a storytelling method.

### **PART I: MĀORI NARRATIVES**

In resonance with the Indigenous research-based approach of this study, the descriptive narrative of this section begins with an explanation of the protocols and customary practices that I undertook in each of the talking circles, workshops and interviews during the empirical process of this investigation in Aotearoa.

I begin with Māori research participants who took part in a series of talking circles that I organised with the Iwi of Ngāti Porou, Ngāti Tūwharetoa, Ngāti Ākarana, Ngāti Hine between the months of March and June 2015. The characters in this story telling are Eruini, Rawhinui, Rangi, Rachel, Tāwhito, Elder Ngāti, kaumātua Eruera, Kaha, and Hinetu<sup>35</sup>.

During the Easter break of 2015, I visited my Māori colleague’s ancestral land—the Iwi (tribe) of Ngāti Porou. Specifically, I visited the hapu (sub-tribe) of Ruatoria, which is a predominantly Māori town on the East Coast of Aotearoa New Zealand’s North Island. This was an excellent opportunity to foster further personal and professional relationships with kaumātua and Māori academic leaders engaged in traditional food production.

I landed at the Gisborne airport, and through the morning haze, I saw my friend who was waiting for me. She greeted me with a warm welcome from the Iwi of Ngāti Porou. With my gear in the back of her car, and ready for the three hours’ car ride, we started the

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<sup>35</sup> I gave fictitious names to the people who took part of this research to protect their privacy.

long but pleasant journey to her hapu of Ruatoria. The scenery was beautiful and included colourful forestry and surf beaches.

Once I arrived in Ruatoria, I was invited by my friend's family to the Whareponga marae where I was greeted with a pōwhiri (Māori welcome or ritual of encounter). The pōwhiri included calling, wailing and chanting, and as explained to me by a wāhine rangatira (woman leader) named Ngātu: "*it goes beyond a simple reception for visitors. Rather it is an encounter aimed at reducing space and distance between groups and to harness relationships*". I still remember the lyrics of the pōwhiri chant which was explained to me by Hine (my Māori friend's mother) and which I documented during my field trip to Ngāti Porou.

The pōwhiri started with a warning shout in Māori: whakaarara (chant) or whakatūpatō; Tihei....mauri ora (I sneeze – it is life!). The orator (Hine) shouted these Māori words from her bench, then stood up, catching our attention. She proceeded to give a sign to her fellow Māori to be ready to launch into chant. The whakaarara began with: Kia hiwa rā – be watchful, be wakeful:

***Kia hiwa rā Kia hiwa rā!***

Be watchful Be wakeful!

***Moe araara ki te matahī taua!***

You have to stay awake to catch eels

***Moe araara ki te matahī taua!***

You have to stay awake to catch a war party!

***Ka tiritiria, ka reareaia a tama tū ki tōna hiwa rā,***

Scatter, rise up, stand in your places,

***Kia hiwa rā! Kia hiwa rā!***

Be watchful Be wakeful!

***Kia hiwa rā tēnei tuku, kia hiwa rā tērā tuku***

Be alert on this terrace. Be alert on that terrace

***Kei whakapurua koe ki te toto,***

Or someone will wound you and make you bleed.

***Papaki tū ana te tai ki Te Reinga***

The tide is beating to Te Reinga

***Eke panuku! Eke Tangaroa!***

Move one! Up Tangaroa!

***Hui e! Taiki e!***

Together! It is done!

~Welcome chant~

Following the pōwhiri was the mihimihi or pepeha (introductions) that culminated with a waiata (song). After formalities had been concluded, Eruini, Rawhinui, and others started sharing stories about the importance of whakapapa.

### 7.2.1 Māori Whakapapa: Genealogy

**Eruini:**

*“My name is Eruini, and my waka is Te Arawa. That is, where my lineage comes from – well on my mother side because from my dad’s side he is from Taranaki from the Tokomarua waka. My uncle who brought me up taught me about being Māori, and one the things that he taught me is: you need to know your whakapapa because that traces you to all your relations.*

*We are descendants of Rangi and Papa, the two main gods, and then they got all the little gods after them, who their children and they control all of Nature”.*

The narrative above refers to the origins of Māori and is inherent in their whakapapa that still reverberates within Māori people’s culture and is documented in Māori history and literature (see Best, 1973; Bishop, 1998; Moko Mead, 2003; Salmond, 1984). In Māori mythology, Papatūānuku and Ranginui were lovers who found great fulfilment in their union because it was a union between the two worlds—the spiritual and physical, culminating in the birth of their children (Barlow, 1991; Best, 1973).

Before I proceed any further with the explanation about the importance of whakapapa for Māori, another character in Māori mythology worth noting is Kupe. According to research participants from the North Island:

*“Kupe is regarded highly within our whakapapa because Kupe was the first person to discover Aotearoa”<sup>36</sup>.*

In North Island tribal traditions “Kupe is a discoverer and contemporary with, but older than, Nukutawhiti, the ancestor of the Ngā Puhi people” (Simmons, 1976, p. 34). The name of Kupe appears in the legend of Māui recorded in 1841 by Louis Catherin Servant, a Marist missionary (Barlow, 1993; Stirling & Salmond, 1980). Māui was the offspring of Tūmatauega (god of humankind), and in spite of being considered an outcast, he gained a reputation for taming the sun, capturing fire, and, more importantly, he fished up the North

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<sup>36</sup> Research participants from the five Iwi stated that in their Māori mythology of creation, Kupe is the one who discovered Aotearoa.

Island of Aotearoa, resulting in him being called in Māori Te Ika ā Māui, meaning ‘ Māui’s fish’. Then, Māui returned to Hawaiki where he imparted his navigational knowledge to other seafaring men, one of them being Kupe. Then Kupe fled from Hawaiki in his waka (canoe) named Matahourua and successfully landed in Aotearoa (long white cloud) (King, 1992; Shortland, 1980; Salmond, 1976).

Other tribal stories report that the first Māori inhabitants of Aotearoa arrived in various waka such as Te Arawa and Mātātua, which among others, settled in the unclaimed territory (Simmons, 1976). The crew members of each canoe cleared the land and began to harvest it. The population was organised into iwi (descendant groups of different scale-tribes), hapū (subtribes), and whānau (Buck, 1949; Walker, 1989, 1992). As the research participant Tāwhito stated:

*“Such events are of great importance for us because these stories express and tell us our whakapapa, it influences our relationship with Māui and provides the basis for us to trace our lineage and affirm our Indigeneity in Aotearoa”.*

The relationship Māori have with the land is based on whakapapa. Additionally, having a wider understanding of whenua tipu (traditional lands), and mahinga kai (traditional foods) are important for Māori Indigeneity. These concepts are imperative for Māori identity, particularly to know who they are, where they come from, and where they were born, as this establishes their connection with their land—Papatūānuku (Best 1976; Bishop, 2008; Durie, 1997; Jackson, 2000; Salmond, 1976; Walker, 1991). In doing so, whakapapa illuminates the layering of relationships between Māori and the wider community, in which mountains and rivers are regarded as sacred living entities (Williams, 1975; Henry & Wolfgramm, 2015). The quotations above provide evidence about the importance of whakapapa for Māori in Aotearoa.

### **7.2.2 Wairua: Spirituality and associated deities of food**

Concerning Māori deities for agricultural purposes, there are two major gods: Rongomātāne (god of cultivated food) and Haumietiketike (god of uncultivated food). The narrative by research participant Rachel highlights the role of karakia (prayers) in the cultivation of Māori food:

**Rachel:** *“I still remember seeing my koro (grandfather) performing a karakia when we planted our kūmaras and watermelons. Ah... those were the old days when you were a native of the land. He told me once about the union of Papa and Rangi, he also told*

*me about their children. For example, you've got Tangaroa, Tane, and Rongomātāne. Rongomātāne and Haumiatiketike are important to me because they are the gods of food. So I always say a prayer. My koro told me that the wairua element is probably one of the biggest reasons why and how we connect with Papatūānuku because we all come from Papatūānuku.*

*We still practice our customary practices and every time you plant your crops, you go and do a karakia to Rongomātāne or Haumiatiketike, to the cultivator of plants. I think it's similar to other cultures, Indigenous cultures around the world where you go and get permission to plant kai and ask all the gods to look after your kai.*

*And when you harvest your kūmara you do another karakia to say thank you for growing nice and healthy food without hurting Papatūānuku with pesticides and all those sorts of things. It is really basic tikanga stuff that Māori people, we still do it today”.*

Māori attribute spiritual and cultural significance to certain words, images and locations such as the performing of a karakia (prayer). In the book by Paul Moon (2003) entitled *Tōhunga: traditional Māori healer*, Moon captures the thoughts of tōhunga Hohepa Kereopa about the role of karakia in planting food. Tōhunga Hohepa believes that karakia and mauri complement each other because mauri gives karakia its full spiritual impact. He discusses that an essential part of a karakia is to listen carefully to the matter being addressed. For example, if one just says the words of a karakia without any mauri (energy), then they are simply empty words. In this way, the people who are present in the karakia can feel the spiritual connection and understand what the mauri of a karakia is. Māori scholars support the interpretation of tōhunga Hohepa Kereopa (for example see Best, 1982; Barlow, 1993; Hēnare, 2001, 2003; Pohatu, 2010; Moko Mead, 2003) who reaffirms that karakia has its mauri and therefore the mauri is the life-force of karakia.

***Elder Ngāti:***

*“Kapai! We do a lot of those karakias when we go and plant our kai because how you grow your food affects the end product. So if you harvest traditional kai then it harnesses your*

*well-being and wairua because you are nourishing your body with nutritious food: food is medicine and medicine is food.*

*Every time I harvest things, I talk to my plants before I cut them, and I ask for their permission to say eat them. By doing this there is no harm made to Papatūānuku, nothing for me to worry or apologise to her for because I have gone through the right process of showing respect to her”.*

Elder Ngāti explained further that it is the spiritual element expressed through karakia at the beginning, during and after food production that brings forward the spiritual connection with Papatūānuku. Māori conduct a karakia to god Rongomātāne because he is considered the creator and protector of vital Māori crops such as the kūmara, taro and yams (Best, 1986). Elder Ngāti’s comments are confirmed by the literature about Maori spirituality which explains that rituals and practices are constructed and enacted in ways that connect the self with the cosmological community of divine beings (Hēnare, 2003, 2011; Wolfgramm, 2007; Spiller et al. 2011; Shirres, 1997; Walker, 1975). Such explanation resonates with the karakia for the blessing of food, as Elder Ngāti stated, “*we perform a karakia to remove the negative wairua in things and because food is considered noa, then I perform a karakia to bless the food*”.

Wairua is a fundamental part in the Māori worldview. Spirituality is a dimension internalised within a person from conception—it is the moment when the seed of human life emanates from the mystic realm into Earth (King, Hodgetts, Rua & Te Whetu, 2015; Hēnare, 2011; Pohatu, 2010; Wolfgramm & Waetford, 2015). Another example about the importance of spirituality in Māori culture is found in the narrative below:

**Ngārimu:**

*“My mother performed a karakia every time we were planting kai. And she had a little kūmara God, it was made of pumice, a little hand carved thing. We never ever saw it, but we knew she had one, right up till we were small children, and big children, and adults, she had that little atua that she cared about. But we weren’t allowed to touch it.*

*And certain children had to bless certain crops. Mine was watermelons, because she said I had a big head.*

*Do you know how to plant watermelons? I tell you how you do it: You put the seeds in a circle, go one, and right around, like*

*that, press them in. Then you put one in the middle that would give you your central point.*

*And she would stand there and do her karakia, and then in English she would say, and when you grow, may you grow as big as her head. So I told her I wasn't going to help anymore, I'd go inside and cook.*

*So I retired from gardening and became the cook”.*

The vignette above suggests that Māori acknowledge atua as a mystical force that governs and influences the way Māori interact with the environment. Atua are considered as spiritual beings or gods. For instance, fish are seen as descendants of Tangaroa (god of the sea), and therefore Māori regard traditional fishing as both practical and spiritual activities (King et al. 2015). Further, each iwi, hapu and whānau has distinctive kinds of atua. For instance, Tāne is acknowledged as the atua or deity of the forest, and Haumiatiketike and Rongomātāne are the atua of uncultivated and cultivated food respectively. The offspring of Haumiatiketike are the various fern roots that can be dug out and dried in the sun (King, 1992; Moko Mead, 2003).

Another rangatira pointed out that “*through karakia, ritual or prayer we Māori are able to acknowledge and respond to the atua that supports the change and growth of the natural environment, and all things in our amaara*<sup>37</sup>”. The spiritual interaction with the natural environmental through karakia supports the growth of food that is healthy for the spirit, the soul, and the body.

Based on my fieldwork observations, I noted that for the majority of Māori people who took part in this research, the physical realm interacts with the spiritual realm, and therefore, every human act is considered to have both physical and spiritual implications. A powerful belief in supernatural forces affects the way Māori interact with one another and also with the environment (Best, 1982; Metge, 2001; Shirres, 1982).

### **7.2.3 Whenua: Placenta, land and Papatūānuku**

Whenua (placenta) has several meanings, but for the purpose of this section, I will consider its significance in relation to the land (Moon, 2005). From a Māori viewpoint, just as the world was born from Papatūānuku, so humankind is born from women.

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<sup>37</sup> Maara means cultivation in Māori.



**Tāwhito:**

*“We are all offspring of Papatūānuku. Papatūānuku for me: well... it’s everything. And whenua that’s our word for land also means placenta. Yes, I am referring to the placenta that nourishes a baby in the womb.*

*When I was born, my placenta was buried in my mountain and next to my grandmother, so that is my whakapapa. It is also our symbolic bond with Papatūānuku.*

*And in Māori terms, it is the essence of being Māori; it’s being the children of the Papatūānuku so that says a lot in itself.*

In Māori traditions, Papatūānuku is the land, a Mother Earth figure who gives birth to all things of the world and imparts many blessings to her children. Māori believe that to be Indigenous is to be born from the land where you live, and continually born and reborn through an intimate relationship with the earth, sea and sky (Hutchings, 2015; Moon, 2005). The vignette above makes reference to whenua, which is the Māori word for land, and which also means placenta. Whenua is the lining of the womb during pregnancy, by which the foetus is nourished, and it is expelled with the foetus and the umbilical cord following birth (King, 1992; Puckey, 2011). Research participants mentioned that after a Māori woman gives birth, the whenua of the baby is buried in a special place, usually at the whanau’s tipuna (sacred mountain), where no one can walk over it. In Māori traditions, whenua gives birth to all things, and provides the physical and spiritual basis for life.

**Elder Ngāti:**

*“So, it’s a bond with our Mother Earth, it influences how we think, and that’s how we interact not only with her but with all of our surroundings; it just plays such an important part of who I am as a Māori”.*

The physical and spiritual well-being of Māori is linked to the land that she or he belongs to. The land expresses Māori well-being by right of discovery or occupation, through ancestral inheritance and conquest. Whānau help to control, develop and guard the area of land and resources allocated to them by the hapu with whom they identified (Moko Mead, 2003; Salmond, 1984; Stirling & Salmond, 1980).

Now I will share my meeting with kaumātua Eruera and a portion of my conversation with him about the following question: What are your views of land? The next couple of days I spent my time visiting two other nearby marae in Ngāti Hine (Northland region) where I was invited to be part of a small hui. I made contact with one of the tribal leaders at Ngāti Hine who kindly organised a hui for me to meet other tribal members,

including kaumātua and community leaders primarily engaged in land preservation, traditional knowledge and rongoā (medicinal use of plants). It was during one of these meetings that I met with kaumātua Eruera who had already been referred to me by his peers as a key person for me to interview due to his substantial involvement with both food production and cultural endeavours in his community. Later in the hui, I formally asked kaumātua Eruera to be a research participant in my investigation, and he happily agreed to it.

***Eruera – Māori kaumātua:*** “Land for me is everything. We have got this concept of *tūrangawaewae*; *tūrangawaewae* is a place to stand. You’re nobody if you don’t own land, that’s how our forefathers in simple terms explained it us.

*And they always stressed that that was the most important thing of being Māori, to own your own land. But then, you know, it only became sort of apparent, much later on to us, because only by following our parents and our grand aunties around. They always stressed the importance of the land, and whether you like it or not.*

*Tūrangawaewae are places where we feel especially empowered and connected. They are our foundation, our place in the world, our home.*

*“To be Māori is to be born from the land where you live, and continually born and reborn through an intimate relationship with earth, sea and sky”.*

Kaumātua Eruera’s answers to my question about land were connected with Māori principles, beliefs, and spiritual connection to the land, which provides evidence of their unique TEK regarding their relationship with Papatūānuku and sustainable food production. Particularly, his answer encapsulated the Māori principle of *tūrangawaewae* (a place to stand). I broke his answers down into two parts, and I shall begin with an analysis of the principle of *tūrangawaewae*. In Māori the word *tūranga* (standing place) and *waewae* (feet) is translated into English as “the place for the feet to stand”, and concerns the foundation of being Māori, their identity and their place in society (Bishop, 2005; Durie, 2000; Walker, 1996). In exploring this concept, two interesting questions come to my mind: Do Māori have a place to stand by having a birth right? What is the birth right of a Māori child? These are interesting questions to ask because, based on the participant’s responses, to be Māori is to have *tūrangawaewae*.

Moko Mead (2003) proposes that the concept of Tūrangawaewae relates to attributes of identity, and he raises the question of birthright—Kaihau-waiū. He further suggests that “a person is born into the world with a heritage that might be very limited or quite extensive. In the Māori case, the birthright includes a spiritual aspect” (p. 53). Research participants expressed their interpretation of a person’s marae to be a source of identification with their Tūrangawaewae because for Māori the marae symbolises the place where their ancestors are present; it is their ancestors’ land. The impact of the loss of land for Māori is explained further by community leader Kaha:

**Community leader Kaha:** *“Much tribal land was lost in the 19<sup>th</sup> century and against the will of my people. Because of this, many people felt they had lost their tūrangawaewae, their sense of foundation and stability. Land for us represents a place; our history and stability as Māori of Aotearoa”.*

An important historical passage for Māori is the Treaty of Waitangi, which was signed on 6 February 1840. The Treaty of Waitangi or Te Tiriti o Waitangi was signed between the Māori leaders, known as rangatira, and the British Crown (Ballara, 1998; Charters, 2007; Orange, 1987). But discrepancies in the English and Māori versions have long been the subject of debate.

**Hinetu:** *“The loss of tribal land in the 19<sup>th</sup> century due to land being taken against our will and the involvement of our Māori soldiers in the Second World War was further exacerbated by land confiscations that resulted in the loss of many Māori’s tūrangawaewae”.*

*This was in 1940s, Second World War, 1939 to 45, and the First World War. And you know what else the government did? For Maoris who lost their land that was confiscated, we never got it back. The government still has it today which is why we’re doing the settlement. A lot of the Pākeha that went to war were able to enter into a ballot. They put their name in like a raffle and when they came home from the war they put their name in it and then they had a draw. And they drew for the land.*

*It was our land! That the government confiscated from our soldiers that went to war. That’s why we’re bitter. Also, the*

*crème de la crème of Maori society was lost during the Second World War. Yeah, the crème de la crème of Maori society was lost during those wars because some of them were rangatira and wise traditional Māori men. Now all that knowledge is gone, the repository of all that customary stuff, a lot of it is gone.*

*And then on, practices on our marae, we're really limited on our Te Reo Māori speakers. Fortunately, in our whānau, we've got Tatai, but he's in great demand, you know, someone passes away, instantly they ring him up. So they're still trying to retain that knowledge. But to retain that wisdom is to be able to overcome the challenge of being treated as second class citizens in our own country so we need to bring the next generation up with Māoritanga and Te Reo Māori engrained in them”.*

Repercussions of the participation of Māori people in the Second World War have been felt in the large-scale urbanisation of Māori away from their land in the 1950s. They had relocated to be part of industries such as wartime manufacturing, or perhaps had repaired aircraft during wartime or had fought overseas along with Pakeha, and upon their return to the country had become more familiar with the European way of life (Jackson, 1989; Sorrenson, 2014).

The Māori view of land ownership evolved over time specifically for agricultural purposes, wherein Māori agricultural pursuits were combined with economic success through the forming of Māori incorporations (Jackson, 1993b; Puckey, 2011). An example is an incorporation that evolved in the East Coast between 1894 and 1909, which was formed by members of extended families who wished to develop farmlands of which they were co-owners.

As Sir Apirana Ngata explains:

“It was necessary on one hand to evolve a system of organising the individuals and the title in such a way as to stabilise corporate action and legal decisions, and on the other hand to secure legislative recognition of the title expressing such as organisation as could be legally offered to a money lender and on which he could lend. The system is known as the

incorporation of native land owners and is in effect an adaptation of the tribal system, the hierarchy of chiefs being represented by the Committee of Management” (Ngata, 1940, p. 140).

Up to 1940, the European intervention had thus produced two principal effects: Maori had lost most of their land, and the rest was no longer under the ultimate control of large, relatively powerful political groups such as iwi or hapu. The typical controllers of Māori land had become the whānau or extended family (Bassett, Steel & Williams, 1994; Ballara, 1998; Walker, 1990). This was not true for many of the larger undivided blocks—in those cases, people had to acquire the title through succession under the Māori Land Court rules. The most significant development in land settlement in the mid-1940s was the purchase of land for all soldiers returning from the Second World War (Bassett, Steel & Williams, 1994; Orange, 1987; Puckey, 2011).

All of the Māori research participants indicated that they are reluctant to sell their land, and the reason is eloquently described by one of the research participants: “I am tangata whenua – the people of the land”, emphasising that the value of land for Māori goes beyond financial means, and it is embedded in their Indigeneity. I next present some vignettes that captured the value of land and food for Māori.

### *Land for food*

Here I present narratives that eloquently express the Māori view of food for their sustenance.

**Tāwhito:** *“Me tiro haere ki ngā āhuatanga o te pūtaiao hei arahi ia rā, ia rā... To view aspects of native science to guide our everyday as well as find spiritual guidance on a daily basis from nature.*

*We should use our senses to observe changes and indicators within the natural environment to preserve Papatūānuku”.*

The quote above is from research participant Tāwhito who suggests that we need to understand what is happening in our land or garden because land requires us to have a continuous relationship with the natural environment for our sustenance.

**Ngārimu:** *“My people are neat gardeners and in the beginning, we only had four food plants: our kūmara – of course, gourd, taro and yam. We were given a task.*

*Yes, we have to deal with one of the most important arts presided over onto us by great Rongomātāne. It is the art of*

*cultivating our food products. And we still carry out this art of cultivating our food crops.*

*The genesis of Māori traditional farming is based around pre-Treaty, you know, before the Treaty, we lived on birds and fish and kūmara, and some tree and plant roots. That's all we grew”.*

This narrative reveals the intrinsic relationship that Māori people have with food and land. Kūmara, as well as other food crops such as the taewa riwai (Māori potatoes), are considered treasured foods for Māori (Williams, 2014). Kūmara is particularly special for Māori because they believe they have an ancestral relationship to the crop that goes back for generations. The abundance of kūmara has often been presented in Māori hākari (traditional feasts) (Roberts et al., 2006; Ropiha, 2000).

**Ngārimu:** *“Hākari is also important for us because it has to do with our hospitality with guests. We have a variety of traditional feasts to celebrate the land because it provides us with food.*

*Hākari strengthens our relations with our community and other Iwi because ka kai tahi tāttou I te hākari – we will eat the feast together”.*

The importance of Hākari (ceremonial feast) in Māori culture goes beyond a connection between land and food, and is the ability to demonstrate hospitality and mana with food arranged on the high stage and shared through ceremonial eating (Williams, 2014). Because of the mana of the host during hākari, the hosts would cook extravagant food in an attempt to provide the biggest feast and hospitality without any room for the guests to undermine them in the future (Moko Mead, 2003; Mead, 1996).

There are some traditional hākari; for instance, the tangihanga (funeral), especially of a rangatira, marriage and the hākari for agricultural purposes (Rubel & Rosman, 1971; Williams, 2004). The ngahuru hākari (autumn festival) celebrates the harvesting season of the kūmara in March and the appearance of Matariki (Pleiades) or Puanga (Rigel or brightest star) in the sky, representing the Māori New Year (Mahuika, 2012; Tapsell, 2002). Additionally, kaihaukai was another traditional feast where tribes exchanged foods from their regions—for example, seafood (paua and kina) was exchanged for food from the forest (flax and timber). For Indigenous communities, where there is land, there is life (Ropiha, 2000; Williams, 2004). The connection between food and land embraces relationships within the whānau, and among all living and non-living things (Carr, 2007; Durie, 2000; Mahuika, 2012).

To conclude this section, the inherent relationship that Māori have with their land based on their whakapapa represents the basis for determining the rights of Māori to use the land. Moreover, it reflects the Māori cultural identity of being direct descendants of the land. Thus, they see themselves as not only belonging to the land but as the land itself. These narratives speak of Māori worldviews grounded within the intimate relationship between themselves and Papatūānuku.

The next section Part II distils the meaning of the meta-theme of ‘Earth is our Mother’ from an Andean worldview.

## **PART II: ANDEAN NARRATIVES**

### **7.2.4 Andean lineage**

In a similar vein to Part I, I begin this section with my experience visiting and conducting talking circle interviews and workshops at the Quechua ayllu<sup>38</sup> (communities) of Sacaca, Pampallacta, Choquecancha, and Rosaspata between July and December 2014.

The characters in this Andean story telling are Tirzo, *Narcisso*, Agustín – Andean Amawta, Elder Runi, and Petronila, Sonia and Marta<sup>39</sup>.

After three days of intense hiking, I started the long ascent to the Quechua community of Choquecancha. Hoping that the slight drizzle would not give way to a torrential rain, I continued walking uphill on a narrow wet path where I could see from the distance a lady wearing a colourful traditional Quechua costume waving at me enthusiastically.

Once I reached the top of the steep Inca slopes, I was warmly greeted by Petronila, Sonia, Marta and Sofia. “*We are delighted that you came to visit us at the ayllu of Choquecancha*” they said, with welcoming smiles, and they greeted me with a warm embrace. Since I arrived at around lunch time it was not appropriate for me to start with the talking circles nor engage in conversations about food. Rather, I embraced our encounter by getting to know each woman and delighted in a delicious lunch with these Quechua ladies. Petronila invited all of us to sit outside her house, which had beautiful views of the Andean mountains.

Petronila quickly sent her grandchild Lupita to bring us roasted corn to snack on while we waited for the soup to be ready. I was told here that the very first thing Quechua

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<sup>38</sup> Ayllu: Community that acknowledges all of its members—human and non-humans (sea, mountains and rivers) —since all are interconnected and so belong to the ayllu (Argumedo & Wong, 2010).

<sup>39</sup> I give fictitious names to the people who took part of this research to protect their privacy.

people do when someone comes to visit them is to offer them a plate of Andean soup made of corn, beans, carrots, potatoes, and some *chicha de jora*<sup>40</sup>. Petronila apologised for not having *chicha de jora* to toast our encounter. She mentioned that the *chicha de jora* was still in the fermentation stage and instead we would toast with *muña*<sup>41</sup>. It was not long until the steaming-hot corn soup was ready to be served and welcomed by everyone. During lunch, the ladies graciously said to me that the climate and altitude are not suitable for growing fruit; hence they have to barter corn for oranges with the nearby ayllus. Such remarks provided me with the background knowledge of the traditions of food as well as the opportunities and constraints that Quechua communities face regarding accessibility to food.

After we had lunch and we all had a chance to meet and greet with one another, Petronila (community leader) formally started the talking circle ceremonies. It began with Petronila calling us all to gather in a circle, and then she grabbed a bunch of coca leaves and after carefully choosing three coca leaves, she raised them facing towards the east in the direction of the sun and the community's apu (spirits of the sacred mountains). She then blew over them in a gesture referred to as *phukuy* (gratitude) and said a prayer in Quechua. This ritual is called *k'intu* and signifies the building of spiritual connections and power between humans and all living things. The three coca leaves represent the three dimensions of the Andean cosmovision: *janaq patsa* (upper world or cosmos), *kay patsa* (real visible world), and *Ja-wa patsa* (intangible world, darkness, invisible forces). The act of facing the coca leaves in the direction of the sun and the apu are signs of respect for the ancestors and seeking permission for the sharing of knowledge during the talking circles.

