How farmers understand their autonomy and the significance of this understanding for environmental management in New Zealand.

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Hannah McCole

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Abstract

This thesis explores farmer understanding of autonomy and what this means for environmental management. Whilst prior research has shown that farmers place a high value on their autonomy, there has been little work conducted to understand how significant maintaining this autonomy is for environmental management. In New Zealand, ongoing conflict regarding top-down agricultural regulation and the current momentum towards establishing farmer-led catchment collectives suggests that farmers want to maintain autonomy over the environmental action that they take. To explore farmer understandings of autonomy in the context of environmental management, this research undertook semi-structured interviews with nine dairy farmers in the Waikato region utilizing a thematic analysis approach. The key findings revealed that farmer autonomy is complex, it is not static. This research also identified four recurring components of autonomy which were embedded within the interviewees' collective understanding of their autonomy. These components indicated that farmers often defined their autonomy as their ability to 1) act as active sharers rather than passive receivers of knowledge, 2) use modes of self-regulation via collective action, 3) pursue their interests and values without fear of undue financial constraints, and 4) enact their own sense of obligation to their land in accordance with their personal stewardship values. Overall, this research supports the idea that farmer autonomy can be preserved whilst achieving beneficial environmental outcomes through the promotion of farmer-led collaborative groups and networks that encourage farmer knowledge exchange. This study also highlights the importance of creating mechanisms that provide farmers with financial support and acknowledge farmer feelings of responsibility for their land. This research therefore argues that a top-down regulatory approach which inadvertently marginalises farmer autonomy may be detrimental to the future of effective environmental management in New Zealand.

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Chapter 1: Introduction

"A farmer depends on himself, and the land and the weather. . .You work hard, but you work as you please, and no man can tell you to go or come. You'll be free and independent, son, on a farm."

— Laura Ingalls Wilder, *Farmer Boy* (1933)

This thesis aims to investigate how farmers understand their autonomy and how this understanding is significant for environmental management in New Zealand. This investigation will unravel how farmers experience, understand and conceptualise their autonomy within the broader context of farming. In order to investigate farmer autonomy, one must first define autonomy, hence for this research, Collier's (2003) definition of autonomy will be used; according to Collier (2003, p.1), "autonomy means self-governing…autonomous systems…. which both produce their own governance and use that governance to maintain themselves". Of note, this definition does not represent the multifaceted nature, nor the broader context in which *farmer* autonomy is defined. This will be explored later in this thesis.

In both scholarly and fictional depictions, farmers have oft been illustrated as "free and independent" individuals, granted a degree of autonomy unbeknownst to many contractual workers (Wilder, 1933). These depictions, whilst fairly representative of farmer values, do not account for the variability of farmer autonomy. Meaning, that although these depictions acknowledge farmer autonomy as intrinsic to the farming lifestyle, they tend to universalise farmer experiences of autonomy (Jansen, Vicol and Nikol, 2021). Throughout time, this has led to the generalisation of farmer autonomy as a singular "thing" which can be appeased by governing and management systems (Adam et al., 2017; Berer, 2004; Brown, 1992; Emery, 2014; Stock et al., 2014). This thesis will develop this rather narrow interpretation of farmer autonomy by exploring the multi-faceted, transient nature of farmer autonomy. In doing so, this thesis will be providing much needed insight into how farmers understand their autonomy

Moreover, whilst the notion of farmer autonomy is often considered in agricultural literature and values-based research, this consideration rarely spills over into the realm of environmental

management literature. There is therefore a gap in the literature regarding how farmer values of autonomy can impede upon or influence effective environmental management. This gap is notable as farmer understandings of autonomy may fundamentally influence farmer behaviour. Within the literature, whilst this idea has not been fully explored, it has been hinted at within various agricultural-based studies. These studies reveal that a farmer's understanding of their own autonomy may influence how 1) they adhere to agricultural regulation, 2) how they make decisions upon their farm, 3) how they self-identify, 4) and how willing they are to participate in collaborative systems where a degree of non-autonomy is required (Boonstra, Ahnström & Hallgren, 2011; Carr, 1999; Carr & Wilkinson, 2005; Coolsaeet, 2016; Nedelsky, 1989; Peel et al., 2019; Stock & Forney, 2014; Van Driessche, 2020; Verdonk, 2019). Hence, a deeper exploration of farmer autonomy is required in order to understand its true significance for environmental management.

In New Zealand, this exploration is particularly vital; namely, as agri-environmental degradation has sparked debate around the regulatory nature of agricultural management (Armoudian & Pirsoul, 2020; Blackett & Le Heron, 2016; Cullen, Hughey & Kerr, 2006; Jay & Morad, 2007). Whilst various parties have advocated for more top-down regulation, others have championed for more bottom-up, farmer-led approaches to agricultural management (Duncan, 2017; Forrester, 2021; Hungerford, 2017; Kirk, Brower & Duncan, 2017; NZ Landcare Trust, 2014; O'Connor, 2021). Currently, many bottom-up approaches whilst relatively uncontested, have been hindered by the New Zealand government's primarily expert driven, regulatory approach to agricultural management (Memon et al., 2010). In response, farmers have expressed their need for greater independence in their farming decisions, thereby demonstrating the saliency of their autonomy values (Duncan, 2017; Stock & Forney, 2014). This saliency again demonstrates the need for deeper, autonomy-based research.

To provide further context for this research, this introductory chapter will begin by examining agri-environmental issues in New Zealand. This will be followed by a discussion of agricultural regulation in New Zealand; primarily, as it is important to consider the social context underlining farmer autonomy. This chapter will then include a brief description of the research approach. I conclude this chapter with a structural breakdown of the thesis chapters.

1.1 Background of Agri-Environmental Issues in New Zealand

The state of New Zealand's environment is increasingly threatened by the intensification of the country's agricultural industry (Chobtang et al., 2017; Moller et al., 2008; Smith & Saunders, 1995). Consequently, the New Zealand government has adopted a range of regulatory approaches to counteract agri-environmental degradation (Jackson Inderberg & Bailey, 2019; Ministry for the Environment, 2022; Sandrey, 2019). These approaches, which are restrictive in nature, seemingly infringe upon a farmer's ability to make autonomous decisions (Sandrey, 2019; Stock & Forney, 2014). Hence, in this section of the chapter, it is pertinent to consider the *need* for such regulation via an examination of New Zealand's agri-environmental issues.

In New Zealand, over the past 150 years, the intensification of agriculture has modified much of the country's lowland ecosystems (MacLeod et al., 2008). In the initial colonisation phase, indigenous grasslands, wetlands and floodplain forests were converted into pastoral land, thereby signifying the initial stage of agricultural intensification (MacLeod et al., 2008). Following this, in 1920, agricultural productivity increased due to the application of new soil science, fertilisers and improvements to animal breeding (MacLeod et al., 2008). Over the past 40 years, this trend of intensification continued as represented by increased nutrient and pesticide input, increased yields and stocking rates and the conversion to more intensive forms of agriculture (e.g., sheep farms converted into dairy farms) (MacLeod et al., 2008). In the past two decades, this rate of agricultural intensification has accelerated, particularly in New Zealand's Southland region (Stewart et al., 2019). Extensive research has confirmed that this level of intensification is unstable; namely, as intensifying agricultural land has provoked rapid ecosystem decline in New Zealand (Baskaran, Cullen & Colombo, 2009; Clarkson, Ausseil & Gerbeaux, 2013; Craig et al., 2000; Moller et al., 2008).

Beyond ecosystem decline, agricultural intensification in New Zealand has also been responsible for high carbon emissions, contaminated waterways, extensive soil erosion and the reduction of native biodiversity (Chapman,1996; Dudley et al., 2020; Longhurst et al., 2000; Moller et al., 2008). Many of these negative processes are resultant of intensive farming practices (Moller et al., 2008). For example, the excessive use of inorganic fertilisers, combined with the ever-increasing volumes of animal effluent, has increased the level of phosphorus (P) and nitrogen (N), leaching into the country's waterways (Baskaran, Cullen & Colombo, 2009; Julian et al., 2017; Moller et al., 2008). In surface waters, this excess of P and N causes eutrophication, thereby catalysing a loss of marine biodiversity

(Fountain, Wratten & Dymond, 2013). Increased stocking rates (the number of dairy cows has increased 82 percent nationally from 3.4 million to 6.3 million between 1990 and 2019) have also increased the production of agricultural emissions, particularly methane (Ch4) and nitrous oxide (N20) (Moller et al., 2008). Land clearance for pastoral development has also led to widespread habitat destruction, deforestation, loss of soil structure (84 million tonnes of soil are eroding off New Zealand pastures every year), soil nutrient degradation and biodiversity loss (Ministry for the Environment, 2019; Moller et al., 2008; Schipper et al., 2010).

And yet, the intensification of the agricultural industry appears seemingly inexorable, as New Zealand's economy relies heavily upon the industry. In 2021, the $15 billion dairy industry eclipsed the tourism industry as New Zealand's most valuable export (Statista, 2022a). Dairy farming in particular has evolved into a booming, profitable industry. In New Zealand, the dairy industry currently contributes over $10 billion to the country's economy (Statista, 2022b).

Evidently, New Zealand's government is confronted with an ever-increasing challenge regarding the sustainability of New Zealand's agricultural industry. The New Zealand government must maintain the profitability of the industry whilst simultaneously minimising agri-environmental degradation (Doole & Romera, 2015; Jay, 2007). For many political actors and parties, the solution to this challenge has been to introduce more agricultural regulation (Cameron, Barrett, Cochrane & McNeill, 2008; Forest & Bird, 2020). However, as stipulated by Cooper & Rosin (2014), agricultural governance needs to address the cultural foundations of farming practices, rather than simply adopting market-based and regulatory instruments of change. This reflects the overall sentiment of this thesis; in order to properly manage farmer practices, one must understand the cultural values behind those practices. Hence, the need to fully explore farmer values, such as autonomy.

1.2 Background of Agricultural Regulation in New Zealand

In response to agri-environmental degradation, the New Zealand government has steadily introduced a range of agricultural regulations. These regulations have encroached upon the day-to-day operation of farmers, thereby dismantling traditional ideas of farmer autonomy (Meijboom & Stafleu, 2015; Stock & Forney, 2014; Watson, 2019). Thus, providing a background on agricultural regulation is vital for

understanding the interrelation between farmer understandings of autonomy and environmental management in New Zealand.

To begin my discussion on agricultural regulation, it is first important to define what regulation is; according to Levi-Faur (2011), regulation is a directive maintained by an authority, for the purpose of ensuring beneficial safety, economic, social and environmental outcomes. In New Zealand, the primary authority responsible for regulation is the central government. In terms of agricultural management, the central government has produced several environmental regulations; perhaps of most importance, is the Resource Management Act (1991) (RMA). The purpose of the RMA is to promote the sustainable management of all natural and physical resources in New Zealand (Memon et al., 2010).

In terms of agricultural management, the RMA affects farmers via the imposition of various resource consenting processes. Due to the RMA, farmers typically need approvals in the form of stream withdrawals, land-use permits, track or road building permits, discharge permits, and water permits (Gibson, 2021). The RMA also empowers the creation of regulation. For example, the RMA empowered the establishment of the National Policy Statement on Fresh Water Management 2020 which for one, introduces stricter restrictions upon farm winter grazing (Gibson, 2021). Under the aegis of the RMA, the Resource Management (Stock Exclusion) Regulations 2020 also imposes stricter constraints upon farmers by prohibiting the access of cattle to lakes, wetlands and rivers (Ministry for the Environment, 2021a).

Much of New Zealand's national policy is also influenced by international agreements. Of note, is the United Nations Framework Convention on Climate Change (UNFCCC) which was adopted by New Zealand at the Rio Earth Summit in 1992 (Ministry for the Environment, 2021b). The primary objective of the UNFCC is to prevent dangerous anthropogenic interference with the climate system. Following the UNFCC agreement, the Kyoto Protocol (2005) was also developed. The Kyoto Protocol committed developed countries (including New Zealand) to greenhouse gas emissions reduction targets (2008-2012) (Hodgson, 2002; Ministry for the Environment, 2021b). These international agreements have placed weighty sanctions upon New Zealand, thereby, pressurising the government to reduce national emissions.

Farmer response to these international agreements and national policies have been mixed. New Zealand farmers have a complex rather than a collective perception of environmental regulation. On the one hand, MPI surveys show that most farmers (rising from a half in 2009 to two-thirds in 2019) support

global moves to reduce negative environmental impacts, but that most farmers (three quarters) also believe that there are too many environmental regulations from councils (Ministry for Primary Industries, 2019). This is a somewhat paradoxical result. Perhaps this farmer ambiguity reflects the way in which environmental regulation has failed to appropriately acknowledge and engage with farmer understandings of autonomy.

The increasing emergence of environmental regulation in New Zealand may have profound impacts upon farmer understandings of autonomy. As bureaucratic systems complexify the process of farmer decision-making and as the government limits farmer self-regulation, farmer understandings of autonomy are susceptible to change. And yet, the environmental literature has not fully illustrated the significance of this change. Hence, the requirement for research which adeptly explores how farmers understand autonomy and the significance of this understanding for environmental management.

1.3 Description of the Research Process

In order to explore farmer understandings of autonomy, an explorative, qualitative approach was adopted. Specifically, this research used semi-structured interviews to investigate the thoughts, feelings, views and opinions of dairy farmers as pertaining to their sense of autonomy. And whilst these questions did not overtly discuss "autonomy", they remarked upon agricultural issues, policies and organisations in order to stir connotations of freedom, power, and control. A qualitative methodology was chosen as it enabled an in-depth analysis of varying human perspectives. Further justifications for this research method are provided in chapter four of this thesis.

Part of the research process involved structuring research questions. These questions would ultimately act as the backbone for this research. Evidently, these overarching research questions could not be overly broad, nor could they be unduly specific and thereby limiting (Flick, 2008). The research questions had to be able to guide *and* stimulate the research process. To satiate these demands, I settled upon two overarching researching questions:

1. How do farmers understand their farming autonomy? And,
2. How is this understanding significant for environmental management in New Zealand?

By constructing these research questions, I had purposely provided the research with structure, whilst simultaneously providing specific objectives for the thesis.

To answer these research questions, I interviewed 9 dairy farmers within the Waikato region of New Zealand. Upon the completion of the interviews, thematic analysis was used to identify the areas of interest to this research. These areas were then grouped into four key themes: autonomy as knowledge, autonomy as a collective, autonomy as money and autonomy as responsibility. These themes were codified and grouped into sections within chapter five of this thesis.

1.4 Thesis Structure

In this section, I will briefly outline the structure of this thesis.

Following the introduction, Chapter 2 will examine key theoretical concepts via a literature review. This analysis will begin with an in-depth examination of autonomy. This discussion will then lead into an exploration of how autonomy can be conceptualised, experienced and expressed by farmers. This section is intended to expose how autonomy does not exist as a singular thing, but rather as a multi-faceted component of individual identity.

The next chapter, Chapter 3, will outline the methodology of this research; namely, a critical review of academic literature, a case study design, semi-structured interviews and a thematic analysis. This chapter will ultimately outline the reasoning behind such methodological decision-making. Chapter 3 will also introduce this thesis's case study: the Waikato region.

The results from this methodology will then be presented in Chapter 4: the Results. This chapter will provide a thematic analysis of all recurring farmer understandings of autonomy. This analysis will occur via an iterative process.

In Chapter 5, these autonomy themes will be analysed alongside the relevant literature. This will provide a comparative evaluation of farmer understandings of autonomy. This chapter will also provide the practical implications of this research. This will involve examining how farmer understandings of autonomy are significant for environmental management in New Zealand.

Finally, in Chapter 6 a conclusion will be provided which considers research limitations, opportunities for future research and general research findings.

Chapter 2: Literature Review

In chapter 1, a background to farmer autonomy in New Zealand was presented. This provided a conceptual backdrop for this study.

Moving on from this discussion, this chapter will build upon contemporary scholarship for the purpose of providing a deeper examination of farmer autonomy. This will involve drawing upon a range of literature which examines the three predominant concepts associated with the study of farmer autonomy: farmer autonomy over time, farmer autonomy as individualism and farmer autonomy as collectivism.

Since this research is also concerned with answering *why* farmer understandings of autonomy may be significant for environmental management, this chapter will also explore the relevancy of these theoretical concepts for environmental management in New Zealand.

In general, this chapter demonstrates how few studies have fully explored the variable nature of farmer autonomy. Notably, whilst some studies have touched upon the multi-faceted nature of autonomy, many of these studies are overly generalised, primarily due to their process of typifying and compartmentalising autonomy. This research is therefore essential as it identifies collective, yet subjective components of autonomy and situates them within the broader context of farmer autonomy. This chapter also reveals a relative disconnect between the literature on farmer autonomy and the literature on *managing* farmer autonomy. Hence, despite the imperativeness of autonomy for farmers, few studies have fully explored how autonomy can be incorporated within environmental management systems. This research should therefore be considered imperative for the purpose of bettering environmental management in New Zealand.

To begin this chapter, I will first delve into the definitions of farmer autonomy as provided by the literature.

2.1 Introduction to Farmer Autonomy

"Without [autonomy there is] no I; without I, nothing is intelligible." -

Zhuang Zhou, "Equality of Beings"

Before examining the literature's depiction of farmer autonomy, it is first pertinent to consider how the literature interprets autonomy itself. Throughout the literature, autonomy has been studied and subsequently interpreted by scholars in a myriad of ways. Whilst some academics simply interpret autonomy as empowerment, other scholars have created specific requirements for autonomy such as the capability to act, the capability to self-govern, the potential to self-regulate or the ability to "know that you know". (Castle, 2004; Dworkin & O'Neil, 2003; Hmel & Pincus, 2002; Skår, 2009). Alone, these varied interpretations reflect the complex nature of autonomy.

For this thesis, Collier's (2003) definition of autonomy will be utilised; according to Collier (2003, p.1), "autonomy means self-governing…autonomous systems…. which both produce their own governance and use that governance to maintain themselves". Whilst this is a relatively simplified account of autonomy, it does provide a useful starting point for this research. This definition indicates that autonomy is used in the construction of self via the process of "maintain[ing]" oneself (Collier, 2003). As depicted by Kühler and Jelinek (2013), autonomy is used to create and continuously define one's own interpretation of "the self". Hence, autonomy is often the catalyst used for identifying one's ideas, values and beliefs. Without autonomy, one can neither build a sense of self, nor govern "the self" (Kühler & Jelinek, 2013).

Alongside Collier (2003), various other researchers have attempted to specifically define *farmer* autonomy. Stock and Forney (2014) contextualise farmer autonomy by situating it within the social and relational context of farming. Namely, by demonstrating how farmers experience autonomy via the retention of their social, economic and personal well-being. This expands upon previous distinctions of farmer autonomy by emphasising the contextual nature of farmer autonomy, it does not paint farmer autonomy as static. Stock and Forney (2014, p.1) summarise their understanding of farmer autonomy within this following statement: "the farming self captures autonomy as a tool: a tool of identification, a tool to mitigate, navigate and translate the experiences of being a farmer in a wider network of

agricultural relations". Throughout Stock and Forney's (2014) complex account of farmer autonomy, there is also an attempt to delineate autonomy; as according to Stock and Forney (2014), there are two prevailing instances of farmer autonomy; neoliberal autonomy (based on individualism and competition) and actual autonomy (based on collectivism and the realisation of collective interest). Whilst this type of delineation does reaffirm the varied nature of autonomy, I believe it overly compartmentalises how one may understand their own autonomy.

In comparison to Stock and Forney (2014), other academics have attempted to define farmer autonomy in terms of farm operation. In Cabaret et al. (2015)'s autonomy-related study, they interviewed 36 farmers and determined that farmer autonomy could be defined in terms of a farmer's ability to decide upon all aspects of farm management (Cabaret et al., 2015). Overall, Cabaret et al. (2015) depicts farmer autonomy as a process of self-sustaining farm activity. This introduces a rather definitive version of farmer autonomy. This definition by Cabaret et al (2015) is supported by a range of academics who associate farmer autonomy with farmer decision-making ability (Devitt, 2018; Duncan, 2017; Neog & Sahoo, 2020; Verdonk, 2019). These interpretations of farmer autonomy create an autonomy hierarchy of sorts; specifically, by indicating that farm owners experience greater autonomy than farm workers (Cabaret et al., 2015). This autonomy hierarchy seemingly states that farmers can only experience "true" autonomy if they themselves inhabit positions of power. More recently, these rather stringent interpretations of farmer autonomy have been disputed; as recent studies have indicated that it is more often an individual's *interpretation* of autonomy which influences their sense of autonomy, rather than the position that they hold (Boonstra, Ahnström & Hallgren, 2011; Collier, 2003; Janker, Vesala, & Vesala, 2021).

Other academics have also attempted to define farmer autonomy in terms of a farmer's ability to self-identify (Boonstra, Ahnström & Hallgren, 2011; Gonzalez & Benito, 2001; Janker, Vesala & Vesala, 2021). According to Cornell (2003)'s essay on autonomy, it is often the ability to define oneself which grants an individual with a true sense of autonomy. Specifically, as it is the process of self-identification which enables the enactment of self; the ability to act in accordance with one's own values, beliefs and desires (Berofsky,2013). As stated by Niska et al. (2012) farmer self-identification operates in a similar way, as self-identification grants farmers with the ability to identify their own lived experience, and by identifying one's own lived experience, one can identify changes and protest discrepancies. Again, this aligns with Stock and Forney's (2014) indication that the farming *self* lies at

the heart of autonomy. By defining who one is, one can evolve within changing social contexts and ensure that their autonomy is unperturbed (Stock & Forney, 2014). This harks back to the opening quote of this section; without autonomy, one cannot readily identify themselves as autonomous, thereby limiting their ability to *be* autonomous.

These distinctions all reveal the multi-faceted nature of farmer autonomy. Specifically, as academics have identified farmer autonomy heterogeneously. Various scholars have equated farmer autonomy with farmer identity whilst others have associated farmer autonomy with modes of farm operation (Cabaret et al., 2015; Stock & Forney, 2014). In general, whilst these studies together provide an interesting outlook on farmer autonomy, alone these categorisations may limit our understanding of farmer autonomy by placing strict boundaries upon what it means to be autonomous. Moreover, few studies have identified the variable nature of autonomy; for example, while identity may represent a *component* of autonomy, it does not fully account for autonomy. Autonomy is merely an umbrella which within various components of autonomy lie. This critique of farmer-autonomy-based research is not new. Jansen, Vicol and Nikol (2021) assert that past autonomy-based research has often failed to fully understand the agency and structure of autonomy. Therefore, this research will attempt to fill this gap in the literature by focusing upon the multi-faceted nature of autonomy and by situating farmer autonomy within its broader context.

One can simply look upon the evolution of farmer autonomy to understand that autonomy is not absolute. As indicated by Stock and Forney (2014), as social contexts change, so too does farmer autonomy. For many academics, this changing nature of farmer autonomy has been particularly compelling. Hence, many agricultural studies have focused upon the changes to farmer autonomy over time. These studies that adopt a temporal lens provide an important background for understanding how our modern-day conceptions of autonomy have been shaped. Thus, in the next section of this chapter, I will explore this particular literature.

2.2 Evolution of Farmer Autonomy

Agricultural scholars have often explored the everchanging state of farmer autonomy (Benveuti, 1975; Bourcier, 1984; Nedlesky, 1989; Klauck, 2013; Starr & Adams, 2003; Stock & Forney, 2014; Van Court, 2012). Meaning that past research has oft contextualised farmer autonomy via a temporal lens.

In a seminal paper titled "Reconceiving Autonomy: Sources, Thoughts, and Possibilities", Nedelsky (1989) explores the changing nature of generalised autonomy. This paper is notable as she describes the historic state of farmer autonomy, dating back to the eighteenth century. According to Nedelsky (1989) in the eighteenth-century, farmers were often viewed as self-governing individuals. This image of self-governance was routinely proliferated by the "myth of autonomy" i.e., the idea that farmers were truly self-dependent workers (Nedelsky, 1989). However, as described by Nedelsky (1989), this rather fanciful image of famer freedom soon wavered following the industrialisation of agriculture. In fact, according to Nedlesky (1989) the industrialisation of agriculture changed many pre-conceived notions of farmer autonomy. Nedlesky (1989) describes how following the specialisation of markets and the introduction of machinery in the 1930's, farmers became much more reliant upon external organisations, thereby relinquishing a degree of individual autonomy. In general, this research by Nedlesky (1989) is poignant as it demonstrates how past societal movements (such as industrialisation), changed the myths, ideas and symbolgies surrounding farmer autonomy.

Van Court (2012) expands upon Nedlesky's (1989) research via their own study which investigated the transformative autonomy of an Iowan farming community. Van Court (2012) discovered that the community often experienced autonomy losses when they underwent profound agricultural changes. Van Court (2012) agrees with Nedlesky (1989) by indicating how these changes to autonomy were often symbolic. For example, Van Court (2012) describes how farmers were once symbolised as the "ultimate independent agent", succeeding based on hard work alone. Van Court (2012) links much of this symbology to before the 1930's, when this image was much more indicative of reality, as many farmers would have practiced subsistence-based agriculture and thus, farmers would have maintained a higher degree of self-sustaining autonomy. But, as Nedlesky (1989) demonstrated, this symbology soon changed following the introduction of external organisations, organisations that farmers soon came to rely upon. Van Court (2012) illustrates that whilst this reliance increased farmer efficiency, it also led to the Iowan farmers ceding a level of individual autonomy as they abandoned self-sustaining systems. According to Van Court (2012), this abandonment of self-sustaining systems ultimately diminished

many a farmer's ideal sense of independence. This research by Nedlesky (1989) and Van Court (2012) is notable as it demonstrates how external influences changed the *idea* of farmer autonomy over time.

On another note, various other academics illustrated that it is the historic *role* of the farmer which has been instrumental in provoking temporal changes in farmer autonomy (Fite, 1956; Ross, 1956; Seabrook & Higgins, 1988; Stock & Forney, 2014). For example, according to Klauck (2013), the role of the farmer underwent changes following the epistemological differentiation between farmers as knowledge providers and farmers as knowledge users. Duna et al., (2018) expands upon this research by depicting how this epistemological differentiation is indicative of the 20th centuries marginalisation of rural expertise. Over time, according to Duna et al., (2018) this marginalisation diminished the role of the farmer in knowledge exchange networks, thereby reducing a farmer's ability to make autonomously motivated decisions. Again, this reiterates how farmer autonomy has oft been shaped by factors outside the realm of the individual farmer's control. However, these studies do have a fairly limited scope as they do not explore how external conceptualisations of farmer autonomy influence farmer understandings of their own autonomy.

Much of this literature on the changing role of the farmer is also underlined by scholarly depictions of the "good farmer"; the "good farmer" is a concept, inspired by Bourdieu, which explores farm decision-making through cultural and symbolic framing (Burton et al., 2021; Hunt et al., 2013; Kessler, Parkins & Huddart Kennedy, 2016; Naylor et al., 2016; Riley, 2016; Saunders, 2015). This literature indicates that farmer decisions are often shaped by their own ideas of what it *means* to be a good farmer. This literature is therefore important as it demonstrates how changing "good farmer" identities have shaped farmer understandings of their own autonomy. For example, as demonstrated by McGuire, J., Morton and Cast (2012)'s research, if farmers relate good farming to sustainable farming, they may relinquish a level of autonomy for the purpose of adhering to sustainable guidelines. This indicates that not only is farmer autonomy shaped by external organisations, regulations and policies, but also by a farmer's evolving understanding of what it means to be a "good farmer". As described by Saunders (2015), over the past 50 years, the rules of the agricultural game have changed, and the ideals surrounding the notion of the "good farmer" are different. Where once farmers focused upon productivism, farmers are now more readily focused upon multifunctionality and conservation (McGuire, Morton & Cast, 2012; Saunders, 2015). Independently, this demonstrates how identity can oft shape understanding over time.

Overall, this section has illustrated how the literature has often applied a temporal lens to the examination of farmer autonomy. This is notable as it demonstrates how the literature has interpreted farmer autonomy as transformative. Farmer autonomy, as stated within the literature, is not static, it is something that is susceptible to change; changes derived from industrialisation, specialisation, regulation, farmer identity and the role of the farmer. This chapter has also revealed the literature's tendency to relate farmer autonomy to modes of farmer independency. In fact, this is a relatively pervasive idea throughout much of the literature on farmer autonomy. Hence, in the next section a brief overview of autonomy and individualism will be provided.

2.3 Farmer Autonomy and Individualism

Farmers have routinely been examined through the connotative lenses of independence and individualism (here, individualism is defined as an ideology which involves competition, freedom and self-reliance) (Cryer, 2021). These examinations of farmer individualism have often explored how farmers operate, compete and exist on an independent and cooperative level (Cryer, 2021; Emery, 2014; Key, 2005; Sullivan et al., 1996).

From the earliest appraisals of farmer values, scholars have identified independency as vital to the farming lifestyle (Pearson, 1933). For example, in a seminal study by Gasson in (1973), it was revealed that many farmers treasured their farming lifestyle purely for their ability to be independent. In the following decades, similar sentiments have been echoed by farmers in numerous agricultural studies (Jansen, 2002; Lucas, 2016; Peel et al., 2019). And whilst some studies have equated independence with autonomy, many scholars have emphasised their semantic differences. Ryan and Deci (2006) differentiate independence and autonomy by indicating that whilst independence represents a detachment from others, autonomy represents the ability to act freely without constraint or coercion (Ryan & Deci, 2006). Similarly, Gagnier (2003) states that independence is a matter of self-affirmation, whereas autonomy is relational. More generally, studies have understood that independence is not synonymous with autonomy, but rather, a by-product of autonomy (Fineman, 2000; Reindal, 1999).

Notably, whilst various academics have explored the notion of farmer individualism, few studies have examined the topic in such depth as Emery's (2014) study titled "Independence and individualism: conflated values in farmer cooperation?". In this study, Emery (2014) interviewed 33 English farmers

in three case study locations (Peterborough, East Midlands; Grafton, West Midlands; Tamar, Southwest) and discovered that 1) many farmers understood their autonomy as contingent upon their independence, 2) many farmers viewed their neighbours as natural competitors from which independence must be sought and 3) the concept of farmer independence has subverted many efforts for farming collectivism. Moreover, according to Emery (2014), many farmers may be dissuaded from acting cooperatively due to the preconceived pressure to exist as an independent, "good farmer". This indicates that farmers may pursue independence not for the sake of personal autonomy, but for the sake of social validation. This research is notable as it demonstrates how farmer autonomy may be dependant not only upon one's own understanding of autonomy, but upon collective understandings of autonomy i.e., the collective "good farmer" identity. Evidently, Emery's (2014) study focused upon one particular value of autonomy: independence. And hence, by pre-applying a state of autonomy onto farmers, Emery (2014) may have inadvertently compartmentalised farmer autonomy into a pre-existing box. And whilst, it cannot be denied that many farmers do value their independence, it is also important to reconsider the subjectivity of autonomy.

In a similar vein to Emery (2014), Stock et al. (2014) also reemphasised the role of individualism in bolstering farmer autonomy. In fact, according to Stock et al. (2014) there is a mode of farmer autonomy explicitly defined as "individual autonomy". Farmer individual autonomy is predicated on neoliberal understandings of value and entrepreneurialism. This mode of farmer autonomy functions via the idolisation of neoliberal ideas; ideas which revere the notion of independent enterprise. Stock et al. (2014) noted that this mode of individual autonomy, was oft prevalent, but predominantly counterintuitive. As farmers who idealised neoliberal ideas of autonomy were primarily dependent upon the capital and the capitalist class (Stock et al., 2014). This introduces a new dynamic to individual autonomy as it reflects how farmers may value modes of autonomy, whilst simultaneously undermining what it means to be autonomous. Stock et al. (2014)'s research therefore confirms Emery's (2014) account of farmer individualism by indicating that certain *ideas* of autonomy may be counterintuitive to producing actual autonomy.

Various scholars have also examined the correlation between farmer independence and farmer identity. As demonstrated by Peel et al. (2019), farmer ideas of independence often play a role in developing farmer identity. Here, identity is defined as a set of meanings which an individual utilises to characterise themselves in relation to society (Burke & Stets, 2009; Stets & Burke, 2000). According

to Hall (1996) these identities are constructed through a process of self-identification. For example, Laoire (2002) revealed that farmers often identify themselves as independent in order to conform to their self-imposed identities, e.g., their identity as a solitary, masculine farmer. Similarly, Alkon & Traugot (2008), illustrated how farmers may identify themselves as independent for the purpose of inhabiting their role as a *rural* farmer; namely, as ruralism regularly conjures ideas of solitude, independence and isolation. This sort of analysis falls under the umbrella of identity theory. Identity theory represents the idea that a person's identity can influence their behavior and attitude (McGuire, et al., 2015). Overall, these types of identity-based theories are notable, as they diversify more typological based accounts of farmer autonomy and instead focus upon the subjective, very personalised nature of farmer autonomy.

In short, this section has recounted the literature's investigation of farmer individualism in relation to farmer autonomy. Whilst this literature has painted a diverse image of farmer independence, many of these studies have attempted to compartmentalise "types" of autonomy such as Stock et al. (2014)'s typification of "individual autonomy". These types may be useful in representing the components of autonomy, but they may be overly zealous in applying certain types of autonomy onto large groups of farmers. Other studies have focused upon the more identity-based relationship between farmer autonomy and farmer individualism. These studies diversified the literature's understanding of farmer autonomy and farmer individualism. However, as other studies have indicated, farmer autonomy is not wholly dependent upon individualism (Duncan, 2017; Putnam, 1995). Numerous studies have recognised that collectivism rather than individualism can also inform farmer understandings of autonomy (Cofré-Bravo, Klerkx, & Engler, 2019; Sutherland & Burton, 2011). This notion will be discussed in the following section.

2.4 Farmer Autonomy and Collectivism

Throughout the literature, discussions on farmer autonomy have often appeared amidst discussions of farmer collectivism (Cofré-Bravo, Klerkx, & Engler, 2019; Kenny & Kaboré, 2006; Stallman & James, 2015; Sutherland & Burton, 2011; Westbrooke & Greer, 2017). In this context, collectivism represents an ideology which involves acting interdependently, sharing behaviour and adopting the norms of a particular in-group (Triandis, 2001). Whilst the literature on farmer collectivism is less prominent than that on farmer individualism, it is notable enough to provide an important conceptual background for

this research. Hence, in this section, I will provide a brief overview of the literature's depiction of farmer collectivism in relation to farmer autonomy.

Over time, studies have reexamined the narrative of the independent farmer, thereby, leading many researchers to discover that whilst farmers may be physically isolated from non-family members, they often develop (both personally and occupationally) in conjunction with others (Adam et al., 2017; Fisher, 2013; Poortinga & Pidgeon, 2003; Stock & Forney, 2014). More commonly, researchers have determined that farmers often operate collectively; they depend upon their neighbours, communicate within their collectives, build friendships with their local professionals and work collectedly with fellow farmers (Noy & Jabbour, 2019; Sligo & Massey, 2007; Sutherland & Burton, 2011). This shift in perceived farmer identity has altered the ways in which farmer autonomy is understood. Where once farmer individualism was synonymous with farmer autonomy, many researchers now acknowledge that it is the farmers' ability to connect with others that builds their individual autonomy (Ensor & de Bruin, 2022; Hoffmann, Probst, & Christinck, 2007).

Much of this literature on farmer collectivism is built upon social capital theory; the theory that a supportive communal network can bolster human capital (Putnam, 1995). For example, in Fisher (2013)'s exploratory study, Fisher (2013) discovered that farmer collectivism enabled farmers to improve their operational functionality by sharing resources and by establishing a collective voice with which to influence regional policy. Fisher (2013) thereby directly correlates supportive networks to the improvement of self-sustaining activities; a process which will inevitably improve individual autonomy. Notably, many of these studies are focused upon the economic benefits of enhanced social capital; thus, they do not thoroughly explore the linkage between social capital and human autonomy. Despite this, these studies do create notable correlations between farmer collective behaviour and farmer independence; thereby, introducing a broader interpretation of farmer individualism and autonomy. This research is also notable as it provides a contrasting perspective to Emery's (2014) study which focuses upon the interrelation between farmer independence and farmer autonomy. This contrast ultimately reflects the diversity of the literature's interpretation of farmer autonomy.

Stock et al. (2014) go beyond simply establishing correlations between autonomy and collectivism and instead stipulate that collective autonomy is in fact *actual* autonomy. Meaning that more independent models of autonomy are less likely to grant liberties oft associated with collective autonomy. For example, whilst individual autonomy grants farmers freedom from the state, collective autonomy

enables farmers to focus upon the common good, thereby granting farmers with freedom from the "dependencies and inequalities caused by the structures of neoliberal accumulation" (Stock et al., 2014, p.7). Stock et al. (2014) therefore imply that whilst independence may grant the individual farmer with relative freedoms, collective autonomy partially prevents the uneven distribution of benefits and the subjugation of farmers via monopolising corporations. This literature is compelling as it reinvigorates the literatures discourse around independence and autonomy; evidently, according to Stock et al. (2014)'s research, it is overly reductionist and in parts wrong to simply equate autonomy with independence.

However, this type of research which equates collectivism with autonomy may not account for the subjectivity of collectivism; as depicted by numerous researchers, autonomy is conditional (Christman, 1991; Oshana, 2016; Shuman & Barnosky, 2011) For example, in Nys's (2015) exploratory research paper on autonomy and trust, he states that for many individuals, collectivism cannot breed autonomy if trust is not present. Hence, Nys (2015) attempts to define the conditions in which autonomy via collectivism must be met. Nys (2015) indicates that both trust and self-trust must be apparent in order for farmers to experience autonomy via collectivism. Since one cannot readily rely upon a system that they do not trust (Lehrer, 1999). Noy and Jabbour (2019) build upon this notion by demonstrating how farmers cannot autonomously make decisions within a collective system if they do not trust the knowledge provided within that system. This literature is therefore notable as it reinforces the subjectivity of autonomy; what may represent autonomy for one, may not represent autonomy for another. The research conducted by Nys (2015), Noy and Jabbour (2019) and Van Driessche (2020), therefore illustrates how various collective pathways to autonomy may be undermined by individual values and ideas of autonomy. This leads to a common critique of farmer-autonomy-related research, which suggests that studies often apply a one size fits all solution to understanding farmer autonomy (Jansen, Vicol & Nikol, 2021). For example, different researchers have both stated that acting collectively and acting independently establishes autonomy. Evidently, not only is this oxymoronic, but it represents how single conclusions can disrupt proper explorations of farmer autonomy.

Overall, in this section I have investigated how much of the literature recognises the role of collectivism in bolstering farmer autonomy. In doing so, this section has highlighted the discrepancies between research conducted on independent and collective autonomy. Now that the literature's appraisal of farmer autonomy has been provided, it is important to consider how these theories are

explored specifically within the environmental management literature. This will involve looking at the implications of farmer autonomy for environmental management.

2.5 Farmer Autonomy and Environmental Management

So far, this chapter has explored how the literature itself portrays farmer autonomy. This chapter has revealed how farmer autonomy is often studied via the lens of temporal farmer identity, individualism and collectivism. In doing so, this chapter has only explored the literature findings on farmer autonomy without articulating why these findings are integral for environmental management. Thus, in this section, I will illustrate why it is important to research farmer autonomy for the purpose of bettering environmental management in New Zealand.

This chapter opened with an exploration of the relative definitions associated with farmer autonomy. Through this examination it was revealed that researchers have oft provided conflicting accounts of farmer autonomy. Whilst various researchers associated autonomy with farm operation, other researchers associated autonomy with lifestyle, individualism and self-identification (Cabaret et al., 2015; Emery, 2014; Gonzalez & Benita, 2001). In terms of environmental management in New Zealand, this ambiguity is problematic since it is difficult for environmental managers to actively acknowledge farmer autonomy without fully understanding what farmer autonomy *is.* Moreover, in New Zealand the current debate around farmer autonomy is ever-present. As illustrated in the introduction to this thesis, in New Zealand there is a relatively public debate regarding the level of autonomy granted to farmers. Due to recent agricultural intensification, government actors such as Environment Minister David Parker, have stipulated that "strict restrictions" must be put onto farmers to protect the future of New Zealand's environmental sustainability (Nicoll, 2018). Similar sentiments have been expressed by government parties, such as New Zealand's Green Party via their plans to reduce agricultural-based environmental degradation (Coughlan, 2020; Forest & Bird, 2020). Many New Zealand farmers state that these plans do not consider nor understand the role of farmer autonomy (Stock & Forney, 2014; Stock et al., 2014; Wedzerai, 2020). This may suggest that prior research has not fully illustrated what the value of farmer autonomy is to environmental regulation. Hence, the need to adeptly define farmer autonomy. In order for environmental managers to fully acknowledge farmer values of autonomy, research must be provided which examines how *farmers themselves* understand

their own autonomy (Jansen, Vicol and Nikol, 2021). This alone represents the relevancy of this current research.

In the second section of this chapter, I investigated how scholars have commonly applied a temporal lens to their investigation of farmer autonomy. Through this investigation I identified the literature's transformative illustrations of farmer autonomy. This literature indicated that changes to social, political and cultural contexts can ultimately recontextualise farmer understandings of their own autonomy (Nedlesky, 1989; Van Court, 2012). In the context of New Zealand dairy farming, this account of farmer autonomy is notable, specifically as the dairy industry is currently facing a range of regulatory and operational changes (DairyNZ, 2020; Duncan, 2017). For example, dairy farmers are now required to adhere to guidelines under the National Environmental Standards for Freshwater (NES-F), the Stock Exclusion Regulations and the Water Metering Regulations (DairyNZ, 2020). By introducing these changes, the government may inadvertently be modifying how farmers implement, understand and experience their own autonomy. And since many of these changes are symbolic, environmental managers may not be able to readily identify these changes (Burton et al., 2021; Hunt et al., 2013; Naylor et al., 2016). Hence, the need to fully evaluate the fluidity of farmer autonomy via the perspective of farmers themselves. Since changes to farmer autonomy are also oft dependent upon idealisations of the "good farmer", environmental managers may also need to be aware of how "good farmer" ideations change in relation to farmer autonomy (Naylor et al., 2016). For example, if the "good farmer" identity evolves into an ideology which prioritises conservation, environmental managers can harness this via the promotion of farmer-led sustainable initiatives.

This chapter also acknowledged the breadth of literature concerned with farmer autonomy in relation to farmer individualism. This literature, which primarily focused upon the competitive independent, neoliberalised and solitary nature of farming, illustrated how farmers often maintained their autonomy via the maintenance of self-sustaining, independent farm systems (Emery, 2014; Lucas et al., 2016; Peel et al., 2019).). Alone, this revelation is significant for environmental management; specifically, as the construction of farmer collectives (groups of farmers that facilitate the coordination of conservation measures at a landscape level), catchment groups (groups of people who typically work together to improve the health of river catchments) and other bottom-up management systems depends upon the collaboration of farmers (Ballinger et al., 2014; Dik et al., 2022). And in New Zealand, collective initiatives (such as the Rangitikei Rivers Catchment Collective) are currently instrumental in bettering

agricultural practices (Marshall, 2015). Evidently, collective initiatives in New Zealand cannot be readily implemented if farmers seek their autonomy and independence via narratives of productivism and self-sufficiency. On another note, environmental advisors, environmental policymakers and other external agents cannot improve farmer practices without being granted access to the farmers.

However, as depicted within the fourth section of this chapter, the literature also indicates that farmers can experience autonomy via collectivism (Blackstock et al., 2006; Cofré-Bravo, Klerkx, & Engler, 2019; Devine et al., 2008; Fisher, 2013; Kenny & Kaboré, 2006; Stallman & James, 2015; Stock et al., 2014; Sutherland & Burton, 2011; Westbrooke & Greer, 2017).This literature on collective autonomy is notable as it presents a theoretical conundrum regarding the nature of autonomy. By stipulating that farmers can in fact experience autonomy collectively, this literature defies the theoretical narrative which equates farmer autonomy with farmer independence. This again reiterates the recurring pitfall in the literature which occurs via the typification of farmer autonomy. Many researchers attempt to identify a singular value or solution to farmer autonomy, without fully exploring the subjectivity and variability of autonomy. This is problematic for environmental management, as environmental managers may simply seek to promote farmer independence without recognising the value of collective farmer systems. Since the literature also identifies autonomy as conditional, environmental managers may also need to be aware of how conditional autonomy operates amidst farmers (Christman, 1991; Noy, 2015; Oshana, 2016; Shuman & Barnosky, 2011).

In general, this section has confirmed the need to fully define and understand farmer autonomy for the purpose of bettering environmental management systems. Hence, the objectives of this study are 1) exploring how farmers understand their autonomy and 2) ascertaining the significance of this understanding for environmental management in New Zealand. This section has also linked the literature descriptions of temporal, individualistic and collectivist autonomy to their implications for environmental management. Moreover, this section illustrated how prior research has not yet articulated the variability of autonomy, thereby leading to various contradictions amidst the literature. This reaffirms the need for this study, as a proper understanding of farmer autonomy must be developed in order to fully express its significance for environmental management.