Personal introductions followed the ritual of the *k'intu* and culminated with the sharing of some delicious roasted corn. After formalities were concluded, we all engaged in a three hour talking circle in which we discussed the Quechua cosmovision. Some of the narratives I present to you now.

**Tirzo:** *“The sun god (Inti) and Mama Kilya (the moon and wife of the sun Inti) bore a son referred to as Inca Manco Capac and a daughter known as Mamac Ocllo and it is how humanity is descended...”*

*They asked their son Manco Capac to teach men how to plant the fields, and how to build houses. And their daughter Mamac Ocllo was requested to approach women and teach them the*

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<sup>40</sup> Chicha de jora is a type of corn/maize beer which is made of fermented yellow maize called jora.

<sup>41</sup> A traditional Andean herb to aid digestion.



*art of weaving and how to prepare food as well as teach humans to be kind and fair.*

*Inca Manco Capac and Mamac Ocllo journeyed together to find the perfect place to settle down bringing with them corn seeds and potatoes as requested by Pachacama, their supreme parent. Pachacamac gave them a golden stick and told them about the foretelling that once the golden stick gets stuck on the Earth, it would be a symbol for his people to build a city there. After years of roaming, they finally reached the valley of Huanacauri in Cusco, Southern Peru where the golden stick sank into the ground and disappeared. And this is where the royal town of Cusco is and where the Inca empire was founded”*

Tirzo is referring to one of the most common myths about the genealogy of Andean people, which is based on the belief that Inca Manco Capac and Mamac Ocllo, who are the children of the sun god (Inti) and the moon (Mama Kilya), were sent to Earth. Literature on the history of Peru cites the tale of the first Inca named Manco Capac and his sister-wife Mamac Ocollo as the ones who ruled the first humans. The book, entitled *Hidden Pages* by renowned Indigenous Peruvian archaeologist Julio C. Tello (1967), provides one of the most moving recounts of the history of the Inca civilisation, and in his book he makes reference to tale of Manco Capac and Mamac Ocllo.

**Narcisso:**

*“The Legend held that there were three caves on the Pacaratimbo hill located at the Tampusocco Mountain (translated into English means Tavern of the Dawn). Out of the central cave emerged the four brothers named: Ayar Manco (the leader), Ayar Aura (the enlightened one), Ayar Cachi (the warrior), and Ayar Uchu (the peppery one). The brothers were accompanied by their wives: Mama Huaura, Mama Cara, Mama Ocllo, and Rangua Oclla. These brothers began their journey in the Andean highlands looking for a place to settle down. Despite not having a definite place to stay they devoted themselves to agricultural work wherever they decided to rest”.*

Narcisso is referring to the second most important legend of the origins of the Inca people, commonly known as the legend of the *Ayar*<sup>42</sup> *brothers*. He further explains that *“The Legend of the Ayar brothers explains the profound connection between the Andean people and the land. In this story, Pachamama signifies the land that has been promised to them by the Creator (Pachacamac) to plant their most precious crops: corn and potatoes, and also marks the beginning of the Inca empire”*.

The four Ayar brothers, Manco Capac (the magnificent) and his wife Mama Occllo, Ayar Kachi (the strongest one) and his wife Mama Qora, Ayar Uchu (the spiritual and religious one) and his wife Mama Rahua, and Ayar Auqa (the warrior) and his wife Mama Huaqo, endured long journeys in their quest to find the promised land (Mendoza, 1987; Rostworowski de Diez Canseco, 2013). In the chronicles of Cieza de León (1962), he states that the Ayar brothers arrived at a place called Huanancancha where they settled for a short while to sow and harvest the land. In Rostworowski de Diez Canseco’s (2013) recounting of this legend, she explains that one of the brothers, Ayar Uchu, became a bird and flew to heaven, and returned to his brothers bringing an omen from the Inti God (sun god) that Ayar Manco would become the founder of the great City of the Inca. Once they reached the hill of Huanacaure, Ayar Kachi, who was the strongest of all the brothers, shot stones into its deep ravines. The other brothers saw his strength and decided to get rid of him.

Then Ayar Kachi was tricked into entering the cave of Capac Tocco (the entrance of the mountain of Tampusocco), and one of his servants betrayed him, locking him inside the cave by placing a stone at the entrance. Ayar Kachi, unable to leave the cavern, screamed so loudly that he managed to shake the earth, causing volcanos to erupt, and shaking the heavens. The remaining brothers and their wives continued their journey until they arrived at Mount Huanacauri where they found a stone statue of the same name. With much fear, the brothers entered the place to worship the stone statue. During their search for fertile land, Ayar Uchu went exploring to nearby areas, and according to the myth, he sprouted wings and flew to a place known as the Pampa del Sol where he landed and also turned into stone.

Manco Capac was the only brother who managed to reach the valley of Cusco where he found fertile soils and was successful in sinking the golden stick into the ground, and it sank deep into the earth. For them, it was a clear sign that they had found the place for the foundation of what would later become the Empire of the Incas, also known as the Tahuantinsuyo. Manco Capaq built the city of Cusco, the capital of the Incas, high in the

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<sup>42</sup> Ayar means wild quinoa, which is one of the main crops produced in the Andes, as explained by Narcisso and Quechua research participants.

mountains, and he and Mama Ocllo became the parents of the first Inca, Sinchi Roq'a (Mendoza, 1987; Huamán, 2011).

Manco Capac also built the House of the Sun (Inti Kancha in Quechua), the great temple to the sun-creator, Pachacamac, which in Inca times was referred to as Viracocha (Ferreira & Dargent-Charmot, 2003). The Inca worshipped many gods and goddesses. Most of them represented elements and natural phenomena such as rain, thunder, earth and sea. The main God ruler was Inti (the sun) god. Inca means 'children of the sun', and therefore they considered themselves Inti's chosen. During the Inca Empire many temples were built in honour of Inti and Pachacamac. In addition, Inca rulers were thought to be direct descendants from the deities (Espinoza, 1987, Gade, 1999; Urton, 1981) below:

***Apu llapu (rain god):*** Andean people pray for the rain to come to the agricultural deity of Apu llapu.

***Inti (sun god):*** Regarded as the patron deity of the holy city of Cusco, which is the home of the sun. Farmers who need the warmth and light of Inti worship him due to his stewardship over their food crops.

***K'uychi (rainbow god):*** This deity was connected with fertility and considered as the heavenly form of the goddess Sach'Mama (Mother tree).

***Mama Kilya (wife of the sun god Inti):*** She personifies the Moon Mother, who regulates women's menstrual cycles.

***Mama Ocllo (is the sister-wife of Manco Capac):*** She was chosen by Pachacamac for her wisdom to civilise the people, and was the one who taught women how to weave and build houses.

Having discussed the various myths surrounding the Andean genealogy, and taking into account that their mythology makes reference to Pachamama as a precedence for their intrinsic link to the land, I now present a vignette regarding the significance of Pachamama for the Andean people.

### **7.2.5 Pachamama – Land**

In the Incan mythology, Pachamama (in Spanish *Madre Tierra*) is a fertility goddess who lives beneath the mountains, and is the wife of Pachacamac (supreme god or god of Earth) (Lajo, 2005; Hunacuni, 2010; Mayer, 2002).

***Elder Runi:***                                    *“To me, Pachamama means the one who give us everything. She gives us her bounties; fruits and seeds all that grow in her she feeds life to it. We feel very different to other people*

*because for us Pachamama means everything, she is our mother. Also, our type of work is predominantly connected to the land, and it is because since we are born we are already connected with the land of our ancestors and we work and live from it.*

*How we work and nurture our land influences greatly on our food, and food security. I love my seeds and I cry when my potatoes do not grow and I know it is because my mother – Pachamama is unwell. So our Andean thinking is different from other people such as mestizos. For example, mestizos live in the city and they don't do the type of work that we do in our farms. They don't practice our Andean traditions and so their bodies and souls are not connected with Pachamama. That is why I feel I am an Indigenous person”.*

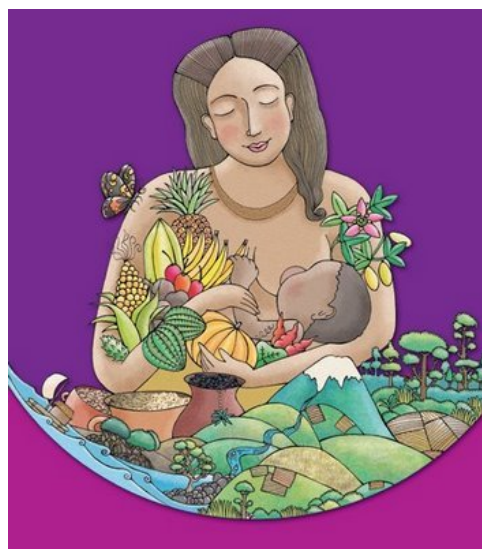
Pachamama is the highest divinity of the Andean people and is associated with the Earth itself, with the full moon, and with the sea. I note here that all Andean respondents agreed with the statement I wrote below based on my field work notes:

*‘Pachamama is synonymous with fertility, generosity and ripening crops as well as nurturing and protecting all humans and other living things on Earth’*

Pachamama is often the default image of the Goddess; she is the universal mother as represented in Figure 21. In the context of food security, because agriculture plays a critical role in the sustenance of the Andean economy, Pachamama is thought to be a goddess who protects all living things on Earth and at the same time reigns over the spiritual universe (Earls, 1998; Chirapaq, 2016; Mayer, 2002). For Andean people, Pachamama she symbolises the human environment in every aspect; as a result, those

who believe in her maintain a balanced, reciprocal and harmonious relationship with her that forms the basis of the Andean peoples' living well philosophy (PRATEC, 2005; Lajo, 2012).

**Figure 21: Pachamama**



In March 2013, I travelled to the highlands of Peru as part of my preliminary research phase. It was during one of my visits to various Quechua communities that I had the honour to meet with elder Agustín who holds vast knowledge of Inca culture and sustainable agricultural practices. We have remained in touch sporadically, and once I was back in the Peruvian Andes in July 2014, I travelled to his community and invited him to be a part of my talking circle interview session that took place the following week.

Below is a segment of my interview during the talking circle session with elder Augustin, in particular when I prompted him with the question: What does Pachamama mean to you? I still remember vividly my meeting with him, not only because the conversation took place on a beautiful but freezing afternoon in the Peruvian highlands, but, more importantly, because of Agustín's humble and nurturing demeanour, and the gift of his wisdom.

### *Agustín – Andean Amawta*<sup>43</sup>

The Andean elder referred in Quechua as *Amawta* walked slowly, almost as if he was asking permission to walk on earth. It seemed as if he was carrying the heavy burden of many years. We were all seated next to each other, forming a human circle. He continued walking until he got close to the bonfire, and then sat beside us. He extended and opened his hands, his palms reaching the bright fire. He closed his eyes, paused, and then inhaled deeply, as if he was absorbing the heat of Ninatayta (Father Fire) through his hands. With a deep, long and relaxed exhalation, his face expressed satisfaction. He slowly opened his eyes and said:

*“Ninaqa kawsaymi (fire is life).*

*Then, on that bright and serene night, his eyes locked with ours and in a calm but firm voice he asks us: Iman Pachamama? (What is Pachamama?)*

*For which most of us responded quickly – Mother Earth, Mother Earth!*

*Our answer was received with a somewhat awkward pause by our Amawta. It felt like those milliseconds became hours. Even the Wayra – wind – stopped with us too, and so it was a profound silence.*

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<sup>43</sup> Amawta is a Quechua word meaning elder, wise man or respectable person.

*The Andean elder nodded. Then with his right hand he grabbed some soil from earth and addressed us in Quechua:*

*Kaypa sutin: allpan, hallp'an and then translated for us in Spanish – the name of this is allpa o hallp'a – soil.*

*He then bent forward and with little difficulty grasped a handful of sand but this time he used his left hand and spoke to us again in Quechua: Kaypa sutin: aqon, challan, tiyun and again in Spanish. The name of this is aqo o challa o Tiyu – sand.*

*He then showed us what he had in both hands, and spoke to us once again in Quechua: Kaymi allpan, kaymi aqon – Iman Pacha?*

*This is soil, and this is sand. So what is Pacha? He asked in Spanish.*

*We looked at each other with hesitation, others left the group quietly and I looked down with embarrassment.*

*And how about Machula? He asked with a firm voice in Quechua.*

*Then with a strong voice he looked at us all and told us in Quechua:*

*Yachaytarpuyta reqsiypaq, simita yachaykichis – To know and understand your cultural heritages then you need to connect with Nature and learn the language of your ancestors”.*

*Interview with Amawta – Lares – Peru, August 2014.*

The experience with amawta Agustín in Lares was a valuable lesson, because his teachings imparted wisdom and a reflection of his strong Indigenous cultural identity, such as when he said “*To know and understand your cultural heritage then you need to connect with Nature and learn the language of your ancestors*”.

He was referring here to the fact that Andeans are the cultural stewards of Andean knowledge, and it is imperative to speak one’s own tribal language. The Quechua language has been threatened during the decline of Andean populations after the arrival of Europeans to the Americas, in particular between the years 1520 and 1620 (Escobar, 2010;

Rostworowski de Diez Canseco, 201), and also during the migration from rural to urban places that took place in Peru in the 1980s (Espinoza, 1987; Rengifo, 1998).

Nevertheless, in the highlands of Peru, the people still speak Quechua while only a few around Lake Titicaca on the Peru-Bolivia border speak Aymara (Argumedo & Stenner, 2008; Ferreira & Dargent-Chamot, 2003). According to the latest 2012 rural and urban population census of Peru, Andeans, who make up 37 percent of the Peruvian population, live a life apart from the modern sector (Argumedo & Pimbert, 2006; Instituto Nacional de Estadística e Informática (INEI), 2015). The whites and mestizos (people of mixed European and Indigenous ancestry) make up 60 percent of the Peruvian population, speak Spanish, and live in a modern urban world that is undergoing rapid change (INEI, 2015; PRACTEC, 2005). The social classes, therefore, are separate and unequal.

Amawta Agustín further explained to me that his answer conveys his belief that to understand the essence of Andean science, it is paramount to appreciate the five essential elements of Andean life: earth, water, air, fire, and spirit. In his speech, he mentioned the fire element and called upon us to connect with Nature as a foundation for education. Those five elements of life play a distinctive role in Indigenous life.

#### **7.2.6 Mysticism – Spirituality**

To understand the fundamental relationship between Andean people and their Pachamama, it is paramount to appreciate the Andean cosmovision, as explained in section 2.2.2. The Andean cosmovision contains notions of mysticism engrained in rituals and festivities. One of them is the ‘gift for Pachamama’.

In July 2014, following the food security workshop that I organised with various community leaders and Sabios Andinos in the Andean province of Lares, I accepted the invitation of Andalí of the community of Rosaspata, to spend the festival of the gift for Pachamama with her family. I share and analyse the extract of our interview below.

**Andalí – Quechua:** *“My mum and grandmother always taught us to give thanks to Pachamama and every August we celebrate the ‘gift to Pachamama’. Also, when you die, you are buried at the top of your community’s mountain, and you are embedded with seeds of any kind: corn, fruits, and potatoes, and for us it is a symbolic ritual that we are returning to our Pachamama just as our ancestors the Incas did. We invited all the people in the community and killed our best livestock, so we serve a good meal during the funeral”.*

Peruvian researchers (see Argumedo, 2013; Rengifo, 2008; PRATEC, 2005) argue that Andean farmers are always respectful of nature, and a variety of rituals are performed for Pachamama. For example, the month of August is of great significance for the Andean people because they believe that the earth opens during this month. Male llamas and alpacas are honoured on the first day of August, and so are the gods that protect them. Additionally, offerings are brought not only to Pachamama but also to other deities such as the apus (sacred mountains), mayu (rivers), and qochas (lakes) (Argumedo & Stenner, 2008; Apffel-Marglin & PRATEC, 1998).

According to field notes, one of the most important apus for the ayllu of Rosaspata is called Quishuarani, and all the farmers in this area bring offerings to this apu. All these are manifestations of deep respect and affection for the deities (wakas in Quechua) that protect them and safeguard their crops. Of all fiestas, the most cherished is the ‘gift for Pachamama’, colloquially referred to in Peru as ‘el despacho a la Pachamama’. I also observed that Quechua people celebrate this ritual with a jubilee in the month of August. I now share with you my experience of the ritual of the gift for Pachamama.

It is hard to escape from Andean mysticism in the highlands, and the area’s energy is felt strongly in the month of August. However, it is not only during fiestas (celebrations in Spanish) that one gets to experience how Indigenous peoples think and feel about their connection with Pachamama. Apffel-Marglin (2012) explains that the values and principles of Andean society expressed through rituals carry deeper meanings of respect, sacredness and reciprocity. For example, as soon as I arrived at Andalí’s house, I was offered a plate of soup. The same gesture of kindness is the one that I observed at the house of Andalí’s mother, Mrs Rosita. She provided a needy neighbour with a handful of coca leaves, corn and potatoes. She simply grabbed whatever was handy in her kitchen. Andean people do not separate the material from the sacred, and the events that I just mentioned take the form of a ritual being performed with kindness, love and devotion for one another, just as they behave towards their Pachamama.

Andalí told me that the ritual of the gift to Pachamama would take place in two hours’ time, and so it was time for all guests to prepare themselves for the ceremony. Some of the most effective ways to prepare for the gift for Pachamama include meditation, relaxing music, walking around nature or cleansing oneself with incense, tobacco or Palo Santo (sacred wood). Since Andalí’s house was surrounded by nature and beautiful plants, creeks and hills, I decided to prepare myself for the ceremony by connecting with nature. The purpose of preparing ourselves is to connect with our consciousness, as well as engage ourselves to a higher state of presence.



During my walk to the surroundings of nature, I met with community member Yanuri who explained the origins of the gift for Pachamama to me. This ceremony traces back to the Q'ero peoples of the Andes. The Q'ero people live high up in the Andean mountains of Peru and are a small community of farmers, weavers and healers. After the invasion of Peru by the Spanish conquistadors, the Q'ero people sought refuge in unreachable communities in the highlands. The Q'ero people lived in isolation until they were located in 1949 by the anthropologist Oscar Nunez del Prado (Rostworowski de Diez Canseco, 2013).

In the Quechua communities where I conducted this research study, practitioners of the ancient spiritual tradition of the Andes have spiritual powers to see the unseen world. They are called by their Quechua name: paqo. My Quechua and mestizo interpreters struggled for a moment to find a synonymous word for paqo in English, and after much thought and discussion, we settled on 'mystic'. A paqo is regarded highly in Andean society because he or she is the gatekeeper of Andean knowledge, beliefs and traditions. Moreover, through oral traditions, paqos<sup>44</sup> conserve the knowledge of civilisations that came before them. Traditionally, the paqos of the Q'ero people perform an offering to Pachamama, and to the sacred apus. The offerings are given as gifts from the heart; an action of honouring Mother Earth, the feminine representation of the natural world. Through the gift for Pachamama, the connection between the paqos and Mother Earth is strengthened.

I heard someone calling my name from the distance, and it was Andalí asking me to make my way back because the ceremony was due to start soon. Once I returned to Andalí's house, everyone had a responsibility: some people were preparing the Pachamanca feast, others were placing the chicha de jora in decorative jars, and other groups were playing the flute and charangos (small Andean threaded musical instrument) outside. The ceremony was performed by Paqo Cesar, who is a native of Rosaspata.

Andalí commented on the community's preference of choosing a paqo from her ayllu over one who belonged to another ayllu. This is because the paqo who performs this ritual has to go to the top of the mountain that belongs to his/her community where he/she has to bury the gift for Pachamama in a sacred place known as pukara in Quechua. Hence, it is important for the paqo to have a connection with the land where the ritual for Pachamama is being performed. Andalí alluded to the time that they had to seek paqos outside their ayllu because their paqos were unwell or away from town. They experienced an adverse

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<sup>44</sup> Paqo is singular and Pacos plural.

harvesting season and their llamas died and so prefer to have their paqos performing this ritual for them.

The ceremony of the gift for Pachamama took place in the outdoors at the top of the community's hill. The ceremony only took a few minutes to set up. The basic idea is to set a tone of respect and joy, and accordingly we all gathered to form a sacred circle. The sound of the flutes and drums provided the ceremony with a delightful and mystical ambience. The ceremony finally began when Paqo Cesar placed on the ground a generous-sized piece of Andean textile quilt. The paqo put all the offerings—coca leaves, flower petals, corn, potatoes, biscuits, candles, cooking spices, cotton, animal fat, confetti, wine, oranges, pineapples, and the foetus of the llama—gently and methodically on the textile clothing.

Then after the offering to Pachamama was completed, Cesar gently placed all gifts into a package. Then he elevated the package, always facing the east where the sun rises. This is when we all held hands and felt our blessings being received. Then we all followed Paqo Cesar in what I describe as a joyful procession accompanied with the sound of the drums and people singing out loud in Quechua. Then the paqo advised us to wait for him while he went to the top of the mountains to bury the gift for Pachamama including the llama foetus. The ritual concluded when the paqo returned from the mountain empty-handed as an indication that the gift had been received by Pachamama.

Another celebration that I had the fortune to be part of is called Pukllay (carnival at the end of the rainy season), and in this festivity the deities are implored to grant fertility to llamas and alpacas, and foremost to the land. This ritual is to worship the vital enqa (energy) that acts as the sacred fertiliser that pervades all living things, and therefore for agricultural purposes enqa must be replenished with songs, food and dances. For instance, all men play the Pukllay melody on their flute during this fiesta, at home and also on the high places between the suyus (regions), while young women and girls sing ancient songs and invent new lyrics to fit the Pukllay tune.

Since time immemorial, most Indigenous cultures have had many blessings from the land, for which they express their gratitude to various gods such as those of the sun, the earth, wind, and fire (Apffel-Marglin & PRATEC, 1998; Darder, 2015; Little Bear, 1998). Nelson (2013) states that Indigenous peoples acknowledge the bounties of Mother Earth through rituals and festivities. For example, LaDuke (2008) explains that the Ojibwe or Anishinaabeg people of North America were gifted with the manoomin (wild rice)<sup>45</sup> and knowledge of it. She adds that Ojibwe express their gratitude for the bounties of Mother

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<sup>45</sup> A grain that predominantly grows in lakes and rivers in the central part of North America (LaDuke, 2008).

Earth with big thanksgiving feasts for the first rice, as well as a wild rice dance starting in August.

In the case of the Andean people, the gift for Pachamama is a ceremony to express the community's respect and gratitude for their well-being, and to keep away bad energy. This celebration seeks the blessing of Pachamama for all the animals, corn and potatoes, and for a good harvest season.

### **7.3 Chapter summary**

Through the analysis of both Quechua and Māori cosmovisions, it is evident that the meta-theme of 'Earth is our Mother' reveals that Māori and Quechua have an intrinsic and harmonious connection with the land, and this forms the basis for their holistic ecological approach of the ecosystems. The unique Māori bond with Papatūānuku has its origins in their mythology of creation that reverberates through their whakapapa, and thus, links them with the origins of life. Subsequently, their self-identification as descendants of Papatūānuku, whereby land is an intrinsic part of their cultural identity, still reverberates within their culture. Andean peoples' link to the land is expressed in the concept of Pachamama, which is tightly related to their cosmovision.

TEK is a valuable theoretical lens for the understanding of Indigenous people's knowledge systems. Quechua and Māori have respectful relationships with their traditional lands and territories, and these are expressed through their culture, language and history that form a core part of their identity and realms of spirituality—which are deeply rooted in their TEK. There is a disagreement between a Western and Indigenous view of the use of land. On the one hand, the Western ideology of land sees it as a commodity owned by individuals and enforced by property rights. On the other hand, the Indigenous view of land is centred on the sense of place, love and respect between Indigenous peoples and their Mother Earth. Native views are at odds with the Western views of land because from an Indigenous perspective land is a sacred place; it is considered sacred because it is where the history of their ancestors comes from and the essence of their food sustenance too.

Andean and Māori cosmovisions have not only provided them with cultural resilience but have enabled them to maintain a harmonious relationship with Mother Earth for their sustenance and the well-being of their livelihoods. Indigenous peoples' unique relationship with their traditional lands is often overlooked in the current approach to food security.

My argument raises questions about the role of governments and legal frameworks in support of not only traditional farming systems but also of Indigenous peoples' strong bond

with land that forms a core part of their cultural identity and spirituality. This is a fascinating point to address because it raises two questions in my investigation: 1) How does their knowledge and practice guide and influence their food systems? 2) What are the key features of their cosmovisions influencing their food security model? The next chapters focus entirely on the analysis of these questions.

## CHAPTER VIII: META-ANALYSIS OF META-THEME FOOD IS SACRED: TRADITIONAL WAYS OF KNOWING AND BEING

*“Food is sacred for us Indigenous peoples because it is  
a gift from Mother Earth”*

*“We can and must protect and restore practices that can  
make us healthy and well as Indigenous peoples.”*

*(Quotes captured during field work in both Quechua and Māori  
communities July 2014 – August 2015)*

### 8.1 Introduction

Following from the analysis of the previous Chapter VII, it can be derived that these two Indigenous groups have vibrant and distinctive cosmovisions. Wherein knowledge and attitudes towards Mother Earth arises from certain kinds of interrelationships and actions between particular beings, be they humans and non-living beings such as stones, stars, the sun and the moon. It is in the uniqueness of their cosmovisions and ways of interacting with nature, that I next study the Quechua and Māori lore in regards to food security.

*The main objectives of this chapter are:*

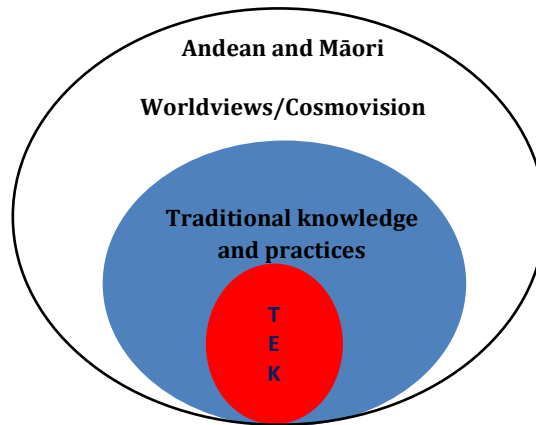
- To examine the Andean and Māori peoples’ relationship with food
- To understand their approaches to food production and significance of their traditional knowledge and practices of their food systems
- To examine traditional knowledge and practices of Quechua and Māori through the TEK lens.

#### *TEK Theoretical framework*

Figure 22 outlines the TEK framework to address the questions below:

- How do they knowledge and practices guide their food systems?
- What is their relationship between food and culture?

**Figure 22: TEK: Traditional knowledge dimension**



Source: Designed by the author based on Berkes (1993), Lajo (2011) and Durie (1994)

This chapter entirely focuses on the analysis of Quechua and Māori solar and lunar calendars that according to the empirical data these calendars symbolise Quechua and Māori's unique lore for the governing of the activities of their food systems.

## **8.2 Solar-Lunar calendars: The significance of natural indicators for food**

Yachay and Mātauranga play a crucial role in the lore of Māori and Inca's ways of knowing and interacting with the ecosystems for their livelihood exemplified in the use of the lunar calendar to guide their harvesting and planting days as this study reveals. I begin this section with the Inca calendar, followed by the Māori māramataka.

### **8.2.1 Inca calendar**

Now I introduce you to the workshop session with community leaders and campesinos<sup>46</sup> that gathered research participants from all four Quechua communities. The workshop took place in August 2014 in the community of Sacaca. The characters in these sections are Runi, Amaru, Runi, Sunqu, Rachi, Petronila, Sonia, and Marta<sup>47</sup>.

#### ***Runi***

*“I still harvest my land following the Inca calendar and also the festivals and celebrations for Pachamama. My taita (grandfather) is the one who has a vast knowledge of the Inca calendar, and he would tell us that every year on 24th June you can see the ‘Qollqa’ which is a set of stars of dawn; they are a group of stars. There is a big star in the group of Stellar constellations, and when this star is in forward position will be*

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<sup>46</sup> Farming people in the highlands of Peru are referred to as ‘campesinos’ (male) and ‘campesinas’ (female).