2.6 Chapter Summary

This chapter illustrated how autonomy is inadequately defined within the literature; as whilst prior research has attempted to define farmer autonomy, these interpretations often include overly generalised, and often contradictory, accounts of autonomy. This affirmed the variable and unpredictable nature of farmer autonomy. This chapter also revealed a theoretical disagreement regarding the nature of autonomy; as whilst prior research states that individualism promotes farmer autonomy, other research assert that is instead collectivism which breeds autonomy amidst farmers. This disagreement reflects the inefficiency of allocating one theoretical condition onto which a farmer's experience of autonomy depends. In this chapter, I also linked many of the literature's concepts to their potential relevancy for environmental management in New Zealand. This led me to discover the disconnect between the literature on farmer autonomy and the literature on the management of farmer autonomy. Hence, further concentrated analysis into how farmers understand their autonomy and how this understanding is significant for environmental management is required. For New Zealand's environmental managers cannot readily incorporate farmer autonomy, without first understanding its significance for environmental management.

In terms of this research's methodology, this literature indicated that a more interpretive analysis of farmer autonomy was needed to derive a more varied perspective on autonomy. This research will therefore attempt to broaden the literature's exploration of farmer autonomy by focusing upon the multi-faceted nature of autonomy. This will involve identifying numerous farmer understandings of autonomy, whilst avoiding the literature's tendency to identify farmer autonomy as one collective whole. However, this research *will* use the prior literature to help inform the interview schedule. This will involve drawing upon the literature's themes (such as farmer individualism), to assess their relevancy to the participants own understanding of autonomy. Again, this will help in answering this research's primary research question: how do farmers understand their farming autonomy?

In the next section, I will illustrate how I have adapted prior autonomy research to guide my own examination of farmer autonomy in New Zealand. This will involve justifying my research methodology.

Chapter 3: Methodology

In the previous chapter, a theoretical background was provided for this research; this background painted a rather complex and somewhat contradictory image of farmer autonomy. Following this exploration of the literature, it is now pertinent to consider how this research will be conducted.

This research endeavors to answer the research question: "How do dairy farmers understand autonomy?" To answer this research question, this study needed to explore farmer experiences and perspective; namely, as understanding is often born from one's own perspective and experience of the world. In order to explore an individual's experiences and perspective, a researcher must venture to communicate with that individual (Hopf, 2004). Often, in research, this level of communication is attained via interviews. Hence, for this research, I have chosen to utilise semi-structured interviews to guide the research process. And to interpret the interviewee's perspectives, I have adopted thematic analysis.

To describe this research's methodology, this chapter begins with a description of the research's case study: the Waikato region. This chapter then provides an examination of the research design and data analysis approach. In the final sections of this chapter, there will be a brief (and yet crucial) discussion regarding ethical considerations.

3.1 Case Study Design

For this research, I chose to employ a single case study design. The reasoning behind this decision will be outlined in the following section.

To begin, it first necessary to define what a single case study is. This task is potentially daunting considering the irregularities which often surround the word (Gerring, 2004). And so, for this research, I have adopted Gerring's (2004, p.2) single, revised definition of a case study as: "an intensive study of a single unit for the purpose of understanding a larger class of (similar) units". I have chosen this definition as it provides a concise interpretation of how my own case study functions. Evidently, this research's case study serves to examine dairy farmers (a singular unit) for the purpose of garnering a generalised understanding of how farmer autonomy operates (a larger class of similar units). And since

this research does not rely upon comparative examination, a multiple case study design was not utilised. As stipulated by Gustafsson (2017), a multiple case study design is used when a researcher is studying multiple cases to understand the similarities and differences between them. Clearly, this research did not aim to identify similar or dissimilar types of farmer autonomy across regions. This research intended to simply garner understandings of farmer autonomy from one set region.

Moreover, this research's case study design has been influenced by the multi-faceted nature of the case study approach. As depicted by Crowe et al. (2011, p.1), the case study approach *"*allows in-depth, multi-faceted explorations of complex issues in their real-life settings*".* Accordingly, the case study approach enables a thorough examination into the lived experiences of research participants. This level of insight is vital for this study; specifically, as farmer understandings cannot be obtained without first delving deeper into the complex world of farmer perspective (Stock & Forney, 2014).

In terms of the second component of this research's question, "how are farmer understandings of autonomy significant for environmental management?", the case study design is also imperative. Namely, as a case study analysis allows the researcher to "tell a story" (Flyvbjerg, 2006). And by telling a story, a researcher can properly construct a narrative of that in which they study. As depicted by Flyvbjerg (2006), by constructing a narrative, researchers can truly make sense of an experience and apply it to a practical, real-world setting. Consequently, case study research would enable me to convert real-world narratives of farmer understandings into teachable lessons for agricultural management; thereby answering the second component of this study's research question.

To effectively wield case study methodology for the purpose of answering my research question, I had to determine an appropriate case study location. This required much deliberation and forethought. In the next section, I will briefly illustrate how this research's case study location was decided.

3.2 An Overview of the Case Study Location

To select a case study, I examined various agricultural regions in New Zealand. Via this examination, I determined that the Waikato region (see figure 1) would be an apt location for this research. This conclusion was based upon three contributing factors. Firstly, the Waikato region is one of New Zealand's most productive agricultural regions (the Waikato region produces more than 25% of the country's milk and is home to the country's largest share of dairy cows at 22.4%); hence, many dairy

farmers reside within the region and study participants would be easily accessible (Statista, 2021). Secondly, due to the prominence of the region's dairying industry, land-use in the Waikato has been heavily influenced by dairying. For example, the expansion of dairying has required regional widespread land clearance. Thirdly, agri-environmental degradation in the region has sparked political contention regarding the management of agricultural land. Much of this contention stems from the relative power struggle between the Waikato Regional Council and regional farmers; both of whom have markedly different approaches to farm management (Burke, 2016). Thus, the region provides a particularly live background for the study of farmer autonomy.

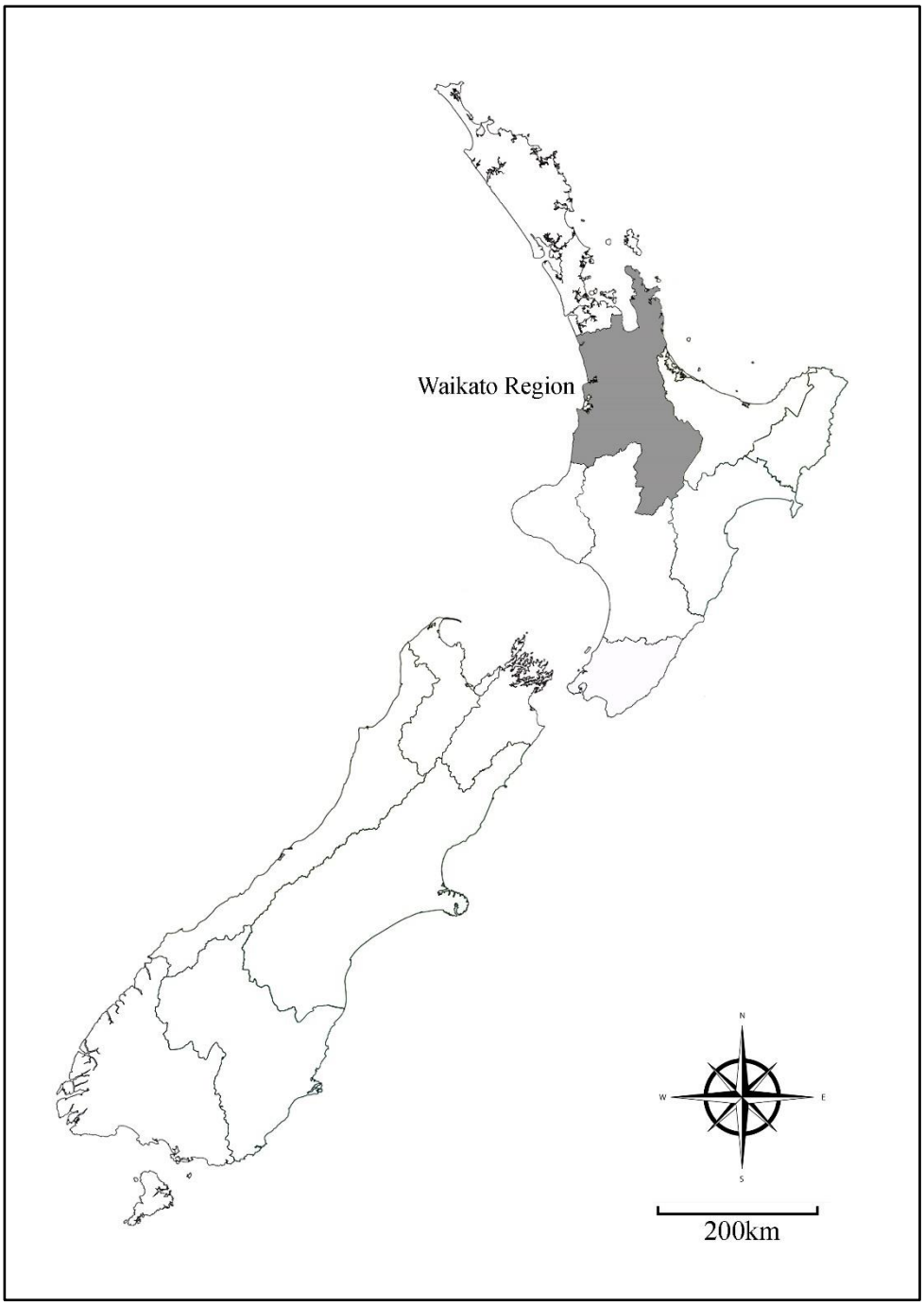

Figure 1. A regional map of New Zealand with the Waikato region identified. Adapted from "A National height-age model for Pinus radiata in New Zealand. M.van der Colff, 2013. New Zealand Journal of Forestry, 43(1).

To further contextualise the region, in this section I will include a brief overview of the Waikato region. To begin I will first provide a general description of agri-environmental degradation in the Waikato. I will then include an overall examination of the regulatory responses to Waikato's agri-environmental degradation. This will offer the reader much-needed insight into the political, social and environmental contexts of the Waikato region. In general, this section will outline the theoretical logic used to determine case study viability (Silverman, 2005).

3.2.1 Agri-Environmental Degradation in the Waikato region

In recent decades, the growth of the region's dairy industry has coincided with an increase in regional agri-environmental degradation.

For example, the region's pastoral development has resulted in rapid land clearance (Department of Conservation, 2020; Waikato Biodiversity Forum, 2019). This rapid land clearance has led to the widespread eradication of native vegetation. According to the Department of Conservation (2020), approximately three quarters of the native land cover has been lost. This loss of native vegetation has also destroyed various natural habitats, thereby producing ecosystem loss. In the Waikato region, only 28% of indigenous ecosystems remain (Waikato Biodiversity Forum, 2019).

Pastoral farming has also resulted in widespread landscape fragmentation (Waikato Regional Council, 2019). Waikato's indigenous vegetation is now fragmented into thousands of patches, ranging in size from 1 hectare to 94,000 hectares (Waikato Biodiversity Forum, 2019). These patches are all commonly separated by plantation forests, towns and pasture. Waterways too are fragmented by perched culverts and other manmade barriers; barriers which ultimately disrupt the natural migration of fish.

The region also suffers from severe waterway pollution, approximately 95-99% of the region's rivers contain pollution above water quality guidelines (Baisden, 2020). Much of this pollution is attributed to pastoral farming. Farm animals' compact soil, trample plants and defecate near waterways, thereby producing increased waterway sedimentation and excess nitrogen input into the water (Rajanayaka et al., 2020). In the Waikato, 20% of wells have nitrate concentrations exceeding the standard maximum aceeptable value of 11.3mg/L (Ministry of Health, 2021). Due to waterway pollution, many of the Waikato's lakes are now unable to support submerged plants, thus reducing the number of native fish

species inhabiting the region's lakes. Pollution has also rendered many wetland and shallow marine environments inhabitable for many native, marine species (Waikato Biodiversity Forum, 2019).

This regional, agri-environmental degradation has prompted numerous regulatory responses from both central and local governments. And understanding these responses is vital for deciphering the socio-political sub contexts which may influence a Waikato farmer's understanding of autonomy. For one's understanding of themselves (i.e., their ability to be autonomous) is often shaped by their interaction with the world (Abrams & Hogg, 1990; Oshana, 2016; Postmes, Haslam & Swaab, 2005). Hence, in the next section, I will provide an overview of regulator responses.

3.2.2 Waikato Regulator Response to Agri-Environmental Degradation

To begin my discission on regulator responses, it is first pertinent to define the various governing structures responsible for managing agricultural activity in the Waikato.

The governing structures of New Zealand are characterised via the distinction between local and central governments (New Zealand Immigration, 2020). The term local government refers to New Zealand's district, regional, city or unitary councils; councils responsible for managing issues specific to local communities. Whereas the term central government refers to the overarching, governing body of New Zealand which oversees broader, national issues (New Zealand Immigration, 2020). Local authorities must act within the legislative framework as provided and maintained by the central government (New Zealand Immigration, 2020). Notably, the local government system is comprised of two complementary sets of authorities: territorial authorities and regional councils (district and city councils). For example, in the Waikato, whilst the Waikato Regional Council acts as the regional council, various district councils such as the Taupō District Council and Waitomo District Council act as governing subsidiaries.

In the Waikato region, the Waikato Regional Council is primarily responsible for mitigating environmental degradation. This is due to the council's legislative responsibilities as specified by various central government Acts of Parliament, notably the Resource Management Act 1991 but also including such legislation as the Local Government Act 2002, the Land Transport Act 1998, the Biosecurity Act 1993 and the Civil Defence Emergency Management Act 2002 (Waikato Regional Council, n.d). Under these Acts, the Waikato Regional Council is responsible for regional planning and

leadership, managing the effects of activities on air, soil, coastal and water resources, flood control and drainage, animal and plant pest control and environmental education (Waikato Regional Council, n.d.).

To uphold their legislative responsibilities, the Waikato Regional Council has proposed a variety of environmental plans. Many of these plans have been developed at the catchment level; meaning that many, different regulators have focused upon mitigating issues within their catchment zones. For example, the Waikato Regional Council has worked with the Taupō District Council to create the Lake Taupō Zone Plan; a plan which prioritises the health of the Taupō catchment (Waikato Regional Council, 2017).

The Waikato Regional Council has also worked with numerous co-governance organisations to address agri-environmental degradation. One of these organisations includes the Waikato River Authority, a Crown-Iwi organisation which works towards restoring the health of the Waikato and Waipā River (Waikato River Authority, 2021). With the Waikato River Authority, the Waikato Regional Council developed the Waikato and Waipā River Restoration Strategy, 2018 (Waikato Regional Council, 2018).

Besides co-governance measures, the Waikato Regional Council has also introduced a range of top-down policy measures to mitigate agri-environmental degradation. The Waikato Regional Council has imposed strict regulations regarding winter grazing, fertiliser usage, livestock exclusion from waterways, drain construction, composting and irrigation (Waikato Regional Council, 2021b). The council has also developed the highly disputed Proposed Waikato Regional Plan Change 1 (PC1) which imposes strict levels upon farm nitrogen leaching loss rate (Business Desk, 2020). The PC1 has sparked contention amidst Waikato farmers, many of whom believe that the plan is fundamentally flawed (Burke, 2016).

The perceived inadequacy of the PC1, alongside the council's tendency to adopt punitive, regulatory measures has provoked general discontent amongst many Waikato farmers. Many Waikato farmers now seem disillusioned with the council's approach to environmental management (Mascher-Frigyesi, 2020). This may account for the emergence of various farmer-led environmental collectives in the Waikato, such as the Piako Catchment Forum: a forum which focuses upon the regeneration of the Piako Catchment (Piako Catchment Fourm, 2021). These collectives seemingly provide farmers with the ability to manage their environment without council input.

As this section has illustrated, the regulatory responses to Waikato-based, agri-environmental degradation have been varied. The Waikato Regional Council has employed various ground-up and top-down approaches to environmental management. These regulatory responses within the Waikato are significant, as regulatory changes can alter how farmers envision and enact their autonomy (Duncan, 2017; Meijboom & Stafleu, 2015; Osbaldiston & Sheldon, 2003; Stock & Forney, 2014; Van Court, 2012). Hence, it is essential to fully consider how regulation can influence farmer understandings of autonomy. Can co-governance measures promote farmer autonomy, or do they undermine farmer understandings of individualism? Moreover, does punitive regulation infringe upon a farmer's sense of autonomy? This research endeavours to answer these questions.

As summarised within this section, the Waikato region present an appropriate backdrop for this thesis's investigation; namely, as the Waikato region must effectively reduce agri-environmental degradation whilst simultaneously maintaining regional farmer autonomy. Now, that the case study location has been explored, it is pertinent to consider the qualitative nature of this research before delving into this study's data collection methods.

3.3 Qualitative Methodology

Before the research process is fully outlined, it is first pertinent to consider the qualitative nature of this research. Namely, since it is a qualitative approach which underlines this study; and by describing the qualitative methodology, the reader may better understand the essence of this research.

Fundamentally, this research examines human understandings. Understandings born from subjective interpretations of reality. Evidently, this is a rather abstract concept; especially when those understandings relate to human autonomy. Human autonomy, in its perpetuity, has been difficult to define (Stock & Forney, 2014). And hence, when examining autonomy, one cannot attempt to categorise human autonomy within one, standardised box. As demonstrated by Emery (2014), human autonomy is best labelled and understood subjectively by identifying parts of the "whole" which constitutes autonomy.

And so, the nature of qualitative research is much more appropriate for this study; specifically, as this research focuses upon subjectivity, flexibility and interpretation. As described by Cassel & Symon

(1994, p.7), qualitative research has *"a focus on interpretation rather than quantification; an emphasis on subjectivity rather than objectivity".*

In short, this research does not aim to examine farmer autonomy in terms of quantity, amount, intensity or frequency, this research aims to examine farmer autonomy in terms of farmer understandings (Denzin & Lincoln, 2000). And hence, for this study, a qualitative research approach has been deemed appropriate.

In this next section, I will outline how this qualitative approach influenced my data collection methods.

3.4 Data Collection

Data collection can be conducted via a range of structured, systematic and scientific methods. Thus, I had to carefully consider a range of data collection methods before proceeding with my research. In this section, I will illustrate the validity of my particular data collection methodology by detailing how the participants of this study were identified, how data was collected from the sample and how data was subsequently analysed.

The process of determining sample criteria is imperative for achieving data saturation amidst the studied population. As beknown to most researchers, a poorly constructed sample will ultimately diminish the quality of one's research (Bartlett et al., 2001; Cleary, Horsfall & Hayter, 2014) For this reason, relevant literature was used to derive appropriate sample conditions. To be assured of sample validity, this research adopted Robinson's (2014) four-point approach to sampling in qualitative interview-based research. This four-point approach involved:

'(1) Defining a sample universe, by way of specifying inclusion and exclusion criteria for potential participation; (2) Deciding upon a sample size, through the conjoint consideration of epistemological and practical concerns; (3) Selecting a sampling strategy, such as random sampling, convenience sampling, stratified sampling, cell sampling, quota sampling or a single-case selection strategy; and (4) Sample sourcing, which includes matters of advertising, incentivising, avoidance of bias, and ethical concerns pertaining to informed consent (Robinson, 2014, p.4)'.

In order to construct a sample universe by ways of inclusion, this research's sample universe (unsurprisingly) included dairy farmers. Initially, I determined that only farm owners or farm managers

could be included within this research. After some deliberation, I determined that this distinction would be unnecessary. Hence, both farm owners and farm managers are included in this study. Whilst this may have resulted in slightly differing accounts of autonomy, I believed that this would not influence the results of the study. This belief was based upon the nature of autonomy. Whilst farm managers and farm owners may more readily experience systematic autonomy, autonomy is not solely derived from one's position. Autonomy is subjective; embedded within one's sense of self and identity.

Following the determination of sample criteria, I identified an appropriate sample size. Undoubtedly, there are a myriad of factors to consider when determining sample size. As indicated above, an inappropriate sample size can invalidate one's research. Due to this, various academics have attempted to pinpoint the exact sample number required to conduct effective qualitative research (Francis et al., 2010; Guest et al., 2014). For example, Guest et al. (2014) stated that, in qualitative research, approximately 12 participants are required to provide for data saturation. However, according to Cober & Adams (2020), sample size should not be determined by a preconceived number, rather, it should be determined by one's own judgement. And consequently, I applied my own judgement when attempting to determine the sample size for this research.

Upon consideration, for this research, I determined that 10 participants would be sufficient. Again, this decision was based upon the nature of autonomy. A researcher can never truly pin down autonomy. Autonomy, in its perpetuity, will be experienced in a multitude of conflicting ways. When attempting to thematically synthesise how autonomy is conceptualized by dairy farmers, one is simply attempting to identify recurring expressions of autonomy, not solidify an exact meaning of autonomy. Due to this, I believed that a large sample size was not required to draw an exact conclusion.

However, as indicated by Robinson (2014), during qualitative studies, the agreed parameters of sample size are likely to change. Recruiting participants is an unpredictable business and it can often prove to be difficult. This can lead to a reduction in sample size (Robinson, 2014). During this research, I did indeed encounter a range of recruiting challenges. Participants withdrew from the study, organisations showed disinterest in the study and financial limitations prevented the promotion of any monetary incentive. Moreover, during the final stages of the interviewing process (August 2021), the delta variant of COVID-19 became rife within my city (Auckland, New Zealand). This meant that I was in lockdown for the final stages of the interviewing process. This prevented me from travelling to any

prospective interviewees. These restrictions meant that only 9 participants could be located for this study.

The next two stages in Robinson's (2014) four-point approach, 'selecting a sampling strategy' and 'sample sourcing' will be discussed in the next section: Sample Recruitment.

3.4.1 Sample Recruitment

Participants were recruited in accordance with the sampling criteria outlined above. Overall, the methods of recruitment were diverse in nature.

Firstly, recruitment involved a form of snowball sampling. Snowball sampling, also known as "chain referral" or "networking", occurs when the researcher gathers information from a particular person (in the literature, this initial participant is often referred to as the "seed") and then relies upon that person to put the researcher in contact with other potential participants (Lopez & Whitehead, 2013; Robinson, 2014; Sadler et al., 2010). This process occurred during my initial attempt at sample recruitment. I identified an initial interviewee (with whom I had had previous contact with) to act as the initial seed. However, this first attempt at snowball sampling was unsuccessful. The first interviewee did not know of any other willing participants.

The second method of sample recruitment involved posting a detailed advertisement for the study on social media, specifically Facebook. The advertisement involved a general description of the study: study purpose, selection criteria, interview details and researcher background. This advertisement was sent to pages intended to elicit responses from Waikato dairy farmers including Waikato Farmers, NZ Dairy Farmers and Waikato Young Farmers. Unfortunately, this method did not provoke any responses.

The third method of sample recruitment involved recruiting interviewees via specific conservation organisations. These organisations were primarily located within the Waikato region. This strategy involved securing permission from an individual (the "recruitment gatekeeper") to obtain access to organisational channels of communication (Robinson, 2014). According to Robinson (2014), these channels of communication often include group emails, notice boards, internal mail and social media connections. By gaining the approval of the gatekeeper, Robinson (2014) stipulates that the gatekeeper can become a research 'champion' within the organisation. Fortunately, Robinson's (2014) stipulation

was correct. By gaining approval of organisational gatekeepers, I was able to gain access to a wide range of participants. Following the success of this method, I was also able to employ a form of snowball sampling within the organisations. When I interviewed one organisation-based participant, this participant contacted other organisation members to ascertain whether they would also be interested in participating. This is how I located most research participants.

Following the identification of a suitable participant, I would begin preparations for a semi-structured interview. Semi-structured interviews will be discussed in the next section.

3.4.2 Semi-Structured Interviews

Evidently, there are a range of data collection methods that can be utilised when undertaking qualitative research. In order to evaluate the validity of certain methods, one may turn to the literature on research methodology.

According to Taylor et al. (2015), in-depth interviewing is an effective data collection method when: 1) research interests are clearly defined, 2) the researcher is interested in a broad range of perspectives and 3) the researcher is limited by time constraints. Evidently, since this research revolves around the exploration of multiple perspectives, and since the research focus is clearly defined, the first two conditions are fulfilled. The 3-month time limit of this research also meant that the third condition was satisfied. Logistically, this indicated that an interviewing methodology would be appropriate for this research. But, beyond Taylor et al. (2015)'s appraisal of interview efficiency, interviews are also simply effective at deciphering how an interviewee understands a certain phenomenon.

Once the interviewing methodology was decided upon, the next methodological consideration pertained to the type of interviewing methodology. Within the literature, there are three main proposed types of interviews, the structured interview, the semi-structured interview and the unstructured interview. In structured interviews, all questions are created in advance and the direction of the interview is pre-ordained (Thomas, Riley & Smith, 2018). In an unstructured interview, the interviewer has no pre-planned direction, and the questions arise spontaneously. In semi-structured interviews, these two approaches are combined, thereby pre-planned questions are combined with the flexibility to pursue a free-flowing format (Thomas, Riley & Smith, 2018).

According to Jamshed (2014), unstructured interviews can be counteractive to a research project which draws upon a conceptual base. For example, in this research, I am using a literature-based focus on autonomy, thereby a level of guidance is needed in order to steer interviewees towards that focus. Structured interviews can also be problematic as they limit the freedom of expression available to the interviewees. And whilst this limitation may be appropriate for some research questions, for this study, structured interviews do not fit the exploratory nature of the research. To me, this indicated that the best method of interviewing was the semi-structured interview approach. Semi-structured interviews allowed me to explore the participants' perspectives, thoughts, opinions and feelings on a range of complicated and personal topics (Barriball & While, 1994). And the semi-structured interview also enabled me to allow free expression whilst simultaneously keeping respondents focused upon the research topics of interest. By using semi-structured interviews, I could also weigh up the credibility of responses, explore underlying motives and allow interviewees a degree of freedom to explain their thoughts (Humphrey & Lee, 2008).

As the interviews were semi-structured, I had to construct an interview schedule. This schedule contained a list of written questions, separated into seven, distinct sections (see Appendix 3). The sections included: 'Introduction, 'Farmer Information', 'Co-ops', 'Professional Networks', 'Top-Down Networks', 'Bottom-Up Networks' and 'Conclusion'. These sections were intended to reveal how farmers conceptualise autonomy in a range of alternating circumstances. Ultimately, the structuring of this interview schedule talked to the literature that had identified significant aspects of farmer autonomy.

Following a literature review of interviewing techniques, I also determined that the interviews would occur in-person. I decided that simply conducting phone interviews would not be appropriate for this study. This decision was mainly influenced by Johnson, Scheitle & Ecklund (2019)'s assertion that in-person interviews resulted in more fluid, natural conversations. According to Johnson, Scheitle & Ecklund (2019), in-person interviews are also more effective at producing conversation turns, field notes and word-dense transcripts. Notably, according to Knox & Burkard (2009), in-person interviews also tend to yield higher quality data. I considered these factors alongside my own personal research style: I believed that I could build rapport more easily in a face-to-face setting.

Since these interviews were to be conducted in-person, before the semi-structured interviews could begin, I had to establish an appropriate time and location for the interview. Locational and time

discussions occurred via email communication. Before the interviews began, I also informed the participants that the interviews would be audio recorded.

I knew that in order to successfully conduct the semi-structured interviews, I had to build rapport. Without rapport, even my well phrased questions could elicit brief, uncommunicative answers (Fisher, 2013). So, to initially build rapport, I would bring along an icebreaker in the form of a relatively large biscuit tin. This was intended to build an initial relationship with the interviewee. I also hoped that this would partially counteract the imbalance of favour (since the participants had little to be gained by agreeing to be interviewed) (Fisher, 2013).

In many instances, when a participant invited me to their farm, the participant would offer to take me on a tour of their farm. This offer was always readily accepted. As stated by Heiberg and Syse (2020), by “getting [one’s] boots muddy” (p. 472) a researcher can properly immerse themselves within the lives, experiences and perspectives of their farmer participants. I considered this notion when accepting the participant’s offer. I also believed that these farm tours would be important for building rapport. By demonstrating my interest in the farmer’s livelihood, I felt that I could reaffirm my genuine interest in their stories, perspectives and opinions.

The interviews were designed to last approximately one hour, but this time allocation was not strictly adhered to; namely, due to the varying nature of the participants. The shortest interview was 45 minutes, whilst the longest interview was approximately one and a half hours long.

Ultimately, these semi-structured interviews were intended to produce raw data and facilitate a further analysis of farmer perspectives, thereby granting me with an enhanced understanding of farmer perspectives on autonomy. The range of participants also enabled a thorough analysis of farmer perspectives. The sample of participants included farmers ranging in age, gender, farm size, years of experience, type of operation and level of participation within environmental collectives. Various interviewees conducted the interview independently, whilst other interviewees completed the interview with their partner and/or parent.

Upon completing the interviews, I transcribed the interview data. This involved converting the audio recordings into detailed, written documents. According to Kowal and O’Connell (2004), this form of transcription can be understood as "the graphic representation of selected aspects of the behaviour of individuals engaged in a conversation" (p. 249). Initially, I considered using automatic transcribing

software. However, I soon decided that this would be too expensive and too impractical. I also acknowledged the benefits associated with manual transcription; by manually transcribing the data I could reacquaint myself with the data, and I could avoid the inclusion of any automated error (Dollah, Abduh, & Rosmaladewi, 2017). By having a transcription of the interviews, I could also reliably and consistently draw upon the data. In essence, during this process, I made 'the conversation permanent'.

Once transcription was complete, I then had to analyse the data. This process will be discussed in the next section.

3.5 Data Analysis

Data analysis can be defined as the practice of working with data to derive useful information, which can then be utilised to make informed decisions (Coursera, 2021). This stage of the research is paramount. As explained by Brandt (1999, p.1), "in addition to designing and carrying out the experiment, an important task is the accurate evaluation and complete exploitation of the data obtained". And hence, for this study, I had to construct a way in which to examine the data obtained via semi-structured interviews.

For this research I had to settle upon a mode of data analysis. As explained by Harper (2011), this is often a relatively overlooked task. In order to effectively decide upon a data analysis method, one must reappraise the purpose of their research. The purpose of this research is to identify and structure components of farmer understandings of autonomy. And hence in this research, I planned to summarise unstructured data into thematic categories (categories pertaining to farmer autonomy). According to Harper (2011), this purpose aligns with a thematic model of data analysis. Harper's (2011) reasoning is clear; when categorising components of a greater whole, it is best to first create components (themes) for the analysis stage. Consequently, for this research, I decided to use thematic analysis for the examination of my data.

3.5.1 Thematic Analysis

Evidently, it is important to first define what thematic analysis is. As defined by Braun and Clarke (2012, p.57), thematic analysis is "a method for systematically identifying, organising, and offering

insight into patterns of meaning (themes) across a data set. Through focusing on meaning *across* a data set, TA allows the researcher to see and make sense of collective or shared meanings and experiences".

Predominantly, I chose thematic analysis due its accessibility (Braun & Clarke, 2006; Harper, 2011). Many qualitative analysis methods require a breadth of preexisting knowledge, expertise and training. Hence, since thematic analysis requires little prior knowledge or experience, it is much more accessible for a budding researcher like myself (Harper, 2011). And since thematic analysis is a method rather than an approach to qualitative research, it is much more flexible than more traditional, rigid approaches to research.

Since thematic analysis is markedly flexible, there are various ways of conducting thematic analysis. One can adopt either an inductive or deductive approach, a theory-driven data coding and analysis, an essentialist versus constructionist theoretical perspective or an experiential versus critical orientation to data. These different modes all influence how a researcher may interpret their data (Harper, 2011).

In terms of this research, the inductive and deductive approaches to thematic analysis are particularly relevant. Namely, as this research used a combination of the two approaches (Harper, 2011). Here, an inductive approach refers to the bottom-up method of coding and analysing data in terms of what is *in* the data. Meaning that the themes and codes derive from the semantic content rather than the researcher's preconceived theory-driven ideas (Harper, 2011). Contrastingly, a top-down, deductive approach involves applying a series of topics, ideas and concepts to the data set in order to code and interpret the data. This research used an inductive approach by drawing codes directly from the interviewees' response (Harper, 2011). And this research used a deductive approach by structuring the schedule around specific topics and identifying semantic patterns relating to those particular topics (farmer knowledge, farmer individualism, farmer collectivism).

To further expand upon this process, it is imperative to discuss what "drawing codes" specifically entails. When I drew codes from the data, I was simply recognising important moments and patterns within the data and encoding them (Fereday & Muir-Cochrane, 2006). For example, I would identify that the topic of "neighbours" routinely emerged throughout the interviews, I would then identify "neighbours" as a code and categorise it within the topic of "farmer collectivism". Evidently, this mirrored a more inductive approach to analysis; specifically, as I had expected and thereby promoted the collectivist theme via the interviews. My more deductive approach to analysis occurred once I encountered unexpected patterns within the data. For example, I noticed that many of the interviewees

mentioned “debt” unprovoked. This led me to believe that this was an important idea that should be subsequently codified and categorised. This is how the theme “Autonomy as Money” emerged. In the end, by codifying themes, I was able to easily organise and retrieve data (Miles & Huberman, 1994).

Notably, this process of coding occurred once all interviews had been transcribed. And as previously mentioned, I used manual coding methods. This meant that rather than using automated coding systems like NViVo, I used my own evaluation of the data to construct the codes. This approach involved underlining, highlighting and extracting interview statements which expressed familiarities with other interviewee responses. For example, if I noticed two or more interviewees mention “being one’s own boss”, I underlined these statements due to their conceptual overlap.

In the end, once I had decided upon my mode of data analysis, completed the manual coding process, and identified recurring ideas, I had four, predominating themes: Autonomy as Knowledge, Autonomy as a Collective, Autonomy as Money and Autonomy as Responsibility. I then compiled these themes within the results section alongside the contributing interviewee statements. Following the results chapter, in the discussion chapter, I analysed the themes in alignment with the relevant literature. Primarily, the objective of this stage was to establish an interchange between material and theoretical prior knowledge (Flick, 2008). This was ultimately the final stage of this research’s methodology.

Before moving on to examine the results of this methodology, it is first pertinent to consider the ethical concerns associated with this study.

3.6 Ethical Considerations

The deliberation of ethics is important for any research process. By considering and adhering to research ethics, a researcher can be assured of their research’s integrity; specifically, by ensuring that their work is truthful, secure and knowledgeable. By adhering to ethical norms, researchers can also be assured that their work will not be harmful to others.

Moreover, it is particularly imperative to consider ethics in qualitative research. As stipulated by Arifin (2018, p.30), in qualitative research, “ethical considerations have a particular resonance due to the in-depth nature of the study process”. For this research, the in-depth nature of the study is particularly apparent; namely, due to the internalised focus of the study: human autonomy. Thus, I had to thoroughly consider all potential ethical concerns before conducting any form of analysis.

By deliberating upon ethical considerations, I was able to ensure that all research undertaken met the guidelines set by the Human Ethics Committee at Massey University. I also undertook to protect the reputation of Massey University, as outlined in the Policy on Staff Conduct and the Code of Responsible Research Conduct. This research received a low-risk ethics application approval, thereby indicating that the research would not pose any mental, physical or cultural risks to participants.

To alleviate ethical concerns, I ensured that voluntary and informed consent had been obtained from the participants. To ensure informed and voluntary consent, an information sheet was provided to the participants (see Appendix 1). This information sheet contained the general purpose of the research as well as a brief research description. To further reassure participants, the purpose of the research and the information sheet was discussed before the interview began. The information sheet also instated my legal obligation to ensure that the interviewees' privacy rights were maintained. To protect the interviewees' identity and reputation, the interviewees were provided with pseudonyms. Participants were also assured that they could change and withdraw information at any time. A consent form was also provided to the participant before the start of the interview (see Appendix 2). By accepting the conditions outlined in the consent form and by signing the consent form, the participants gave me the right to record the interview, use the data for analysis and include that data within the production of the thesis.

To logistically ensure that privacy was maintained, all data was stored on a password protected computer and only myself and the two, listed supervisors had access to the data.

To avoid any socio-ethical concerns, I focused upon building rapport with the interviewee. I also acknowledged the cultural norms and principles expressed by certain interviewees. For example, I was conscious of following social etiquette (when to take off shoes etc).

Additionally, I ensured that the interviewees were well informed. Before the interview was initiated, I ensured that the participants understood the full purpose of the research. And when the study was completed, an essential debriefing occurred to inform the participant of any incomplete disclosures.

3.7 Chapter Summary

In this chapter, I explored the case study design, investigated the nature of qualitative research, unpacked the data collection process, examined the data analysis stage and considered ethical concerns. This will have provided insights into how the results of this research were obtained.

Through this chapter I also demonstrated how the research methodology aligned with the research purpose. Since this research endeavoured to explore how dairy farmers understood their autonomy, I needed to craft a research method which would allow for this exploration. Evidently, in order to explore farmer understandings, I had to explore farmer perspectives, contextualise farmer responses and interpret farmer opinions. This meant that I had to adopt a flexible, exploratory method of research; hence, the adoption of thematic analysis. Moreover, since I was exploring farmer perspectives, I inevitably needed to communicate with farmers; hence, the semi-structured interview approach. And since I planned to draw a collective consensus (on farmer autonomy) based upon a singular unit (farmers), I utilised a case study approach to streamline, navigate and validate the research.

Overall, by using these methodologies, I identified 4 reoccurring themes amidst the interviewee responses, thereby yielding strong results. These results will now be discussed in the next chapter: The Results.

Chapter 4: Results

In the previous chapter, I outlined how the methodology intended to capture farmer understandings of autonomy; this chapter presents the results produced by these methods. Thematic analysis of the farmer interviews identified four general ways in which the interviewed farmers understood their autonomy. These thematic results stem from probing questions derived from literature findings that link autonomy to trust, knowledge, individualism, collectivism, and regulation. As is expected with semi-structured interviews, these probes did not explicitly dictate the content of the interview; rather, they acted as conversational markers to simply ground the conversation. As the probes allowed for open discussions, two new themes emerged that had not previously been identified in the initial literature review: autonomy as money and autonomy as responsibility.

Figure 2 summarises the four themes and their conversational contributing factors. These summary results are presented fully in the remainder of this chapter.

Autonomy as Knowledge	Autonomy as a Collective	Autonomy as Money	Autonomy as Responsibility
-The changing role of farmer knowledge - Inadequate knowledge sharing networks - Access to knowledge - Knowledge suppression - The ability to learn -Knowledge and identity	- Collective gatherings -Community support -Neighbourly support -Sharing resources -Trust -Social capital -Farmer and non-farmer relationships	-Debt -Money and mental health -Financial strain -Financial obligations -Family and money obligations -Financial incentives -Time as money -Financial limitations -Profit focused	-Stewardship -Leaving a legacy -Improving the environment -Preserving the environment -Professional duty -Moral obligation

-Epistemological divides		-The price of preservation	

Figure 2: Key themes and their conversational, contributing factors

4.1 Autonomy as Knowledge

Throughout the interviews, the farmers discussed their desire to gain access to knowledge, to share their own knowledge and to improve the current systems required for knowledge exchange. The interviewees' understanding of autonomy was therefore molded by their ability to access and use knowledge.

Though, as discussed by many of the interviews, this ability had been undermined; namely, as the uptake of farmer knowledge had become limited during the policy making process. This had resulted in many of the interviewees feeling dejected in terms of their knowledge autonomy. This feeling of dejection emanated via the interviewees' routine criticism of the council. Of note, when the interviewees referred to "the council" they were usually referring to the Waikato Regional Council, rather than a specific council member. For many of the interviewees, "the council" also seemed to represent a sort of disembodied, authoritative entity; an entity which disrupted their ability to function autonomously.

Many of the interviewees, including F8, felt as if farmers were no longer "being listened to by the council":

> *I think many farmers feel like they're not being listened to by the council or whoever. They're not taking into account what we know and what we do every day, it's frustrating, but uh that seems to be just how it is now, they don't listen to us, they listen to graduates, consultants, not really ever the farmers (F8).*

As stated by interviewee F8, farmers feel as if "what [they] know" is being disregarded by the council and hence, they experience involuntary detachment from numerous decision-making processes. This is evident in F3's following statement:

> *Yeah, there's a fear that someone at Wellington is making the rules and that they don't really know what's going on and even when they came with the national rule for water - it's like our soil types here are quite different to Canterbury, even the other side of Walton and Pukekohe is*

different again, so there has to be some scaling to suit the areas and even topography, like for us to put our effluent irrigation system on we can't use those big boom jet irrigators because our slope is more than 7%, so if it's more than 7% you'll get too much run-off, so you have to use low application rates, irrigators, sprinklers, and shift them, frequently, but, no one at Wellington would know anything about that (F3).

Here, F3's reference to the generic "someone" reiterates how they felt detached from policymakers and the policy-making process. They are not aware of *who* is creating the policy nor *why* they are creating it. Moreover, as indicated by F3, the exclusion of farmer knowledge results in rules that are perceived to be misinformed by farmers - "they [the council] don't really know what's going on" (F3). This sense that the rule makers are "getting it wrong" is also echoed by F5:

And so, we've got people in Wellington who wouldn't know the first thing about dairy farming, dictating to you about what you're going to do on your farm without the slightest understanding of all these nuances and subtleties that you are doing every day, day to day on your farm (F5).

Here, both F3 and F5, indicate that there is a burgeoning gap between those who *know* agriculture and those who *do* agriculture. As described by F5, those who know agriculture, do not understand the "nuances and subtleties" (F5) of day-to-day farm operations. And thus, for F3 and F5, their inability to properly inform agricultural policy, is worsened by the government's inability to fully understand farm management.

During the interviews, the interviewees also routinely expressed how their "ways of knowing" were neglected by governing authorities. For the interviewees, their "ways of knowing" were born from personal observations, experiences with trial and error, cultural understandings and historical accounts. Many of the interviewees, (particularly the older farmers) once used these "ways of knowing" to regulate their fertiliser use, cattle treatment, and land management. By losing this ability to draw upon such individualised knowledge, many felt as if they were losing their ability to self-regulate:

Yeah, I think my boss and other people, other farmers, they did kinda have that ability to look and see what needed to be done and then they'd do it, it's a bit different now, like with the fencing, now we're being told where to put fences, where before I think my boss would have just put it where he thought was best. I don't know. But he doesn't like - he's stubborn (F1).

The interviewees also felt that they had their own unique understanding of their land. This became particularly apparent to me during my numerous, spontaneously offered tours of their farms. During these tours, the interviewees pointed out specific areas that had flooded over the years, discussed the history of their streams, explored the symbology of specific trees and retold anecdotes regarding their cows' interactions with the land. These tours revealed how the interviewees personally understood their land. Such farm-specific knowledge was held to be critical for "understanding how [one's land] must be managed" (F2). Notably, by having this farm specific knowledge marginalised in the process of agricultural policy development, the interviewees seemed increasingly discontented with current policy arrangements.

The farm tours also reemphasised the importance that these farmers attached to the process of knowledge *sharing*. In fact, for the purpose of knowledge sharing, numerous interviewees had "opened their gates to the public". F2, F8 and F9 all discussed this notion of opening their gates:

> *Fonterra's got those boards to go to those farms and help them out, they like showing the better side of it, that's not the truth and they won't show the truth, it's frustrating, especially when us farmers are trying to open their gates and say this is our job, this is what we do, they don't want to have it, you know (F9).*

Here, F9 illustrates how "open[ing] their gates" would enable Fonterra and other organisational bodies to better experience and understand their farming lifestyle. Thus, the notion of "opening their gates", seemed to simultaneously represent the physical relinquishment of a boundary and the metaphorical transference of farmer knowledge. The interpersonal nature of this exchange is notable, given that an individual's farm is also their home:

> *Farmers just get weird about people coming in, like who's that, who are all these people coming to my farm, they get weird, it's kind of like an extension of their house and they don't want people looking around (F1).*

For many of the farmers, there is no physical divide between their home and their work. In effect, opening their gates was inviting strangers into "an extension of their house" (F1) and thus into their lives. This sense of autonomous surrendering represented the significance of knowledge autonomy for these interviewees; these interviewees were willing to sacrifice control for the sake of effectual

knowledge exchange. As the above results clearly demonstrate, the interviewed farmers were grappling to regain their autonomy as both the providers and holders of valuable knowledge.