<sup>47</sup> I gave fictitious names to the people who took part of this research to protect their privacy.

*an early planting, but when this star is behind the stars, the planting will be delayed”.*

In the quote above, Runi is referring to the Qollca star which is regarded in the Andes as the dark or black constellations (Pacheco et al., 2011; Urton, 1981). In the study of Malville (2010) about the Andean cosmovision, he suggested that there are two different types of constellations: luminous and dark. Pacheco et al., (2011) explain that the first is made up of sparkling stars that depict geometric forms in the sky. These bright constellations such as Orion and Scorpion are seen as inanimate. The other group of stars are called the dark constellations representing the shape of animals that are highly regarded and respected by the Incas such as the llama and the serpent: these are considered living forms.

In effect, research participants emphasised that the dark group of stars represents the shape of animals that are considered influential in Andean agricultural practices, and provided the example of the atuq (fox). For example, if the fox gives a deafening howl in August, this means that he presages a good harvest season (Malville, 2010; Urton, 1981). Table 20 presents a list of both Stellar and Dark constellations guiding the agricultural system of the Incas as described by Quechua research participants.

**Table 20: Andean constellations recorded during field work**

<b>Stellar constellations (bright stars) in Quechua</b>	<b>Dark constellations of the Andean people</b>
<b>Sirius:</b> WillkaWara (Sacred Star)	<b>Yakana</b> or Qatachillay (Sidereal Llama)
<b>Canopus:</b> Qolla Wara (Star of the Qollas)	<b>U<sup>~</sup>na Llama or Huch’uy Llama</b> (The Llama’s offspring)
<b>Achernar:</b> k’ancha Wara (Bright star) or Qatachillay*	<b>Atuq</b> (The Fox)
<b>Antares:</b> Choqechinchay (The Golden Feline)	<b>Michiq</b> (The Shepherd)
<b>Aldebaran:</b> Chuchu Qoyllur (Star going forward or to the centre) or Chukchu Qoyllur (Star of Malaria)	<b>Kuntur</b> (The Condor)
<b>Pleiades:</b> Qollqa (Warehouse) or Qoto (Bunch)	<b>Lluthu</b> (The Partridge)
<b>Hyades:</b> Qollqa	<b>Mach’aqway</b> (The Snake, not to be confused with Amaru)
<b>Lira:</b> Urkuchillay (The Small Silver Llama)	<b>Taruka o Lluych’u</b> (The Deer)
<b>Scorpion:</b> Choqechinchay or Amaru (Sacred Snake)	<b>Ukhumari</b> (The Bear)
<b>Orion:</b> Hatun Chakana (The Big Cross) or Llaka Unancha Llakachuqui*	<b>Urk’uchillay</b> (The Black Llama)
<b>Southern Cross:</b> Huch’uy Chakana (The Small Cross)	

<p><b>Pegasus:</b> Thunawa (Batan to grind)</p> <p><b>Tail of Scorpio:</b> Qollqa</p> <p><b>Galatic centre:</b> Kukamama or Kukamanka (Mother Coca or Pot of Coca)</p> <p><b>Tail of Ursa Major :</b> Yakumama (Giant Jungle Snake)</p>	
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Source: From Malville (2010); Pacheco et al. (2011).

**Amaru**

*“Everyone refers to the Inca calendar, but for us it is both male and female (sun and moon). So, for us it is called the Quilla calendar<sup>48</sup>. In September, we have the Great Feast of the Quilla the wife of Inti. In this festival we seek for purification from any wrongdoing and seek protection from Inti against evil that could cause damage to our animals and crops.*

*An important bright constellation is the Willkawara. I remember my grandmother telling me about the myth of the Willkawara, it is a star that protects our crops”.*

The literature on Peruvian history describes that the Inca had a calendar based on the observation of both the inti (sun) and the quilla (moon), and also about the high level of proficiency of astrology (Malville, 2010; Pacheco et al., 2011; Urton, 1981). The Inca (sun) calendar was based on the solar cycle and had 365 solar days while the Quilla calendar had 328 days. The Inti calendar was used for economic activities such as agriculture, mining, warfare and construction. The Quilla calendar is used to mark the festivities of the agricultural cycle (Espinoza, 1987; Cabello, Mendiburu, Bonierbale, Monneveus, Roca, Chujoy, 2012).

The myth of the ‘Sacred Star’ or Willkawara (from Sacred = Willka, Star = Wara) still resounds among Quechua communities (Ferreira & Dargent-Charmot, 2003; Lajo, 2005; Pacheco, et al., 2011). The myth states that Willkawara is a star that appears at dusk with the rains of December and comes to protect the crops of Andean farmers throughout the maturation period when potatoes are harvested and stored (Gade, 1999; Malville, 2010; Mayer, 2002). A curious fact about the presence of Willkawara in the Cusco sky relates to the appearance of the constellation of Sirius that reaches its zenith towards the end of

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<sup>48</sup> The Inca calendar derives from the sun and lunar months, the Quechua word for both is quilla.



February. In Andean folklore, this is a sign of harvesting the first potatoes from the early sowing, whereas when Willkawara happens to be located in the western sky after the peak in March (a few weeks after the equinox), it is a sign that harvest will be larger than the previous season (Grillo, 1991; Mayer, 2002).

**Suni:**

*“Yes, we are still working on the land following the Inca calendar. Also, we follow the local indicators such as animals and wild plants. Let me tell you about the story about the singing of the atoc (fox in Quechua). When the fox cries or sing he transmit a special squeal that goes like this... Wuaccaccaccacc’ and so it is a long squeal and gives the impression of laughter or happy and therefore the year will be a rainy season.*

*But when the atoc is crying or singing transmitting a small and unique sound that goes like this ‘waccacc’ then the year will be a bad one.*

*So we listen and respect the interpretation of these animals and ... we use it to make decisions about early sowing if required. In this case, we ask and listen and look at the wild plants such as añapanco (cactus) or turnip. Turnip is a wild plant that grows in times of scarcity of food in our ayllu, but it is hardly noticeable. It is very unlikely to face food shortages”.*

From my interviews, I observed that Andean worldviews guide them to have a harmonious interaction with their crops. In growing their crops, they converse with the wild plants to learn how to harvest in the best ecologically sound manner; it is through this reciprocal interaction that Andean farming is performed. Andean people also consult with the Pleiades and interpret the symbolic expression of the cosmos for agricultural purposes.

For example, Suni mentioned that

*“on June 24th at around four in the morning, the farmers observe when the constellation comes up in the sky. If the stars are very bright, then it is going to be a wet year, but if the stars are opaque then it is going to be a dry year”.*

Argumedo & Pimbert (2006) and Valladolid & Apfell-Marglin (2001) discusses that the harmonious interrelationship that exists between the Quechua people and their relations (living and non-living) is a manifestation of the peasants' way of seeing, feeling and living in their natural landscape, and frames the Andean cosmovision. This cosmovision has enabled them to have an in-depth understanding of natural indicators as recorded in the empirical data below.

**Sunqu**

*“When we want to predict our crop year we use various techniques. For example, we go to our warehouse and look at the seeds stored there. If the outbreak of the potatoes is quite intense and you can see the roots coming out of the main eyes of the potatoes, it indicates that planting is early. But if the potatoes are dry, it means that frost and diseases will spoil our first planting.*

*But if the outbreak of the potatoes come from the middle of the potato and it looks healthy and stays like that until planting season finishes. It indicates that planting season will be earlier.*

*But if the outbreaks of the potatoes come from the end of the eyes of the potatoes, this means that we will have a late planting but it will be a good one. Ultimately, if the outbreaks come from the base to the head, it shows that this will be a good year”.*

Although most of the research participants presented a high level of Andean knowledge for agricultural practices, empirical data reveals that paqos are the ones who can engage in more intimate conversations with the constellations because they know how to converse well with the stars, and therefore can differentiate the position shine of the stars in the sky, in the middle or closer to the horizon.

As Paucino revealed *“When we see that the big stars are brighter than usual, it is an indication that we have to bring forward out sowing. And when the little stars are the one shining in the sky then it is a sign for the planting to be delayed. But if the middle stars are the brightest, then planting should be done at the usual time”.*

Another prominent constellation in the Andean world is the chakana as revealed in the narratives. An example is a commentary about the role of the chakana in aiding the Quechua people to determine when the Inti Raimi festival would take place.

### ***Rachi***

*“The Inti Raimi is one of our great festivals because in this celebration we remember our Inti God. The Andean Sabios predict which specific day is right to celebrate this festival. It is usually on 24th or 26th June so they pay attention to the Chakana for weeks and months and once they are a consensus on which day to celebrate the Inti Raimi then the whole region start dancing for the God Inti”.*

In Andean folklore, the chakana has four important corners that symbolises the location of the north, south, east and west hemispheres. Moreover, the twelve corners of the chakana exemplify the twelve festivals of the Inca calendar such as the Inti Raimi (Festival of the Sun) in June (Lajo, 2011, Melville, 2010; Valladolid & Apfell-Marglin, F. 2001). The Inti Raimi is one of the most important Andean festivals. The Inti Raimi is a nine-day winter solstice celebration worshipping the Inca god ‘Inti’ and precedes the ritual of the harvesting season (Huamán, 2011; Rostworowski de Diez Canseco, 2013).

The Inca calendar plays a major role in the Andean world because they depend on this calendar to fix the days of planting herding activities (Chirapaq, 2016; Grillo, 1991; PRACTEC, 2005). In this study, I witnessed that the Inca calendar still guides the people of the Altiplano through their agricultural seasons such as the harvesting season with the festival of Inti Raimi. Also, the planting season with the festival of Capac Raimi (Great Festival) celebrated in December denoting the summer solstice (Argumedo, 2013; Apffel-Marglin & PRATEC, 1998).

### **Traditional knowledge and biodiversity**

In this section, I highlight the innovation systems, traditional practices and biodiversity preservation techniques that the community of Choquecancha adopts in their cultivation systems enabling them to meet their food security. The case study of Choquecancha represents a window into the other three Quechua communities that took part in this investigation.

### ***Petronila***

*“My parents, grandparents and ancestors have been producing the land in the same traditional manner as I do today. I have seen, observed and learned all their harvesting techniques and rituals. I still follow my ancestor’s tradition. We still practice our Andean agriculture. We have our traditional way of see and do things – that is the Indigenous*

*way which outsiders do not comprehend. I grow uqa, potatoes, and tarwi in my land.*

*If you go up at the top of the hills then you will see our qochas, and my father and husband still use the chaquitacla when working in the field. I remember that the first time that I was learning on the farm, my grandmother told me the tale of the golden maize so I could be able to differentiate the male maize to the female maize for polynation.*

*We have here two kinds of maize: parracay and ovina. Ovina is resistance to any plagues and plant diseases and represents the man figure. And parracay is slightly weaker and represent the woman. We all women here know how to differentiate a male and female seed and which ones are good for storage for the next planting season. We can recognise all the many different potato varieties based on the type of plants and tuber traits, as well as for their agronomic and culinary characteristics”.*

One hundred and fifty families live in this community. Each has a small parcel of land no bigger than thirteen thousand square meters and practices small-scale farming agriculture. The people of Choquecancha refer to themselves as the last Incas, alluding to the fact that their ayllu is located in the middle of the Qhapaq Ñan<sup>49</sup> (Great Inca road system). Andean agricultural innovation systems are found in their infrastructure and water systems to support and reinforce their agrarian system (Argumedo & Stenner, 2008; Altieri, 2004; Rengifo, 1998). Research participants stressed the importance of the use of qocha<sup>50</sup> in their agricultural systems.

***As Amaru stated:***

*“Qocha is used in our farm to keep the rain water. The rain is collected by radial and circular canals among earthworks, and it is very useful for us during draught seasons. The concave structure of the qocha manages the wind blowing from the*

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<sup>49</sup> The book entitled Qhapaq Ñan by Peruvian scholar Javier Lajo (2005, p. 142-154) provides comprehensive insights into this sophisticated Inca road system traversing all across the South American continent.

<sup>50</sup> The Quechua term for Qocha is lake or ponds of natural or artificial origin. The qochas are an ancient agriculture technique; Qochas are linked together to a network of canals to form a system of water and soil management used for crops or pasture. Qochas are a real hydraulic system.

*West and control the strong evaporation produced by solar radiation. We use it to irrigate my farm when there is no rain”.*

***Also, Sunqu added:***

*“I still make use of my qocha because it is a clever water engineering system. It is very expensive to administer the qochas though’.*

The qocha is a hydraulic system, a structure which primarily thrives when environmental conditions either natural or social are undermining agriculture and local communities. Another example is the large-scale irrigation system of canals built up Andean people to divert water from rivers descending from highland areas to irrigate foothill slopes (Cabello, et al., 2012; Huambachano, 2011; Zimmerer, 2002). Also, contributing to their state-of-the-art infrastructure were roads and footpaths providing them with an extensive system for transportation of food. As a result, massive amounts of food are still moved on the backs of the llamas and campesinos from ayllu to ayllu. For instance, corn from the highlands was traded or bartered with quinoa in the lowlands. Similarly, tropical fruits from the eastern jungles were transported to the heights of Cusco city (IIED, 2005; Rostworowski de Diez Canseco, 2013).

In regards to Andean agricultural technology tools were developed to plough, harrow, furrow, seed, harvest, and make the land adapting it to grow roots and tubers (Bebbington, et al. 2011, ETC Andes, 2011; Salas, 2013). One of the Andeans essential agricultural tools is the chaquitaqlla<sup>51</sup> (Mendoza, 1987; Valladolid & Apfell-Marglin, 2001). I particularly witnessed the Quechua people using two kinds of chaquitaqlla (a) a curved chaquitaqlla for significantly inclined terrain, and (b) a square chaquitaqlla for the slightly inclined terrain. Also, a few research participants showed me how to use the chaquitaqlla. I observed how an Andean farmer moved it skilfully with his feet and at the same time hold it tight with his hands, pushing it with his left foot to break the surface of the land. The aim is not to damage the contexture of the soil as it occurs with modern agricultural implements.

As mentioned in Chapter II the principle of yanantin urges both men and woman to work together on the land, and this is evident with the use of the chaquitaqlla that after the men skilfully broke the surface of the land, the women deposit seeds in the open furrows. As this investigation revealed, the traditional technique of the foot-plough with the use of the

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<sup>51</sup> Chaquitaqlla is a foot-plough tool technique usually made of wood and had a blade of stone and bronze metal.

chaquitaqlla is still widely utilised by Quechua farmers. Figure 23 shows Nicanor<sup>52</sup> showing me how to use the chaquitaqlla.

**Figure 23: The use of Chaquitaqlla in the Andes**



Indigenous agricultural knowledge is

vital for the development of sustainable farming techniques. The example of the water management technology of the Andean people referred to as qocha is a case in point. In the latest study by Craig, Aldenderfer, Rigsby, Baker & Blanco (2011) about water reservoir innovations for agricultural infrastructure, they highlight that the qocha is one of the most sophisticated Andean inventions for the management of water and soil. It allowed the Andean people to farm and survive through millennia (see another studies Contreras, 2010; Vera Delgado & Vincent, 2013). However, based on the empirical data gathered during my field work in the highlands of Peru, there are entire zones of qochas looking deteriorated due to soil salinity. In other cases, some have been abandoned for lack of money from farming families to maintain them. As a result, sustainable farming techniques and the knowledge embedded in their development are at risk of being lost.

Other theme that reverberated for Quechua communities is about collective traditional knowledge, and literature on the theme supports this fact. Literature on the agricultural systems of the Incas explains that once the Incas had domesticated a particular seed, they purposefully transplanted the seeds and plants with their farmers. Thereby spreading the species and the knowledge of how to cultivate them throughout their empire (Grillo, 1991; Huamán, 2011; Lajo, 2008; Valladolid & Apfell-Marglin, 2001). It is an

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<sup>52</sup> I gave fictitious names to the people who took part of this research to protect their privacy.

example of how the Quechua people imparted their wisdom on all members of society to preserve the continuity of their food self-sufficiency.

Another central topic that resonated with the Quechua communities is the biodiversity of their food crops especially about the status that the corn and potatoes hold for their food security.

**Sonia**

*“We are the custodians of the biological diversity of the crops that we grow here. We adopt traditional cultivation techniques that are an essential part of our Indigenous heritage and thanks to that approach. We have never had to face food insecurity and we are healthy people.*

*We know about wild plants and animal species that are unknown to other people because that kind of biodiversity is unique to the highlands of Peru. We have a variety of medicinal plants in the forest and wild plants and animals that we have domesticated to ensure our biodiversity preservation”.*

The Incas were master agriculturalist and experts in the domestication of crop species (Altieri, 1995; ETC Andes, 2011; Brush, et al., 1981). Archaeological evidence confirms that more than eight thousand years ago, the majority of the Andean food plants that we know today were already being cultivated (Gade, 2015; IIED, 2005; Cuellar, 2013).

Andeans domesticated approximately seventy crops species for the purpose of maintaining the diversity and sanctity of plants for their food survival (ANDES, 2012; Valladolid & Apfell-Marglin, 2001). For example, Inca scientists experimented with seeds to determine which plants are more resilient to extreme weather conditions of the highlands. Thus, ensuring the preservation of biodiversity in food production (Brush, 2007; Bebbington, 2009; Estermann, 2007). Andean biodiversity is one of the distinctive characteristics of its agricultural landscape. Food crops grow at more than thirty-five thousand meters above sea level (Argumedo, 2013; Cabello, et al., 2012; ETC Andes, 2011). The most eloquently examples are the potato and maize and according to the International Potato Center (IPC), there are four thousand different native potato cultivars grown in the Andes. The IPC also recorded, sixteen hundred entries of maize that were grouped into forty-eight kinds (IPC, 2016).

In August 2014, I visited one of the most significant agricultural terraces of the Incas named Moray, which is located approximately 50km north-west of Cusco city. This was an important agricultural research station of the Incas. Secondary literature on the subject (Argumedo and Pimbert, 2006; Brush, 2007; Fernandez, 1998; IIED, 2015, IPC, 2016) affirms such details given to me by the local people. Because of the striking geographical complexities of the Andes, the Incas developed a remarkable understanding of the different microclimates to grow crops even under complex weather conditions (ANDES, 2012; PRATEC, 2005; Huamán, 2011).

Research participants enthusiastically acknowledge the biodiversity of their crops with the following quote: “We grow more than fifty varieties of corn here in Choquecancha” said Sofia and Sonia, who are campesinas of ayllu names Choquecancha. They started reciting the name in Quechua of twenty-four of them which I wrote down and later validated the names with them in Figure 24, and Table 21 over the next page.

**Figure 24: Andean crops**



**Table 21: Biodiversity in the Andes: different varieties of corn in the community of Choquecancha**

Name of varieties of corn in Quechua				
Pisq'oruntu	Paraq'ay	Waq'ankillay	Q'ello sara	Puka sara
Oq'e	Yuraq sara	Sacsa	Checche	Kulli
Qello Owina	Chinko	Chullpe	Chelino	Fallcha
Puka Capuli	Oqe puncho	Puka Paraqay	Qoto Maya	Llotu Runto



Suya Paraqay	Puncho	Waku Mollo	Soqso Paraqay	Q'op'otyay	Yana ccapya
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*Marta and Sofia continued:*

**Sofia**

*“For me and my family corn is very important probably more than potatoes because you can feed corn to the animals such as pig, chicken and so if you feed the animals with corn then you have food.*

*But we gotta grow food in harmony with Pachamama so she can be happy with us and we always have to show her our gratitude by reciprocating her love and caring for us”.*

**Marta**

*“we have other Andean crops such as olluco, quinua and kiwicha, cuy<sup>53</sup>, and other animals such llamas, alpacas. We also grow potatoes but not as many as for example the people of Pampallacta do. So on a Saturday we go and barter with them; we give them our corn and they give us their potatoes”*

Sofia is making reference here to the fact that the location of Choquecancha at approximately 3,800 meters above sea level is ideal for growing corn but not so much for potatoes. Potatoes are grown as high as 4, 2000 meters above sea level as is the case of the community of Pampallacta. Some notes from my field work in Pampallacta recall “We grow seven hundred and seventy-eight varieties of native potatoes here in Pampallacta among them are papa arariwa (guardians in Quechua)” said Aniceto, a farmer of Pampallacta.

Marta’s narrative resonates with the Quechua people’s food security philosophy of planting crops principally to eat and to feed their families, then to feed the community, and the rest of their produce is for trading purposes with other communities. Thus, the necessary amount of food is consumed, and there is no food wastage. The locality of the community of Choquecancha makes it ideal to grow corn but challenging to harvest as many varieties of potatoes.

Therefore, they trade their corn for potatoes in the barter markets. Quechua people transport their produce using llamas. I note here that these llamas are adorned with beautiful and colourful wool ribbons and bells and with these bells they call the spirits of foods. Thus, when they are bringing back, for example, the corn to their communities, they are not just

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<sup>53</sup> Cuy: guinea pigs

bringing the corn, but they are also bringing the corn-spirit because the spirit is what nourishes their well-being.

To conclude this section, the narratives above elucidate the ways of knowing, seeing and feeling of Quechua people. Andean cosmovision and the nurturing of biodiversity expresses their feeling of love and respect that Andeans have for all their relations. In addition, traditional knowledge and practices ingrained in them have enabled them to grow their crops in a culturally and sustainable manner without compromising the state of the environment warmly referred by them as their Pachamama. The traditional knowledge of Indigenous peoples for biodiversity preservation of food security is often overlooked in the academic literature, and I will be addressing this further in the discussion chapter of this thesis.

### **8.2.2 Māramataka Māori calendar**

Now I introduce you to the talking circle session with various kaumātuas and rangatiras (leaders) in the four iwi that took part of this study. In a similar token as the Quechua analysis style above. I now describe you the narratives of Kupe, Tawhito, Tawhinui, Raewhinia, Erenui<sup>54</sup> selected for the analysis of this section.

#### ***Rangatira Kupe:***

*“I was born and raised in the Hokianga, a place called Taheke Waima, it’s the home of the people called Te Ma Hurihuri and Ngati Pakau tribes. So I grew up there and when we were growing up we didn’t have any radios or clocks or calendars. I used to live with my grandmother and a lot of other old people were also living with us at that time, so we learned to live with the rhythm of the tides and moon”.*

*The māramataka connects you with all of your senses, for instance to hear the waves breaking through so you know about the current and whether it is low or high tide.*

*The birds, you know, they might be out, and depending on the type of birds that are out then you know straight away if they’re out there fishing, you know diving, naturally you’ll go out, but at the same time because you don’t want to be interfering with their, that’s all the things you’re thinking about before you actually go and do it”.*

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<sup>54</sup> I gave fictitious names to the people who took part of this research to protect their privacy.

The word *māramataka* means both the moon and the lunar month (Williams, 1975). *Māramataka* is based on the understanding of the phases of the moon as well as the occurrence of the solstices and movements of heavenly bodies across the night sky that acted as indicators of appropriate times for planting, finishing and harvesting of crops (Best, 1986; Ropiha, 2000; Roberts, Weko & Clarke, 2006). It is the Māori ability to foretell suitable times for fishing and harvesting crops that enabled Māori previously to produce adequate food.

### ***Kaumātua Tawhito***

*“With the understanding of the māramataka you were just working to the nature’s rhythms actually. And so that was a little different, but by the time we went to primary school there were clocks and radios and, not so much calendars, but mainly an old radio when we were going to school. So it was quite difficult actually, coz you’d get up on a Saturday morning, for example, not knowing that there was no school, and you’d get ready to go to school. So that was a bit of confusion until you got into the habit of lining all your activities to the Gregorian calendar and the commercial time clocks and things like that.*

*But on Sunday, ah you knew you were a Māori because my grandmother gave us a boil up, the famous Maori boil up; lamb chops and puha and stuff. No fat. It was beautiful. And we all hurried up to eat it; ah there was no confusion there about which day it was. You know this is the sort of cultural values and customs that I grew up with”.*

Early ethnographers recorded some of this knowledge: Māori Elsdon Best recorded the teachings of *tohunga Tūtakangahau* who was a Tūhoe chief from Maungapōhatu and was considered one of the experts of the lunar calendar (Best, 1986; Ropiha, 2000; Royal Astronomical Society of New Zealand (RASNZ), 2016). The phases of the moon, presence of food-bearers, among other signs of the season influence Māori fishing and cultivation of food.

*Matariki* means *Mata Riki* (Tiny eyes) and *Mata Ariki* (Eyes of God) (Best, 1986; Kōrero Māori, 2005; RASNZ, 2016). Some of the research participants explained to me that *“Matariki is a mother surrounded by her six daughters being represented by the six*

*constellations*” as in the Figure 25 below. However, others suggested that “*Matariki is a male star*”.

**Figure 25: Matariki stars**



Data source from (Tapsell, 2002).

Kaumatūa Raewhinia suggests that “*if Matariki is seen twinkle in brightly, it is a sign that the year will be a good one for growing kai and the fruits and vegetables will be vast and plentiful*”. One of the key features of the māramataka is being able to observe the Matariki stars or Pleiades Constellation that signals the Māori New Year. The Matariki celebrations commence with Hinamarama, the new moon following the heliacal (dawn) rising of Matariki (Pleiades) (Hakaraia, 2006; Ropiha, 2000; Tapsell, 2002).

The Matariki festival represents the completion of one year and the approach of another in the Matariki Māori Calendar. A lunar cycle consists of 30 moon nights or 29.5 days (Best, 1986; Hakaraia, 2006). Matariki occurs at the end of the harvest season in June and storage houses or pātaka kai in Māori were filled with food especially kūmara. Also, the bounties of the sea were present with the abundance of fish like moki and korokoro (Māori Language Education Commission, 2010). Before the new moon in Pipiri (June-July) of the Matariki Year, a karakia can be done to end the year and acknowledge all the work that has been accomplished during this time. Some use this time for reflection, to discuss goals and aspirations and plan for the year to come (Kōrero Māori, 2005; Tapsell, 2002; Ropiha, 2000).

For some tribes especially for those in Whanganui and Taranaki, it was difficult to view Matariki in the West Coast of the North Island. Therefore, Puanga (Rigel), a star in the constellation of Orion, rising to the east of Matariki was used as the equivalent of Matariki (Hakaraia, 2006; Kōrero Māori, 2005; Māori Language Education Commission, 2010).

## **Tawhinui**

*“The Māori calendar is different to the Gregorian calendar, I mean, in the māramataka it’s like every day of the month has a name. So it’s not like we have Monday to Sunday; the Māori calendar is not like that, [because] each day has a different name. So there are certain days within those months where it tells you that it’s a good time or plant, or go and catch eels, or go fishing, or whatever.*

*You are respectful of nature and you listen and understand when it’s the right time to go out hunting, fishing or harvesting. The Māori calendar will dictate; it will tell you when to go. But if you’re on your own, you think out, well, and you have a look, with the same principle of understanding when you’re supposed to go out hunting in the bush.*

## **Erenui**

*Kapai! You think about it before you actually go in there. When I was a kid – you sort of had a group to go in with the same principle. But now! A lot of people go in to the realm of Tane<sup>55</sup> or Tongoa<sup>56</sup> without having an understanding of the māramataka without the knowledge on whether it is a good time to harvest or go fishing. Nowadays, some people just think of only extracting those natural resources, they just go in, without thinking of the consequences that is depleting our natural resources.*

*So we did things according to the moon and the animals, animal behaviours. So it was a lot different to what young people are brought up with today. And so you knew exactly where you were, just because the old people had it ingrained in them about when they should do things, planting, for example, when were the good days to go fishing. So you didn’t have any idea of the Gregorian calendar, or that there was a Monday or*

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<sup>55</sup> God of the forest.

<sup>56</sup> God of the sea.

*Tuesday or Wednesday. And it was a totally different sort of world”.*

Māori research participants attested to the usefulness of the māmata in informing them of the actual days on which particular food and its related activities are or are not advised to harvest. For example, they stated that “*from the Rākaunui (full moon) on day 16 of the calendar, it is an excellent day for planting crops and finishing but not catching eels*”. There are similarities and differences between iwi knowledge about the māmata because the geographical location of the iwi influences the predictions of it.