Moreover, the interviewees often felt that their knowledge was shunned or disregarded in favour of more "expert" knowledge. This sentiment is expressed in the following interview exchange:

> *I: So, you think when it comes to these impractical policy suggestions, they exist because they're [the council] not listening to farmer information?*
>
> *F4: Maybe not asking?*

This interview exchange reaffirms how farmers understand policy development as something contingent upon someone else's knowledge, rather than their own. As depicted by F4, farmer knowledge is routinely neglected within standardised knowledge networks. Farmers are seemingly assumed to not know "the right things" and are therefore "not ask[ed]" to participate in valuable knowledge exchange systems. Consequently, many interviewees also expressed a sense of "being in the dark" when it came to agricultural policy development and rationale. This disabled the interviewees from applying policy rationales to their own knowledge and often resulted in a sense of powerlessness. According to one, many farmers could not "see the reasoning behind doing something as directed by the regulation" and yet "they had to do it" (F2). When the interviewees felt as if they could not access institutional knowledge, they also felt less internally motivated by their own actions; they felt as if they were being controlled by some impersonal other.

> *If we all took ownership, and helped implement and make those policies together, not just "hey, this is what's happening", and then that will be generational, that will be for hundreds years to come, but if you start to just say, "this is the rules", then you're going to get the hairs on people's backs ups, and that will become generational, "oh, that bloody council", and you don't want that (F2).*

Many interviewees felt as if they were being compelled to act by externally imposed rewards and punishments, rather than by what they autonomously accepted as known. This autonomy-limiting externality tended to "get the hairs on [their] backs up" (F2). A similar sentiment was expressed by F9; when regulatory reasoning was disengaged from what F9 knew, they felt as if they were "jumping through hoops for jack shit".

F3 argued that this type of ineffective, external motivation could be alleviated by promoting the educational role of council members. By encouraging these members to properly explain and rationalise policy, farmers could better align their own knowledge with that of the council. As depicted by F3, by "bring[ing] along a carrot instead of a stick" the council could prove that they and the farmers "want[ed] to achieve the same thing" (F3):

> *It's sort of difficult because they're almost the police rather than the educators, we'd actually like to see them, they used to be only the police, only the enforcers, but they do have an education role now and it would be nice to actually develop that side, because we actually, we all want to achieve the same thing and you know, bring along a carrot instead of a stick, you sometimes make more progress* (F3).

F2 also indicated that simply being privy to policy rationale was not necessarily enough to appease farmer knowledge autonomy. For F2, they did not want to simply be *given* the data by their local council, they wanted to dissect the data alongside their local councilmen:

> *I want, I would love the council to come up my drive, and they say hey, how you going, want a cup of tea, let's have a cup of tea, how's the farm environment plan going? Oh yeah, everything's up to scratch, cool, you wanna go check out how those trees are going out the back of the farm? How's your water quality testing going? Good, here's the data. But that's it. Then they can come back and say, look I've put all this data together, your farm is contributing to this, and we've reduced it to this much and with your neighbors all on board, it's fantastic, here's a photo of a fish we haven't seen in the river for a hundred years, or something like that, like, that's how it should be (F2).*

F2's indication that they wanted "the council to come up [their] drive" and discuss regulatory measures (such as water quality and their farm environment plan), represented F2's individualised preference for policy deconstruction. Whilst this form of policy engagement may not be preferential amongst all farmers, it does represent the diversified ways in which policy can be absorbed by farmers. Many farmers may not be content with simply receiving policy instruction; they may want to experience and visualise policy implications. This again exhibits the importance that farmers place upon knowledge sharing rather than mere one-way policy instruction.

During the interview process, it also became evident that many interviewees felt as if their knowledge autonomy was contingent upon the accessibility of knowledge. If industry-based information was overly standardised or unnecessarily complex, the interviewees were less inclined to read it and subsequently absorb it:

> *I found it, what I like with Fonterra, is they have a discussion after, and all the farmers ask questions after and that's when I began to understand what they were actually talking about. I don't want to sit there for an hour, not knowing (F7).*

In this statement, F7 describes how they struggled to comprehend the jargon-laden knowledge brokering of Fonterra. Evidently, F7 was only able to fully comprehend the information conveyed by Fonterra when that information appealed to their own familiar and regular dialogues.

It is apparent that a farmer's sense of autonomy is strongly linked to their ability to access, produce and share knowledge. This knowledge autonomy is not a homogenous conception; it is understood and realised by farmers in a multitude of diverse ways, such as receiving information in familiar modes, working alongside council members or by opening one's farm gates to the general public. Though diversely expressed, the farmers' understanding of autonomy clearly involves a profound personalisation of knowledge.

4.2 Autonomy as a Collective

During the interviews, I explored how farmers operated in conjunction with other farmers, non-farmers, their cooperatives and their local council. This revealed whether the interviewees felt stifled or relatively empowered by their relationships, connections and collective systems. As suggested by the literature, interviewees who felt connected to others often experienced a greater sense of individual autonomy than those who felt detached from their community.

Notably, many of the interviewees indicated that farmer collectivity was an integral component of the farming lifestyle. As depicted by F4 and F1, farmers like to "help each other" (F1) and act "in unison together" (F4):

> *It's like we all help each other, our neighbours, our friends who are local farmers, my neighbour, we all get together and they'll do one farm, so it's like for a few weeks we're doing*

each other's farms, so we've got six people helping out, but yeah afterwards, whoever is doing that farm usually, by an unwritten rule has to provide dinner and beer, because we do that after milking at night (F1).

There is a longing for that cooperative nature amongst farmers, so they become in unison together, a united unit together (F4).

By acting collectively, many of the interviewees were able to regain a sense of personal autonomy; namely, by sharing resources, by bolstering the collective farmer voice and by improving farmer-based knowledge systems. Within the interviews, a sense of reinforced autonomy via collective resource sharing was particularly apparent:

Just to help each other out sometimes, so there's always things that can go wrong in a neighborhood, either due to climate or criminal activities, or whatever, or for instance, you need a tip trailer because there's, because you're going to do some work on your farm so you go to your neighbour and say can I borrow your trailer or can I borrow your tractor, or they come to us and say can I borrow your wheelbarrow, we just finished half a silage paddock, so you help each other out, that is the neighbourly thing to do, yeah (F4).

In this example, F4 drew upon collective resource sharing to circumvent the limits imposed by material shortcomings. By sharing resources, F4 was not constrained by missing wheelbarrows or tractors; F4 could continue to operate normally. This resource sharing ability was therefore able to promote F4's sense of operational stability and operational autonomy. By relying upon others, F4 could also alleviate any potential autonomy loss derived from unpredictable "climate or criminal activities". This sort of resource collectivity demonstrated by F3 is freely entered; it flows from neighbourly sentiment rather than organisational compulsion. This voluntary coordination of individual and group interdependencies seemed to characterise how the farmers understood their autonomy.

This sense of collective autonomy extended beyond farmer/farmer relationships. Various interviewees expressed the importance of bringing farmers and non-farmers together to all "sit at the table" (F2) during sustainable initiatives. By working with non-farmers, interviewees such as F1, believed that they could produce "better solutions" (F1) to environmental problems. By enhancing their mitigative capacity, the interviewees could ultimately improve their capacity to act and thereby improve their personal sense of autonomy.

In fact, the interviewees often relied upon these non-farmers to improve the efficiency of their farm's operation. For example, F3 routinely relied upon contractors and other professionals to alleviate on-farm disaster situations:

> *And developing good relationships with them [professionals] certainly makes it easier if you really need someone, so for instance even a contractor that I use for doing all the earth works on the farm, um, if I had a culvert that collapsed and I need to get him, he would get his digger in today kind of thing. So, that's developing relationships that will help me because I'm important to them too (F3).*

Here, F3 indicates that their "good relationship" (F3) with their earth works contractor ensured that they would have immediate assistance ("get his digger in today kind of thing" F3) whenever disaster struck. This would have likely granted F3 with a reinforced sense of certainty regarding land-based farm disasters; ultimately, this may have increased F3's sense of control and autonomy over their own farm. Evidently, a collapsed culvert prevented F3 from moving freely across their farm; a "good relationship" with their contractor restored that autonomy. F3's relationship with their contractor was also reciprocal, thereby indicating that farmer-to-non-farmer relationships operate similarly to farmer/farmer relationships.

These autonomy-supporting relationships involved high levels of interpersonal trust. When an interviewee did not trust a non-farmer actor within their network, they seemed to experience a loss of autonomy; specifically, as they did not feel as if the non-farmer actor had their "best interests at heart" (F7). For example, when F8 expressed distrust and discontent towards their veterinarian, they felt as if their vet was ordering them around rather than engaging in an open dialogue:

> *The genuine vets, who aren't straight out of Uni or whatever, have a few years under your belt, they will ask how the cows are going, how the farm is going and they will just make it all a big conversation, instead of making it, oh, we've got to do this, you just tell them, oh yeah if you can add that, that would be good and then they sign off and it's not a big deal, now days it's a marathon to get it done (F8).*

According to F8, vets need to be personally "genuine" in order to be a trusted collaborator rather than an external authority that diminishes one's sense of personal autonomy.

For various interviewees, trust with non-farmers was developed through constant communication and the establishment of back-and-fourth communicatory systems. For F2, they desired to simply "have a cup of tea" and openly discuss regulation with their local council representative. For F5, their ability to trust and work with the council was seemingly dependent upon their ability to communicate as equals with their local council representative:

> *We had [the local council person] come and she was here yesterday, but she was actually really useful, because I had applied… for funding, for fencing … and she was the one who said… "I can probably get you some help with that, I can probably get you some funding, want to fence these trees, well, I'll get you some funding (F5).*

As articulated by F5, F5 and their local council person were working together to create compromises in order to reach regulatory standards. This working together did not remove F5's critique of council policy, but it did improve their access to council resources such as funding and advice. This relationship therefore bolstered F5's ability to autonomously request and receive assistance. Overall, working with the council seemed to not only improve an interviewee's access to resources, but also an interviewee's sense of personal autonomy. And when an interviewee worked *alongside* rather than *against* the council, it seemed as if the interviewees had no "issues" (F2) in accepting council advice:

> *I've never had an issue with the regional council, they've been really good, I've got a really good, there are two, three parts to the council I guess, there's a drainage board, there's effluent inspectors, there's also another huge riparian planting scheme, (inaudible), I just ring those people, they give me the advice I need, they're amazing, they're really good, no issues, aye (F2).*

For F2 their trust in the council granted them with improved access to knowledge and resource sharing systems. By acting collectively with the council, F2 seemed to gain a degree of personal autonomy when attempting to maintain regulatory standards. This personal autonomy likely stemmed from their ability to readily receive council advice and assistance. Ultimately, in this situation, F2 was able to improve their farm whilst simultaneously conforming to council advice. This reiterates the notion that simply submitting to regulation does not always eradicate one's personal sense of autonomy. For the interviewees, their sense of autonomy was usually only threatened when regulation and/or direction originated from an untrusted source. By working collectively and communicating openly with the council, many of the interviewees did not view the council as an untrusted source.

Interviewee's who were unable to establish a connection with their local councilperson were often unable to establish effective knowledge and resource sharing systems with their local council. For F9, their local councilperson would simply *'type up their report and then [F9] never hear from them again' (F9*). This caused F9 to doubt their local council:

> *The council comes down here, which is a totally different soil type and if it's just showered, they'll say well, why are you irrigating today, because in Hamilton you can't do that, and they go oh, their terminology is a bit not clever, they go, what depth are you irrigating to today and I said well, the question is how much am I applying is it not, and they go no, no, what's the moisture going into the layer of the soil and I said well, doesn't that mean well, what am I applying today?(F9)*

Here, F9's poor relationship with their local councilperson resulted in a sort of communication stalemate. These stalemates seemed to prevent the development of effective collective autonomy. In the absence of such autonomy, regulations can seem '*ridiculous*' (F5) and '*unnecessary*' (F1) and by adopting such regulation, farmers are explicitly acting against their own will. Additionally, by refusing to submit to government regulation, rather than willingly comply, farmers (such as F9) feel as if they are constantly battling to obtain autonomy.

On another note, throughout the interviews, it became apparent that working within a communal system boosted autonomy via the process of collective "voice sharing". Interviewees who operated on collaborative environmental boards or who actively participated within their cooperatives often expressed a sense of having a "big voice" (F3):

> *I think farmers tend to forget that they actually do have a big voice. They can get involved with their cooperative or their local community and actually make a change or do what they want to do (F3).*

This notion of having a "big voice" can be interpreted as "having the autonomy to speak and be heard". When interviewees felt as if they had a "big voice", they felt able to exact meaningful change in their community. This sentiment is reflected in F2's statement:

> *And I'm proud to be a part of a cooperative, it's really important, cause they, we don't know, in terms of what you were saying before about the catchment, how do we group together, well we've actually already done that in a high sophisticated business down at our local dairy*

factory in a cooperative and that makes me proud, to be able to actually work together and do something good for the environment (F2).

Evidently, F2's ability to "do something good for the environment" relies in part on the collective nature of the local cooperative. As F1 suggests, working collectively with their cooperative replaced external direction with a sense of personal improvement.

Most of the time it[cooperative meetings] end up being, just in our community, I'd say 8 out of the 12 people there are my boss' best mates, they all take the piss out of each other and they all just end up drinking . . . but, you can't be going to those meetings and just be winging it, it's good in that aspect, it means you have to always be professional in your job. (F1).

As articulated by F1, collectives can enhance farmer autonomy by combining interpersonal informality with professional competence and responsibility, allowing farmers to pursue goals which they see as their own. By attending cooperative meetings and by meeting fellow cooperative members, F1 was encouraged to always be "professional in [their] job" (F1). Presumably, this sense of cooperative-based improvement increased both F1's and F2's perceived personal sense of competency (a component of autonomy).

Conversely, when farmers sense that their voice is not being collectively received, they may find themselves unable to "say anything" at all (F7):

Some farmers chose not to say anything, because they just don't know if their point is right or if anyone is going to have their back so they just keep it to themselves (F7).

As demonstrated by F7, a lack of communal support may provoke utter powerlessness amidst certain farmers. According to F7, when farmers feel as if "no one" has their "back", farmers may feel unable to voice their opinions, ideas and beliefs. This may ultimately result in many isolated farmers feeling helpless and nonautonomous. For F7, a newly budding farmer, with minimal collective involvement, this reality appeared to be true:

F7: At this stage, I don't know, I don't think people would listen to me much, but I don't really have anything to say.

I: Do you just kind of feel like a cog in the machine then?

F7: Yes, exactly.

This again harks back to the empowering role of communication. The farmers who could simply "have a conversation" (F2) with the cooperative leaders and fellow members, tended to approve of cooperative regulation; namely, as they likely felt well-informed and instrumental within the regulatory process. Participating in collective decision-making also resulted in a sense of shared identity in which farmers were able to regulate themselves:

> *If we don't take ownership and show that we are doing the right thing as a collective, then regulation is going to be put on (F2).*
>
> *[F1's collective] they'll laugh and take the piss out of those who aren't doing it right, doing the right thing (F1).*

Clearly, "doing the right thing" is more than simply complying with "put on" regulations. And having 'the piss' taken out of you by fellow, valued, collective members has a personal bite lacking in more externalised systems of reward and punishment. As this section has demonstrated, the collectives that enhance and make effective use of farmer autonomy are not limited to those made up solely of farmers. Many interviewees viewed themselves as an integral part of wider set of social relationships and shared fortunes:

> *Farmers go by those communities and the communities thrive by the farmers as well (F4).*

Evidently, the ability to act collectively is a fundamental feature of personal, farming autonomy. Throughout the interviews, it became apparent that communality bred autonomy. Farmers who had access to shared resources, dialogic communication, professional networks and cooperative support often expressed a sense of their own ability to "make a difference". Drawing upon the support of others enhanced the farmers' ability to act autonomously and to influence regulatory policies, rather than simply seeing them as the will of someone else.

4.3 Autonomy as Money

During the interviews, the concept of money and debt emerged unprovoked. This was unexpected as the interview schedule did not contain any direct reference to the interviewees' financial situations. However, given the focus on independence and autonomy, the topical emergence of money was likely

inevitable. For younger interviewees (F7), a fear of debt tainted their desire to be a farmer, whilst for more experienced farmers (F9), financial insecurity seemed to characterise their farming experience.

For F7, the potential experience of owning their own farm was marred by the need to "have to throw [money] at something":

> *Yeah, but to be completely honest, the thing that puts me off is that so much is changing with farms, like the government is getting harder and harder and harder, like it's not going to become impossible, but at the end of the day, it's just all this money that we are going to have to throw at something and it's like the cows can only cover so much, so I would like to, if that day comes I wouldn't mind to own my own farm, but… (F7).*

This idea of "throwing money" stirs connotations of financial waste without fit purpose or intent. For F7, this "throwing" is not born from their own desires; it is something she feels will be forced upon her, such that she risks going against her own interests and desires. F4 expressed a similar idea of being "forced to act" by monetary considerations:

> *Yeah, it all makes sense, um sometimes the milk price can hold you back, but then you've got the banks also are an in influence in the background, they monitor your farming operation, and um they don't want you to go backwards either of course. So, they are definitely a part of the orchestra (F4).*

Here, this idea of being "held back" evokes images of restriction and inaction. Evidently, one cannot act in accordance with their own interests if they are being limited by some external force (such as milk pricing). When summarising the influence of money and debt in their lives, F4 also indicated that the banks were "a part of the orchestra". In this sense, "the orchestra" can be interpreted as F4's life. This then suggests that money and everything it entails was an uninvited guest within F4's life: an uninvited musician upon the stage.

For various interviewees, their first step in becoming a farmer meant significantly going into debt. This indebtedness was often justified as a path to autonomy in the future, a future that often remained distant:

> *I invested heavily, at one stage I borrowed a hell of a lot of money, so I was a very uh driven person with a lot of that, and a lot of cows a lot of farms and it probably put my business a little bit on edge, but my whole life I've been doing that (F4).*

As F4 suggests, autonomy is linked to debt in two often conflicting ways. On the one hand, debt is taken on as a means to enhance future autonomy. On the other hand, however, the weight of debt can strip away any experience of personal autonomy due to its burdensome, immobilising nature.

> *[Not having any time] that's just dairy farming and because we don't have a whole lot of staff and because we have vast amounts of debt, we just do it, we just get up and do it (F5).*

For F5, the everyday running of the farm was overshadowed by the lingering presence of debt. Servicing this debt forced them to act, to "just get up and do it", sacrificing their time and aspirations. Debt can thus severely deplete a sense of personal autonomy. It can lock people in place; for example, a number of interviewees indicated that they felt unable to leave their farm due to the presence of accumulating debt and the occupational commitments it entailed:

> *F1: I hated it (farming), but I persevered for the family I was looking after and one month led to two months, you can't sort of up and leave when you get a home with a job, so I just preserved, and I found bits that I enjoyed.*
>
> *I: Did you feel trapped?*
>
> *F1: I did, sometimes I still do, um I don't know have any other qualifications, but at the same time I've lived rural now for so long so when I visit family and friends in town, I can't stay long.*

For F1, debt and financial requirements resulted in a sense of entrapment. For him, farming was more a matter of necessity than choice.

Furthermore, for various interviewees, money and the lack thereof, prevented them from engaging in environmental collectives and conservation initiatives. This notion is apparent within F5's following sentiment:

> *Yeah, but the cows are the ones that produce the money, if you can't, if you haven't got the money, you can't do any of the [environmental conservation] stuff, and frankly we shouldn't have done any of the other stuff (F5).*

Here, F5 is describing their desire to engage in sustainable ventures, (specifically, planting swales and native trees on their farm), and yet, due to their monetary constraints, F5 had to prioritise their farm's "money makers" i.e., the cows.

For F3, who was happily retired and financially secure, these financial constraints were no longer an issue, and thus F3 could be directly involved with environmental collective initiatives:

> *I: Why do you think that you're involved in these environmental collectives now that you're retired?*
>
> *F3: I think it's just a time of your life of what you're involved with them, so when we're in our thirties and early forties, we had our young families, we were trying to get ahead on the farm, it was just career and family took priority really, but, now at this age, we've, I don't have to be out there milking every day, the kids aren't waiting for me to take them to sports practice, it's just a change of life.*

Overall, when considering how farmers conceptualise autonomy, it is important to acknowledge the immaterial and material consequences of money and its related time commitments and priorities. As demonstrated in this section, without the proper resources, a farmer may not be able to act in accordance with their own understanding of autonomy.

4.4 Autonomy as Responsibility

Throughout the interviews, it became evident that the farmers understood autonomy as involving the capacity to be responsible for the land and themselves, now and in the future. This theme was unexpected as it did not figure explicitly in the existing literature. It is also an intriguing result, given that it seems obviously counter-intuitive. Being held responsible is surely something that limits someone's ability to act autonomously. The interviews made clear, however, that this is inexact. Indeed, in such a situation, denying the ability to be responsible erodes ones' sense of personal autonomy. Hence, in this section, autonomy is characterised, not as freedom *from*, but rather as freedom *to*, i.e., the freedom to act.

Notably, many of the interviewees expressed a sense of responsibility regarding land ownership; they felt as if it was their responsibility to care for and preserve their land. This notion is succinctly expressed by F5:

> *It's a privilege isn't it, to own land, it is a privilege, but with privilege comes responsibility (F5).*

In F5's statement it is evident that land-based 'responsibilities' lie within the hands of the farmer, not the council. Thus, when a local or regional council imposes their own regulations upon a farmer's land, however inadvertently, they are undermining that farmer's ability to be responsible. Many of the interviewees wanted to decide how their farm was conserved; this, they understood, was to be *their* responsibility. This sense of responsibility was often accompanied by interviewee references to landscape stewardship. As described by F4:

> *The underlying theme of every farmer is that they want to be a good steward to their land, and they want to leave it in a better place than they got it (F4).*

As described by F4, stewardship also involves leaving the land "a better place than [one] got it". This demonstrates how the concept of future responsibility is also interwoven throughout the idea of farmer stewardship. Here, future responsibility can be understood as the responsibility to protect and preserve the future. Many of the interviewees realised that their sense of responsibility was not a transient thing; their sense of responsibility and the resultant impact of their responsibility extended into the future. For example, an interviewee's decision to "plant riparian vegetation along a stream" (F2) would ultimately impact the future ecological integrity of that environment.

This idea of preserving the farm for future generations was apparent within many of the interviews. Many interviewees viewed themselves as a part of ever-changing, long-term ecological system; a system wherein their actions would have future consequences.

> *I know that it will make a difference in the future. I want my kids and my kid's kids to be able to swim in our rivers. I think that's partially why I do what I do, but also because I just want to do it…it's also neat to know that your actions may help the future ecosystem. I think a lot of farmers are encouraged by that idea (F2).*

During the interviews, it also became evident that future stewardship not only represented a responsible preservation of the land, but also the responsible preservation of future generations. This was evident as many of the interviewees wanted to "pass on" (F1) their farm (and ultimately their work) to the next generation. This intergenerational adoption of the farm provided a way for farmers to continue their legacy. As stated by F1, most farmers encouraged and pressured their children into taking on their farm:

> *They hard out try and pass it on to their next ones, because a lot of it, a lot of these dudes that are doing the farming are thinking of their kids (F1).*

Therefore, not only were many interviewees preserving the future of their land, but they were also preserving their legacy as stewards. As demonstrated by the statement below, F2 felt as if their legacy could be maintained by engaging in landscape stewardship:

> *You'll be leaving a legacy for future generations, so that's the sentimental stuff (F2).*

It is this "sentimental stuff" which motivates F2's pro-environmental behavior and landscape stewardship.

Moreover, throughout the interviews, it became clear that individual farmer responsibility was dependent upon an interviewee's personalised sense of morality. Their ability to act upon their own morality was integral to their own sense of autonomy. Many of the interviewees indicated that they wanted to act upon their *own* moral values rather than upon mere council instruction. For many interviewees, being required to act according to someone else's values was to be treated morally like a child:

> *It doesn't feel right that they're [the council] the ones telling us not to do something, shouldn't I be able to know not to do it already? I don't need them holding my hand. That's how it feels. That they're always holding my hand … our hands are tied most of the time (F5).*

As is evident in F5's statement, if you are denied the ability to hold yourself responsible, you lack basic autonomy; essentially, your "hands are tied" (F5).

For many of the interviewees, being responsible meant relying upon their own sense of "what was right". For example, F1 felt that it was imperative for farmers to be in control of how waterway protection occurred upon their own farms:

> *It's an important decision [how to monitor and mitigate water pollution], right, a lot of these things are, so I think I'd feel better or my boss will feel better if you have more control over these decisions. Like, we should know what is right, what to do already...but if the council wants you to do something, do that, do this and it, these people are becoming more authoritative, if they let farmers decide, if they gave farmers control over where they could, that would give them more incentive to be a part of it (F1).*

Evidently, F1 indicates that as farmers, they and their boss would prefer to be granted with the autonomy to be responsible for changes on their farm. They do not want to be told to "do this" and "do that", they want to be given "control" over decision-making. F1also indicates that autonomy as responsibility does not imply moral isolation; it is an "incentive to be part of it" (F8). Joining in is not a matter of submission to external controls. Indeed, one interviewee felt that if anything, farmers had become inured to doing what they are told to do.

> *I think farmers are now submissive, they get told that's what we're doing and everyone's like okay, there's no point fighting it because whenever you protest it, like that one, we got no response from that protest, from Jacinda, so you don't say anything and if you do, it's just going to get blown over anyway (F8).*

Overall, the ability to hold oneself responsible and to act upon this basis is an important part of how the interviewees understood their autonomy. Their autonomy to be responsible maintains a future-oriented morality focussed on landscape stewardship in which farmers imprint an abiding legacy onto the land that is to be received by coming generations.

4.5 Chapter Summary

This chapter has presented the results of the interviews that took place with nine dairy farmers in the Waikato region between June 2021 and August 2021. The results were presented in four different themes: Autonomy as Knowledge, Autonomy as a Collective, Autonomy as Money and Autonomy as Responsibility. These themes represent the diversity in which farming autonomy can be understood.

The results of this study have shown how farmers need to share, exchange, and receive knowledge in order to function autonomously. The results also illuminate how farmers can draw upon communal networks and collective bodies to bolster their autonomy. This investigation has also exposed how for many farmers, money and debt are major hindrances to their realisation of farmer autonomy. In the final section of this chapter, I explored how farmer autonomy is linked to a farmer's sense of responsibility. This section revealed how farmers understood their autonomy as their perceived right to maintain their land now and in the future for both themselves and future generations.

The findings of this study therefore reflect many of the concepts embedded within the literature review of this thesis. The results have reaffirmed many scholarly theories regarding the interconnection between farmer autonomy, farmer knowledge and farmer collectivism.

The next chapter will draw together the analysis of these results with the relevant literature. This discussion will ultimately reveal connections between the results and the literature whilst simultaneously divulging the real-world implications of this research's results.

Chapter 5: Discussion

In chapter 5, I explored the variability of autonomy as understood by 9 New Zealand dairy farmers and synthesised these variabilities within 4 autonomy themes.

1) Autonomy as Knowledge,
2) Autonomy as a Collective
3) Autonomy as a Money,
4) Autonomy as Responsibility,

In this chapter, I explore the research question - "How do farmers understand autonomy and how is this understanding significant for environmental management in New Zealand"? by undertaking a vigorous analysis of farmer autonomy in the context of the aforementioned themes.

Since an important part of this research is to determine how farmer understandings of autonomy are significant for environmental management in New Zealand, I will discuss the implications of each theme for environmental management and specifically tailor these implicatory discussions for agricultural policymakers and environmental collective leaders in New Zealand. These two agents have been chosen as they are both key figures in the ground-up and top-down management of agriculture in New Zealand.

5.1 Autonomy as Knowledge

Throughout this study, it was revealed that the interviewees often embraced their farmer autonomy via their ability to share, receive and gain knowledge. In fact, many of the interviewees equated their ability to be autonomous with their ability to be knowledgeable. This is significant for environmental management as it illustrates the need to develop management systems which better support farmer knowledge exchange. In this section, I will therefore explore farmer "autonomy as knowledge" and its role in agriculture management; specifically, in both policymaking and environmental collectives.

To begin, it is first apt to consider how the interviewees' ability to access policy knowledge influenced their sense of autonomy. For many of the interviewees, being privy to policy information granted them with a sense of empowerment; namely, as they were able to better understand and enact regulation. The interviewees with policy awareness were also more willing to accept regional policy. Contrastingly, the interviewees who felt as if they could not access policy rationale, often felt as if they were being forced to act in an unreasonable manner, incongruent with their usual behaviour. For example, F9 reported feeling "forced to conform" to policy for no valid reason. For F9, this resulted in them feeling unwillingly coerced by the council. In the literature, this is referred to as feeling "externally motivated" (Cheshire, Higgins & Lawrence, 2007; Cooke, Fielding & Louis, 2015). According to Cheshire, Higgins and Lawrence (2007), when one feels "externally motivated", they are likely to feel unable to act in accordance with their own interests; hence, a state of nonautonomy is born. As such, farmer "autonomy as knowledge" is significant for environmental management as it influences both farmer autonomy and farmer uptake of policy. For policymakers this is particularly significant. In order for policymakers to bolster farmer access to policy knowledge, policymakers may need to develop the transparency of policy information (Wiskerke et al., 2003). This may involve councilmembers taking a more active role in distributing policy information (as requested by F2). Furthermore, every piece of information provided to farmers may need to align with a farmer's individual mode of learning and uptake (Ingram, 2010). In doing so, policymakers can drastically improve the transparency, relatability and accessibility of policy information for farmers (Fan et al., 2015). In terms of developing knowledge transparency in environmental collectives, environmental collectives can dedicate in-group time to the clear delivery and distribution of policy information (Wiskerke et al., 2003). This may be particularly pertinent for farmer collective leaders who can essentially "translate" policy information into familiar, farmer dialogues, thereby improving the accessibility of policy knowledge (Westerink, Termeer & Manhoudt, 2020). This relates to the next component of "autonomy as knowledge": knowledge accessibility.

During the interview process, it became evident that many interviewees felt as if their knowledge autonomy was indeed contingent upon the *accessibility* of information. If policy information was unnecessarily complex, the interviewees were less inclined to read it and subsequently absorb it. This is particularly enlightening, as it suggests that even minor details regarding how information is displayed may alter a farmer's sense of knowledge autonomy. Interestingly, this somewhat relates to Rust et al. (2021)'s theory which states that farmers are much more likely to absorb policy information if that

information originates from a familiar source (i.e., a local farmer's group on Facebook). In terms of environmental management, knowledge accessibility may therefore be achieved by reprioritising how information is delivered to farmers. For example, policymakers can defer from providing dry, jargon-driven reports to farmers and instead bolster the knowledge brokering role of farmer spokespeople and collective leaders (Nguyen & Evers, 2011; Pettit et al., 2011; Rust et al., 2021). This suggestion supports Phoenix, Atkinson and Barker (2019)'s research which emphasises the important role of farmer spokespeople in distributing agricultural knowledge to farmers. Moreover, as described by Garforth et al. (2004), local and personal contacts, as opposed to more distant and impersonal sources, generally have more influence on farmers than non-farmers. Thus, the bolstering of farmer spokespeople may have a positive effect upon both a farmer's sense of knowledge autonomy and farmer uptake of future agricultural policy (Garforth et al., 2004). In the Waikato, due to the interviewee's perceived inadequacy of regional policy, this bolstering of a farmer spokesperson is particularly imperative. By having a spokesperson, and/or farmer collective leader to clarify council documents, Waikato farmers may feel less externally motivated by seemingly "stupid" (F9) policy instruction. Also, by having this personal linkage between farmers and the council, farmers may feel more connected to the council (Botha, 2019). And as will be discussed in the next section, this is evidently important for farmer "knowledge autonomy".

Many of the interviewees expressed that their ability to be knowledgeable had been hampered by their inability to operate alongside the council. In fact, during the interviewees, many participants lamented their inability to properly "work with" (F2) the council via the policymaking process. For various interviewees, they felt excluded from policy-related decision making. F5 identified this exclusion as the burgeoning gap which existed between those who created policy and those who enacted policy, i.e., the farmers. This aligns with Kleijn et al. (2019)'s assessment that there is a growing scientific divide between those who *know* agriculture and those who *do* agriculture. Alarmingly, for many interviewees, this divide meant that they were not being "listened to" by the council. In general, many of the interviewees felt as if their knowledge was being shunned in favour of more traditional, expert-driven modes of knowledge. This reflects Dieleman (2014)'s and Carolan's (2006) theories on farmer knowledge suppression. According to these studies, the shunning of farmer knowledge is nothing new. Throughout recent decades, farmer knowledge has been routinely sidelined for the purpose of prioritising metrocentric, expert knowledge (Dieleman et al, 2014). This study evidently expands upon Dieleman et al. (2014's) theory by demonstrating how farmer knowledge suppression can also have

impacts upon a farmer's sense of knowledge autonomy. To prevent this marginalisation of farmer knowledge in agricultural knowledge exchange networks, a two-way rather than a one-way knowledge system may need to be developed betwixt farmers and policy makers (Clark & Murdoch, 1997; Collins, 2018; Millar & Curtis, 1997; Schindler, Graef & König, 2016; Sewell et al., 2014). This two-way knowledge system must operate in a manner which equally prioritises farmer and expert knowledge, converges modes of communication (i.e., using language both familiar to farmers and experts) and merges data-driven and experiential knowledge (Botha, 2019; Collins, 2018). This may ultimately improve a farmer's ability to work with (rather than against) the council.

When interviewees did have the ability to "work with the council" they often emphasised this need for a two-way knowledge exchange system. Meaning, that the interviewees wanted to share knowledge rather than simply receive it. For example, interviewee 2 desired closer contact with his local councilmen, not for the purpose of gaining knowledge, but for the purpose of sharing knowledge. This emphasis upon farmer knowledge dissemination was notable as it provided a new insight into how farmer knowledge autonomy operates. This new insight revealed that for farmers, *sharing* knowledge is just as imperative as *gaining* knowledge. This insight is significant, as it suggests that farmer knowledge autonomy may be bolstered via farmer-based knowledge sharing, rather than simple farmer-based knowledge provision. This assertion contradicts Hughes (2007) who implied that farmer knowledge autonomy may be obtained simply via farmer "upskilling" (here, "upskilling" refers to the teaching of new skills to farmers). Evidently, farmer knowledge autonomy is not only bolstered via external knowledge input, but also via farmer knowledge dissemination. This finding more closely aligns with Coolsaet et al. (2016)'s assessment of farmer knowledge; their assessment exposed how farmers can attain knowledge autonomy via the promotion of farmer knowledge in knowledge exchange systems. To further support farmer autonomy, policymakers and industry leaders may therefore need to reidentify farmers as valuable knowledge sharers (Allan, 2005; Brugnach, 2017; Ingram, 2014). This may involve developing, supporting and funding farmer-led groups such as the Piako Catchment Forum; specifically, as these groups focus heavily upon inter-group knowledge sharing (Piako Catchment Forum, 2021). In the Waikato, these groups are also responsible for sharing their findings with district and regional councilmembers; hence, reinforcing a farmer's autonomous ability to shape regional policy (Ministry for the Environment, 2012).

Expanding upon the role of farmer knowledge dissemination, this study also revealed that many farmers no longer felt as if they could draw upon their own unique "way of knowing". Specifically, many of the interviewees felt as if they could not share their knowledge in a manner which aligned with their own "way of knowing"; instead, they were forced to standardise their knowledge for the sake of council guidelines. Many of the interviewees felt as if they could no longer rely upon their own systems of measurement, experience and observation to guide their knowledge, instead, they had to reply upon council systems of data monitoring, data collection and data reporting. This meant that the interviewees felt as if they had a reduced ability to gain and produce new knowledge. This supports Verdonk's (2019) theory which suggests that the organisational dismissal of the farmer's "way of knowing" has reduced the ability of farmers to rely upon their own innate knowledge systems. And by reducing a farmer's ability to act in accordance with their own "way of knowing", farmers cannot act in accordance with their own sense of self (thereby limiting their ability to be autonomous) (Verdonk, 2019). For policymakers to address the significance of "farmer ways of knowing", policymakers may need to reappraise how policy information is retrieved, developed and delivered (Duncan, 2016; Feldman et al., 2006). In terms of retrieving policy information, policymakers may want to deprioritise typical systems of expert-based knowledge in favour of drawing upon farmer-based knowledge (Coolsaet, 2016; Duncan, 2017). For example, Waikato policymakers may choose to harness the knowledge provided by farmers in collectives such as *Rivercare Trust*, *Piako Catchment Forum* or *Friends of Barret Bush* (Department of Conservation, 2022). By drawing upon farmer knowledge, policymakers can appeal to a farmer's autonomous desire to give as well as receive knowledge. To improve this system, environmental collective leaders can also encourage farmer members to utilise their own systems of measurement when collating environmental data (Oliver et al., 2012).

Evidently, the way in which the interviewed farmers shared, received and accessed knowledge influenced their understanding of farmer autonomy. If the farmers felt as if their ability to participate within knowledge exchange networks had been diminished, they often felt unmotivated, powerless, and "left in the dark" (F7). This linkage between farmer autonomy and farmer knowledge is profound; namely, as this linkage may have a substantial impact upon how farmers are integrated within environmental management systems. Presumably, if farmers are not granted with knowledge autonomy, they may be dissuaded from participating within environmental management systems. And consequently, policymakers and environmental collective leaders may need to reconceptualise how

farmer knowledge is integrated, displayed, retrieved and developed within agricultural management systems.

5.2 Autonomy as a Collective

For many of the interviewees, it seemed as if their ability to act collectively supported their individual sense of autonomy. Namely, as it was their ability to rely upon others, share resources and exchange knowledge which solidified their potential to be independent. Whilst rather oxymoronic, this sentiment does reaffirm Stock and Forney's (2014) idea that farmer interdependency oft promotes autonomy. This revelation has significant implications for environmental management; hence, in this section I will also explore the real-world implications of "autonomy as a collective" for both policymakers and environmental collective leaders in New Zealand.

Throughout the interviews, various interviewees described how they willingly operated within collective systems. Various interviewees even described how they *relied* upon these systems to operate effectively. This sentiment contradicts Emery's (2014) indication that farmers tend to feel "more autonomous" when operating independently. Also contrary to Emery's (2014) assertion, the interviewees did not view their farmer neighbours as "natural competitors" (p.1) from which independence must be sought, rather, they viewed their farmer neighbours as people on whom they could depend upon. Many of the interviewees stated that they did not seek to "compete" with other farmers, they sought to "work" (F1) with other farmers. For many of the interviewees it seemed as if "working with other farmers" (F1) enabled them to be independent. And hence, the results of this study are more closely aligned with the theories proposed by Stock and Forney (2014); according to Stock and Forney (2014), it is farmer *collectivism* which often breeds farmer autonomy. Thus, in terms of environmental management, farmer understandings of "autonomy as a collective" are significant; specifically, as they can be recognised in agricultural management to develop a farmer' sense of autonomy. This recognition can be present in both policymaking proceedings and collective, environmental initiatives. In order to recognise "autonomy as a collective" collective leaders and policymakers can promote modes of farmer communality. In collectives, this bolstering of farmer communality can occur via the promotion of knowledge exchange, trust, resource sharing, feelings of relatedness and competence amidst farmers (Berno, 2017; Wynne-Jones, 2017). The promotion of resource pooling may be particularly imperative for "autonomy as a collective"; many of the

interviewees who had greater access to communal resources often reported an enforced sense of control, opportunity, financial mobility and on-farm, operational stability. In turn, policymakers can recognise "autonomy as a collective" by building institutionalised systems which uphold these communal values (Wynne-Jones, 2017). Whilst difficult due to the rather abstracted nature of farmer communality, this may occur through the formal promotion of collaborative farming, farmer resource pooling, farmer social networks, systems of labor exchange and shared farmer infrastructure (Chaudhuri et al., 2021; Government of South Australia, n.d; Sarker, Ross & Shrestha, 2008).

Notably, despite the varied "autonomy benefits" of collectivity, as revealed within Chapter 5, autonomy via collectivity is conditional; farmers only experience autonomy via collectivism when they trust the actors within their collective system. When farmers operate in untrusted collective systems, mistrust often diminishes one's sense of internal motivation (Akinnage & Avaji, 2010; Koutsou, Partalidou, Ragkos, 2014). According to Farmer et al. (2011) this can often prevent farmers from participating in collective, environmental initiatives. The role of collective trust is therefore significant for environmental management as it integral to the establishment of both farmer autonomy and farmer motivation. To address the integral role of trust in developing "autonomy as a collective", policymakers and collective leaders may need to focus upon building trust amidst farming communities, networks and partnerships (Botha, 2019; Megyesi, Kelemen & Schermer, 2011; Palmer et al., 2009). As demonstrated via the literature, trust is typically less attainable in farmer/non-farmer relationships than in farmer/farmer relationships; consequently, councils may need to focus upon developing trust between policymakers and farmers (Garforth, Bailey & Tranter, 2013; Noy & Jabbour, 2019; Richens et al., 2015; Sharp & Smith, 2003). According to the European Centre for Nature Conservation (2004), this reaffirmation of trust can be developed by respecting farmer local knowledge, ensuring that policy instruction is not wholly based upon compulsion and by ensuring that farmers are considered in a positive light. Furthermore, trust may need to be developed in environment collectives, especially collectives (such as the Piako Catchment Forum in the Waikato) which rely upon the input of both farmers and non-farmers. To build trust amidst environmental collectives, non-farmers within the group may need to link themselves more closely with the rural agenda, specifically by sharing farmer perspectives and by communicating more frequently with farmers (Marshall, 2004; Oliver et al., 2012; Raya, 2016; Sjölander-Lindqvist, Johansson & Sandström, 2015).

For many of the interviewees it was this ability to *communicate* with non-farmers which specifically sparked trust and reciprocity. For example, for F5, it was their ability to routinely talk to their local councilperson which granted them with the ability to make compromises and feel "equal" in their transactions. Similarly, for F2, the ability to "ring up" and "talk to" their local council person, was their solution to various on-farm issues. This indicated that the mere ability to talk to someone, seemed to bolster a farmer's sense of autonomy. Conversely, when an interviewee could not establish a communicatory back-and-forth with a particular non-farmer, they seemed to mistrust and dislike that non-farmers advice. For example, F9 was deeply unhappy with their local councilperson's tendency to just visit their farm, "write up [their] report" and then leave. For F9, this lack of communication, left them feeling as if their councilperson was "stupid" and untrustworthy. This supports Carolan's (2006) theory which illustrates how a lack of communication between farmers and non-farmers can often breed mistrust and again reaffirms the aforesaid need for communication between farmers and non-farmers. Hence, "autonomy as a collective" is significant for environmental management as it illustrates the need for improved communicatory systems between farmers and non-farmers. In order to develop these systems, both formal and in-formal communication networks may need to be constructed. For example, the Waikato Regional Council could build trust between farmer and non-farmers by establishing communicatory links (such as workshops and regular, scheduled meetings) between farmers and council representatives (Allen et al., 2011). More informally, councils can encourage councilmembers and farm advisors to be "more available" to farmers (European Centre for Nature Conservation, 2004). Ultimately, as depicted by Šūmane et al. (2021) by building trust via communication, social capital development can be transformed into political capital, thereby granting farmers with greater influence over policy development.

On another note, throughout the interviews it seemed as if the ability to "work together" with other farmers improved the interviewees' ability to self-regulate. As explained by Adam et al. (2017), it is often the ability of farmers to self-regulate which promotes their sense of autonomous decision-making. For many of the interviewees, their ability to self-regulate seemed to depend upon their involvement in collective and cooperative initiatives; as it was by participating within these initiatives, that the interviewees could set attainable standards of behaviour, standards congruent with their own values, beliefs and ideas. And whilst academics such as Gunningham (2011) claim that self-regulation may not be the answer to complex, environmental problems, it is evident that instances of co-regulation and self-regulation may appeal to an enhanced sense of farming autonomy. For example, in a study

conducted by Adam et al. (2017), it was revealed that farmers used their collective decision-making abilities to decide what collectively defined them (what made them "good farmers") and then used this definition to apply self-regulatory standards. A similar model of self-regulation seemed to be emulated by many of the interviewee's who participated in collective systems. This relationship between farmer understandings of autonomy and self-regulation is significant for environmental management; namely, as farmer self-regulation can reduce the requirement for top-down agricultural regulation (Dewick, Foster & Webster, 2017). In order to bolster famer self-regulation, policymakers can begin by ascertaining what a farmer collective identity *is*, acknowledging how this identity is enforced, regulated and controlled, identifying the standards upheld within this collective identity and utilising these standards to develop an internalised metric of behavior i.e., by classifying what in-group behavior should be explicitly rewarded (Adam et al., 2017). In the Waikato, farmer self-regulation could be specifically bolstered by emulating collective farmer values within catchment-based environmental plans (Botha, 2019; Groth & Curtis, 2017). For example, the Waikato Regional Council could work more closely with farmer collectives to identify pre-agreed indicators of "good farmer" behavior, i.e., maintaining healthy on-farm waterways, and then reduce heavy regulation upon this behavior in favor of in-group regulation.