Therefore, iwi members seek the help of their kaumātua about māmata (Ropiha, 2000; Roberts, et al., 2006). The ancient wisdom of moon and solar cycles enabled Indigenous people to develop innovative devices such as the Māori māmata (Bauer & Dearborn, 1995; Earls, 1998; Māori Language Education Commission, 2010; Ropiha, 2000; Whiteford & Barns, 2002). However, following the European settlement in Aotearoa the use of timekeepers such as clocks and the Gregorian or monthly calendar system progressively replaced the use of the māmata.

### **8.3 Chapter summary**

Results suggest that Quechua and Māori lore guides their relationship with the land for agricultural practices. Also, Quechua and Māori’s knowledge about the constellations is still used today in the Andes and in the North Island of Aotearoa

Quechua and Māori agricultural systems embody rituals that reflect their nurturing, and deeply respectful ways of growing their food crops embedded in their worldviews because in Andean and Māori view everything is connected to the streams of life. The phrase *food is sacred* expresses the profound and respectful relationship with food as well as traditional practices between Quechua and Māori.

Food signifies the giving and receiving of essential gifts from Mother Earth, which nourish the continuance of life, calls for the reassessment of the link between land, culture and the environment in today’s world. Nourishment of Mother Earth reverberates in spiritual practices (rituals), traditional agricultural techniques (sustainable techniques), and symbols (lunar and solar calendars) among others. Nourishment is found not only in the relationship with food which is harvested, hunted, eaten and shared.

Expressions of nourishing take place in Quechua and Māori's reciprocal relationships with all living and non-living community members, for example, the animals, plants and birds, the earth, waters and sun. Andean and Māori ways of life reflect their customary

practices within their territories/land. The intrinsic relationships between Mother Earth; land, plants, and animals provides them with the basis for their sustenance – food.

## **CHAPTER IX: META-ANALYSIS OF META-THEME: HONOURING MOTHER EARTH—GOOD-LIVING PRINCIPLES**

*“Me tiro haere ki ngā āhuetanga o te pūtaiao hei arahi ia rā, ia rā...*

*To view aspects of native science to guide our everyday as well as find spiritual guidance on a daily basis from nature”.*

*“Pachamama gives us food through seeds and fruits; we honour the sanctity of our food with rituals, dances, and songs to express our love and caring for our Mother Earth and to nurture our bodies and souls too”.*

*Narratives captured during the field work (Peru, 2014 and Aotearoa, 2015).*

### **9.1 Introduction**

This chapter builds on the analysis and of the previous Chapters VII and VIII and draws from the literature in Chapters II and III, wherein Quechua and Māori peoples’ unique knowledge and belief systems of traditional agricultural practices reflect their ecological outlook on life. Such insights form the basis for my argument that further exploration of Quechua and Māori good-living philosophies about food security is warranted. Hence, in this chapter, I focus specifically on the analysis of Māori and Quechua good life principles ingrained in their cosmovisions to gain an understanding of their security framework.

***The main objectives of this chapter are:***

- To provide a meta-analysis of the meta-theme: Honouring Mother Earth—Good-living principles;
- To explore the role of Māori and Quechua’s good-living principles in enabling food security;
- To investigate the fundamental cultural values entrenched in these two groups, through the TEK lens.

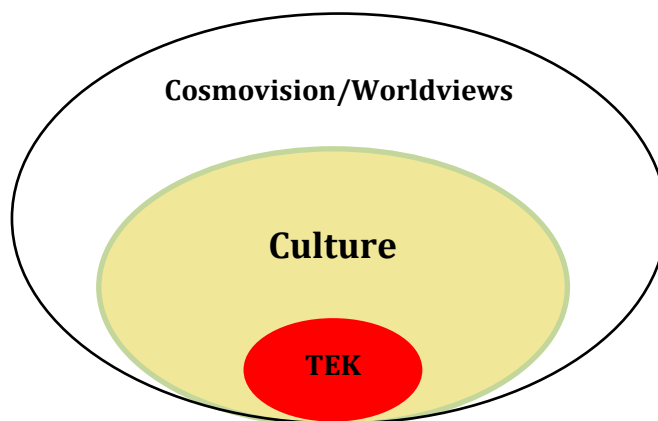
***TEK Theoretical framework***

Figure 26 outlines the TEK framework to address the questions below:

- What are the similarities between Quechua and Māori people’s worldviews?
- What are the values that underpin their way of life?
- How are these values adopted in response to food security?



**Figure 26: TEK: Culture Dimension**



Source: Designed by the author, based on Berkes (1993), Lajo (2011) and Durie (1994)

I begin with the story about the good-living principles of Quechua communities in the highlands of Peru, and the iwi in the North Island of Aotearoa. I continue with the analysis of the four key features of Quechua and Māori worldviews, after which I go on to discuss the similarities and differences between these two Indigenous cultural groups, before finally presenting a summary of findings.

## **9.2 A tale of two Indigenous cultures: Quechua and Māori**

In the previous Chapters II, IV, VII, and VIII, I provided an in-depth literature review and research analysis about the essence of each of these two groups' forms of knowing and being. From such analysis, it was acknowledged that Indigenous cultures are a reservoir of beliefs, traditions and values underpinning their worldviews. Accordingly, I analyse the good-living philosophies of Quechua and Māori people as a window into their food security systems. I begin with the story of the Quechua people.

### **9.3 Quechua people and Allin Kawsay**

Data analysis supports the claim that Quechua farmers still harvest the many varieties of Andean crops such as potatoes, corn, and quinoa, as well as other staples such as oca, ullucu and qañiwa<sup>57</sup>, adopting traditional practices. Studies on Quechua people affirm that their agricultural system is oriented on the principle of Allin Kawsay (Ishaya & Abaje, 2008; Walsh, 2010; Lorenzo, 2009). In relation to the significance of the principle of Allin Kawsay, the answers provided by the four Quechua communities were unanimous across all of them. Below I amalgamated their responses for easy analysis and interpretation.

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<sup>57</sup> Oca and ullucu are Andean tubers that, like potatoes, can be freeze-dried to provide a nutritious food staple. Qañiwa is an Andean grain related to quinoa, well adapted to high altitudes and rich in protein (Biodiversity Research group, 2001).

**Pachakutek:**

*“Allin Kawsay is part of our Andean philosophy; it comes from our ancestors who spread the knowledge to all of South America. I simply grew up practicing this philosophy and I learned it from my parents. I can’t really experience how I learned it because I grew up with ayni, and seeing my mother and father together working on the land all the time since I was a little girl they always talk about what to plant in our chacra. You need to actually live in an ayllu to experience Allin Kawsay”.*

**Andares:**

*“I remember that my grandfather once told us the story of the ‘Qhapaq Ñan’ – Andean Road System. He told us that it is a Pre-Inca trail that encompasses the entire South American continent; a pathway that joins many Inca cities that are located all along the Andes ranges. This is evidence that our ancestors embarked on a journey to share the Andean knowledge on economic, social and environmental ideology of our communities – Allin Kawsay. This is the reason why the Allin Kawsay is also embraced and recognised with our brothers and sisters of Ecuador and Bolivia”.*

**Narciso:**

*“Allin Kawsay is buen vivir; it is a kinship based principle where we all have equal access to food, water, and shelter because we all work together practicing ayni. In this way we are in harmony with ourselves, our neighbour, our parents, and all our relations”.*

**Amaru:**

*“Allin Kawsay is living well within you community, your family, and with the apus, river and lakes, etc. So every day is an act of Allin Kawsay because everything we do is interconnected with all nature, the cosmos and the unseen world”.*

**Tupac:**

*“Allin Kawsay is part of my cosmovision because my cosmovision guides how I think feel and act upon land and everything that surrounds me”.*

**Antay:**

*“Allin Kawsay is an ancestral principle and this principle has been practiced since many centuries ago. It is an ideology of*

*sustainable living because if it was not for the Allin Kawsay then there would have been no systems of law or order in our community. For example, we have the ayni that enables us to work well together. Then all our actions and labour are connected with our rituals and nurturing attitude for our Pachamama. In my house we all know that all things on earth are living spirits and deserve respect. I help my neighbour with minka and yananti when a widow needs help with her chacra. All those actions reflect my Andean cultural identity, my cosmovision and that leads me to Allin Kawsay”.*

**Atoc:**

*“Allin Kawsay is embodied in our cosmovision because practicing Allin Kawsay is not only respecting Pachamama. It is beyond that – it is a holistic approach to living a good life. For example, the God sun looks after us. I believe in the Sun God, so for me the Sun God complements Pachamama because the sun projects energy to the land so all things on earth can grow but it also depends on the runas (humans) that is us to look after the land”.*

The responses above about Allin Kawsay are supported by Javier Lajo who is one of the very few Indigenous Peruvian scholars who has written about Allin Kawsay. Lajo defines Allin Kawsay as:

*“A philosophy for the sustainable use of the natural resources available on Pachamama, and managed accordingly to sustainability principles of reciprocity, duality and the application and transmission of a state of equilibrium with Pachamama, human and all living things” (Lajo, 2011, p. 5).*

According to Lajo (2011), Allin Kawsay or buen vivir is one of the legacies of the Indigenous people of the Abya Yala that is unique in the world. The name Abya Yala, or ‘land in its full maturity’ or ‘land of vital blood’, comes from the Kuna language. The name Kuna is used to refer to the language of the Americas before the arrival of Christopher Columbus. The in-depth literature on the good-living philosophy of Allin Kawsay was addressed in Chapter II section 2.3.3. Therefore, to avoid repetition, I will limit myself to discussing the background of this principle as the exploratory point of reference to Andean cultural values.

Lajo (2005, 2011) explains that Allin Kawsay is based on the philosophy of a sustainable use of the natural resources available on Pachamama, and managed according to sustainability principles, principles of reciprocity, community and family solidarity, and the application and transmission of ancestral knowledge.

Huanacuni (2010) argues that Andean cosmovision permeates throughout the Andean world, and explains that, for example, in the Peruvian Aymara language, the term 'suma qamaña' denotes the good-living approach.

From the Aymara cosmovision, the suma qamaña can be translated as:

- Suma: wonderful, plentiful, and magnificent
- Qamaña: life, to be in a happy state

Therefore, the closest English translation of suma qamaña is 'wonderful life' and in Spanish is referred to as *vivir bien* or the good life approach in English. This Aymara translation is similar to the Quechua translation of good life. Studies of Andean peoples' culture by Peruvian historian Espinoza (1987) claim that one of the fascinating legacies that the Inca civilisation left humanity was the introduction of the ayni or 'reciprocity or common good' tenet.

Espinoza (1987) explains that the ayni or reciprocity principle functions as the link within a community's cooperation systems that ensures the social inclusion of community members with a view to embracing equality and social fairness (Espinoza, 1997; Dávalos, 2008). The adoption of the ayni principle embedded in the Allin Kawsay plays a key role in the Andean peoples' spiritual leadership towards safeguarding food security (Huambachano, 2015).

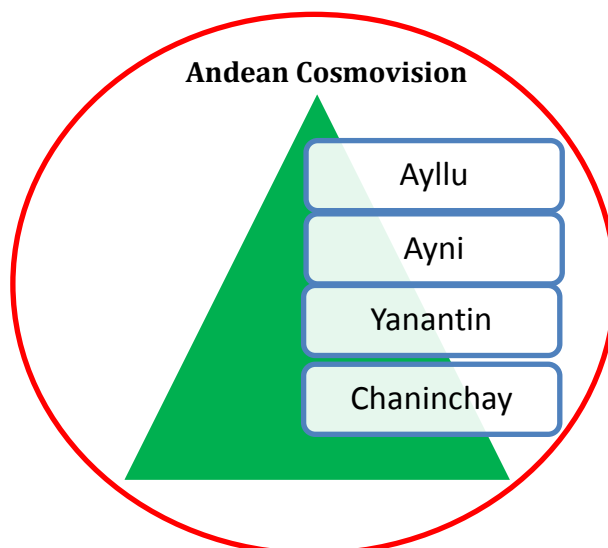
It is argued by various scholars (Dávalos, 2008; Lajo, 2005; 2011; Espinoza, 1987) that the Andean communities succeeded in meeting the food requirements of their people through the adoption of the ayni system in their farming practices. Their argument is supported by the in-situ research conducted by Argumedo and Wong (2010), who suggest that in the Andean agricultural system the ayni principle is exemplified in the exchange of community work between families, commonly referred in Quechua as ayllu.

Further, empirical analysis brought to light a range of features among these, which I describe in the next section four that are particularly relevant to food security and thus important for this dissertation.

### 9.3.1 Characteristics of Quechua people's cosmivision

Four main characteristics are entrenched in the Quechua cosmivision: *Ayni*; reciprocity, *ayllu*: collectiveness, *yanantin*: equilibrium, and *chaninchay*: solidarity, which are illustrated in Figure 27.

**Figure 27: Andean fundamental cultural values**



### 9.3.2 Ayllu – Community

The following narratives are extracts from talking circles ceremonies I conducted with the four Quechua communities in the Andes of Peru between July to December 2014.

#### *Narratives from the Andes*

##### **Suni:**

*“My name is Sumi and I am fifty-six years old, and I was born here in the community of Choquecancha. My community witnessed history with the arrival of the Spaniards because many Inca descendants settled down here so we are home to the last Incas. Did you see the entrance of our community in the plaza?*

*It is an Inca fortress; you know it is Inca architecture because the ruins have drawings of our spiritual and warrior animals in it. Choquecancha is also part of the Antisuyo, and my city holds the key to the entrance of the city of Paititi another important lost city of the Incas, and located in the Peruvian forest. Well, this is what my mother Rosita who is 125 years old told me about. She knows really interesting stuff about living in ayni and ayllu systems because she used to be the*

*elder and healer of the community until she got unwell and now I look after her”.*

Indigenous communities in the Andes have a long tradition of communal governance to produce their food, which is referred to as ayllu in Quechua, and in Spanish the ‘comunidad de los Andes’. This tradition includes a sector of land that is operated communally alongside chacras (farms) or small plots allotted to individual families, and there is an ayllu leader chosen by all ayllu members. In addition, in the ayllu system people, houses, sacred mountains, rivers, plants and animals, as well as the history, stories and spirit of a place, all have roles to play in maintaining balance in the ayllu. Furthermore, as discussed in Chapter II, specifically in the section of Andean cosmovision there are three dimensions or ayllus that embody the natural, human and spiritual word, and that are the cornerstone of the Andean worldviews.

**Aclla:** *“I am the daughter of Lusmila who used to be the elder and healer of the community until she got unwell and now I look after her. All my traditional knowledge comes from my mother who knows a lot about the ayni and ayllu system for environmental preservation”*

*“We don’t call it ayllu anymore because back in the 60s the government wanted to suppressed our ayllu system and so they changed the name to ‘community’ but for us only the name changed and we still living practicing ayni and living in an ayllu system”.*

**Anyas:** *“Ayllu is a community and we all share the same interests and objectives linked through shared norms and principles with respect to humans, animals, spirits, mountains, lakes, rivers, pastures, food crops, and wild life – we are all interconnected. We have a harmonious relationship with Pachamama because we regard her highly as well as all its principles such as reciprocity – only take what you need. You only take enough resources from Pachamama, you do not exploit her because she is our mother”.*

Another elder from the Quechua community of Rosaspata added:

**Apachita:** *We don’t call it ayllu anymore because back in the 60s the government wanted to suppress our ayllu system and so they*

*changed the name to 'community'. The name of ayllu might have changed to community but we still practice ayllu within our communities.*

Quechua responses coupled with my personal observation of the communal governance of these Quechua communities lead me to interpret that the ayllu is a cultural system unique to them. This assumption was confirmed when interviewees pointed out the attempts of various governments to disrupt their Indigenous way of life by imposing changes to their cultural system – ayllu. As Rosita stated:

*“The politicians in the capital, those men in power since the 1930s and worst in the 1950s came up with the idea of changing the Quechua name of ayllu to the Spanish version of ‘comunidades de campesinos’. They want us to assimilate to their urban life which for me is a life that has no principles and no values for Pachamama. So to leave us alone and don’t come up here, we all agreed to call it comunidades but around here we still call it ayllu”.*

Research analysis reveals that the Inca ayllu system has been through a process of change to suit the government’s modern views of what constitutes a community (Quiroz, 2011). However, based on having studied them for extended periods of time, in my opinion, the change of the Quechua word of ayllu to the Spanish word of ‘comunidades’ which in English is ‘community’ has not had any impact on their cultural identity. This is because they are still practicing their traditional ways of life in their everyday life, they still wear the same beautiful and colourful Andean traditional clothing, perform rituals, protocols, and foremost their community governance is still based on the Inca ayllu system.

Respondents indicated that in the ayllu all families work together planting traditional crops but due to living at very high altitudes, they are only able to produce varieties of corn, potatoes and other staples such as oca and qañiwa. They mainly produce food for their own consumption and such a communal approach has prevented them from experiencing hardship. However, research participants mentioned that although they prefer to be isolated from the city such disconnection with the modern world creates obstacles for them such as lack of health services and access to clean water and electricity. As Amaru commented:

*“We live in our ayllus, and so we have full governance and control of our land, and this is how has been done for centuries. If we let the regional council come and visit us, ah*

*that is asking for trouble. Manan caycho with them even if we don't have electricity and our kids do not have a good hospital nearby we decided that to remain isolated from the city is the best option for us and has been working for a long time. We are the guardians of our land, and we never starved, and we are happy people”.*

The locations of Quechua communities living in the highlands of Peru are remote, with average altitudes of approximately three thousand five hundred meters above sea level. I recorded that at least half of the people have never left their communities, and the other half have travelled only to other nearby communities to attend festivities, obtain health-related services, and barter their food crops. Thus, it can be understood that these communities have little or no contact with modern civilisation.

I also note that conditions in Peru in the latter half of the 20th century began to deteriorate, as pressures from increased population and erosion arising from the effects of more intense agriculture were felt. Nevertheless, in spite of such conditions, Quechua communities proved to be resilient regarding food security. All of the Quechua respondents declared that they have never experienced food shortages, and they have food security coping mechanisms such as bartering systems, and food crops such as chuño that have been domesticated to last for long periods of time, especially during the months of January and February (rainy season).

The current situation of Quechua communities of being disconnected from the modern world remains the same, and their isolation from cities has enabled them to preserve their Quechua language embedded in their culture and traditions. Woolard and Schieffelin (1994) suggest that “people use language not only to identify with groups of people and particular sets of social circumstances but also to create boundaries and clear distinctions between groups of people” (p. 55). Additionally, as Quechua research participants confirmed, isolation has enabled them to guarantee their sovereignty and the control of their natural resources for their survival.

### **9.3.3 Ayni – Reciprocity**

Acknowledgment of the importance of the principle of reciprocity was unanimous in all Quechua communities. In the Andean cosmovision, balance and harmony among the four ayllus is achieved through ayni (reciprocity), leading to Allin Kawsay (Lajo, 2005, 2011). An example of the narratives that depict reciprocity as their common cultural value is below:



***Acllanuna:***

*“Ayninakuy is paramount for the construction of our houses and in harvesting our land. Our ancestors have practiced ayni, and we practice it with our children. Because we will not be able to cope of producing the food for ourselves and so we need the help and support of other families and so with ayni, we can produce our land and feed ourselves”.*

Ayninakuy, shortened to ayni in Quechua, means *reciprocity*, which embodies the principle that what is received must be returned in equal measure (Quijano, 2010; Huambachano, 2015a; Lajo, 2011). The ayni principle is ingrained in traditional narrative (Lajo, 2011). For example, the Andean people would ‘reciprocate’ the gifts given by their gods—sea (fish), earth (food crops) and sea (water)—not only by conducting offerings and rituals before the beginning and at the end of their harvest festival season, but also by applying this Indigenous philosophy in their daily lives.

***Quila:***

*“Ayni enables us to work together and faster because we all help each other and so we can speed things up. For example, we need help with the harvesting of our food because my daughter is getting married later in the year. Ayni is a rotation system so each family helps another family. So we contacted the leader of the community and asked him to please write our name down to be part of the next rotation system because we need help to harvesting our land. So five families came to help us, and then when they need help – I will help them because they are helping me to grow enough food for my daughter’s wedding”.*

Peruvian mythology reveals how the Andean people’s spiritual leadership embodied in the ayni tenet and the adoption of the ayni system in their agricultural practices was able to satisfy the hunger of their people (Argumedo & Wong, 2010; Espinoza, 1987; Estermann, 2007; Lajo, 2005, 2011). Ayni played a spiritual and essential role in guiding the Andean people’s ethical principles and beliefs when working in the Tahuantisuyo<sup>58</sup> for their food sustenance.

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<sup>58</sup> Tahuantisuyo: The Inca Empire in Peru was the largest and most influential Andean culture since it expanded the Andean world views to what now represents the countries of Bolivia, Ecuador, Argentina, Chile, and south of Colombia – this Inca territory is referred as ‘Tahuantisuyo’ (Inca empire) (Espinoza, 2011).

For the purpose of illustrating how the principle of ayni works for their nourishment the example of the crop-rotating systems between Inca families, consider the following subjective example.

*“The Huambachano family from the Wari community in Southern Peru was required to grow a hectare of quinoa in 6 months’ time for the Mamani family. Consequently, the Huambachano family focused on this vegetation diversification technique by working collectively towards achieving this goal. In return the Mamani family provided the Huambachano family with food, drink, and gifts as an expression of respect and gratitude towards them. The food and drink as well as gifts were presented to them in ritual ceremonies to Pachamama recognising their sheer work, commitment and work ethics. They embraced the belief that ‘all you give must be returned to you in its pure form’ therefore encapsulating the philosophy of reciprocity” (N. Ramirez, personal communication, 3 April, 2013).*

Another example of ayni captured below:

**Rumpi:**

*“The essence of ‘ayni’ is to work together and help each other to maintain equilibrium with nature, runas, and the spiritual world and very important for our Allin Kawsay”.*

*Chanikuy waqekuy is the act of sharing food as a family and connecting with the land and spirit because food has a spirit. Chanikuy waqekuy is the food that is given to women when she helped in ayni to other families. For example, women help the other family in need by cooking for them. Then they bring the food to the men and women working in the farm. Because man and women all work collaboratively together and help each other then you feel a peaceful and gratifying feeling and as a thank you for the women’s help with the cooking. Then we give them a dish called a ‘Chiri uchu’ as a symbol of reciprocity and gratitude. The woman then brings her plate of food to the family and she shares it with the rest of her family”.*

The ayni was not simply an act of trade-off between families, but more importantly encapsulated a set of Indigenous values and beliefs with regard to business ethics and human well-being with sustainability, transparency and accountability values being reflected in the ayni, or reciprocity, principle (Lajo, 2011; ANDES, 2012). In addition, ayni was considered not only an act of good faith between Indigenous farming communities but more importantly an act of business ethics (Argumedo & Wong, 2010; Humán, 2011; Huambachano, 2015a).

The success of the ayni depended on the community's 'knowledge cooperation' system that incorporated the values of trust, solidarity, reciprocity and work ethics of community members. The colloquial Spanish phrase 'un dame y toma sin fin', 'give and take without end', or in Indigenous good-living philosophy 'indefinite reciprocity', was widely recognised as the core value of ayni within Andean farming communities (Huambachano, 2015). This led to the Inca Empire developing one of the most organised and sustainable agricultural production systems (Argumedo, 2010; Lajo, 2008).

Lajo (2011) explains that ayni has its origins in the Andean peoples' world view of maintaining and reciprocating their intimate and sacred relationships with their gods: the earth, the sky and the sea. For example, the act of giving a *chiriuchu* (traditional Andean dish) as a gesture of gratitude goes beyond the simple meaning of thank you; rather it represents the ethical set of principles within the community.

To illustrate, the *chiriuchu* is a traditional dish symbolising how important food, and the act of sharing it with each other, is for the Andean people. In the composition of the *chiriuchu* you may find seaweed, coca leaves, potatoes, guinea pigs, charqui (dry llama or alpaca meat), *chalona* (dehydrated lamb meat), roasted corn, *kumara*, and other important Andean crops.

As one of the research participants emphasised: *"This dish represents the act of harvesting seeds together (man and women), and our expression of gratitude. It is not just simply having manners but more importantly symbolises our connection with the land, and living in harmony with one another by acknowledging their help"*.

Another research participant in the talking circle added:

***Mamani:***

*"We would cross the mountains dancing and singing joyfully. This is our permission from our cosmic brothers to start our planting season on Pachamama.*

*Especially we ask permission to our cosmic brother that directly affects the land cultivation and growth of arable crops.*

*One of the important rituals that we perform is the Sata Qallta, to the sun, rain, earth and air in the form of dances, chants and the sharing of food among community members.*

*We perform these dances according to the Inca calendar at the end of September. Also, it was a tradition for the Inca to declare the harvest season by digging into the ground with a Chaquithaqlla, and we still do it now. The Ayllu leader is the one who re-enact this Inca tradition. In every festivity we all wear our most beautiful and brightly coloured polleras”*

The narrative above expresses that the *act of working collectively* and crossing the mountains dancing and singing joyfully reflects the ayni principle. Dávalos (2008) argues that the Indigenous philosophy of ayni is attributed to the Andean people’s state of happiness because labour was performed in a joyous and collective manner. Thus, in the Tahuantisuyo ‘labour’ was not considered a commodity but rather a symbol of happiness.

The same philosophy is still practiced in the ayllus, and this has been the guiding Allin Kawsay philosophy of the Andean civilisation for thousands of years, and has led to the success of food security. Furthermore, research participants emphasised that for Andean people communal working days are regarded as festive holidays, just as they would be performing a profound corn festivity in January. Women in the talking circle pointed out about their traditional clothing, which is called ‘polleras’. Polleras are traditional Andean garments made of cotton or wool with several embroidered underskirts illuminating the vibrant soul of the Andean woman.

In addition, traditional dances and rituals are a form of expressing their cultural identity, and they mentioned the Sata Qallta ritual. This ritual is performed by four women who exemplify the four cosmic brothers; sun, rain, earth and air. The Sata Qallta is a dance of gratitude and respect to all the cosmic beings, and once they are granted permission from their cosmic world then they would start the pollination of native seeds by planting male and female seeds to germinate together, resulting in nutritious food. I note here that Andeans perform this ritual by putting into practise another key tenet—duality or ‘yanantin’.

#### **9.3.4 Yanantin – Equilibrium / Semantin**

Elder Rosita continued with the explanation of the Sata Qallta dance that manifests the principle of duality—yanantin:

*“The women would greet their four cosmic brothers with joyful dances and chants and would swing their colourful polleras around, giving the crowd the impression of a colourful rainbow.*

*“Then it would be the men’s turn to form four groups of four, symbolising the four basic principles of life: space, time, matter and energy. By dancing together and digging in the Chaquithajlla they would look forward to the new harvest season. The ayllus still wait anxiously for the festivities of the Sata Qallta or the harvest festival. As a result, the well-being or good living of the community was paramount for them and this was achieved by seamlessly respecting, loving and honouring Pachamama and their four cosmic brothers”*

In the Andean culture, *yanantin* is manifested in the belief that existence relies on the tension and balanced interchange between the various ‘polarities’ (Webb 2012). In this sense, polarities exist throughout the worldview of Indigenous culture; for example between the wet and dry season. There is a very definite ideological and practical commitment within Indigenous Andean life to bringing these seemingly conflicting opposites into harmony with one another without destroying or altering either one.

The application of *yanantin* has obvious advantages in terms of balancing ecological cycles and processes. For example, Brush et al. (1981, p. 81) detail the existence of Indigenous seed banks and exchange networks which share resilient seeds between communities in order to balance two common polarities, drought in the summer and frost in the winter. Interviews conducted with Quechua participants confirmed that *yanantin* is perceived as the most important value for seed storage in the Potato Park.

Therefore, the tenet of *yanantin* in a nutshell comprises equal rights and obligations of both men and women with the view to meeting and achieving harmony and maintaining equilibrium in the ayllu. These principles are exemplified in the transmission of ‘knowledge’ relating to agricultural practices, where the roles of women and men complement each other.

### **9.3.5 Chaninchay – Solidarity**

An extract of responses gathered from Quechua participants when prompted with the question: What is chaninchay?

**Aniceto:** *“It is an act of solidarity, for example, we do community work and go and help the elderly. We go and assist the elderly by gathering food on their behalf and they have a sense of community support. Also, we help them to harvest the land of the elderly”.*

Another participant interrupted and said:

**Antaro:** *“It means to be good person for both man and woman. It is to talk truthfully and with clarity”.*

Another one continued:

**Aquiri:** *“To speak the truth, and do not tell on others. Speak with conviction”*

The answers provided reveal that this value is the least-known of the four; indeed, there is almost no mention of it in contemporary literature. Like the other terms it is not related only to the human world. Instead it applies to the ‘*pacha*’<sup>59</sup>; the human (*kay pacha*), natural (*ukhu pacha*) and spiritual world (*hanaq pacha*) collectively (Raaflaub & Talbert, 2009). In this way, *chaninchay* differs from *ayllu* in that *chaninchay* compels communities to strive for unity with the natural and spiritual world, while *ayllu* focuses on the human social unit. *Chaninchay* is used in the agricultural management systems, which are based on principles of ecological, productive, and social solidarity. At the core of this principle is a profound respect for Pachamama and reverence for the power and fragility of the environment for the attainment of Allin Kawsay – good living (IIED, 2005).

#### **9.4 Māori people and te ātanoho and mauri ora**

In contrast to the Allin Kawsay philosophy in Peru, there is no consensus about an established good-living philosophy in academic Māori literature. The literature review about good-living philosophies in Aotearoa indicated that principle of te ātanoho – the ‘good life’ conceptualised by Mānuka Hēnare (2011), shares similarities with the Allin Kawsay philosophy and therefore, I investigate the legitimacy of te ātanoho in this research.

To provide the contextual background of te ātanoho, I refer to Hēnare’s scholarly works, including *The changing images of the nineteenth century Māori society: From tribes*

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<sup>59</sup> Translated as ‘*world*’, *Pacha* is an Incan conception of the different spheres of the cosmos in Incan mythology (Huamán, 2011).

*to a nation* (2003) and *Lasting peace and the good life: Economic development, and 'Te Atanoho' Principle of Te Tiriti o Waitangi'* (2011). Hēnare argues that in the Māori language version of Te Tiriti o Waitangi 1840 is embedded an essential principle of economic development and business futures: “This principle is the Māori philosophical idea of a good life” (Hēnare, 2011, p. 1). He further contends that te ātanoho conveys the Māori right to prosperity in a time of lasting peace and was ratified in the preamble of the Te Tiriti o Waitangi (Hēnare, 2003).

Hēnare proposes that the principle of te ātanoho embodies the Māori good life approach, and subsequently, this proposition was tested during the empirical data collection of this investigation between March and August 2015. Empirical data revealed that almost all Māori interviewees were unfamiliar with the principle of te ātanoho, except one interviewee. In an interview format, I provide you with some of the recounts of Māori research participants about the concept of Tē ātanoho.

Question: Could you please tell me about te ātanoho – the ‘good life’ principle?

**Tawhito:**

*“For me te ātanoho means to sit quietly so you could learn and appreciate what’s going on in your surroundings. That’s now being taught, thankfully, been brought back and being taught in some of our kura, our kura kaupapa, schools”.*

**Rangi:**

*“It is the practice is to sit quietly and just listen, tune the mind and the body to what’s happening in the environment. For example, if you were in the classroom and you were taught the different things around you. For example, if the lecture was about the different kind of winds. Now there could be up to about a hundred different names for the different types of winds.*

*So every little wind had a name. And these are the all the children of Tawhirimatea, so you couldn’t teach it in the classroom, to get the students to understand what these changes to these winds are, especially if you’re going to sail a waka out six thousand nautical miles out to sea. And so they’d sit them in a prominent place, and they’d just sit quietly and listen. Just listen to what the winds doing. And so that is our type of learning”.*

**Ngāri:** *“Yeah, Mānuka pulled that out, the saying of te ātanoho from one of the elders up there from Rob Cooper and Sir James Henare. But I don’t know how credible that is...uhm good life? How do they describe a good life? It’s hard to know what a good life might be, you know, in a changing world like we’ve got.*

*Because back in the day, one of the key elements of leading a good life was to have connections to ancestral lands, eh. That was a way to connect back to ancestral lands”.*

**Rene:** *“Te ātanoho is not a common good-living concept – I don’t quite understand it as a good-living philosophy because in Māori means to sit quietly. I am not sure what this concept means ...I am sorry”.*

**Hakar:** *Did you say te ātanoho?*

*It’s not really a common phrase.*

*No, it is not phrase around here.*

*No, not here.*

**Elder Ngāti:** *“I don’t know about te ātanoho, I think maybe that sentence is taken out of context and a lot of it actually. I might need to read the whole sentence to make sense of what this concept is about”.*

Because of the lack of understanding about te ātanoho from research participants then I decided to (a) engage in further discussions with Hēnare about the meaning of te ātanoho and (b) organise a series of talking circles in Ruatoria, Ngāti Hine and Ngāti Rarawa to discuss further this principle with research participants.

My conversations with Hēnare about the conceptualisation of te ātanoho between January 2012 and March 2016 involved lengthy philosophical discussions about the genesis of this concept. Additionally, there was an in-depth study of the preamble of protection of the good life—Article 1 of the Treaty of Waitangi—which Hēnare argues contains the essence of a Māori good life approach. I now present you with the highlights of my discussion with Hēnare about this topic. One of the highlights was to hear him saying that the meaning of te ātanoho is often overlooked in the Māori version of the Treaty of Waitangi.



Consequently, I began with the breakdown of te ātanoho to investigate the semantics of this Māori concept.

Below are some examples of my field notes deconstructing the concept of te ātanoho with Hēnare (personal communication, March 23, 2015).

Te: the (singular)

Āta: openly, nothing hidden, cautiously, gently, slowly

Noho: to sit, stay, remain, settle

After discussing te ātanoho, the saying *the devil is in the detail* was used by Hēnare to explain to me that the good life approach is contained within the Māori version of the Treaty of Waitangi. Specifically, it is in the Preamble as defined in Māori ‘tonu hoki te Rongo’ - Ātanoho (peace and continued life as a Māori people – good life), and in Article 1 of the Tiriti – right to self-determination or Kawanatanga Katoa o Rātou Whenua (governance forever of their lands) (Personal communication, March 23, 2015). He further contended that within those Māori words are the fundamentals of the Māori principle of te ātanoho or the good life, and that te ātanoho encapsulates the Māori Indigenous worldview of vitalism, humanism and reciprocity as mentioned in Chapter III (Hēnare, 2001, 2003, 2011). Below is a quotation of Hēnare’s (2011) proposition of the meaning of te ātanoho:

“In speaking to the world through the proposed treaty, Victoria states in the Māori text of Te Tiriti, “kia tohungia ki a rātou ō rātou rangatiratanga me tō rātou wenua, kia mau tonu hoki te Rongo ki a rātou me te Ātanoho hoki. This is rendered as her desire to preserve to them their full authority as leaders (rangatiratanga) and their country (tō rātou wenua), and that lasting peace (Te Rongo) may always be kept with them and continued life as Māori people (Ātanoho hoki)” (Hēnare, 2003, p. 229).

Consequently, to validate Hēnare’s proposition above I preceded to interview Māori research participants from each of the five iwi that took part of this investigation during March to May 2016. I circulated the paragraph in Māori below which according to Hēnare encapsulates the good life approach:

**Māori version:**

“Kia tohungia ki a rātou ō rātou rangatiratanga me tō rātou wenua, kia mau tonu hoki te Rongo ki a rātou me te Ātanoho hoki” (Hēnare, 2011, p. 1)

**English translation:**

“To indicate to them their sovereignty over their lands, to hold fast to their own serenity and sit vigilant and patient”

I amalgamated some of their responses for easy reading below:

**Kori:** *“Te ātanoho is a noun not a verb so, here, kia tohungia ki a rātou ō rātou rangatiratanga me tō rātou wenua, that is sovereignty over our lands. Tonu hoki te rongo, atanoho is to sit still.*

*So I interpret it as having sovereignty over our lands but to sit still? It doesn't make sense”.*

**Rangi:** *“It sounds as though te ātanoho can't be interpreted on its own because on its own it means to sit still. And now I am reading this and within this context I assume is about sovereignty of our lands that were confiscated after we signed the Te Tiriti o Waitangi”*

**Kimiora:** *“Ok let me read it...this sentence is not related to a good life approach because it is saying that we should sit quietly and wait..wait for what? It could be perhaps written as te moana atanoho, kōhi tonu hoki te rongo. That's better. That sounds a bit better”.*

**Ngarimu:** *“Kōhi tonu hoki te rongo Ātanoho, well to me, is sitting down and observe what's happening – maybe should be a full stop there or say something as te rongo me te ātanoho”.*

Discussions with research participants about what would be the Māori word that resonates with their good life approach has led to the concept of mauri ora (well-being). In addition, research participants put an emphasis on the recognition of mātauranga Māori as a body of knowledge for the foundation of understanding about Māori culture.

**Tawhito:** *“If you are trying to understand what a good life means for us then you should understand our mātauranga Māori because that is the essence of who we are.*

**Kiri:** *“I don’t understand te ātanoho and I would suggest you to ask us for mauri ora – that is close to what you are explaining us about your people in Peru with Allin Kawsay/the good living”.*

**Taniwha:** *“Now... if you ask me for a Māori word that embodies well-being and health of our people then the closest to it would be mauri ora. I am not sure if we all Māori would interpret it as a good life approach though. But for me personally mauri ora is about your well-being. As far as I am concerned te ātanoho is not even close to our understanding of well-being or mauri ora”.*

Thus, my research shows that the concept of te ātanoho is not a well-established good life principle in the four iwi that took part of this investigation. Further, the concept of mauri ora (well-being) does resonate with research participants’ philosophy of a good life. For the purpose of understanding mauri ora as a well-being philosophy, this section draws on discursive definitions of this concept and its complementation within mātauranga Māori.

Mauri is the spiritual essence, life-force, spark of life and therefore is understood to flow through all living things (Hēnare, 2003; Hikuroa, Slade & Gravley, 2011; Marsden, 2003; Morgan, 2006; Pohatu, 2010). Morgan (2006) describes mauri as the “binding force between the physical and spiritual” (p. 3). Mauri connects life with life and is found in land, forests, waters and the life they sustain, and complements human thoughts, intentions and language (Hikuroa et al., 2011; Morgan, 2006; Pohatu, 2010). Further, mauri has been presented as a relevant sustainability measure (Hikuroa et al., 2011; Morgan, 2006).

Mauri is seen to flow through all living things humans and non-humans (Hēnare & Kernot, 1996; Nicholson, Spiller & Hēnare, 2015; Pohatu, 2010; Shirres, 1997; Spiller et al., 2011). Pohatu (2010) outlines three states of mauri: mauri moe is interpreted as a proactive but latent state of untapped potential; mauri oho is the awakening, a state of active engagement and rediscovery of the human purpose striving towards mauri ora. To diminish mauri is to decrease the capacity to support other life: without mauri, all things cease to exist (Hēnare & Kernot, 1996; Morgan, 2006).

In regards to the concept of mauri in the realm of ecosystems, traditionally Māori realised that shifts in mauri (life-force, life spirit) of any part of the environment, for example through use, would cause changes in the mauri of immediately related components. As a result, the whole system is eventually affected. The process used by Māori to guide resource use reflects this belief in the interrelationship of all parts of the environment.

Mauri is not a stand-alone concept; rather is inextricably linked to other energies that derive from the spiritual realm (see Morgan, 2006; Spiller & Stockdale, 2012). “Ora” means energy in Māori and together with mauri, form the Māori philosophical system of mauri ora. Mauri ora is thus a dynamic process that is a part of well-being. The theoretical basis of mauri ora can set up the platform for relevance regarding New Zealand well-being legislation, and a means to measure and evaluate well-being impacts (Fa’au & Morgan, 2014). Mauri ora can be defined as the life-supporting capacity of the air, water and soil; the physical and mystical life aspects are also a central idea in a Māori understanding of mauri ora. My reasoning about mauri ora as a good life principle goes beyond the mere interpretation of the semantics of this concept; rather, I prefer to study it from the perspective of mātauranga – Māori knowledge or ways of knowing.

According to the National Library of New Zealand website:

*“Ko te Mātauranga Māori, i roto i tōna horopaki tuku iho, ko te mātauranga, ko te mōhiotanga, ko te māramatanga rānei ki ngā mea katoa e kitea ana, ki ngā mea katoa e huna ana, i te ao tukupū.”*

Translated it says: *“Mātauranga Māori in a traditional context means the knowledge, comprehension or understanding of everything visible or invisible that exists across the universe.”*

The National Library further states:

*“Mātauranga Māori takes many forms, including language (te reo), traditional environmental knowledge (tāonga tuku iho, mātauranga o te taiao), traditional knowledge of cultural practice, such as healing and medicines (rongoā), fishing (kai moana) and cultivation (mahinga kai).”*

A similar definition is provided by Moko Mead:

“Mātauranga can be seen as constituting the knowledge base which Māori people must have if they are to be comfortable with their Māoritanga and competent in their dealing with other Māori people. It represents the heritage of the Māori, the knowledge which the elders are said to pass on to their mokopuna, the wahi ngaro which our youth long for, and the tikitiki mo te mahunga (the topknot for your head) Sir Apirana Ngata talked about” (2003, p. 26).

One of the more generally accepted is Marsden's (1988), which defines the term, in a traditional context, as

“the knowledge, comprehension or understanding of everything visible or invisible that exists across the universe; this includes all Māori knowledge systems or ways of knowing and doing” (p. 42).

Durie (2006) asserts that mātauranga (knowledge) is entrenched in Māori cultural identity<sup>60</sup>. Māori oral traditions have played a key role in transmitting mātauranga, values, morals and ethics. Such traditions have been passed down through generations in the form of rituals, ceremonies, languages of meta-themes and symbols, as well as written sayings and proverbs (Awatere, 1984; Barlow, 1991; Spiller et al., 2010; Royal, 2009). Additionally, mātauranga can be translated as knowledge, wisdom or ways of knowing (see the recent Wai 262 Report, Waitangi Tribunal 2011, 252).

When Māori speak of knowledge, they commonly use the word mātauranga, though terms such as maramatanga (to understand), mohiotanga (to know) and akona (to learn) also convey much of the same meaning as mātauranga. I note that most of the literature I studied about mātauranga was related to the English word knowledge. To highlight the exclusion of the consideration of other Māori words as mentioned above, I offer Salmond's (1985, p. 260) caveat:

“The ontological orders of Maori knowledge are not obvious: and in seeking to begin to understand mātauranga, a Western epistemology cannot be presupposed. The reasonableness of mātauranga rests within Maori language and not in the partialities of translation”.

In reasoning about mauri ora and mātauranga, and to make sense of the research participants' responses about mauri ora as a concept entrenched in their mātauranga, I suggest that mauri ora resonates with the development of well-being and health models of Māori people. These models were conceptualised predominantly from the 1970s onwards, based on Māori traditional knowledge and understandings (Durie, 2006; Morgan, 2003; Land Care Research, 2016). For example, Durie (2006) outlined the framework of Māori

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<sup>60</sup> Frierson et al. (2010, p. 75) define culture as “a cumulative body of learned and shared behaviour, values, customs, and beliefs common to a particular group or society. In essence, culture is a predominant force shaping who we are.”

well-being (Table 22) and provides specific Māori measures of well-being, built upon Māori understandings of what constitutes a good life that flows through all aspects of mātauranga.

**Table 22: A Māori perspective of what constitutes a good life**

	<b>Individuals</b> <i>The well-being of Individuals</i>	<b>Collectives</b> <i>The well-being of families, groups</i>	<b>Populations</b> <i>The well-being of whole populations</i>
Universal measures	Measures that are relevant to all people Example: life expectancy, mortality data	Measures that can be applied to diverse groups Example: aggregated data	Measures that apply to all populations and nations Example: global burden of disease
Māori-Specific measures	Measures that are specific to Māori individuals	Measures that are relevant to Māori collectives	Measures that are relevant to te ao Māori

Source: From Durie (2006)

Moreover, the Mauri Model (Morgan 2003, 2006) was developed based on the concept of mauri from 2002 onwards. It is not only a framework but an assessment and decision-making tool to integrate three main dimensions: economic, social, and cultural. The Mauri Model proved to be a useful tool for measuring sustainability, human well-being, and the interconnectedness of all living things (Morgan, 2003). Scoping the academic literature regarding Māori well-being, most of the studies have been in the health- and nutrition-related areas (see Durie, 2006; Morgan, 2011; Te Kete Purangi, 2016), and gaps remain in the study of Māori well-being and food systems (Cram, 2014). However, there is an emergent area of research projects studying plant, food and technology for the improvement of Māori well-being (see Landcare Research, 2016), and related business areas (Spiller et al., 2011).

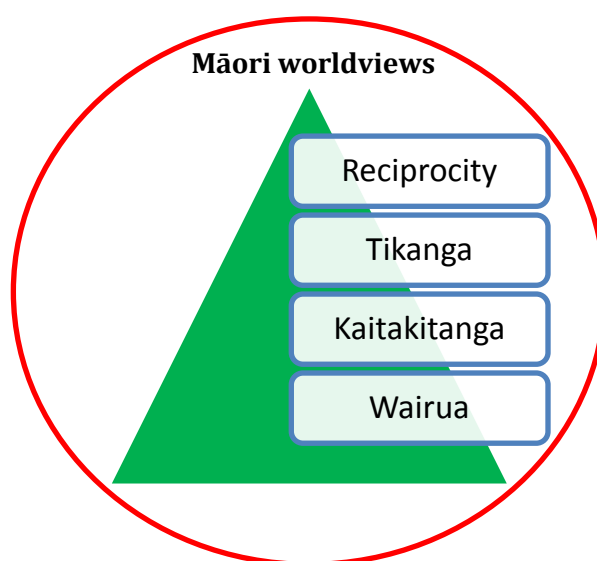
In comparing te ātanoho and mauri ora based on the study presented in this section, I realised that mauri ora is a better fit in the attempt to select a concept that resembles a good life approach from an Indigenous perspective. Mātauranga imbues Māori knowledge, thinking, cultural aspects that are unique to Māori people, informing Māori well-being. Therefore, in my perspective, mauri ora offers greater insights about mātauranga (Durie,

2006; Nicholson, Spiller & Hēnare, 2015; Pohatu, 2010; Shirres, 1997). The next sections describe the Māori values that strongly resonate with my research on Māori traditional knowledge and food security: reciprocity, tikanga, kaitakitanga and wairua.

#### 9.4.1 Characteristics of Māori worldviews

Based on the interviews collected and analysed between April to December 2015, within the Māori worldview there are four cultural values: reciprocity; tikanga, kaitakitanga and wairua (Figure 28), which are explained through the narrative below.

**Figure 28: Māori key cultural values**



#### 9.4.2 Tikanga – Customary system of values and practices

The recounting of by a kaumātua below highlights the importance of tikanga with land and subsequently in food production.

*“The old people devised what they called karakia, for the different things that you do. And that’s where a lot of that, and it’s based on tikanga, you know, it’s simple stuff really.*

*So when you go and get medicine plants, the first thing you do in tikanga is you ask permission of Tane, you know, if you’re going into Tane’s realm, you ask permission.*

*And then you go and get your medicine, because food is medicine, and then you say thank you. I mean that’s the basics of tikanga.*

*A lot of our tikanga comes down to, people have hard and fast rules on it, but to me it comes down to whether something is sacred or whether something is not sacred. We call this tapu (sacred) and noa (not sacred).*

*And a lot of tikanga centre around that, those two very important guides, you know, one of the most commons ones, of course, is that a person's head is tapu. And so when you put a hat on your head, you don't take your hat off and leave it on the table that you are eating your kai”.*

He further added:

*“When I go to harvest things, I talk to the plants before I cut them and I announce to them that I am going to sacrifice them. Oh! but first I ask myself what the berries' values are, and the answer is that the berries will feed my family. So even if people are growing food to sell, there still needs to be a process of respect in place. And you only take enough for you, and leave the rest – you are not greedy, and this is what I grew up with hard tikanga rules. Therefore, there is not debt or nothing you have to pay back because you have gone through the proper process... you can't just go to the bush and pull out your herbs or fruits. You have to ask permission to god Rongo and then you go and do your businesses”.*

Research participants acknowledged tikanga as a guiding principle because from their point of view tikanga influences the moral judgements of Māori about appropriate ways of behaving and acting in everyday life. They further mentioned that “the clear-cutting of forests and loss of land that they had to endure post-Treaty of Waitangi that was detrimental for their traditional worldview. All living things in the forest were a model for the knowledge of tikanga”. The loss of their land symbolised for them the decline of their tikanga and customary practices that influence how to be Māori (Ballara, 2003; Hēnare, 2013; Moko Mead, 2003).

In the book entitled *Eruera: the teachings of Māori elder*, Anne Salmond recorded the opinion of Eruera about tikanga:

*“Knowledge or mātauranga is a blessing on your mind; it makes everything clear and guides you to do things in the right*



way.... And not a word will be thrown at you by the people. It is the man who goes with his spirit and is mind and his heart believing in all these things who will climb to the high summits of leadership” (Salmond, 1980, p. 247).

Tikanga encompasses a set of common terms and definitions intertwined with one another within Māori worldviews which I have summarised in the Table 23 below:

**Table 23: Māori common terms and definitions within tikanga**

Wairua	Spirit or spirituality. Recognition that the Māori view of spirituality is inextricably related to the well-being of individuals.
Aroha	Love, also having a heart that is caring and kind.
Turangawaewae	A place to stand.
Whānaungatanga	Family or extended family which plays a fundamental role among Māori because everybody takes care about the well-being of their families.
Tapu/Noa	Sacred/profane. Essential for the acknowledgement of the repercussions of breaching norms and practices.
Kawa	Protocols are guiding Māori social system.
Karakia	Prayer, and symbolises the acknowledgement of wairua.
Tūpāpaku	Deceased person. Deceased is elevated to a position of respect during tangihanga (funeral and burial).
Marae	Gathering place of Māori to connect and unify as Māori.

Source: From Best (1982), Marsden (1992), Mead (1996), and Shirres (1982)

Tikanga still reverberates in today’s Māori society; however, it was not an easy process for Māori to embrace their tikanga Māori. When the Europeans arrived in Aotearoa they set about establishing their own institutions and religious beliefs with the hope of civilising the native people and this entailed breaking down the foundations that had governed and influenced them, such as Mātauranga and tikanga Māori (Walker, 1991).

These two core Māori cultural concepts were absent from school curricula for over a century with the exception of the Māori arts, crafts and dance that were allowed by the government at schools in the 1930s (Māori Language Commission, 1995, 2016; Walker, 1990). The suppression of Māori knowledge since at least the 1860s, instigated by much of the government legislation, caused traumatic changes for them (Durie, 2009; King, 1992; Walker, 1990).

The sense of Māori disempowerment and spiritual defilement is expressed in the following saying by Rev. Māori Marsden:

“Kua pikitia te upoko o te iwi Māori.

The ‘head’ of the Māori people has been ascended (overcome)”<sup>61</sup>

Religion also influenced the decline of tikanga for instance the conversion of Māori to Christianity which often had led to Māori detaching from their culture and the belief that progress and development could be achieved by disregarding Māori culture and accepting one form of knowledge – Western knowledge are examples of knowledge suppression (Marsden, 2003; Walker, 1990; 1991).

The interviewees mentioned that some of those ways of thinking still resonate in today’s world and this is the reason why they are still vocal about expressing their aspirations for Māori cultural revitalisation and autonomy. Two important cultural events dramatically changed the attitudes of many Māori towards their Māori knowledge, customary practices, and ceremonies and of the general public in 1984-1987 and 1990, as mentioned below. See the table below for milestone events in the revitalisation of tikanga and Māori language from the 1960s.

**Table 24: Revitalisation of tikanga and Māori language rooted in landmark events**

1960 onwards	Steady movement towards a greater acceptance of aspects of Māori culture in Aotearoa.
1973	Revitalisation of Māori language spearheaded by Hana Te Hemara.
1975	The Waitangi Tribunal was founded.
1975	Whina Cooper on the Māori Land March: Nationwide march to stop the sale of Māori land. She succeeded.
1977	Bastion Point Occupation: Protest against the housing development of former Ngāti Whātua reserve land. Land was returned to Ngāti Whātua.
1984-1987	Two important cultural events changed dramatically the attitudes of many Māori towards their Māori knowledge, customary practices, and ceremonials and of the general public starting in 1984. International exhibition of Māori art, Te Māori.
1986	The success of Te Reo Māori Claim (WAI 11) – Acceptance of Māori language in schools’ curricula.
1989	The Education Act of 1989: Tikanga Māori appears in legislation.

<sup>61</sup> Used by Rev. Māori Marsden of Te Tai Tokerau when discussing colonisation. Marsden papers, Auckland City Library.

1990	The waka taua (war canoes) revival for New Zealand's sesquicentennial celebrations at Waitangi in 1990.
1991	Resource Management Act (RMA) 1991: Tikanga also appears in the RMA.
1993	Te Ture Whenua Māori Land Act 1993: The term tikanga is acknowledged in the Land Act 1993.

Source: From Barlow (1993), Moko Mead (2003), Māori Language Commission (2016).

In July 2015 I crystallised my research findings with research participants from all four iwi that took part of this study. They all agreed with their interpretation of tikanga as the knowledge foundation for the set of ethical principles and guidelines of acceptable behaviour that embodies the essence of being Māori.

### 9.4.3 Kaitakitanga – Guardianship

Environmental self-determination for the preservation of Mother Earth is encapsulated in the Māori principle of kaitakitanga; specifically, the ethical principle of rāhui, as this investigation shows.

Maori views on rahui (tapu restriction):

*“It was used in the old days, from what I can remember, when there was, it goes back to that question there, eh, tapu and noa, when a person drowns, for example, in an area, the old people would put a rahui on fishing in that particular area, gathering shellfish, you weren't allowed to gather shellfish or go fishing. So there'd be a tapu place on that particular area, where you'd not allowed gathering any fish or any shellfish”.*

*“The only problem with rahui is that only half the population understands, the other half doesn't. But I think they're getting better at it now. I've seen some rahui put in place, up in some of our harbours, and you know, everyone respects it, which is really awesome. I mean, it's changed from back in the fifties and sixties and they carry on doing, but Maori wouldn't break rahui. to break a rahui would mean death. And you can't go and knock people off these days.*

*“Oh I tell you, back in the day, if you broke a rahui, that was it, you get bopped off”.*

*“Rahui was done also to protect areas, like if there was an area, for example, if you wanted to replenish the food in that*

*particular area, see that area, might be birds, for example, pigeons were a common edible commodity back in those days. So if they wanted to look after that population of pigeons, for example, they could put a rahui on particular areas. So you weren't allowed to harvest any pigeons from that area. They would also put harvest on the eels, taking eels out of certain areas at certain times. And, so, it had that purpose, rahui had that purpose”.*

In the Māori view, they have an active rather than passive relationship role with the environment, one that leads them to adopt a stewardship or guardianship role regarding the environment (Kawharu, 2002, 2010; Marsden & Hēnare 1992; Roberts et al., 1995). Kawharu (2010) argues that in resonance with the Māori role of guardians of the land, the custom of rahui plays a significant role in environmental well-being. Rāhui is a form of tapu—a restriction of the use of natural resources that might compromise the well-being of Mother Earth (Kawharu, 2010; Moko Mead, 2003). Rahui denotes, as a case in point, the setting of boundaries for the protection and preservation of the environment.

#### **9.4.4 Koha: An example of reciprocity (giving back)**

Maori research participants stated some ideas about reciprocity.