In conclusion, "autonomy as a collective" appeared to be a fundamental component of the interviewees' understanding of farmer autonomy. This understanding seemed to be born from the advantages related to working together, depending upon one another, communicating and self-regulating. In terms of environmental management, farmer understandings of "autonomy as a collective" are significant as they reveal how farmers may operate autonomously via collective action. This reimagines standardised ideals of autonomy which oft link farmer autonomy with farmer independency. As alluded to within this section, to accommodate for farmer understandings of "autonomy as a collective", agricultural policymakers and environmental collective leaders can promote farmer self-regulation, build a sense of community in collective initiatives, encourage the sharing of resources amidst farmers and develop trust between farmers and non-farmers.

5.3 Autonomy as Money

Throughout the interviewees, numerous interviewees indicated that financial expectations, profit requirements and debt often provoked a perceived and personal loss of autonomy. Ergo, the role of

money ought to be considered when examining farmer understandings of autonomy. In this section, this consideration will occur. In this section, I will also outline the implications of "autonomy as money" for environmental management and illustrate how farmer values of money may be incorporated within policymaking and environmental collective systems.

During the interviews, it was revealed that many of the interviewees felt trapped by their financial demands. Many of the interviewees could not "take a day off" (F5), "leave the farm" (F5) or even "consider not being a farmer" (F1) due to their financial constraints. For many of the interviewees, their debts were so significant that they could no longer exist freely; their entire lifestyles revolved around repaying their debts. This finding somewhat mirrors Simmel (1991)'s evaluation of autonomy and money. According to Simmel (1991), one's ability to exist, survive, function and operate within a society is predominantly determined by one's ability to access money. Evidently, this conflicts with the fictitious idea that farmers are "free men", unburdened from the monetary demands of everyday, metrocentric life (Wilder, 1933). With this in mind, it is important to consider how money is linked to one's own understanding of personal autonomy. How can an individual act autonomously if their actions are motivated by a requirement for money? Moreover, how can an individual act in accordance with their own values if they must adhere to the restraints imposed by financial limitations? Upon answering these questions, it was evident that many of the interviewees could not fulfill their desires, values and goals due to the limitations imposed upon them by money. In terms of environmental management, addressing "autonomy as money" is difficult. Unlike "autonomy as knowledge", the acknowledgement and incorporation of "autonomy as money" is logistically difficult; namely, as the mitigation of farmer financial concerns largely depends upon external forces such as government funding, resourcing and collective financial backing (Botha, 2019). Fleming et al. (2015) therefore, advocates for simply recognising the role that money plays in determining farmer behaviour. For example, councils may need to consider how famer financial limitations influence farmer compliance to regulation. Similarly, policymakers will also need to recognise the role of farmer debt in limiting farmer autonomy (Botha, 2019).

For many interviewees, debt played an integral and unfortunate role in their lives. For F1, their debt meant that they felt "trapped" on their own farm, they could not readily leave, nor could they actively engage in their usual hobbies. Moreover, many of the interviewees stated that they went into debt for the purpose of increasing future farm profitability. This demonstrates how the interviewees tended to

go into debt for the purpose of gaining greater financial mobility (and thereby autonomy) in the future. This aligns with Martin (2015)'s study, which confirmed that individuals often go into debt for the purpose of pursuing greater autonomy. These concepts illustrate how the pursuit for autonomy via material avenues is often fraught with trade-offs. For some of the interviewees, this trade-off was in fact beneficial. For example, F3 went into debt for the purpose of expanding his farm, an endeavour which granted him with a substantial, long-term increase in farm profit. This also supports Cattaneo (2005)'s theory which illustrates how autonomy, whilst immaterial is a commodity that can be bought, sold and sacrificed through material offerings. To alleviate farmer debt, government agencies may seek to provide farmers with greater financial support and incentives. Whilst a relatively simple idea, financial incentives play a role in promoting farmer financial security (Lea & Webley, 2006; Ramsdell, Sorice & Dwyer, 2015; Szumelda, 2019; Vanclay, 2007). And as noted by Kolinjivadi, Mendez and Dupras (2019), financial security is important for preserving a farmer's sense of personal autonomy; without financial security, a farmer has a limited capacity to act. Thus, government agencies may need to ensure that farmers have the proper financial backing to act autonomously. This support may involve providing farmers with subsidies and funding (Kolinjivadi, Mendez and Dupras, 2019). Although, as stipulated by Van Hecken et al. (2019) a financial incentive is not the "silver bullet" for promoting sustainable agriculture. As depicted by Bowles (2008), farmers need to be motivated not just by financial self-interest, but also by the interests of self (personal values, beliefs, opinions). For many farmers, this involves appealing to a farmer's strong stewardship ethic (Beedell & Rehman, 1999; Greiner & Gregg, 2011). And so, when funding farmers, councils may need to fund activities (such as environmental collective initiatives), which appeal to farmer stewardship values (Brown & Mitchell, 2000; Morris, Mills & Crawford, 2000). To alleviate debt via the funding of value-based initiatives, one must also recognise the limited time possessed by those beholden to debt; for a farmer cannot readily engage in value-driven activities if they lack the time to do so (Andreoni, 1990).

For various interviewees, their financial restraints meant they had no time to pursue their own interests. For interviewees such as F5, they had "no time" to engage in activities that they wanted to, they simply had to work on the farm all day, every day. And for F1, they had "little to no time" to visit their friends in the weekend. This harks back to the idea that "time is money"; as illustrated by Loft (1995), time is a resource to be spent. However, as this research has shown, it may be more pertinent to consider that time is not just money, but also *autonomy*. As demonstrated by Epstein (2000), "unhappiness about time pressure…. may, at a deeper level, represent concerns about [individual] autonomy". Similarly,

the interviewees who lamented their lack of time often correlated it to an underlying lack of "freedom" (F1). Hence, many of the interviewees related their diminished time to their diminished autonomy. For the interviewees, their markedly longer hours also meant that they were at a greater risk of experiencing an autonomy loss; namely, as by working longer hours, the interviewees had a limited ability to travel, engage in hobbies and act in their own interests. This closely aligns with Sahlstein & Dun (2008)'s findings, which state that for some people, the ability to "have time" closely correlates with their perceived ability to be autonomous. In terms of environmental management, confronting the despondency of diminished time is challenging, but by simply acknowledging the farmer burden of "having no time", policymakers may assist farmers (Leclerc, Schmitt, & Dube, 1995). For example, councilmembers can forfeit of a degree of responsibility in arranging meetings, inspections, reports and follow-ups, instead, allowing farmers to better dictate when and how on-farm administrative matters occur (Kröbel et al., 2012). Similarly, environmental collective leaders may encourage members to create rotational rosters for events and meeting, thus, allowing farmers to choose when they participate in collective initiatives (Botha, 2019; De Vries et al., 2019). Both policymakers and environmental collectives, must also be wary of "wasting farmer time", instead opting for clear, concise communication and uncomplicated reporting (Botha, 2019). Overall, these approaches may enable farmers to partake in more off-farm activities such as sport, social gatherings, community groups and pro-environmental initiatives.

In relation to having depleted time and finances, interviewees often reported feeling concerned about their inability to engage in pro-environmental initiatives. For example, F5 indicated that they were eager to continue planting swales and introducing native vegetation onto their farm, but could not due to their need to prioritise the farm "money makers" (F5) i.e., the cows. This finding reflects Lucas et al. (2008)'s theory which stipulates how a farmer's financial situation can often prevent them from engaging in pro-environmental behaviour. For many of the interviewees, their desire to maintain their environment was profound, and so their inability to act in a pro-environmental manner, was a particularly egregious affront to their autonomy. Notably, this appeared to have spillover effects into how many of the interviewees perceived themselves; they could not engage in pro-environmentalism and hence, they could not identify themselves as environmentally responsible individuals. This tended to reduce their expressed sense of self-esteem. And as displayed within the literature, a loss in self-esteem often results in a perceived loss of autonomy; namely, as low self-esteem hampers an individual's perceived ability to make decisions (Cooke, Fielding & Louis, 2015; Crocker & Park,

2004; Gardner, 2000; Govier, 1993; Hodgins, Brown & Carver, 2007). These findings are profound, as they demonstrate not only how money relates to a farmer's pro-environmental motivation, but also to a farmer's ability to feel autonomous. To improve a farmer's ability to engage in pro-environmental activities, farmers may need greater, monetary support when participating in environmental initiatives. Moreover, farmers may need to be assured of their capability to enact their own modes of pro-environmentalism. According to Botha (2019, p.28), this may be addressed by ensuring that stakeholders "recognise and appreciate the good [pro-environmentalist] work that has already been done" by farmers. In terms of supporting pro-environmentalist initiatives amidst farmers, environmental collective leaders can garner funding to provide participating farmers with improved resources. Environmental collective leaders in New Zealand can apply for regional council grants, local-board grants, DoC community funds, the Fonterra grassroots fund and other related community funds (Predator Free NZ, 2021). To encourage fund applications, policymakers may need to improve farmer access to these funds by raising farmer awareness, strengthening fund accessibility and by bolstering relationships between councilmembers and environmental collective leaders (Botha, 2019).

Ultimately, this section of the chapter has revealed that money plays an important role in influencing how farmers understand autonomy. For some farmers, money can greatly impede their ability to be autonomous, whilst for other farmers, money can be a "way out" (F3) of relative poverty and instability. In this section, it was also revealed how debt may greatly reduce a farmer's ability to autonomously engage in environmental management; and so, "autonomy as money" is evidently significant for environmental management in New Zealand. Again, whilst policymakers and collective leaders may not be able to fully eradicate the autonomy loss resultant of farmer financial burdens, these actors can better accommodate farmer financial concerns by providing farmers with funding, value-based incentives, acknowledgements of financial difficulties and clearer, simpler pathways to engagement in conservation initiatives.

5.4 Autonomy as Responsibility

During this research, it was revealed that the interviewees often felt autonomous when they expressed their ability to be responsible over their land. This responsibility appeared to manifest itself in four predominating ways: the ability to be responsible as a steward, the ability to "pass down" responsibility to the next generation, the capacity to enact moral autonomy and the potential to exist as an

autonomous professional. In this section, I will address each of these approaches to demonstrate how farmers may understand their "autonomy as responsibility". Furthermore, I will illustrate the significance of "autonomy as responsibility" for both policymakers and environmental collective leaders in New Zealand.

In the interviews, a sense of "being responsible" for the land was reflected by almost all of the interviewees. Many of the interviewees stated that they wanted to be responsible for preserving, maintaining and protecting their land. And many of the interviewees stated that they did not want the government to "take over" that responsibility (F2). Throughout this research, this sense of responsibility was visible in a variety of ways. For F3, their need and desire to "give back" to the community seemed to represent a sense of internalised responsibility. For F3, "giving back" was something that they seemed to pride themselves in having the autonomy to do. And for F5, it was their duty as a landowner which granted them with the "need to be responsible". For many of the interviewees, it was their identity as stewards, which also afforded them with a sense of responsibility. As depicted within the literature, a farmer's ability to act as a steward, is often ingrained in the process of owning land and simply "being a farmer". (Hanson, 2001; Raymond et al., 2015; Sheryal et al., 2017). Hence, "autonomy as responsibility" is significant for environmental management as it reinforces the need for ground-up, farmer-led approaches to agricultural management; namely, to avoid top-down, regulatory management approaches which diminish land-based, farmer responsibilities (Botha, 2019). And so, for policymakers to recognise "autonomy as responsibility", they may need to reinforce farmer, land-based rights, specifically by supporting the right of local farmers to create their own institutions, collectives and modes of self-regulation (Botha, 2019). As for collective leaders, an environmental collective may be an ideal setting for promoting a farmer's sense of stewardship as environmental collectives facilitate farmer stewardship roles within an organised system (Taranaki Catchment Communities, 2021). In the Waikato region specifically, policymakers and environmental collectives could work cooperatively to devolve regional land-based authority in favour of fostering local environmental groups (Hungerford, 2017). Over time, this may work to develop a farmer's innate desire to enact their stewardship values.

Regarding stewardship, for many of the interviewees, farmer stewardship seemed to not only represent the responsible preservation of the land, but also the responsible preservation of the land for future generations. Many of the interviewees wanted to "preserve their farm" (F3) so that their children could

one day take over. In the literature, it is often noted, that farming parents will intend for their children to become successors of their farm (Brown, Daigneault & Dawson, 2018; Cavicchioli, Bertoni & Pretolani, 2018; Morias, Binotto & Borges, 2017; Morais, Borges & Binotto, 2018); however, the literature does not always emphasise the role of stewardship in influencing that decision. For example, many studies focus on the passing down of the farmer profession, and yet they do not account for the passing down of the farmer stewardship role. Via this research, it is evident that the "passing down" of the farm was often synonymous with the "passing down" of stewardship responsibilities. Many of the interviewees wanted their children to take up the farm, so that the land could continue to be preserved and protected. In other words, the interviewees wanted to pass on their legacy as stewards. This is something that has not been previously explored in the literature; and hence, this research expands upon the nature of farmer stewardship. In terms of autonomy, this indicates that for many farmers, it is not only their ability to act as stewards which is integral, but also their ability to pass down their stewardship responsibilities. Evidently, if a farmers' ability to be responsible is limited, farmers cannot fulfill their desire to autonomously "pass down their legacy" (F2). In terms of environmental management, this is significant as it represents the need to better support farmers during the transitional phases of farm ownership. According to Keating (1996), this support may occur via the introduction of future planning, community support and pathways to farmer goal fulfillment. Evidently, both councilmembers and environmental collective leaders may assist in developing such systems of support. For example, policymakers could develop long-term partnerships with both the current farm owner and the farm beneficiary to assure future farm security (Dupré et al., 2021). Similarly, environmental collectives could harness collective communality to provide farmers with both emotional and material support (Cofré-Bravo, Klerkx & Engler, 2019).

In the interviews, this notion of passing down stewardship, also seemed to reiterate the future focused nature of farmer responsibility. Many of the interviewees expressed their desire to protect the future of farming in New Zealand, not only for themselves, but for future generations. In fact, when discussing their responsibilities as farmers, the interviewees often described their posthumous responsibilities. They wanted to protect the river so that their great grandchildren could swim there in 50 years' time; ultimately, they wanted to leave a legacy that would remain even after they were gone. I came to consider this notion as "future autonomy". Many of the interviewees wanted to enact present changes that would have profound effects upon the future. And consequently, it was their ability to do so which often granted them with a sense of autonomy as farmers. This finding echoes Worrell & Appleby

(2000)'s theory on farmer responsibility; their theory states that farmer responsibly is often future focused. This finding also somewhat mirrors the study by Birnbacher (2006) who depicted the nature of responsibility as necessarily future-orientated. Thus, it seems as if the notion of future responsibility cannot be circumvented when discussing the notion of individual responsibility. In terms of environmental management, formally recognising farmer future-orientated responsibility is therefore vital for acknowledging farmer understandings of "autonomy as responsibility". For policymakers, recognising this concept may involve upholding farmer responsibility in long-term plans. For example, including references to farmer stewardship, input and role in the Waikato Regional Council's 2021-2031 Long Term Plan (Cavicchioli, Bertoni & Pretolani, 2018; Waikato Regional Council, 2022). For collective leaders, promoting farmer, future responsibility may involve strengthening a farmer's sense of long-term autonomy (Beza et al., 2018). This could include demonstrating what their particular collective can achieve in 30-50 years' time, discussing the future policy implications of their collective's findings, using future projections to quantify group impact and utilising modelling data to display land use change (Beza et al., 2018; Birnbacher, 2006; Stock et al., 2014).

On another note, throughout the interviews, numerous interviewees identified their *moral* right to be responsible. They wanted to be perceived as "knowing what was right" (F1) and thereby granted the ability to act responsibly and autonomously. In the literature this mode of autonomy is often referred to as moral autonomy (Gergen, 2011; Krueger, 2016; Meijboom & Stafleu, 2015, Smith & Robins, 1987). Moral autonomy alludes to an individual's capacity to own and apply moral values in decision-making with ethical implications (Tsahuridu & McKenna, 2000). Moreover, the interviewees did not want to be presented with the "right decision", they wanted to arrive at their own conclusions based upon their own moral autonomy. For example, many of the interviewees did not want to be told what level of fertiliser use was acceptable, they wanted to decide for themselves as moral, autonomous individuals. The interviewees predominantly believed that they had the moral autonomy and responsibility to make most (if not all) on-farm decisions. This reaffirms Münster (2015)'s theory on moral responsibility; farmers want to operate within an equitable moral economy, where their sense of moral responsibility and stewardship is justified within the system. Moreover, this supports Tsahuridu & McKenna (2000)'s assessment of moral autonomy, as they illustrate how an individual can often be assured of their own moral competency via their ability to express moral autonomy. In order to address the significance of moral autonomy (a component of "autonomy as responsibility"), policymakers may need to recognise that farmers "have the competence or moral judgement and discretionary powers to assess a situation if

[the government lacks] laws or are confronted with genuine moral plurality" (Meijboom & Stafleu, 2016, p.411). This involves prioritising farmer self-regulation in favour of top-down regulation (Coeckelbergh, 2006; Meijboom & Stafleu, 2016; Mendoza & Wielhouwer, 2012). Similarly, for environmental collective leaders, farmer moral autonomy may be recognised by formulating ethical codes of conduct within their given organisation (Meijboom & Stafleu, 2016). Thus, enabling farmers to establish a self-driven foundation for moral decision-making.

This sense of moral autonomy also tied into many of the interviewees' sense of professional autonomy. During the interviews, the interviewees often alluded to their deflated sense of professional autonomy. Here, professional autonomy represents a professional's ability to discipline themselves and operate with the spirit of positive freedom (Hashimoto, 2006). Many of the interviewees felt as if their professional autonomy had been limited by regulation, supervision, external management and top-down policing. Hence, many of the interviewees no longer felt able to exert their professional autonomy. This is key as "autonomy is a central concept in the discussion [of] professions . . . and de-professionalisation in particular" (Frostenson, 2015, pg. 21). Specifically, as de-professionalisation can cause an individual to lose autonomy simply via the enactment of their occupation (Frostenson, 2015). Furthermore, many of the interviewees also lamented the changing role of "the farmer"; according to many of the interviewees, farmers were no longer respected as professionals. This again reflects how farmers may understand their autonomy as transient, conditional and susceptible to change amidst bouts of new agricultural reforms. To address this in environmental management, the professional role of the farmer may need to be resolidified in agriculture milieu. For policymakers, they may need to reaffirm the long-term, professional value of farmers by including them within regulatory plans; for example, in the Waikato Lake Taupō Zone Plan, farmers are considered integral to the future enactment of the plan (Waikato Regional Council, 2017). Moreover, as depicted by Chambers (1980), the professional role of the farmer may need to be reinvigorated; farmers cannot be perpetuated as "inferior professionals", subservient to traditional, scientific knowledge. Farmers must be included in all stages of scientific discovery and included in all policy-driven participatory experimentation (Kraaijvanger & Witteveen, 2018). In environmental collectives (whether farmer-led or not), farmers should also be driven to the frontlines of council/collective engagement and play an active, professional role in the dissemination of collective data (Kraaijvanger & Witteveen, 2018).

On another note, for the interviewees, it seemed as if being responsible was not a "burden", but rather a side effect of being autonomous. This may indicate that for the interviewees, their understanding of responsibility closely aligns with Kraaijvanger & Witteveen (2018)'s depiction of responsibility. According to Kraaijvanger & Witteveen (2018), responsibility does not explicitly refer to one's unconditional moral obligations within an object area, but rather the ability of a particular agent to act within that area. Specifically, responsibility is not a limitation of action, but rather a spurring of action. Responsibility can involve doing something in an active sense to support, provide, protect and control someone or something. In this sense, responsibility encourages autonomous decision-making and individual empowerment (Kraaijvanger & Witteveen, 2018). In accordance with this theory, this may explain why interviewees such as F2 and F3 were actively involved in local boards, environmental collectives and committees. As by engaging within these decision-making systems, they were exerting their right to be responsible and thereby empowered. Moreover, by being responsible, the interviewees could often draw upon their own interpretations of effective decision-making, thus relying upon their own sense of self and purpose. This understanding of responsibility and autonomy contradicts Key (2005)'s simplified assertion that autonomy merely represents "autonomy from"; evidently, autonomy also represents "autonomy to", the autonomy to act. In environmental management, this understanding of farmer autonomy is significant as it demonstrates the need to better incorporate farmers within decision-making systems, particularly systems that pertain to agricultural management. Resultantly, farmers may better enact their "autonomy to be responsibility" via their engagement in environmental collectives. To harness this, policymakers and environmental collective leaders may need to better support the involvement of farmers in environmental collective initiatives. This could involve increasing farmer awareness to potential collective activities, encouraging high levels of communication between existing collectives, raising farmer expectations of collective results, and reinforcing the bottom-up nature of collective initiatives (Barghusen et al., 2021; Fraser et al., 2006; Villamayor-Tomas et al., 2021).

In conclusion, in this section, it has been identified how farmers may understand their autonomy via their ability to be responsible. As demonstrated via the interviews, this ability to be responsible is often defined by a farmer's ability to be make long-term, on-farm decisions. In terms of environmental management, addressing a farmer's understanding of "autonomy as responsible" is a multi-faceted process.

5.5 Chapter Summary

This chapter delved into the findings of this study and demonstrated the significance of farmer autonomy for environmental management in New Zealand. This involved unfurling the four, predominating components of farmer understandings of autonomy: "autonomy as knowledge", "autonomy as a collective", "autonomy as money" and "autonomy as responsibility".

In terms of the first component, "autonomy as knowledge", this chapter revealed how farmers oft imagine their autonomy as something dependent upon their ability to share, give and receive knowledge. Moreover, this chapter illustrated how knowledge accessibility, transparency and relatability also influences a farmer's ability to experience "autonomy as knowledge". When evaluating the significance of these findings for environmental management, this chapter exemplified the need for better, more equitable knowledge exchange systems in New Zealand; systems which bolster the role of farmer knowledge brokers, develop two-way knowledge exchange networks and reprioritise farmer "ways of knowing".

In relation to "autonomy as a collective", this chapter indicated that farmers frequently experience a greater sense of autonomy when they can act collectively. This revelation emerged via the interviewee's favourable descriptions of interdependent, communal networks; networks which involve resource sharing, interpersonal communication and knowledge exchange. For environmental management, this is significant as it highlights the need for both formal and informal farmer, communal systems in New Zealand. For example, this chapter advocated for the formalisation of farmer resource pooling and collaborative systems in the Waikato region.