##### **Rereata:**

*“Reciprocity is an important characteristic of Māori tradition, for me is, it's a spiritual relationship because rather than an actual physical and money type relationship, it's more like a spiritual relationship. For example, when we go to a tangi we bring food so we help out the family who is mourning the loss of their loved ones. When someone helps you out, it's something that you remember to repay when you are able to pay. And that might take years and years, but you still remember it, eh, so when you get a chance, you go and repay it but you don't pay with money. That's why people just give up, they give up their time to repay their debt. Some people give up land too, as reciprocity. Yes...some of them give land, gifted land to people to say thank you. Reciprocity is the phrase that we use when we say, it's never paid in full, but when you say kua e ha, that means the debt has been satisfied, eh, that commitment has been satisfied”.*

According to the Te Aka Māori-English, English-Māori Dictionary<sup>62</sup>, the English translation of koha is a gift, present, offering, donation, and contribution—especially one maintaining social relationships and that has connotations of reciprocity. However, all my Māori informants expressed that the meaning of koha goes beyond the one captured in the English translation. They explained that in traditional Māori society the presentation of koha often took the form of food given to an elder or relative among the hosts of a tangihanga. Further, Hēnare (2003) points out that koha can be tangible in the form of monetary contributions, or intangible such as the simple act of helping one another. Moko Mead (2003) adds that koha is not regarded as payment. Recipients receive them and hold them in trust and therefore they do not own them but are expected to return the koha at a given time.

Facets of a Māori worldview inform the analysis of this section elucidating the role that spiritual value play in Māori way of life. Kaumātua's Rereata narrative, in regards to koha considered as a spiritual relationship, is oriented in one of the elements that frame a Māori worldview. As explained earlier, a Māori worldview is contained within a matrix of beliefs oriented in tikanga Māori, and among those beliefs is tikanga hau (a spiritual basis of reciprocity in relationships) (Marsden, 1985; Barlow, 1991; Metge, 1976, 2001; Durie, 1998; Walker, 1991; Hēnare, 2003). Hēnare (2003) explains how *hau* [reciprocity and breath] is manifested in everyday life:

“Over the millennia, hau was established as a complex totalising system of obligatory gift exchange. The exchange followed some basic principles where the intrinsic hau of the taonga and the hau belonging to the donor are imbued in the taonga; these in turn infuse Māori social, economic and religious life with profound implications for the management of social relations and guardianship of the natural world” (p. 53).

Another Kaumātua interrupted and added:

*“Let me expand on what this rangatira just said with an example of reciprocity used for land purposes too which can also be interpreted as utu. I'm just trying to think of a good example. Ah... Hauraki, in the Coromandel, there's a whole community down there that are Ngati Porou, from the East Coast; they gifted land over there. We were gifted land; when I say we, this is my side from down Te Arawa, when the Tarawera, Mt. Tarawera*

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<sup>62</sup> <http://maoridictionary.co.nz/>

*erupted, the people in Hauraki, Te Aroha, gifted some land for our ancestors to resettle on after the mountain erupted.*

*A whole eight acres of it, down in Te Aroha, they just gifted that land to resettle the people who were affected by the eruption. But no one ever took it up. No one ever took it up. But the offer remained there, and I think it was only, I think our families from Te Arawa only gave it back, I think, sometime in the 1990s, late 1990s, when that land was handed back to the original owners who gifted it.*

*See that's where our understanding of reciprocity is about. See in his example they gave it out of the goodness of their heart. To help out people out, so now that you don't need it, you don't keep it and do other things with it, you give it back. You give it back to the original owners. That what a lot of the land that was given by Māori, for education for example, for building schools, a lot of families gifted land to the government to build schools, but of course, when the government finished using them as a school they sold the land. And that's where a lot of, that's where we get a lot of the squabbles and troubles. See they didn't understand reciprocity. They still don't".*

In Māori views, reciprocity, reciprocal relationships and responsibilities between humans and ecosystems are imperative for the harmonious relationship between human beings and resource-management ecosystems inherited and handed down through generations (Kawharu, 2002; King, 1992; Hēnare, 2011). Another Māori concept linked to reciprocity is *utu*. *Utu*: There is a value placed upon *utu* as compensation, or revenge, or reciprocity (Durie, 1994, 1998; Sorrenson, 2014).

Life is kept in balance by the principle of *utu* (reciprocal exchanges) which operates in relationships between individuals, groups and ancestors. In the context of *utu* being linked with *mana*, *utu* is a human way of protecting *mana*. For instance, a person or group will reciprocate anything they receive, whether it is good or bad, because of the challenge such an act represents to the concept of *mana* (Hēnare, 2003; Moko Mead, 2003). Moreover, the main purpose of *utu* is maintaining relationships (Walker, 1991; Metge, 2001).

#### **9.4.5 Wairuatanga – Spirituality**

The narrative captured below provides insights into the concept of *wairua*.

*Narratives from Aotearoa:*

*“Karakia is symbol of spirituality. Yeah, so the old people devised what they called karakia, for the different things that you do. And that’s where a lot of that and it’s based on tikanga, you know, its simple stuff really. So when you go and get medicine plants, the first thing you do in tikanga is you ask permission of Tane, you know, if you’re going into Tane’s realm, you ask permission. And then you go and get your medicine, and then you say thank you.*

*I mean that’s the basics of tikanga. And then you plant your crops, you go and do a karakia to Rongomatane or Haumia-tiketike, to the cultivator of plants. I think it’s similar to cultures, Indigenous cultures around the world where you go and get permission to plant kai and ask all the gods to look after your kai. And when you go and harvest it you do another karakia to say thank you for growing nice food, all those sorts of things, really basic stuff that people, we still do it today. We do a lot of those karakia when we go and plant kai, grow your food, go and get your water.*

*And a lot of our tikanga comes down to, people have hard and fast rules on it, but to me it comes down to whether something is sacred or whether something is not sacred, noa, they call it tapu and noa. And a lot of tikanga centre around that, those two very important guides, you know, one of the most commons ones, of course, is that a person’s head is tapu. And so when you put a hat on your head, you don’t take your hat off and put it on a kai table. You put it on the chair, or put it somewhere else, on the floor, but you don’t put your hat on the kai table, the table that you have food on”.*

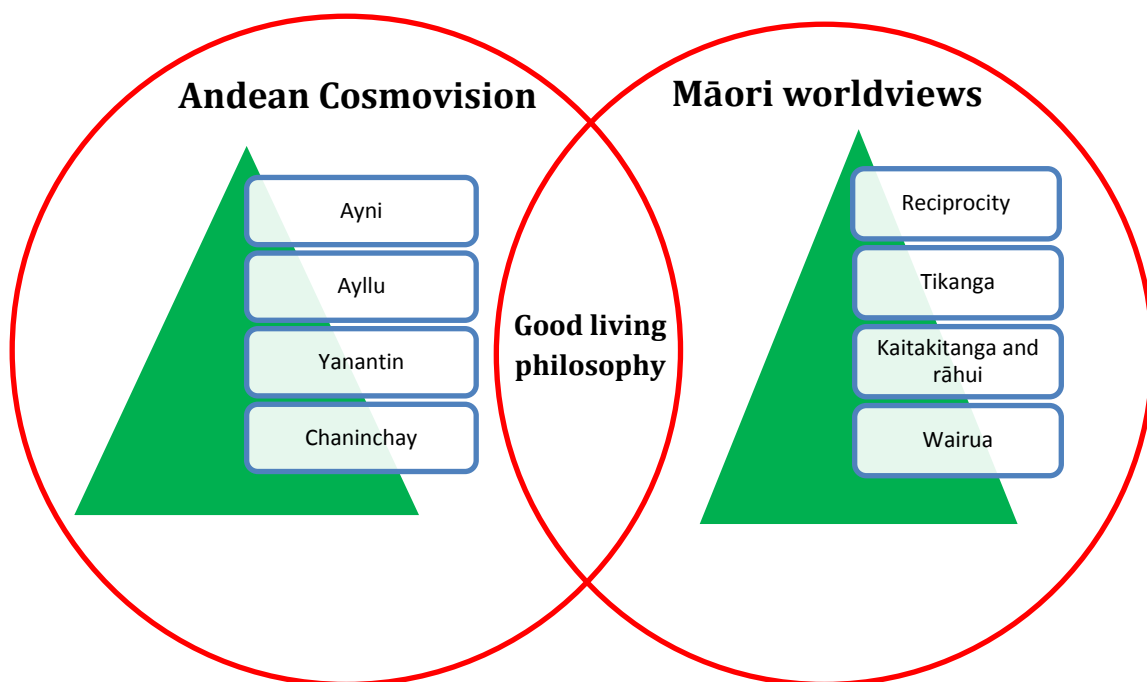
The narrative above resonates with the way that tikanga values permeate every aspect of Māori life, which are numerous and diverse depending on tribal groups and their descendant lines, because each tribe has their own histories and customs to remember and practice (Durie, 2003; King, 1992). In relation to food, tikanga values play an important role, with the blessing of food through karakia to remove the tapu on food (Shirres, 1982; Moko Mead, 2003; Salmond, 1991).

Additionally, an important aspect is the interpretation given to me by kamātua Eruera earlier about the meta-theme *Food is Sacred*, because food is medicine and medicine is food, and this is explained in Chapter VII. In his opinion, the reason for blessing the food is because in his view food comes from Papatūānuku, and it is medicine to your body. He believes that all medicine has a wairua (spirituality), and unless it has that wairua it will not work as it is meant to because some things have a negative wairua, and therefore some food can make you feel unwell. That is why he performs a karakia to bless food, to kill the negative wairua in food and to show gratitude to the god Rongomātāne.

### 9.5 Chapter summary

Figure 29 illustrates the model that follows from my discussion of the two cases. I note that there are very strong similarities across these two cases, but a key difference is their historical context.

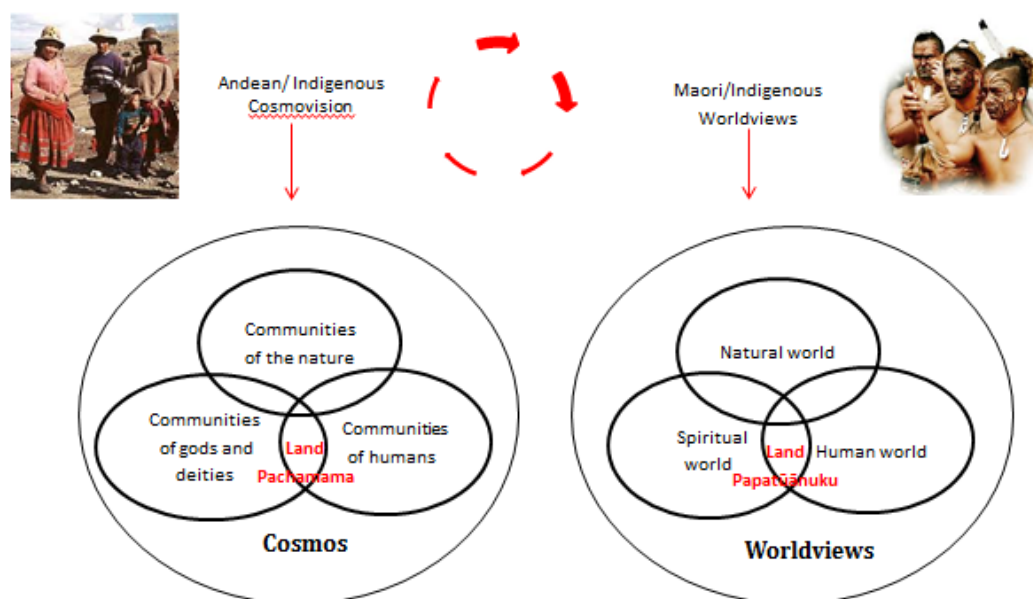
**Figure 29: Māori and Andean fundamental cultural values**



Indigenous peoples have their own TEK within them but they also share similarities regarding their perspectives of how they see and interpret the world around them (Posey, 1984; 1985 and Freeman, 1992). Research findings show that both these Indigenous groups have their own TEK within their worldviews, and safeguarding TEK is important for their social, cultural and environmental preservation. Figure 30 below illustrates the model that summarises the essence of these two Indigenous groups, and which I explain in the next subsection below.



**Figure 30: Similarities of Andean and Māori worldviews**



Source: From research findings and a literature review of Lajo (2011), Best (1976), Walker (1975), and Smith (2012).

In this illustration, I summarise the cosmvisions of the Andean and Māori people that reverberated during the analysis of the empirical data. The interconnection between each sphere represents (a) a reciprocal or dual relationship with nature, (b) a connection with the spiritual world, and (c) human life. This research provides evidence that these three dimensions embody a set of cultural principles for the respect, nurturing, and preservation of their Mother Earth. However, I also argue that Indigenous worldviews expressed through their cultures are not uniform, and that the interpretations of their ethos can be subtle, and therefore require a careful examination of their cultural environment. To support my argument, the case of Andean and Māori vital cultural values engrained in their worldviews is a case in point.

Based on the analysis of this chapter, one of the salient characteristics of Indigenous peoples' way of life concerning their well-being is their collectivistic, holistic, and spiritual approach to a good-living or well-being philosophy (Dávalos, 2008; Gorjestani, 2000; Durie, 1994). Research participants showed that their values, beliefs, protocols and customs provide the platform for the success of their communities in the social, economic, and environmental dimensions and for an overall realisation of Allin Kawsay and Mauri ora.

Cultural values engrained in their good life philosophies are at the centre of the ability to safeguard food security, as seen in Figure 29 above. Quechua and Māori present

similarities and differences regarding historical colonial context, community governance, values concerning religion, environment, and mystical beliefs as well as other important characteristics. Highlighting their similarities, these two Indigenous groups share the same bedrock of knowledge embodied in their view of the interrelationships between nature, the mystical and human world for their sustenance.

This chapter has reported a vast amount of traditional wisdom informing fundamental cultural values within the context of Indigenous peoples' right to food (Kuhnlei et al. 2013; FAO, Sillitoe, 2009, World Bank, 2004). Further, similarities between Quechua and Māori worldviews reflected in the Allin Kawsay and Mauri Ora confirm a set of fundamental values and principles guiding both Quechua and Māori agricultural practices for the attainment of food security, as analysed and explained in detail in Chapter IX.

The empirical data and analysis attested that these four cultural values form the basis of any response to food security. This was confirmed in the talking circles and workshops. Although there is some available literature on these values (Ishizawa, 2006; Webb, 2012), this is the first time that all four have been scrutinised in their capacity to influence food security, and the first time that *chaninchay* has been investigated. It is important to note that all of these values operate in the context of the holistic *cosmovision*.

The research findings affirm that cultural identity strengthens Indigenous peoples' right of self-determination. This implies that the sense of cultural identity supports the goal of other Indigenous communities around the globe in defence of the bond they have with the land and the environment for their food sustenance (Berkes, 1998; Cajete, 2015; LaDuke, 1999; McGregor, 2004; Wildcat & Berkes, 1998; Whyte, 2013). As a result, Indigenous farmers are demanding a transformation of the food systems to be more democratised, just and accessible to everyone. Food security strategies of Māori and Andeans function within their cultural values, which are detailed within this case study and add evidence to a growing collection of evidence affirming the value of traditional knowledge. For example, the study of Kuhnlein et al. 2013 of Indigenous peoples' food systems and well-being draws similar conclusions to this research and therefore, support the notion that the right to food security is paramount for their well-being (see another study Woodley et al. 2009).

Importantly, the data offers insights into the particular cultural dynamics of food security in Quechua and Māori communities, and this generates some lessons for potential food security policies. This study also acknowledges that it is not only the four key cultural

values of Quechua and Māori people that are vital for food security, but also that the holistic body of knowledge ingrained within these two Indigenous cultures provides significant insights into Indigenous peoples' fundamental tenets regarding the ethical use of the community's natural resources. It also discusses the preservation of Indigenous science, such as the knowledge and practices of food production and sustainable living.

## **CHAPTER X: DISCUSSION OF RESULTS**

This chapter discusses the significance of the results and analysis provided in Chapters VII: Earth is our Mother; Chapter VIII: Food is Sacred, and Chapter IX: Honouring Mother Earth. This chapter highlights the implications of this study to policy development and implementation. The chapter is structured by examining six discussion points below:

1. Earth is our Mother: contribution to TEK
2. Indigenous view of land and food security
3. National and international treaties
4. Potential loss of TEK
5. The threat of the industrial food approach to food security for Quechua and Māori people
6. The good-living philosophies: Collective buen vivir/well-being

*The main objectives of this chapter are:*

- To discuss the analysis of results of the meta-themes of Chapters VII, VIII and IX in relation to the research questions of this study;
- To address the role of TEK as the theoretical lens of this study;
- To discuss the overall results that have emerged from this investigation.

The chapter begins with a substantive discussion of the first meta-theme: Earth is our mother, followed by the next two meta-themes, Food is Sacred and Honouring Mother Earth.

### **10.1 Earth is our Mother: contributions to TEK**

A recurrent theme throughout this research has been the unique TEKs of Quechua and Māori people, which evolve, adapt and pervade every aspect of life in their communities. In this study, I presented examples that supported the notions that in TEK:

- Knowledge is holistic, cyclical and connected to relationships and connections of their human and non-human relationships (environment) and entities;

- All things are equal; for example, the principle of duality where man and woman complement each other in agriculture;
- Everything is alive and so everything has a spiritual energy essence;
- There is a foundation based on ethical principles: the land is sacred.

Much of the literature on TEK deals with similarities and differences between Western science and traditional knowledge (see Berkes, 2012; Johannes, 1989; McGregor, 2004). By contrast, little has been written about the collaborative approach of TEK to understand local knowledge of the land and food security. An exception is the writings of Anishinabe scholar Kyle Whyte (see Whyte, 2013, 2015, 2016c). As Whyte (2013) argues “TEK should be understood as a collaborative concept” (p. 1).

Extending Whyte’s reasoning, this study shows that it is the collaborative nature of TEK that facilitated the analysis of Quechua and Māori ways of knowing and interaction with the environment for safeguarding food security. This contrasted with the general understanding of food security derived from modern understandings. In this regard, TEK, as a collaborative concept, has the potential to serve as a conduit to advance studies of the TEKs of other Indigenous peoples. This would shed further light on the best integrative approaches to managing ecosystems for pro-environmental, social, and economic purposes.

In terms of the results and analysis detailed above, this study affirms the explanatory validity of TEK as a theoretical framework. For example, the incorporation of TEK as the theoretical lens of this study assisted me in gaining in-depth understanding about the philosophical foundation of Indigenous peoples’ cosmovisions. These worldviews/cosmovisions constitute unique paradigms oriented by distinctive ways of knowing, being and doing. This study supports the argument that one of the main commonalities of Indigenous peoples is based on possessing a comparable philosophy of life wherein humans are, and always will be, connected to Mother Earth, and that there is no such thing as nature existing independently of humans’ interactions and activities (Best, 1986; Cajete, 2015; Hēnare, 2003; Kuhnlei et al. 2013; Lajo, 2011; McGregor, 2005; LaDuke, 1994, 2005; PRATEC, 2005).

In discussing Indigenous peoples’ worldviews imbued in their TEK, the book *Native Science, Natural Laws of Interdependence* by Native science theorist Gregory Cajete (2000a) provides insights into the fundamental values and approaches of Native science.

Cajete states that:

“Native science is a broad term that can include metaphysics and philosophy; art and architecture; practical technologies and

agriculture; and ritual and ceremony practised by Indigenous peoples both past and present. More specifically, Native science encompasses such areas as astronomy, farming, plant domestication, plant medicine, animal husbandry, hunting, fishing, metallurgy, and geology—in brief, studies related to plants, animals, and natural phenomena. Yet Native science extends to include spirituality, community, creativity, and technologies that sustain environments and support essential aspects of human life” (p. 3).

In this quote, Cajete (2000a) argues that distinctive Native science has its basis in the relational worldview of Indigenous knowledge; it is, he says, about “honouring the primacy of direct experience, interconnectedness, relationships, holism, quality and value” (p. 66). This research adds evidence to Cajete’s argument by providing a description of the essence of Quechua and Māori cosmovisions, highlighting the similarities of their worldviews, distilled in the explanation below:

The cosmos is the centre of natural energy that gives life to the cycles of the Pachamama or Papatūānuku. This energy is a way of perceiving and interacting with reality that has its roots in their traditional knowledge. In their view the act of survival progresses according to the flow of natural energy and cycles of the Earth. The energy that the cosmos manifests is part of a greater intention of Creation; all things are interconnected, and so have a role to fulfil. To ensure equilibrium and harmony exist in the overall good life approach – the well-being of life. Thus, they regard and respect all things human and non-human equally because each have the same essence of energy from the cosmos, and the essence which it flows is believed to be ‘spirit’, which connects all things to each other, and to Creation (Best, 1982; Durie, 2001; Hēnare, 2011; Huamán, 2011; Lajo, 2012).

Further, research analysis suggests that it is in the uniqueness of Quechua and Māori TEKs that rests the foundation of a philosophy of life that has enabled them to safeguard food security, and they have done it so without compromising their beliefs, native science and value systems (For Māori examples see Mead, 1996; Salmond, 1976; Walker, 1991; Wolfgramm,

2007; Wolfgramm & Henry, 2006; and for Quechua examples see Earls, 1991, 1998; ETC Andes, 2011; Gudynas, 2011; Lajo, 2012).

In summary, based on this empirical study, it is evident that the TEK theory is useful in providing comprehensive insights into Māori and Andeans' ways of knowing and how they interact with their ecosystems. Such an explicitly holistic approach towards Mother Earth still resonates with Indigenous peoples around the world, including Pachamama in the Andes, Tonantzin for the Aztec, and Nokomis for the Anishinaabe and Ojibwe/Chippewa tribes of North America (Grimm, 2011; Nelson, 2008; Whyte, 2003).

## **10.2 Indigenous view of land and food security**

This research shows that land (Papatūānuku and Pachamama) is at the core of both Quechua and Māori worldviews. In discussing this from a Māori perspective, Moko Mead (2003) argues that the concept of tūrangawaewae establishes the bonding link between Māori and the land, the place for the feet to stand proud, because it represents one's roots, and the sense of belonging to a place and home. Māori believe that land is linked with their cultural values and firmly connected to their whakapapa, their whānau and hapu (Huthings et al. 2012; Mead, 1994a; Salmond, 1997; Schwimmer, 1990). Māori view of land as part of their cultural identity, and this has led them to asserting self-determination through protesting the consequences of colonisation, including major land confiscations (Hutchings, 2015; Durie, 1995; Walker, 1991; Mead, 1994a).

In response to the political uprising of Māori, the New Zealand government established the Waitangi Tribunal in 1975 to hear claims against the British Crown's breaches of the Treaty of Waitangi (Te Tiriti o Waitangi). This treaty was signed in 1840 by 504 Māori chiefs and representatives of the British Crown (Orange, 2003; Walker, 1991). An example is the case of Ngāi Tahu, which was one of the first substantial tribal claims that the tribunal heard, to investigate grievances over Crown breaches from the 1840s (Ngāi Tahu Negotiation Group, 1997). In 1849 Ngāi Tahu chiefs complained about the methods used in purchasing their lands, and in 1988, after almost 150 years, Ngāi Tahu completed their efforts to have the Crown address their grievances (Te Rūnanga o Ngāi Tahu, 2016).

In 1998 Ngāi Tahu received compensation valued at \$170 million, and they were granted ownership of pounamu (greenstone) as well as rights to heritage sites of significance to them such as Ngāi Tahu's sacred maunga (mountain) - Aoraki/Mount Cook. An important observation here is the fact that the Crown also expressed its profound regret and apologised unreservedly for the suffering and hardship it had caused by not honouring its Treaty obligations. Ngāi Tahu people later gifted back Aoraki/Mount Cook to the nation. This

gesture of mutual goodwill seemed to confirm that the Treaty relationship between Māori people and the British Crown was at last on a more hopeful footing (Ngāi Tahu Negotiation Group, 1997). Tribal settlements and tribal enterprise, family (whanau) and individual business activity has led to the Māori economy now being estimated at over 37 billion New Zealand dollars. Māori are increasingly active in private and public sectors of the economy (MBIE, 2016) including in food sectors such as farming and fisheries.

Similar to the experience of the Māori people is the Quechua stance regarding Pachamama. Lajo (2008), speaking from a Quechua perspective, explains that Pachamama is the goddess who protects all living things on Earth and at the same time reigns over the spiritual universe. The literature on Andean cosmovision supports Lajo's explanation, and adds that the Andean cosmovision establishes the bonding link between Quechua and the land (see Estermann, 2007; Huamán, 2011; Huanacuni, 2010). This research shows that the ayllu system underpins collective land stewardship and social relations within communities. Argumedo and Wong (2010) explain that labour was performed collectively and was enjoyed by everyone from the Inca to the commoner, from the child to the grandfather, and by both the man and the woman.

There was no one living and enjoying other people's work; rather it was collectively shared together. Espinoza's 1987 book *The Incas* states that the ayllus is where the Andean people communicate with their three cosmic brothers; sun, moon and rain. Further, Argumedo (2013) and the ETC Andes (2011) report on how the ayllu system is being utilised today as a form of local economic development through the convergence of Andean agricultural innovation systems and modern technology. For example, in 2002 Quechua farmers from the Potato Park in collaboration with the International Potato Centre (ICP) heralded a genetic seed bank initiative with the view to preserving the biodiversity of Andean crops (Argumedo, 2013).

Most interestingly, this study corroborates the general conclusions from the existing studies of community development in the Andes (see Dávalos, 2008; Chirapaq, 2016; Fernández, 2010; Gonzales, 2015; ETC Andes, 2011). These authors argue that the ayllu system reflects the Quechua communities' self-governance of their land. They add that for Quechua farmers, life in the Andes cannot be otherwise. Self-governance for them is living in harmony with the natural, spiritual and animal world even if they are located in the most remote areas of the highlands of Peru and where they do not have the interference of the government.

The ayllus located inside the Potato Park and in the Lares region that took part in this study have organised to increase their presence in the area, to preserve the Andean (terrace)

technology, and to strive beyond levels of mere subsistence (ANDES, 2012; Argumedo & Wong, 2010; Earls, 1991). This study argues that Quechua self-determination is related to their self-community governance. Self-governance for the Quechua people is embedded in their Andean knowledge (*yachay/saberes*) for the governance of the Inca ayllu systems and the preservation of their culture (Esteva, 2002; Earls, 1998; Gonzales, 2015).

This investigation reveals that all Quechua communities in this study still live their lives as peoples of the land, agriculturists and makers of food. Māori, due to massive land losses, are now less involved in traditional forms of farming/agriculture. However, they are revitalising traditional practices and are incorporating traditional values in contemporary farming practices.

Based on my observations and field notes taken during my field work in Peru and Aotearoa, I discovered that in both Quechua and Māori communities, *food sovereignty* was exercised through demonstrating self-determination over their land and this is performed in the way they manage their agricultural systems.

Based on this study, I argue that Quechua and Māori communities face potential loss of their TEKs (Gonzales, 2015; Māori Language Commission, 2016; Rengifo, 1998; PRATEC, 2005). Examples provided in this investigation emphasise Indigenous innovation systems such as the Māramataka and the Inca calendar as cases of the unique competencies that each Indigenous group have in their ecosystems. Māramataka and Inca calendars encapsulate the holistic wisdom of Quechua and Māori, with all the cosmos, ecosystems and spiritual realms working for the conservation of biodiversity for food security (Bauer & Dearborn, 1995; Earls, 1998; Espinoza, 1987; Roberts et al., 2006; Ropiha, 2000; Tapsell, 2002).

In effect, research findings suggest that for traditional farming communities, Quechua and Māori's TEKs enable them to garner comprehensive knowledge of their ecosystems in the form of natural indicators. For example, the close relationship that Quechua and Māori have with their Mother Earth enables them to develop reciprocal acts of affection and respect in all their relationships (with living and non-living beings).

The research analysis captured various examples of these natural indicators. For example, in the Andean world, if the *atuq* (fox) gives a deafening howl in August, this means that he presages a good harvest season (Malville, 2010; Urton, 1981). Similarly, in Aotearoa, as a research participant stated, if the bright stars of Matariki are seen to twinkle brightly, it is a sign that it will be a good harvesting year. Quechua and Māori's harmonious



and reciprocal relationship with the environment forms the basis of their basket of knowledge—yachay and mātauranga, as discussed in Chapters II, VII and VIII.

This study confirms that the traditional agricultural systems of Quechua and Māori are an expression of their distinctive holistic relationship with all living things and the mystical world which are manifested in their rituals. Distinctive rituals are a fundamental component for both of these Indigenous groups in terms of expressing cultural identity and food sovereignty.