This chapter also discussed the notion of "autonomy as money" which represented how the interviewed farmers envisioned their autonomy as something dependent upon their financial situation. Specifically, this chapter revealed that the interviewees often experienced a state of non-autonomy when they were burdened by monetary constraints. This non-autonomy routinely stemmed from their inability to have free time and engage in pro-environmentalism. In relation to environmental management, this is significant as it demonstrates the linkage between farmer autonomy and farmer material shortcomings. To address the significance of this component, this chapter prompted policymakers to support farmers via the promotion of funds, subsidies and financial incentives. Overall, this chapter also highlighted the need to provide farmers with opportunities to self-regulate and self-manage in both on-farm and collective endeavors.

Finally, in terms of "autonomy as responsibility", this chapter recognised that many farmer understandings of autonomy are linked to their ability to be responsible for themselves, their land and their future. This revelation is significant for environmental management as it reinforces the importance of farmer decision-making. Evidently, both policymakers and environmental collective leaders will need to bolster the decision-making capacity of farmers. To do this, this chapter proposed supporting farmer engagement in ground- up environmental collectives, specifically for the purpose of increasing farmer decision-making opportunities. This chapter also recognised that policymakers may improve future farm decision-making by solidifying the role of the farmer in long-term policy plans.

Notably, throughout this chapter, interconnections between the four components have been exemplified. For example, communality fostered knowledge exchange and monetary support enabled collective action. Hence, when considering farmer understandings of autonomy, it is imperative to not view each component as an isolated, individual conception of autonomy, but rather a mere piece of a greater, interdependent autonomy "whole".

In the next section, the final implications of this study will be explored, alongside an examination of future research possibilities.

Chapter 6: Conclusion

In this chapter, I will reappraise the key findings of this research, before discussing the key implications and limitations of this study. In the final two sections of this chapter, I will present potential future areas of research and provide a conclusory statement.

6.1 Overview

Past literature has oft painted farm autonomy as relatively static (Naylor et al., 2016; Emery, 2014; Stock et al., 2014). Moreover, past research, whilst recognising the value of farmer autonomy has not fully acknowledged why farmer autonomy may be significant for environmental management (Adam et al., 2017; Cabaret et al., 2015; Coolsaet, 2016; Key, 2005; Smith, 2014; Stock & Forney, 2014; Williams et al., 2021; Wynne-Jones, 2017). This presented a gap in the existing literature on farmer autonomy.

Hence, this research aimed to thoroughly explore farmer autonomy; specifically, by investigating how farmers themselves understood their autonomy. This aim was achieved by conducting a thorough review of existing literature, by interviewing 9 dairy farmers in the Waikato, and by using a thematic analysis of interviewee data. The results of this investigation led me to discover that autonomy is complex, diverse and often contradictory.

Through this research, I also identified four recurring components of farmer autonomy; components embedded within the collective farmer understanding of autonomy. These four components of farmer autonomy were categorised as autonomy as knowledge, autonomy as a collective, autonomy as money and autonomy as responsibility. These components did not redefine farmer autonomy, rather, they represented four, individual pieces of a much larger autonomy puzzle. Overall, these elements indicated that farmer autonomy can often be defined via a farmer's ability to share knowledge, to use modes of self-regulation via their collective, to be unburdened by monetary constraints and to enact their own sense of obligation to their land.

During this research, I also aimed to investigate how farmer understandings of autonomy were significant for environmental management in New Zealand. I achieved this aim by comparing the

findings of my thematic analysis alongside existing literature in the focused context of this research. In general, the results demonstrated that understandings of autonomy are significant for environmental management as they illustrate the importance of bottom-up rather than top-down modes of management that preserve as many elements of autonomy as possible. This research's results also highlighted the need for preserving or creating collaborative systems that allow farmers to share knowledge, self-regulate as a collective, and enact their stewardship responsibilities. They also demonstrated the importance of access to monetary support to undertake environmental management activity so financial constraints do not impede action. This research also provided evidence to support an argument against top-down systems of management that diminish aspects of autonomy.

6.2 Research Key Findings

Through this research, I have explored farmer understanding of autonomy and learnt that farmer autonomy is contradictory, alive and thriving. Moreover, I have learnt that there is no one type of farming autonomy; farmer autonomy can be conceived as an umbrella within which various components of farmer autonomy sit. In terms of key findings, it is these components which I would like to revisit in this final chapter.

Firstly, through this research I have unveiled various components of "autonomy as knowledge" for farmers. I have learnt that knowledge autonomy is not just about *receiving* knowledge, it is about *sharing* knowledge. And for many farmers, they need to exist not only as valuable knowledge holders, but also as valuable knowledge bearers. I have also learnt that various modes of knowledge exchange are preferable for promoting farmer understandings of autonomy. For example, many farmers desire external knowledge inputs to comply with their own particular "way of knowing".

In terms of "autonomy as a collective", I revealed that farmers often defined their autonomy via their ability to collectively self-regulate. This contradicted previous studies on farmer autonomy, by demonstrating how farmers often felt *more* autonomous when working within a collective rather than as an independent entity (Emery, 2014). Predominantly, this sense of autonomy seemed to be derived from a farmer's ability to share resources within a collective system.

During my research, I also confronted the harsh reality of debt and poverty in preventing farmer expressions of autonomy. Notably, it was money which seemed to be the inescapable elephant in the

room when discussing autonomy with many farmers. For many of the farmers, it was their debt which prevented them from pursuing their own interests, values and aspirations, thereby crippling their sense of personal autonomy.

Throughout the interviews, I also identified the role of responsibility in ensuring farmer autonomy. Many of the interviewees sought autonomy via their ability to be responsible for the land. They viewed themselves as responsible for their environment and thus, wanted the autonomy to enact that responsibility. Perhaps most notable, was the role of future responsibility in promoting farmer autonomy. Farmers did not only want the autonomy to act as responsible stewards, but also as responsible stewards of the *future.* Many of the interviewees discussed their desire to "imprint a legacy" onto the land, a legacy unabated by government regulation and standards.

6.3 Key Research Implications

In this section I consider the applicability of this research for environmental management.

Firstly, when examining "autonomy as knowledge", I learnt that farmers often valued their ability to share knowledge just as much as their ability to gain knowledge. The implications of this revelation are profound as it provides evidence against one-way information exchange systems; systems which are currently prevalent within agri-environmental management. As indicated by F3, it is also important that agricultural policymakers and councilmembers "start asking questions", and actively including farmer knowledge within the policymaking process. Whilst it is notable, that policymakers (for example, MPI) are more actively working with farmers in New Zealand, this interaction needs to be underlined by a genuine attempt to promote farmer knowledge sharing (Ministry for Primary Industries, 2021). For both policymakers and environmental collective leaders, they may need to be wary of prioritising scientific knowledge for the purpose of "upskilling" the farmer knowledge base and instead work towards prioritising farmer knowledge (Hughes, 2007).

Secondly, when appraising the implications of "autonomy as a collective", this research revealed that farmer autonomy may be maintained via collective self-regulation. As exposed by this research, when farmers operate collectively, they can often create systems of self-regulation. Policymakers can then utilise this mode of self-regulation to ease disciplinary and regulatory approaches to agricultural management. Evidently, this may reinforce a farmer's sense of autonomy, by reducing the level of

external regulation. Moreover, since a farmer's ability to experience autonomy via collectivism is dependent upon trust, collective leaders may need to prioritise trust-building within their collectives in order to ensure that farmer autonomy remains intact. Both policymakers and environmental collective leaders may also need to develop resource sharing networks to fully harness the concept of "autonomy as a collective".

Thirdly, the concept of "autonomy as money" revealed that farmer autonomy could ultimately be squashed by the presence of debt and other financial constraints. Hence, this may be the most important lesson to consider for agricultural policymakers and environmental collective leaders. Without proper financing, farmers cannot freely pursue their own hobbies, interests and desires, thus disabling their ability to act autonomously. To combat this, agricultural policymakers may need to ensure that farmers have the proper financial backing to uptake and implement policy. And for environmental collective leaders, they may need to pursue external funding such as MPI funds and regional council grants in order to promote autonomous farmer participation. An example of this funding is the MPI extension services programme which invests in farmer catchment group initiatives (Ministry for Primary Industries, 2021).

Lastly, when considering the implications of "autonomy as responsibility", the findings of this research emphasised the role of farmer stewardship in promoting farmer autonomy. Evidently, many farmers define their autonomy as their ability to act as a steward. This study has therefore revealed that policymakers and collective leaders may need to promote farmer stewardship roles via their policymaking and management systems. This will involve enabling farmers to make more impactful decisions regarding the protection of their own land. In Australia, under the National Landcare Program, this mode of management is currently encapsulated within programs such as the Environmental Stewardship Program (National Landcare Program, 2021). This program provides long-term support to farm owners and recognises their roles as landscape stewards (National Landcare Program, 2021). The success of this particular program demonstrates the viability of this approach for environmental management in New Zealand.

Overall, when viewed holistically, these implications seemingly fall under the umbrella of a policy approach which involves community capacity building. Promoting knowledge exchange, promoting collectivity, and providing farmers with financial assistance is often related to community capacity building. Adopting such an approach, involves moving away from traditional regulatory approaches to

agricultural management and instead focusing upon the ground-up ability of farmers to respond to environmental degradation. By focusing upon a community capacity building approach, environmental decision-makers can develop knowledge exchange systems, promote community networking, offer financial assistance to farmers with debt and assign farmers with a greater degree of responsibility. A bottom-up approach to agri-environmental management may also involve adopting similar initiatives as exemplified by the aforementioned National Landcare Program.

Ultimately, these actions may all assist in promoting farmer involvement in environmental initiatives and help in preserving a farmer's sense of autonomy.

6.4 Research Limitations

For this research, the most notable limitations revolved around budget and time restraints. As a student, I was not in the position to provide participants with financial rewards for participation and thus I was unable to properly incentivise many would-be participants. And notably, since I only had approximately three months to interview participants, my schedule, combined with the hectic schedule of potential farmer interviewees, hindered my ability to locate available participants. This limitation was also exacerbated by the Auckland lockdowns which occurred between August and December 2021, as I was situated in Auckland, and unable to meet participants face-to-face. In the end, I was able to locate 9 interviewees. This number provided for effective findings; however, a larger number of participants may be required for a future, more holistic appraisal of farmer autonomy. Additionally, I relied upon responses from farmers existing within the same organistations (for example, the Piako Catchment Forum) by using a snowballing sampling strategy, thereby reducing the diversity of the data and perhaps introducing an element of organisational bias (Cohen & Arieli, 2011; Etikan, Alkassim & Abubakar, 2016). Regarding bias, my own bias also acted as a research limitation as I constructed the interview schedule and interpreted the interview data. To interpret the data I used thematic analysis. Thematic analysis is inherently subjective and relies upon the mind of the interpreter, hence an element of human error is also introduced (Kwasnicki, 2021). To minimise bias and human error, I routinely relied upon my supervisors to act as content auditors (Baxter & Eyles, 1997). Overall, whilst this research has produced reliable findings and contributed to both existing literature and environmental decision-making, some of these findings may need to be empirically tested more widely on a larger population.

6.5 Areas for future research

This research cannot unravel every component of farmer autonomy and its significance and thus, there are many opportunities for future researchers to develop this research. For example, future researchers may want to explore the everchanging role of the farmer in relation to farmer autonomy. Evidently, the role of the farmer is not static. And so, future researchers may be interested in exploring how the role of the farmer may influence future conceptualisations of farmer autonomy. This may involve a longitudinal study which uses structured interviews to explore how farmer perspectives on autonomy change alongside their evolving, occupational role. Moreover, future researchers may want to broaden and develop the components of farmer autonomy (farmer autonomy evidently encompasses more than the four themes discussed in this thesis). To conduct this research, future researchers may want to adopt a longer timeframe for their study, interview more participants and broaden the contextual and geographical scope of the study. Another interesting area of research may revolve around autonomy compromises. For example, will farmers willingly relinquish a degree of autonomy in order to allow for climate change mitigation policy? Such compromises may be interesting to consider when examining the accelerating rate of climate change's environmental impacts. This study could potentially be conducted by quantifying farmer willingness in response to hypothetical and real policy scenarios, thereby testing the rigidity of their autonomy understandings. On a more internalised level, it may also be interesting to explore the contradictory nature of autonomy. How can conflicting understandings of autonomy be facilitated and can contradictory responses to autonomy be contrived? This would require an in-depth, potentially phenomenological methodological approach, which thoroughly explores farmer understandings via repeated interviewing.

6.6 Final Note

Whilst undertaking this research, I have also been able to witness the real-world implications of farmer autonomy; I have beheld the frustration that accompanies a farmer's powerlessness and I have observed the unwavering determinism of farmers upholding their authority. On either side of the spectrum, I have witnessed the gravity of farmer autonomy. Farmer autonomy, no matter how abstract it may, is a fundamental feature of farming. A feature which will not be easily stifled beneath top-down, regulatory approaches to environmental management. Farmer's will not readily relinquish their autonomy, and

hence, it must always be considered within the realms of environmental management; whether that may be in the backrooms of community halls or the lofty rooms of the beehive.

Overall, this research has achieved its aim of shining a light upon the overlooked, often ambiguous world of farmer autonomy in New Zealand. Through the use of an exploratory research approach, and aided by the thematic analysis of nine interviews, I believe that the results of this study have provided much needed insights into how farmers understand autonomy. This research has also emphasised the need for a more community-based as opposed to a regulatory-based approach to environmental management in New Zealand; primarily, for the purpose of incorporating farmer values of autonomy within environmental management systems.

Hopefully, these insights may prove to environmental decision-makers that by preserving farmer autonomy, we may also preserve the future of our environment.

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Appendices

Appendix 1: Information Sheet

Institute of Agriculture and Environment (College of Sciences)
Private Bag 11222
Palmerston North 4442

Dairy farmer perspectives on the application of autonomy in environmental collective organisations

INFORMATION SHEET

My name is Hannah McCole and I am undertaking a Master of Environmental Management degree. My study will explore how farmers perceive and experience autonomy within collaborative organisations in the Waikato Region. This study will explore the complex, subjective nature of farmer autonomy and examine its role in the process of establishing environmental collective organisations.

The aim of this research is to explore how a farmer's understanding of personal autonomy may influence their experiences with environmental collective organisations. This research intends to explore how farmer autonomy can be more readily understood and subsequently integrated within these environmental collective organisations.

In this research, water quality regulations include all the policies and programmes that are designed to improve water quality in the region. These consist of policies and programmes from organisations including the Waikato Regional Council, Fonterra, DairyNZ, Landcare and other relevant cooperatives. In this research, catchment organisations refer to the groups and collectives that are formed with the intention of improving, conserving and maintaining river catchments. These groups include, but are not limited to farmer-led, multi-disciplinary, communal networks. I want to gain an understanding of how social systems, knowledge networks, trust and farmer norms have shaped dairy farmer perspectives towards water quality regulations and catchment organisations.

The supervisors for my research are Professor Diane Pearson and Associate Professor Brennon Wood from the Institute of Agriculture and Environment at Massey University. Our contact details are:

Hannah McCole
Phone: [redacted]
Email: [redacted]

Prof Diane Pearson
Phone: 06 951 7837
Email: D.Pearson@massey.ac.nz

Assoc Prof Brennon Wood
Phone: 06 951 6626
Email: B.A.Wood@massey.ac.nz

You are cordially invited to participate in this research project. You are kindly requested to participate voluntarily in the interview for nearly two hours in order to provide information related to a farmer group you are involved in. You are under no obligation to accept this invitation.

The research

This case-study research will be conducted using semi-structured interviews. Up to 12 interviews will be completed with dairy farmers who work within the Waikato Region.

You have been identified by me or by other participants in the research as someone with knowledge and information that will assist me to complete my research.

<u>All participants</u>

The interview will be a maximum of 90 minutes. The interview will be at a location and time that you agree to. All your answers will be confidential and anonymous. Your name and identity will not be stated in the research to ensure confidentiality. With your agreement, the interview will be tape recorded to make sure that I record your ideas accurately. The taped interviews will be transcribed and then analysed. A summary of the results will be available to you at the end of the project. I will contact you and let you know how this can be accessed.

<u>Participant's Rights</u>

You are under no obligation to accept this invitation. If you decide to participate, you have the right to:

- decline to answer any particular question;
- withdraw from the study;
- ask any questions about the study at any time during participation;

- provide information on the understanding that your name will not be used unless you give permission to the researcher;
- ask for the audio tape to be turned off at any time during the interview; and
- be given access to a summary of the project findings when it is concluded.

Research ethics

This project has been evaluated by peer review and judged to be low risk. Consequently, it has not been reviewed by one of the University's Human Ethics Committees. The researcher and supervisor named above are responsible for the ethical conduct of this research.

If you have any concerns about the conduct of this research that you wish to raise with someone other than the researcher(s), please contact Prof Craig Johnson, Director, Research Ethics, telephone 06 356 9099 x 85271, email humanethics@massey.ac.nz.

Making contact

If you have any concerns about this research or your involvement, please do not hesitate to contact me or my supervisors. Thank you for your interest.

Appendix 2: Consent Form

Institute of Agriculture and Environment (College of Sciences)
Private Bag 11222
Palmerston North 4442

Dairy farmer perspectives on the application of autonomy in environmental collective organisations

PARTICIPANT CONSENT FORM - INDIVIDUAL

I have read, or have had read to me in my first language, and I understand the Information Sheet attached as Appendix I. I have had the details of the study explained to me, any questions I had have been answered to my satisfaction, and I understand that I may ask further questions at any time. I have been given sufficient time to consider whether to participate in this study and I understand participation is voluntary and that I may withdraw from the study at any time.

1. I agree/do not agree to the interview being sound recorded.
2. I wish/do not wish to have my recordings returned to me.
3. I wish/do not wish to have data placed in an official archive.
4. I agree to participate in this study under the conditions set out in the Information Sheet.

Declaration by Participant:

I _____ hereby consent to take part in this study.

Signature: _____ Date: _____

Appendix 3: Interview Schedule

Interview Schedule

Introductions

- Explanation of paperwork
- Research Intro: I want to talk about how farmers conceptualise their independence, I want to do this by looking at different scenarios where famers experience and express their independence, such as on their farm, with their neighbors, with their co-op. In general, I hope to gain a better understanding of how a farmer's sense of independence and autonomy is shaped by different social and independent settings. I hope that this will give me further insight into how farmer autonomy can be acknowledged and understood in environmental management.

1. Farmer/Family Info

- I would like to begin by talking about your everyday experience on the farm. Could you tell me what an average day on the farm looks like?
- What is the farm ownership structure here (owner/operator, sharemilker)?
- How large is your farm in hectares?
- How many cows are currently milked?
- Who do you farm with on this farm?
- How did you get into farming? How did you end up choosing to be a farmer over a traditional salary worker?
- How long have you been a farmer?
- Did you grow up on this farm? So, this was your parent's farm?

a) Questions for 'I grew up on this farm/a farm'.

- Did you work for your parents on the farm when you were younger?
- **How was that? Can you tell me about that?**
- When you were younger, were you a part of the everyday decision making on the farm?
- How was the transition into becoming the owner of the farm?
- **How did your experience change over time?**

- Do you think you made that decision completely on your own/independently or did your parents sort of influence you into carrying on the farm?
- **Friends?**

b) Questions for 'I became a farmer later in life/I did not grow up on a farm'

- Did you have a different job before becoming a farmer then?
- **How was that?**
- **What didn't you like about it?**
- So, what made you make that initial decision to become a farmer?
- **More freedom? Hated having a boss?**
- Who do you have working for you currently? Do you hire staff? Or is it just you and your wife/husband and kids?
- **Tight knit?**
- **Matter of trust?**
- How do you make everyday decisions on the farm? Are you quite organized? Do you consult with many other people? Making decisions on the fly?

<u>Section 2 – Co-ops</u>

- I'm going to change the topic now to discuss your involvement and experience with your co-op.

- What co-op are you with?
- Do you trust the advice given to you be your co-op?
- **Lack of expertise? Or a lack of trust there? Or you make your own decisions?**
- How do you feel about your co-op's regulations? For example, their conditions of supply and health and safety regulations?
- **Unnecessary? Overstepping? Necessary to sell your milk on the market?**
- Are you actively involved with the co-op? Do you go to the meetings regularly?
- **Sense of belonging? Is it a place to share knowledge? You take their information on board?**

<u>Section 3 - Professional Networks and Informal Connections</u>

- Are there particular professionals that you chose to consult with regularly about your farm? For example, a regular vet or a particular contractor?
- **Would you say they're quite knowledgeable about your farm and how it operates?**
- **So, you must trust them a lot? So, you listen to their opinion then?**
- **Aren't they're telling you what to do though? And you don't mind?**
- Do you talk to neighboring farmers much? Do you get their advice and opinion on matters pertaining to your farm?
- **Their quite knowledgeable then? Apply that knowledge to your farm?**
- How about farmer only groups? Are you actively involved with any of them? DairyNZ for example? Waikato Farmers?
- **Can you tell me about your experience with that group?**
- **Sharing Knowledge? Trust? Support you? Share values?**

<u>Section 4 – Institutional and Top-Down Networks</u>

- What are your thoughts on the new regulation such as the . .. ?
- National Environmental Standards for Freshwater 2020 (NES-F)
- Resource Management (Stock Exclusion) Regulations 2020
- National Policy Statement for Freshwater Management 2020 (NPS-FM).
- How have your experiences with the Waikato regional council been?
- **Lack of interaction? Lack of disclosure? Advice given? Overly intrusive?**
- Would you be willing to be involved in any council led initiatives?
- **Better if they are farmer-led?**
- [Discuss recent fines in the Waikato? Is this level of regulation and financial punishment necessary? Does it help remove the 'bad apples'?
- **Aren't tradeoffs necessary? Does voluntary regulation work? So, doesn't something like this have to happen? Don't the council have to do that?**

<u>Section 5 - Bottom-Up Collaborative Networks</u>

- Lastly, I would like to talk to you about the collaborative catchment groups that are operating across New Zealand.

- Have you heard about any of these groups? In the Waikato Region there is the Piako Catchment Forum which is a community led group focused on the restoration of the Piako Catchment. In the Manawatu area there are many farmer-led groups working together to restore various catchments (more detail) Would you ever consider participating in these groups?
- For the groups that deal specifically with agricultural catchments, do you think that they would operate better if only farmers could join them? **Any risks to involvement?**
- Do you think that this is a way for farmers to regulate themselves? Better than being solely regulated by the policy coming out of Wellington?

Conclusion - Reflection

What do you think now looking back? Any common threads between the groups? Anything you would like to add/change?