### **10.3 National and international treaties**

This section discusses the implication of treaties and other legal instruments for Indigenous peoples and food security. This research affirms that the Treaty of Waitangi (1840) plays a vital role in the defence of Māori sovereignty rights as tangata whenua (people of the land) and Māori self-determination for their livelihood. It is the strong Māori relationships with whenua (land) that influence their sovereignty rights and subsequently act as a vehicle for them to reinforce the principle of kaitakitanga or guardianship of the land (Kawharu, 2010; Land Care Research, 2016). Kaitakitanga enables Māori to practice their ancestral tradition of preserving the landscape, waterways and people (Khawharu, 2010; Marsden & Hēnare, 2002; Spiller et al., 2011). As stated by a research participant:

*“In my lifetime, I have seen the land of my ancestors go from being abundant with kai, to being scarce and now ...wow trust me many... many places are polluted and toxic. Kaitakitanga is my obligation to nurture our whenua to preserve the whenua and the wai so it can be in a better state for my moko”.*

As pointed out earlier, Peru is signatory to a series of international law instruments such as the ILO 169, and the United Nations Declaration on the Rights of Indigenous Peoples. This Declaration is considered one of the most significant milestones achieved by Indigenous peoples because it sets the international standards for the recognition of Indigenous peoples as a stand-alone group within a nation. The rationale for preserving their cultures and traditions is then stated in the Preamble:

*“Recognising the urgent need to respect and promote the inherent rights of Indigenous peoples which derive from their political, economic and social structures and from their cultures, spiritual traditions, histories and philosophy” (Preamble, United Nations Declaration on the Rights of Indigenous Peoples, 2007, p. 2).*

However, as noted in Chapters II and based on the analysis of Chapter VII and VIII this study indicates that in comparison to the Māori people, the land rights landscape is different in Peru, posing challenges for its Indigenous population to have access to land for food production. Since colonial times Quechua people were assigned collective ownership of their ancestral territories referred to as ayllu that has enabled them to continue with their traditional ways of life (Lajo, 2005; Huamán, 2011). For example, they still wear their traditional clothes, practice their arts and music, and speak Quechua (Gonzales, 2015; Mendoza, 1987). However, the location of the majority of ayllu is in the highlands of Peru where approximately 4 million Quechua people live with limited contact with the larger cities (Argumedo & Stenner, 2008; INEI, 2015).

Indigenous peoples of Peru are threatened by a lack of sovereignty rights that compromises their well-being (Escobar, 2010; Klaren, 2000; Huambachano, 2014; Walsh, 2010). For example, Indigenous reserves are collective property which is an indivisible and inalienable collective ownership. However, in the Amazon, for example, there are historical records of dissolution and division of such land reserves (Bunker, 1985, Huambachano, 2014; Hydrocarbons Technology, 2011). As one Quechua participant stated, “I am in fear that the government comes here one day and change our ancestral land system and so my ayllu will be given to big corporations who want to exploit the land only”.

Highlighting the vulnerability of Indigenous Peruvians is the Bagua case of 2009 (Derecho Ambiente y Recursos Naturales (DAR), 2012; Orta-Martínez & Finer, 2010). In 2009, for over a period of two months, Indigenous Peruvians of the Amazon region blocked a highway near the town of Bagua demanding the annulment of land decrees passed by the government of Alberto Fujimori (1990-2000). Specifically, they were protesting against the Law on Sustainable Investment in the Amazon: Decree 27037 that opened up native territories in the rainforest to oil, mining and logging companies, violating rights guaranteed in the constitution.

This resulted in deadly clashes between Indigenous protesters and police officers that left thirty-four people dead and around two hundred injured (Bebbington, 2009). The Peruvian government was forced to re-evaluate its legislation concerning Indigenous peoples' rights. In 2011, the Peruvian Congress granted Indigenous people the right to prior consultation on laws or infrastructure projects that would affect them or their territories (Congreso de la Republica of Peru, 2016: DAR, 2012).

Furthermore, in 2014, my empirical investigation regarding the environmental impacts of the Camisea Natural Gas Project in the highlands of Peru, confirmed that the

concession licence to exploit natural gas in ‘Block 88’, commonly known as ‘Gas de Camisea’, where the country’s largest natural gas reserves are located, posed serious social, environmental and economic threats to the Quechua communities of Shivancoreni and Shimmaa. The Camisea project also highlights the lack of Indigenous peoples’ rights and of free, prior, and informed consent (FPIC) (see Biller, 2006; Huambachano, 2014; Walden & Edwards, 2010).

In summary, the examples above clearly indicate that such legal instruments are not adequately adopted in Peru. The case of the Indigenous people of Peru emphasises the importance of exercising Article 3 of the UN Declaration on the Rights of Indigenous peoples.

Contrary to the Peruvian reality, in Aotearoa, the final two decades of the twentieth century have been significant for Māori people in asserting their cultural customs and traditions as tangata whenua. An example is the principle of tikanga Māori, which is now recognised as one of the main pieces of legislation asserting Māori customary practices. Additionally, other pieces of legislation such as the Education Act 1989 and the Land Act 1991 have incorporated tikanga principles and values within them (Charters, 2007; Jackson, 2000; Gibbs, 2005; Māori Language Commission, 1995).

#### **10.4 Potential loss of TEK**

In this section, a discussion about the importance of Quechua and Māori knowledge systems is addressed. Yachay and Mātauranga play a crucial role in the lore of Māori and Inca ways of knowing and interacting with the ecosystems for their livelihood, exemplified in the use of the lunar and solar calendars to guide their harvesting seasons. This study affirms that yachay and mātauranga are cradles of resilient cultural knowledge. This study provides substantive evidence that these two Indigenous groups are challenged with the potential loss of their TEKs. As per the discussion of the literature review in Chapter II, and the narratives in Chapter VII, there are two major contributors to this threat—namely loss of land by the urban drift of Quechua and Māori people, and loss of language.

For Quechua, two main events marked the decline of their language: (a) the arrival of Spaniards, in particular between the years 1520 and 1620 (Cobo, 1979; Cook, 1981; Escobar, 2010), and (b) rural migration to urban places in the 1980s (Espinoza, 1987). In terms of urban drift, the country’s political and social instability in the 1980s and 1990s led to social and economic pressures such as the government’s removal of agricultural subsidies for peasants in Peru, and rural migration (Arce, 2003; Altieri & Masera, 1992). Lima is home to 34 percent of Indigenous people, who migrated to the capital due to limited access to

productive lands. Those migrants then settled as squatters and engaged in various informal job activities. As a consequence, hyper-urbanisation has generated serious socio-economic issues, such as the increase in poverty and inequality, loss of Indigenous knowledge, health problems, crime and poor education (Escobar, 2010; INEI, 2015; Grillo, 1991).

Highlighting the implications of the rural drift of Indigenous population is the potential loss of TEK in agricultural production. To support this argument, all of the Quechua interviewees raised the concerns that younger rural people in Peru are opting to migrate to urban cities and preferring to speak Spanish rather than Quechua. Such alienation from their families in the Andes is a concern for the preservation of language, cultural survival, food security, and overall well-being. If Indigenous peoples are denied the land and have to migrate to the city then their culture will dissolve and so will food-related skills used on the land, because they are the knowledge keepers of agro-biodiversity and sustainable agridultrual practices, as this study reveals.

The case study of Peru suggests that the social classes, therefore, are separated and unequal. Nevertheless, cultural resilience is acknowledged in the highlands of Peru where the people still speak Quechua, the lingua franca of the Incas, and still harvest the land adopting traditional agricultural practices. As one research participant stated, “as long as we preserve our language, our knowledge will never be lost”. In addition, Andean people living around Lake Titicaca on the Peru-Bolivia border speak Aymara (Delgado & Escobar, 2006; Ferreira & Dargent-Chamot, 2003).

In terms of language for Maori, in the 1970s and 1980s, Māori determination to preserve their language and culture gained momentum. In those decades, concerns for the Māori language were expressed by Māori people, who engaged in a series of protests and movements in an attempt to restore Māori language. For example, in 1972 the Māori Language Petition containing 30,000 signatories was sent to the New Zealand Parliament. Additionally, the Te Reo Māori claim WAI 11 brought before the Waitangi Tribunal by Ngā Kaiwhakapūmau I te Reo Māori (Barlow, 1993; Walker, 1991; Māori Language Commission, 2016; Māori Affairs Committee, 1996) signalled that Māori were not prepared to sacrifice their language. Consequently, in 1987, the New Zealand government introduced new legislation to accommodate Māori expectations, such as the establishment of Te Taura Whiri I te Reo (Māori Language Commission).

Māori also underwent a period of urban drift that escalated after the Second World War. Before the war, 80 percent of Māori lived in rural areas, but by 2015, 84 percent of Māori lived in urban areas (Statistics New Zealand, 2016a). In the early phase of the urban

drift, Māori kept their traditions and values and remained close to their extended family and home communities. However, the demands of city life, family commitments and the pressures of conforming to Pākehā ways of life proved challenging for many.

Moreover, Māori who opted to settle down in the city were sometimes less disposed to keeping contact with their relations living far away (Durie, 2000; Sorrenson, 2014). It could be argued that the physical distance from their land and whanau could be one of the reasons for the drift of urban Māori from their tribal affiliations (Durie, 2009; Mead, 1994b; Māori Language Commission, 1995). Of note, secondary literature on Māori culture and traditional food harvesting suggest that the renaissance of urban garden projects in major cities such as Auckland and Wellington is an expression of cultural revitalisation among Māori people (Hutchings, 2015; Moeke-Pickering et al., 2015; Land Care Research, 2016).

To summarise this section, the study highlights discrepancies in land-based rights between the Quechua and Māori people. Andean peoples have limited governmental policies directed at the revitalisation of their culture (See Quijano, 2000; Lama, 2009; Lazo, 2004; Rengifo, 1998). In comparison to the situation in Aotearoa, the legal rights framework of Indigenous Peruvians lags behind that of Māori and, subsequently, poses a greater threat to cultural loss and consequent food security.

### **10.5 The threat of the industrial approach to food security among Quechua and Māori people**

The focus of this section is the threat of the industrial approach to food policy and its implications for the food security of Quechua and Māori people.

Indigenous peoples argue against the idea that food can be treated as a commodity. They point to the Havana Declaration of the 2001 World Forum on Food Sovereignty (WFFS) that states: “We affirm that food is not just another merchandise and that the food system cannot be viewed solely according to market logic” (WFFS, 2001, p. 2). Resonating with Indigenous peoples’ value of land, the concept of food sovereignty has emerged to support the struggles of farming people in preserving their cultures and traditional ways of producing food (Borras & Franco, 2013; La Vía Campesina, 1996, 2007; McMichael, 2010; Rosset, 2008; Schlosberg & Carruthers, 2010).

Based on this study, the concept of food sovereignty reverberates in both Quechua and Māori people in the sense that land is sacred to them because it is linked to their cultural identity, as exemplified in the meta-theme ‘Food is Sacred’. To explain this meta-theme, food in the form of *seeds* for Indigenous peoples plays a significant role not only in

providing food but also in sustaining cultural knowledge and protection of a country's agrobiodiversity (La Vía Campesina, 2011a; Chirapaq, 2016; Nelson, 2008).

Supporters of industrial food production (see CGIAR, 2015; Collier, 2008; Martindale & Trewavas, 2008; World Bank, 2016) argue that increasing agricultural productivity through supply-driven agricultural innovation systems such as GMOs, reduction of farm subsidies, and further liberalisation of the agricultural sector are required to feed a growing population. The widespread use of GMO maize and high-input agricultural technologies such as pesticides are eroding traditional food systems (Desmarais, 2007; Holt-Giménez & Altieri, 2015, Roberts , 2005). Further, the increase of GMOs through Foreign Trade Agreements (FTAs), and new economic partnerships such as the latest Trans-Pacific Partnership (TPP), pose a threat to both Quechua and Māori control and power for preserving the sacredness of their crops. The literature covering this topic is extensive (see Friel et al., 2013; Horlick, Lim, Elms, & Low, 2012; Jackson, 2007, 2009).

An example of how the use of GMOs threatens the sanctity of seeds is the case of maize. Maize is a crop of the American continent, its origins are linked to the Mayan and Inca civilisations, and it is one of the three most-produced and consumed commodity food crops worldwide (Escobar, 1998; GIEWS, 2005; FAOSTAT, 2015a). Indigenous farmers in Peru still adopt a decentralised model of maize cultivation with emphasis on utilising traditional agricultural methods that involve minimal ecological disruption and maximum conservation of Mother Earth (Altieri, 1995, 2016; Friends of the Earth International, 2003).

However, MNFCs have gained considerable control over seed resources in the last four decades (Kloppenburger, 2010a; McMichael, 2010; Patel, 2013). Notably, the seed industry is controlled by Monsanto (GMO seed bank), which has control of seed patents of large Indigenous crops such as corn and potatoes (Kloppenburger, 2010b; Howard 2009; Wittman et al., 2010). These are clear examples of the threat of the industrial approach to the food security of Quechua and Māori people. An interesting remark that emerged from this study is that despite the thread of transnational food corporations, the self-determination demeanour of Quechua and Māori people for the preservation of land, culture and food security transcends a cultural resilience strategy approach. Rather, it underscores the revitalisation of Indigenous food systems as a tool for reclaiming their traditional food practices and principles and moving beyond colonial approaches. Such a remark is an interesting one that warrants further consideration in the study of food security of Indigenous peoples.

## 10.6 The good-living philosophies: Collective buen vivir/well-being

In this final section, I highlight that this research indicates that a set of distinctive cultural characteristics are the cornerstone of Quechua and Māori good-living ideologies. The four cultural values in the Andes: ayni (reciprocity), ayllu (collectiveness), yanantin (equilibrium), and chaninchay (solidarity), and for the Māori: reciprocity, tikanga (ethical values), kaitiakitanga, (guardianship) and wairuatanga, (spirituality). These are at the heart of their cultural identity and provide the basis of their food security model. Most interestingly though, the data offer an insight into the specific cultural dynamic of Quechua and Māori communities in food security. This generates a number of lessons for food security in a contemporary society.

Firstly, this study demonstrates that Allin Kawsay, mauri ora and te ātahono are exemplars of a good-living philosophy oriented on a ‘collective buen vivir’. Whyte’s (2016) ‘collective self-determination’ theory describes “a group’s ability to provide the cultural, social, economic and political relations needed for its members to pursue good lives” (p. 5). I further extend Whyte’s discussion, and add that the more ‘collective buen vivir’ a society experiences, the more its members experience a sense of social equality and fairness because the common well-being of all the people is the desired outcome of the ‘collective buen vivir’.

To sustain my argument, observations during the empirical portion of this thesis have highlighted that, as the well-being of the ayllu and iwi increases, so does their acknowledgement by their members. Consequently, the growth of members’ affiliation and active roles in the community are extended. There is a sense of collective entitlement of enjoying the fruits of their labour, in their collective responsibilities, love and respect for the land. For example, Māori people rejoice when the mauri of food is preserved. Similarly, Quechua are in jubilation when the spirits of the corn manifest themselves through a good harvest season. Consequently, such beliefs lead to a state of well-being. The collective buen vivir overrides to some extent the belief in individual ownership or property rights: in the view of Quechua and Māori people, they do not own the rights to land, rather they are the custodians of the land.

Secondly, it is not a stretch to suggest that Indigenous communities worldwide may have analogous values ingrained in their social structures as a result of pursuing livelihoods based on the natural environment over long periods of time (McGregor, 2005; Kimmerer, 2011; Kottack, 2006). Regardless of this, the data shows that the interpretation of these specific values in these two Indigenous groups is inherently place-

based, and this has been discussed in Chapters II and in the analysis in Chapter VII, highlighting that each *iwi* and *ayllu* have distinctive ways to appreciate, apply and understand knowledge.

Thirdly, there is currently a vogue of advocacy for scaling up and integrating specific food security strategies in food security intervention projects (Baiphethi & Jacobs, 2009; Winter, 2010; Rao, 2006; Reij, 2014; Röling, 2009). However, based on this study, I argue that food security policies should not necessarily attempt to recreate or scale up the particular food security models of Quechua and Māori provided in this study and apply them to other study locations. This is because the Quechua and Māori food security/sovereignty approaches are place-based and have evolved in relation to their socio-economic conditions. Rather, this study argues that the food security framework of Quechua and Māori people can be adapted and replicated to be used as a tool for the in-depth study of other societies' food security interventions. Through its use as an analytic tool, we can garner better understandings and resilience strategies regarding food systems that can provide better evidence-informed policy, making for the implementation of potential solutions to global food challenges.

Fourthly, this research shows that the global food security model currently in place do not give adequate attention to the cultural dimensions which underlie the food security frameworks of Indigenous peoples. Yet the Quechua and Māori case studies highlight how their food security strategies are part of their holistic cosmovisions, underpinning a set of key cultural and environmental well-being indicators, and herald an alternative food security framework that does not compromise the well-being of present and future generations and thus is more sustainable in the long run.

Consequently, this study argues that food security policies need to connect with the food security approaches of Indigenous communities. Recent empirical studies about food and culture as potential indicators for food security call for further exploration (see Quave & Pieroni, 2015; Leonard et al., 2013; Loring & Gerlach, 2009; Noack & Pouw, 2015). Critically, as Altieri et al. (2012) note, traditional knowledge is a unique cultural system, and if we fail to recognise its validity and also the importance of the cultural dimensions underpinning it, then it is unlikely that addressing food security will be successful.

In summary, this chapter has provided an in-depth discussion of results of this study. It has highlighted the importance of the holistic and collaborative approach of TEK to the Quechua and Māori peoples' systems of knowledge as praxis in local cultures and communities. Fundamental issues that continue to threaten Quechua and Māori peoples'



food security include land sovereignty and the ongoing erosion of their traditional agriculture-based knowledge systems and practices. In addition, it was noted that industrial food production continues to pose a threat to the biodiversity of Indigenous peoples' food crops and their traditional approaches to preserving the sacredness of their foods.

Finally, this study reveals that while the language and concept of food sovereignty has only been introduced in the last four decades, for Quechua and Māori communities it is not a new concept. This study provides research-based evidence that the food security frameworks of these two Indigenous groups resonate with notions of the concept of food sovereignty. Research suggests that Quechua and Māori interpretations of food security are based on self-governance (autonomy), control, and accessibility to land and the natural resources of their food systems (right to food), and the idea that food is not a commodity—rather it holds a meaningful status as part of their cultural identity as peoples of the land (culture), which reverberates with the concept of *food sovereignty* (La Vía Campesina, 1996, 2015).

This study argues that the Māori and Quechua food security model could be used as a tool for further in-depth studies on Indigenous peoples' food security frameworks. Through its use as an analytic tool, insights into resilient coping strategies of Indigenous food systems can provide better evidence-informed policy-making that could be a better fit for the realities of Indigenous peoples. Further, Indigenous peoples have long been concerned that agricultural solutions disregard the social-political and environmental conditions underpinning their food security and well-being. This study provides the platform for further studies on the social-political aspects of and land-based movements in indigenous food sovereignty (IFS) as a potential tool for advocacy and policy change in food systems, an area which is currently not extensively studied.

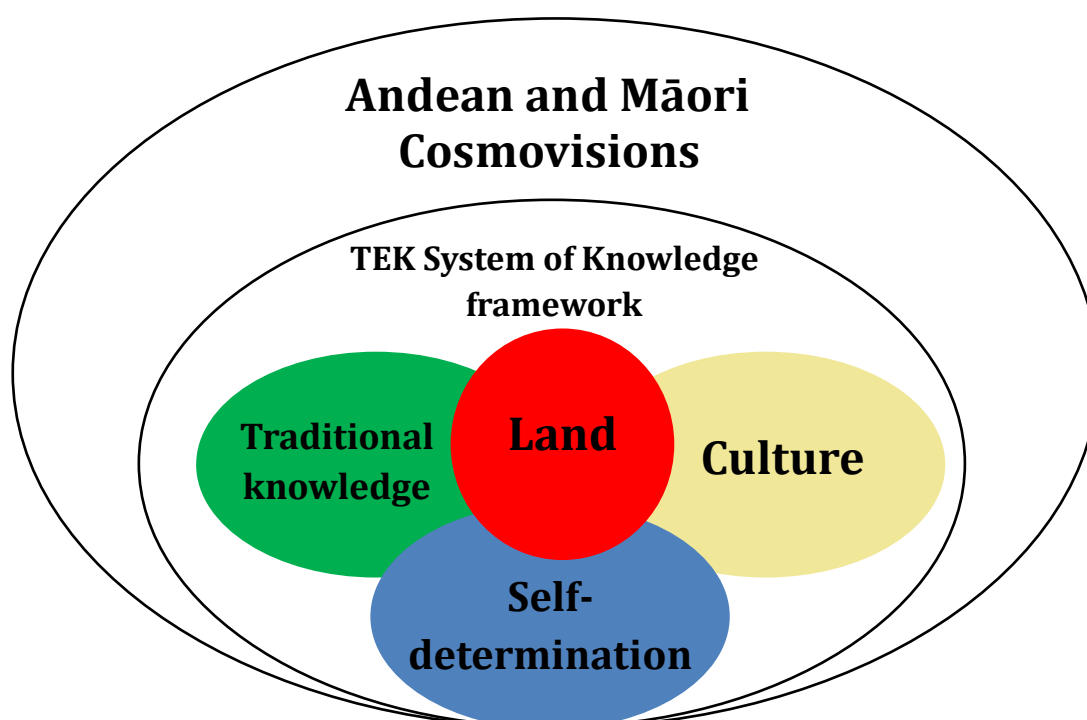
## CHAPTER XI: CONCLUSIONS

The objective of this chapter is to outline the key conclusions of this study as seen through the TEK lens. Because the literature review on food security and traditional knowledge indicated that there was a knowledge gap with regards to the potential contribution of Quechua and Māori people to the field of food security, this investigation aimed to study of the knowledge possessed by Quechua and Māori people in food security, and show how such knowledge could potentially provide insights for better food security policy-making.

However, through this doctoral journey and specifically after conducting my fieldwork, I realised that I was in uncharted waters, because the Quechua and Māori understandings of food security did not resonate with the current concept of food security. Rather, they reverberated with the notion of *food sovereignty*. The conclusion draws together the threads of the argument. Indigenous peoples' TEKs contribute to food security by providing a food security framework that guarantees the preservation of biodiversity of food as well as maintaining healthy ecosystems. Figure 31 illustrates the findings of my investigation of how Quechua and Māori people can contribute to improving food security, by outlining and communicating a food security policy framework as seen through the Indigenous lens.

The chapter begins with a pictorial description of the Quechua and Māori food security model, followed by a description of each of the four-interrelated key research findings of this investigation.

**Figure 31: A Quechua and Māori food security/sovereignty model**



The outline of the results of the research is as follows:

### **11.1 Culture**

This comparative investigation concludes that Andean and Māori food security models challenge the conventional notion of the concept of food security. In the current global food security approach farmers, land and food are seen as static and removed from who, where, and by whom the food is to be produced. This generates a sense of detachment between consumers and farming communities worldwide who mostly live in the developing world.

On the other hand, the collectivistic approach of Quechua and Māori people is based on their close relationship with the land for access to consistent natural resources and sufficient nutritious food that is essential for their well-being. In the case of Māori people, the value of food is entrenched in traditional, healthy, and nutritious Māori kai that embodies their history, culture, community and knowledge base and resonates with the meta-theme 'food is medicine'. Similarly, the value of food for Quechua people has an intangible value, because the 'food is sacred' for them and embodies their spiritual, cultural and inclusiveness approach with all members of their community (living and non-living beings) and for their nourishment.

This study argues that the endorsement of culture as a core aspect of Quechua and Māori food systems is vital to link their food security framework with the concept of food sovereignty. The food sovereignty definition, precisely the widely recognised food sovereignty concept by the IPC mentioned on page 59, asserts the right to food to be specifically culturally appropriate food of individuals. But what does culturally appropriate food<sup>63</sup> mean within an Indigenous context? The results of this investigation confirm that food is at the core of Quechua and Māori's cultural origins and memories. The experience of growing, preparing and serving culturally appropriate food as a community is critical for them to develop a sense of well-being. This study argues that the way Quechua and Māori communities grow food is with love, respect and devotion towards Mother Earth and all their relations (human and non-human). Such a holistic approach is in effect an expression of asserting their Indigeneity for the revitalisation of their food systems and thereby their well-being.

Of note, although these two Indigenous groups share the same Indigenous cosmovision, each agricultural community that took part of this investigation has its own

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<sup>63</sup> Culturally appropriate food refers to food that is produced in a culturally suitable and sensitive manner. Thus, it incorporates the cultural values of a person or group.

set of rituals, principles, and traditions implemented in their food systems. This is an interesting observation that deserves further exploration to the study of what constitutes culturally appropriate food within the food sovereignty context.

This investigation acknowledges that cultural values are at the centre of Quechua and Māori food sovereignty. Accordingly, the reciprocal relationships between (a) culture, (b) land, and (c) traditional knowledge that are fundamental to Indigenous peoples' healthy food systems and well-being deserves further investigation in modern societies. This study has the potential to be one of the very first studies that investigates the relationship between cultural values, traditional practices, and food systems within an Indigenous context.

## **11.2 Traditional knowledge**

In regards to the role of TEK in understanding Quechua and Māori food security frameworks. Because Quechua and Māori TEKs are acquired through an action approach; living, experiencing, and interacting with the land. They are able to use this unique TEK for their advantage enabling them to be self-sufficient with their food, shelter, and clothing. Andean and Māori both use their knowledge of the cosmos embodied in their yachay and mātauranga, exemplified through the knowledge of the Māramataka calendar (Māori) and Inca calendar (Quechua) to guide their planting, fishing, and hunting activities.

The research findings presented in this investigation validates the TEK of Quechua and Māori. Moreover, the TEK theoretical framework was vital for investigating the good-living philosophies of these two Indigenous groups. TEK highlights that there is a lacuna of knowledge about the studies of cultural values within the context of food security/sovereignty with an exception of the study of agroecology, and rural sustainability (see Altieri, 2004, 2016; Reardon & Barrett, 1995; Reardon & Vosti, 1995).

The analysis of the TEKs of Quechua and Māori reveals the implications of their relationship with nature/land and subsequently food. The land is everything to Indigenous peoples, and therefore land cannot be separated from them. Andean and Māori view of land is embedded in their cultural identity and expressed in the meta-theme 'Earth is our Mother' that resonated across the two Indigenous groups.

Furthermore, Quechua and Māori relationships to land, people, and the cosmos are continuously reaffirmed through the TEK within them. These two Indigenous groups' TEK manifests itself through a set of cultural principles, such as reciprocity, self-determination, complementation of both genders, guardianship of land and spirituality. However, the

conditions of a Western society governed by the industrial food security approach overlooks their knowledge contribution to sustainable alternative food systems.

### **11.3 Self-determination**

It is Quechua and Māori collectivistic capacity and knowledge embedded in their good-living philosophies that provides them with the basis to claim their rights to land and resources contained therein, and that these rights are held by the community's customary law, values, and customs. Article 3 of the UN Declaration of United Nations Declaration on the Rights of Indigenous Peoples supports Indigenous peoples' self-determination. However, research findings indicate that Andean and Māori legal frameworks are not the same, and the Treaty of Waitangi defines such boundaries.

The value of foods for Andeans and Māori relates to their Indigenous self-determination to restore their cultural origins and relationships with all beings, cultivating their own food and being the stewards of the environment, and in particular being the keepers of the precious collective inheritance of seeds defines Quechua and Māori food sovereignty. These two Indigenous groups want to have autonomy to grow their own seeds and food according to their cultural knowledge systems. The revitalisation of their food systems is a critical tool in revitalising their culture, well-being, and thereby their rights to food security.

This investigation confirms that Quechua and Māori unique ways of knowing, and doing play a fundamental role in 'collective self-determination' to ensure that food security and food sovereignty remains under the control of their communities. Research findings make a case for the value of food acting as a contributor to a group's *collective buen vivir* and *self-determination* to preserve their cultural heritage and knowledge. In this context, the Andean and Māori relationship between food, the value of food and self-determination differs from how food is often understood in the Western world.

### **11.4 Collective buen vivir: Living well**

Quechua and Māori embrace a collective food relations style, but differences between these two groups are based on tradition, agricultural techniques, and innovative systems. Thus, Andean and Māori people have a unique cultural knowledge of food embedded in their worldviews that have enabled them to preserve the sanctity of their foods and well-being. A set of sustainability principles govern their lives; those principles are rooted in their intrinsic relationship with the land. They manifest through Quechua and Māori distinctive ways of life and cultural systems. Specifically, Allin Kawsay and mauri ora are a manifestation of their cosmovisions and reveal their unique cultural system.

Finally, this research project concludes that it is impossible for Quechua and Māori people to safeguard food security outside the framework of food sovereignty. This study demonstrates that vital cultural and environmental values of Quechua: *ayni* (reciprocity), *ayllu* (collectiveness), *yanantin* (equilibrium), and *chaninchay* (solidarity), and for the Māori: reciprocity, *tikanga* (ethical values), *kaitiakitanga*, (guardianship) and *wairua*, (spirituality), are at the heart of their cultural identity and influence their approach to safeguarding food security.

### **11.5 Distinctive contributions of this study**

In complementation of the summary of the contributions of this study on page 10, I describe the contributions of this study in three specific areas:

**Field of study:** This research advances theoretical knowledge, through the investigation, description, and empirical evaluation of the unique knowledge systems of Quechua and Māori people. The drawing of knowledge from Quechua and Māori food security perspectives enables the conceptualisation of a food security framework as seen through an Indigenous lens. This structure provides insights into how Quechua and Māori people govern their food systems, which can be a model for the study of other Indigenous groups' food security strategies, in order to shed some light on potential food security policies that resonate with Indigenous peoples' cultural conditions. Further, the Quechua and Māori food security framework is a tool that can be replicated and adapted for the in-depth study of other societies' food security interventions. Through its use as an analytical tool, we can garner better understanding and resilience strategies relating to food systems, which can provide better evidence-informed policy-making for the implementation of potential solutions to global food challenges.

**Theory extension:** This is the first comparative research that examines Indigenous worldviews and good-living philosophies of food security through an Indigenous lens, thus challenging the pragmatic imperative for the adoption of scientific knowledge systems in the study of Indigenous communities. This study provides insights into the history and contextual differences of Peru and Aotearoa's Indigenous peoples' knowledge of food security, and shows them to be significant for contemporary food production developments in both countries as seen through the TEK lens. As a result, this study extends the practice and application of the TEK theory from an environmental and management of natural resources to the usefulness of TEK in the study of the social context of Indigenous peoples.

**Research methodology:** The Khipu positions itself as a fully-developed and empirically tested Indigenous research methodology. In addition, this investigation designed the Yupana

analysis tool to complement the functionality of the Khipu. Therefore, the Khipu and Yupana contribute to the small but growing body of knowledge that seeks more efficient and creative methods to produce and validate Indigenous agricultural knowledge and bridge the gap between Indigenous knowledge and scientific knowledge systems. Notably, it will inform more culturally sensitive methods of interaction with Indigenous peoples.

## **11.6 Limitations**

### **11.6.1 Research scope and objectives**

The research opportunities of Indigenous peoples' knowledge in food security are manifold, which became evident throughout both the literature and investigation findings and in particular in sections 2.3, 2.4 and 3.4. While many avenues and important questions could be further explored in this study, fruitful areas such as Indigenous treaty agreements and the meaning of culturally appropriate food could not be fully explored. In consequence, the scope of this research had to be limited to a manageable number of activities. Hence, the research questions and objectives were developed as a feasible compromise. The findings of this study provide the basis for further studies of Indigenous peoples' knowledge of food security.

The scope of this study also had to be limited due to time and resource restrictions. While the sample data was adequate for the analysis of this dissertation, a more insightful investigation of the 'knowledge bank' of Quechua and Māori communities could have been facilitated by a larger and more diverse sample of responses. For example, differences between North and South Island iwi as well as Quechua and Amazonian communities could have been evaluated, which could have strengthened the scope of research findings and the application of the Khipu and Yupana tools.

### **11.6.2 Research processes**

While adapted processes and models were followed, some limitations can be identified with regard to the research methodology. A limitation emerged from a methodological standpoint, in particular in the adoption of an Indigenous research methodology while trying to fulfil the Western standard form of research approach. This limitation is associated with the lack of established research frameworks and methods that specifically focus on the study of Indigenous groups. Research methods utilised in this research primarily consisted of talking circles, workshops, and in-depth interviews. The research findings were empirically tested and validated with research participants. However, response bias, such as reflexivity (interviewees responding in ways they think the interviewer expects), could have emerged during the data collection process.

Additionally, a limitation in the implementation of both the Khipu and Yupana stems from the researcher's philosophical position. While the Khipu and Yupana do not require the investigator to be an Indigenous scholar, having a clear philosophical position (whether it is an Indigenous or Western approach) will have an impact on these tools' methodological and analytical lens.

The research acknowledges that there is a limitation due to a lack of understanding of Te Reo Māori and Quechua languages. Quechua and Te Reo interpreters assisted in the translation of recordings. However, not being able to speak the Quechua and Māori language limits the researcher from becoming fully immersed in the world of these two Indigenous groups.

These issues are not necessarily negative, though may have biased the outcome to some extent.

### **11.7 Future directions**

This investigation suggests three potential future directions to continue extending the study of food security and Indigenous peoples' knowledge.

Firstly, given the contemporary debate on the global food crisis, ecological devastation, and the decline of traditional knowledge, it is prudent to recognise the importance of traditional food practices and ecological good-living philosophies of Indigenous peoples in policy-making. In this dissertation, I made reference to influential empirical studies of Indigenous peoples' knowledge that have helped shape our understanding of their wealth of knowledge in environmental preservation. Now, the findings of this study highlight the knowledge contribution of Indigenous peoples in the field of food security.

Subsequently, this study urges the recognition and integration of Indigenous peoples' traditional knowledge with Western science at the functional level that can preserve not only Indigenous peoples' cultural heritage but so that all individuals can have access to healthy and nutritious foods. There may be many communities practicing similar kinds of agriculture, if not the same. Thus, policymakers must be aware of such practices to make the agricultural policy successful.

Secondly, the findings of this study call for further exploration of the role of cultural values of Indigenous communities and the implications of their knowledge within the right-to-food framework of Indigenous peoples. Traditional knowledge is unique to Indigenous peoples' cultural system, and if we fail to recognise its validity and also the importance of its cultural characteristics, then it is unlikely that addressing food security will be successful.



The logical progression from this is that change is necessary to challenge the status quo of the current food security paradigm. Further comparative studies can tackle such challenges by exploring the cultural context of Indigenous communities in addressing food security with a special focus on (a) treaty rights and food security, (b) revitalisation of cultural values of Indigenous peoples for the respect of and understanding between them, food producers and consumers, (c) recognition of Indigenous peoples' traditional knowledge and practices in agriculture, (d) emphasis on accessibility of food rather than on availability, and (e) revival of Indigenous peoples' philosophies of well-being/buen vivir for the holistic sustainability of the Earth.

Thirdly, if further research is to be undertaken in Indigenous communities, then it is paramount that the research approach is oriented towards supporting and preserving the TEK and cultural systems of those communities. Therefore, the adoption of research frameworks that understand and respect how knowledge is constructed and acquired by Indigenous communities is needed. The Khipu model that incorporates the PAR approach, for example, could be a better fit for the study of the realities of Indigenous peoples.

The Quechua and Māori food security framework offer insights into how to guarantee the preservation of the biodiversity of food as well as to maintain healthy ecosystems. To conclude, this study argues that food security as seen through an Indigenous lens is food sovereignty. Indigenous food sovereignty goes beyond the rights-based approach to food; rather, it is a tool for revitalising Indigenous peoples' food systems, for advocacy and policy change in food systems, and for moving beyond colonial approaches.

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## APPENDIX I: List of interview questions in Peru, and Aotearoa

### Interview Schedule in Quechua Communities

#### Spanish version

#### Semi-structured interviews

#### Starting point

Question	Question Description	Purpose
1	<ul style="list-style-type: none"> <li>• Cuál es su nombre?</li> <li>• Cuántos años tienes?</li> </ul>	Personal Detail
2	<p>De dónde eres?</p> <ul style="list-style-type: none"> <li>• Donde naciste?</li> <li>• ¿Cómo se considera usted? ¿cómo mestiza, indígena, o algo más?</li> </ul>	Personal Detail
3	<p>Si pudieras, por favor descríbeme de un día típico en su vida.</p> <ul style="list-style-type: none"> <li>• A qué se dedica?</li> <li>• ¿Qué hace tu familia?</li> </ul>	Personal Detail
4	<p>Es dueño de su tierra, tiene derechos sobre ella?</p> <ul style="list-style-type: none"> <li>• ¿Es usted productor de su tierra?</li> <li>• ¿Qué es lo que se cosecha en ella?</li> <li>• El excedente de su producción ¿Dónde lo venden? (Local, regional, extranjero)</li> </ul> <p>¿Qué número de nuevo (no tradicional) especies y variedades de cultivos se están sembrando ahora?</p> <p>2. ¿Qué número de cultivos adicionales (no tradicionales) y semillas de variedades 'ahora se almacenan?</p> <p>3. ¿Qué número de especies y variedades de cultivos en últimos 30 años y cuáles fueron los motivos de su introducción?</p> <p>4. ¿Hasta qué punto su comunidad dependen de las semillas de auto-guardado? Y las semillas que se han comprado u obtenido a partir de los actores externos?</p>	Biodiversidad
5	<p>Tiene la comunidad un anciano indígena?</p> <ul style="list-style-type: none"> <li>• ¿Cuáles son sus responsabilidades?</li> <li>• ¿Existe un curso sobre el sistema de la agricultura andina? O ¿dónde aprendiste eso?</li> </ul>	Opinion Gathering?/Open-ended with prompts
6	<p>Qué significa “Pachamama” (palabra quechua para la Madre Tierra) para usted?</p> <ul style="list-style-type: none"> <li>• ¿Te consideras un descendiente de la Pachamama? O no?</li> <li>• ¿Y por qué (si) usted se siente de esta manera?</li> <li>• ¿Qué opinas de la relación entre los pueblos indígenas y la Madre Tierra?</li> <li>• ¿Su comunidad sigue organizada en "ayllus" (familia)?</li> </ul>	Andean Philosophy
7	<ul style="list-style-type: none"> <li>• Qué es lo que sumak kawsay (buen vivir) significa para usted?</li> </ul>	Andean

	<ul style="list-style-type: none"> <li>• Usted aplica en concepto del buen vivir en la agricultura?</li> <li>• ¿Usted piensa el sumaq kawsay seberia practicarse en todo el Peru?</li> <li>• Que significa para usted el principio de yanantin?</li> <li>• Que es el 'ayllu' para usted? Aun lo practican?</li> </ul>	Philosophy
8	<ul style="list-style-type: none"> <li>• Qué es 'ayni'?</li> <li>• ¿Practicas ayni?</li> <li>• ¿Por qué la práctica del ayni en su comunidad?</li> <li>• ¿Qué efecto ha tenido esto en el concepto y la práctica de equilibrio (Yanantin)?</li> </ul>	Andean Philosophy
9	<ul style="list-style-type: none"> <li>• Cuál es el papel de 'ayni' y 'minka' en la producción de alimentos?</li> <li>• ¿Cuáles son los rituales practicados durante las temporadas de cosecha? Quienes los practican?</li> <li>• ¿Cómo describiría el verbo 'trabajar'? es una obligación para usted trabajar?</li> </ul>	Andean Philosophy
10	<ul style="list-style-type: none"> <li>• Qué significa el principio de "reciprocidad" para usted?</li> <li>• ¿Dónde lo has aprendido? En casa, colegio?</li> <li>• ¿A quién has visto practicando este concepto? Y ¿se aplica también a los que están fuera de la comunidad?</li> <li>• ¿Qué papel juega ayni en el desarrollo de adaptaciones de cambio climático? Cambios de clima que está sucediendo?</li> <li>• ¿Cómo influye la forma de trabajar juntos (tanto dentro como fuera de la comunidad?)</li> <li>• ¿Qué papel cree que debería jugar?</li> <li>• ¿Crees que ayni está siendo utilizado ahora menos o más de lo "tradicional"? (lea: en el pasado) y cree usted que todos en la comunidad entiende y se aplica por igual reciprocidad (clase / edad / sexo)?</li> <li>• ¿Cree usted que el mundo moderno entienden de reciprocidad (ayni)? ¿Es que lo practican? ¿Cree usted que deberían?</li> </ul>	Andean Philosophy Reciprocidad

## Interview Schedule on Iwi of the North Island of Aotearoa

### Semi Structure Interviews

#### Starting point

Question	Question Description	Purpose
1	<ul style="list-style-type: none"> <li>• What is your name?</li> <li>• How old are you?</li> </ul>	Personal info
2	<ul style="list-style-type: none"> <li>• Where are you from?</li> <li>• Where were you born?</li> <li>• Do you consider yourself a Kiwi, Māori or Indigenous?</li> </ul>	Personal info
3	<ul style="list-style-type: none"> <li>• Describe a typical day for you?</li> <li>• What do you do for living?</li> <li>• What does your family (wife and parents) do?</li> </ul>	Personal info
4	<ul style="list-style-type: none"> <li>• Do you own some land?                             <ul style="list-style-type: none"> <li>○ Do you produce your land?</li> <li>○ If so, what do you produce in it?</li> <li>○ What do you do with your produce?</li> </ul> </li> <li>• Do you sell locally or overseas? And, what do you do with the food excess?</li> <li>• What sort of seeds do you plant? Traditional seeds?                             <ul style="list-style-type: none"> <li>○ Where do you obtain your seeds? Do you buy them from somewhere else?</li> <li>○ Do you store traditional seeds?</li> </ul> </li> <li>• How long have you been harvesting your land?</li> <li>• To what extent does your family depend on the seeds storage from the previous harvest?</li> </ul>	Biodiversity
5	<ul style="list-style-type: none"> <li>• Does this marae has a Kaumatua?                             <ul style="list-style-type: none"> <li>○ What is his/her responsibilities?</li> </ul> </li> </ul>	Opinion Gathering? /Open-ended with prompts
6	<ul style="list-style-type: none"> <li>• What does Papatūānuku mean to you?                             <ul style="list-style-type: none"> <li>○ Do you consider yourself an off-spring of papatūānuku?</li> <li>○ If so, why do you feel like that?</li> <li>○ What is your view on the relationship of Indigenous peoples and papatūānuku?</li> <li>○ What is the structure of your marae?</li> </ul> </li> </ul>	Maori Philosophy

	<ul style="list-style-type: none"> <li>• Is there a course about Maori agriculture? If so where is it?</li> <li>• Can you tell me about the Maori Calendar?</li> </ul>	
7	<ul style="list-style-type: none"> <li>• What does Te Atanoho (Well-being) mean to you?</li> <li>• Are you familiar with the Preamble I of Treaty of Waitangi, that mentions the following: Titiro atu ki nga Taunata o te Moana Atanoho kohi. Tonu Hoki Te Rongo-Atanoho.</li> <li>• What is a Maori worldview for you?</li> <li>• How do you apply the concept of Te Atanoho or Maori worldviews to agricultural production? <ul style="list-style-type: none"> <li>• What are your views on the concept of Kaitakitanga?</li> <li>• What does the concept of tikanga mean to you? What does it mean for you a marae and hapu?</li> </ul> </li> </ul>	Maori Philosophy
8	<ul style="list-style-type: none"> <li>• What is reciprocity? <ul style="list-style-type: none"> <li>○ Where did you learn about it?</li> <li>○ How do you practice the principle of reciprocity in your daily life?</li> </ul> </li> <li>• What is the relationship between the principle of 'reciprocity' and 'kaitakitanga'.</li> <li>• How do you feel about living in a 'collective' society?</li> </ul>	Maori Philosophy
9	<ul style="list-style-type: none"> <li>• Could you please tell me about the concept of tikanga (Maori values), tapu, mana and whanau?</li> <li>• What role does the concept of 'reciprocity', and tikanga play in food security?</li> <li>• What are the food rituals in your community? If any, are there any specific harvesting rituals being practiced in your community?</li> </ul>	Tikanga' (Maori values), Tapu, mana, and whānau
10	<ul style="list-style-type: none"> <li>• What does a seed mean for you? <ul style="list-style-type: none"> <li>• What kind of seeds do you harvest?</li> <li>• What's your approach in harvesting crops?</li> <li>• What sort of seed varieties does you or your community have?</li> </ul> </li> <li>• What does food sovereignty mean for you?</li> <li>• Do you think the government supports the food security of Māori people? If, Yes/No please elaborate.</li> <li>• Food staples, could you please name 8 major food crops. <ul style="list-style-type: none"> <li>○ What's your staple food? How it is different from 30 years ago?</li> </ul> </li> </ul>	Food security

	<ul style="list-style-type: none"> <li>• What sort of Māori traditional food crops do you eat?</li> <li>• What do you think are the reasons for the decline of agricultural biodiversity in your community?</li> </ul>	
11	<ul style="list-style-type: none"> <li>• What are the main strategies at home during periods of insufficient food? And, who participates in it?</li> <li>• How important is for you, your family and community to have autonomy of your food systems? And, produce your own food according to Māori customary food practices?</li> </ul>	Food security
12	<ul style="list-style-type: none"> <li>• What number of new (non-traditional) species and varieties crops are being planted now?</li> <li>• What number of traditional (non-traditional) and seed varieties' crops are stored in your family and community?</li> <li>• What percentage of seeds are accessed through the exchange of seeds among farmers? What sort of seeds do you trade or barter with other communities?</li> </ul>	Agrobiodiversity and seed sovereignty



## **APPENDIX II: Research Ethics Approval and undertaking.**

### **Office of the Vice-Chancellor**

Finance, Ethics and Compliance

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## **UNIVERSITY OF AUCKLAND HUMAN PARTICIPANTS ETHICS COMMITTEE (UAHPEC)**

09-Jun-2014

### **MEMORANDUM TO:**

Dr Rachel Wolfgramm-Rolfe

Management & Intl Business

### **Re: Application for Ethics Approval (Our Ref. 011124): Approved with comment**

The Committee considered your application for ethics approval for your project entitled **Is Indigenous knowledge able to contribute to food security?**

Ethics approval was given for a period of three years with the following comment(s):

1. PIS for Peruvian interviewees: please add local contact details to the PIS.
2. Please provide the Peruvian interview schedule/questions.
3. If translators are going to be used to support the research, please ensure that a confidentiality form is signed.
4. Please proofread the documents finally before use.

The expiry date for this approval is 09-Jun-2017.

If the project changes significantly you are required to resubmit a new application to UAHPEC for further consideration.

In order that an up-to-date record can be maintained, you are requested to notify UAHPEC once your project is completed. The Chair and the members of UAHPEC would be happy to discuss general matters relating to ethics approvals if you wish to do so. Contact should be made through the UAHPEC Ethics Administrators at [roethics@auckland.ac.nz](mailto:roethics@auckland.ac.nz) in the first instance.

All communication with the UAHPEC regarding this application should include this reference number: **011124**.

*(This is a computer generated letter. No signature required.)*

Secretary  
University of Auckland Human Participants Ethics Committee  
c.c. Head of Department / School, Management & Intl Business  
Miss Mariaelena Huambachano  
Prof Nigel Haworth  
Assoc Prof Manuka Henare

**Additional information:**

1. Should you need to make any changes to the project, write to the Committee giving full details including revised documentation.
2. Should you require an extension, write to the Committee before the expiry date giving full details along with revised documentation. An extension can be granted for up to three years, after which time you must make a new application.
3. At the end of three years, or if the project is completed before the expiry, you are requested to advise the Committee of its completion.
4. Do not forget to fill in the 'approval wording' on the Participant Information Sheets and Consent Forms, giving the dates of approval and the reference number, before you send them out to your participants.
5. Send a copy of this approval letter to the Awards Team at the, Research Office if you have obtained funding other than from UniServices. For UniServices contract, send a copy of the approval letter to: Contract Manager, UniServices.
6. Please note that the Committee may from time to time conduct audits of approved projects to ensure that the research has been carried out according to the approval that was given.

The University of Auckland Human Participants Ethics Committee (UAHPEC)

Private Bag 92019

Auckland, New Zealand

**Dear University of Auckland Human Participants Ethics Committee**

This letter is to inform you that I Mariaelena Huambachano give an undertaking that I shall abide by the Peruvian customary local laws and research-related regulations in my capacity of both an Indigenous researcher of Peru, and a New Zealand citizen, while in Peru.

In particular, I will abide by the Peruvian Constitution law decree 89 (Peruvian Constitution, 1993). Law decree 89 states that Indigenous communities have recognised legal rights, and have autonomy with regard to their communal work practices.

Peru does not have a recognised Indigenous research methodology (T. Stenner, personal communication, 10 August, 2013 and A. Argumedo, personal communication, October, 16, 2013). Therefore, as part of my doctoral thesis, I endeavour to craft the first Peruvian Indigenous research framework referred to as the 'Khipu Andean Model'. This Peruvian Indigenous research framework encapsulates both the Andean (Biocultural Protocol) and Māori (Kaupapa Māori) culturally sensitive research approach. The Potato Park Biocultural Protocol was developed by ANDES NGO under the leadership of Alejandro Argumedo, and members of the communities of the Potato Park based on Andean concepts and values and local customary law (Argumedo, 2010).

Specifically, the Khipu Andean Model would take into consideration the key tenets drawn from Kaupapa Māori and Andean Biocultural Protocol.

- Reciprocity (Ayninakau): What is received must be paid back in equal measure
- Duality (Yanantin): This principle is found in the transmission of 'knowledge' related to agricultural practices
- Equilibrium (Rakinakuy): Proportion of harmony with nature Pachamama, the sacred world and among community members
- Kinship (Whānau): extended family as a foundation of society
- Guardianship (Tiakitanga): Exercise of guardianship in relation to natural and physical resources of Papatūānuku.
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I agree that my permission to conduct my data collection in Peru can be terminated at any time of I violate customary local laws and protocols when collecting data in Peru.

Sincerely,

Mariaelena Huambachano



## APPENDIX III: Quechua and Māori similarities and differences

**Table 25: Quechua and Māori: Main similarities**

Peru	Aotearoa
<b>Indigenous worldviews marks their similarities</b>	
<p>1. Andean cosmovision:</p> <ul style="list-style-type: none"> <li>• Interrelation with Nature, mystic and the human world</li> </ul> <p>Allin Kawsay/buen vivir: Good-living philosophy</p> <p><b>Core values:</b></p> <p>Ayllu: community</p> <p>Ayni: reciprocity</p> <p>Yanantin: duality</p> <p>Chaninchay: equilibrium</p>	<p>1. Māori worldviews:</p> <ul style="list-style-type: none"> <li>• Interrelation with Nature, spiritual and human world.</li> </ul> <p>Well-being principles permeate Māori culture but there is not a consensus about a recognised Māori good-living philosophy.</p> <p><b>Core values:</b></p> <p>Whākapapa: geneology</p> <p>Tikanga: customs and ethical principle</p> <p>Kaitakitanga: guardianship of land</p> <p>Wairua: spirituality</p>
<b>Self-identification Indigenous peoples</b>	
<ul style="list-style-type: none"> <li>• Andeans wear their traditional clothes, arts and music, speak their language and possessed a distinctive variety of food crops.</li> </ul>	<p>Māori identify themselves through their whakapapa, Moko (tattoos), arts and music, and language.</p>
<b>Strong cultural identity: Customs and traditions</b>	
<ul style="list-style-type: none"> <li>• Offspring of Pachamama (Peru) and Papatūānuku (Aotearoa)</li> <li>• Oral traditions: Knowledge has been passed down through one generation to the other</li> <li>• Basket of knowledge referred to ‘yachay’ (knowing) in the Andean world and mātauranga Māori</li> <li>• Unique Andean and Māori culture</li> <li>• Tribal customs and traditions are central to both of these groups, specifically rituals and beliefs in relation to the land and mystic beings such as offerings to the god Rongo (God of cultivated food) in Aotearoa and gifts for Pachamama the supreme Andean fertility goddess</li> <li>• Community governance: Andeans and Māori have their own customary law and practices related to their community governance. However, a collectivist tribal approach is entrenched in their worldviews</li> </ul>	
<b>Indigenous innovation systems</b>	
<ul style="list-style-type: none"> <li>• Inca Calendar</li> <li>• Large biodiversity of Andean crops: kūmara, corn and potatoes are regarded as sacred crops</li> <li>• Traditional innovation systems: irrigation systems, Qocchas</li> </ul>	<ul style="list-style-type: none"> <li>• Maramataka calendar</li> <li>• Kūmara is considered a sacred crop</li> <li>• Traditional innovation systems such as crop rotation and pātaka.</li> </ul>

**Table 26: Quechua and Māori: Main differences**

Peru	Aotearoa
<b>Historical context of colonisation sets their differences</b>	
<p>1. Historical context: Conquest of Peru in 1532</p> <p>Colonisation process started with the conquest of Peru in 1532 by the Spaniards.</p> <p><b>Difference:</b> Peruvian people lost sovereignty of their land with the Spanish conquest. They Conquistadores not only took control of the Inca empire but treated the Indigenous peoples as slaves.</p>	<p>1. Historical context: Treaty of Waitangi 1840 (Māori - British sovereignty over land)</p> <p>European explorers arrived in the mid-1600s and maintained a stable relationship until 1840. With the signing of the Treaty of Waitangi, Aotearoa become a British colony.</p> <p><b>Key difference:</b> Māori claim that they did not cede sovereignty of their land, and they have always referred to the Māori version of the Treaty of Waitangi to justify their sovereignty over Aotearoa.</p>
<p>2. Colonisation: Decline of the Indigenous population: diseases, over-exploitation of labour, native revolts, and wars of Independence.</p> <p>Before the arrival of the Spaniards, it is estimated that Peru had a population of approximately 9 to 16 million. Now the Indigenous population represents four million of the approximately 28 million. Of the 4 million people, 83% belong to the Quechua people (INEI, 2016).</p> <p><b>Difference:</b> Peru has over 55 different Indigenous groups each having their own traditions and cultural differences, including more than forty dialects.</p>	<p>2. Colonisation: Decline of the Indigenous population: diseases, and musket warfare<sup>64</sup>.</p> <p>The exact number of Maori prior the arrival of the first settlers is uncertain. However, according to the recount of Captain Cook whose first visit to Aotearoa was in 1769, it is estimated that there were about one hundred thousand Māori people. Nowadays, Māori represent fifteen percent of the approximately four and a half million people.</p> <p><b>Difference:</b> Unlike the multi-cultural Indigenous Peruvians, Maori are mono-cultural, meaning they share similar cultural significances and Te Reo Māori is their main language.</p>
<p>3. Indigenous rights: There is a set of law in support of Indigenous peoples of Peru.</p> <p><b>Difference:</b> However, they are still struggling to preserve their culture, traditions and values. The state lacks the political will to reinforce legal instruments in support of the well-being of Indigenous peoples. Prior</p>	<p>3. Indigenous rights: Aotearoa also has a set of laws to reinforce the rights of Māori people.</p> <p><b>Difference:</b> The Treaty of Waitangi provides the basis for Māori resilience to self-determination and empowerment to preserve their culture, traditions and language. Māori</p>

<sup>64</sup> There is the belief that the Musket Wars fought throughout Aotearoa, Chatham Islands mainly over land between 1807 and 1845, cause heavy mortality among Māori.

<p>to 2011 Indigenous peoples were not part of negotiations in regard to any activity, plan or legal measure that affects their ancestral land.</p>	<p>feel vulnerable about the imposition of government law and regulations on their way of life. However, they mobilise, raise their concerns with the government and engage in a negotiation process. The power dynamics are different from those affecting Quechua communities.</p>
<p>4. Land rights: The loss of land threatened the cultural identity of Indigenous peoples. Devastating results for Peruvians.</p> <p><b>Difference:</b> Lack of recognition of Indigenous peoples' legal rights over land except that Decree 69 of the Peruvian Constitution 1993 makes reference to the rights of 'native communities'.</p>	<p>4. Land rights: Colonisation made Māori culture vulnerable. For example, the confiscation of Māori land was felt strongly in Aotearoa between the 1840s and the 1870s.</p> <p><b>Difference:</b> The Treaty of Waitangi, specifically Article 2, sets the platform for the recognition of Māori sovereignty and consequently their claim of their land rights.</p>