

**A Complicated Chain of Circumstances: Decision Making in the New Zealand Wool
Supply Chains**

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Lori Elisabet Ann Bradford

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This dissertation explores the influences on individual decision making in a complex, real world context – the New Zealand wool supply chain. It asks two fundamental questions, first, how do decision makers make decisions in their everyday settings and, second, how is decision making learned and improved through experience and contextual factors. Two contextual aspects of decision making were also examined; these included whether decision making processes varied as a result of uncertainty and risky surroundings, or in cooperative and competitive environments. Further examination included revealing how being a member of a (multi-layered) group influences individual decision making. In-depth qualitative interviewing of sheep farmers, and associated supply chain members in the wool industry was undertaken. Three key decision journeys were explored from both the ‘psychological’ and the ‘social’ schools of social psychology in order to give detail on the flow of decision making influences through human systems (whether entities were present, or implied). One of the main aspects of this study was to employ, by analogy, an analysis inspired by the concept of multi-level selection from evolutionary theory as a means of understanding decision making in such a complex, layered system. Other contributions include commentary on the nature of social psychological studies of decision making, suggestions for the expansion of naturalistic decision making to include processes occurring on more than one ‘level’ of context, the framing of information in the media and the judgment of information sources on the part of experienced and inexperienced farmers, and, the role that globalization may play in driving decision making behaviour.

Keywords: New Zealand wool supply chain, naturalistic decision making, uncertainty, rational-analytical approaches, intuition, social psychology, multi-level selection, agribusiness chains

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Chapter One: Making Decisions in Everyday Environments

Many go out for wool, and come home shorn themselves
-Miguel de Cervantes Saavedra

1.1 Rationale

People make decisions in their everyday lives, and everyday surroundings, however much these surroundings are in flux. One of the tasks of psychology used to be to discover how these decisions came to happen, within an individual, whether simply through choosing the first option that comes to mind, selecting an alternative from a perceived list, or by some other mechanized or esoteric means. More research has recently emerged indicating that the setting in which decision making occurs is particularly relevant, especially in constantly changing and unpredictable environments. One such environment, that of sheep farming in New Zealand (post agricultural restructuring of the 1980's), is the context for this study of individual decision making.

It can be argued that people exist in the 'real world' and studying decision making in the laboratory setting, although useful to test certain models and to gain some predictive insight, is like removing a species from its natural habitat and from the forces of natural selection that shape its capacities. Species, however, cannot turn off natural selection and engage it again at will (Gould, 1986; Alcock & Crawford, 2008). Likewise, I wonder whether people can turn off their learned reasoning abilities when removed from their natural or accustomed surroundings. This study explores how decision makers describe the strategies they use to make decisions while in their everyday farming or business environment (social, economic, ecological, cultural, and spiritual). It aims to describe the complex influences that are at work within and between individual decision makers (acting alone and in groups) making real decisions as part of their lives.

When New Zealand positioned itself in the global economic arena with its sweeping changes to economic policies from 1984, it was hoped that the changes would help lift the New Zealand economy from “the brink of ruin” (Douglas, 1980, p. 9), and bring the living standards of New Zealanders back up to the top five in the OECD (Mein Smith, 2005). Agricultural subsidies were removed entirely, leading to changing production environments, and a diversification of markets for New Zealand agricultural products. For some farmers the adjustment pressures of the new policies were too great and they left the industry (Eckhoff, 2008). For others, however, new opportunities arose, while strategic responses of New Zealand agribusinesses generally contributed to profits, and made them more competitive (Dobson & Rae, 2006). When subsidies that farmers had become accustomed to in the 1970’s were drastically reduced, and then removed entirely, some farmers adapted rapidly and efficiently to the new economic environment by modifying the use of their resources in order to mitigate the decrease in their incomes and maintain their standard of living (Gouin, 2006). What was perceived as a challenge by some became a prospect for others who successfully navigated strategic decisions in order to earn their livings from global markets, rather than turning to government for aid.

As in so many areas of life in the modern world, decision making, as a skill, is vital to the ongoing achievements of agribusiness in New Zealand. This study explores decision making as described by members of different levels of agribusiness chains and how the decision making is influenced by global pressures and uncertainties. The historic case of rapid economic change in New Zealand sheep farming provides a fascinating – and real – example of how individual decision making has operated in and responded to an uncertain and dynamic context. This case therefore provides a complex setting for exploring the nature of human decision making in the modern world. It may also be that through better understanding of relevant decision making processes sheep and wool growers in New Zealand may be helped in their attempts to rebound from their current difficulties.

Decision research has been approached from various perspectives but most commonly, from normative and prescriptive perspectives (Keller, 1989; Bell, Raiffa, & Tversky, 1988). In normative research, individual decisions are studied with an emphasis on structured logic, reasoning, and the rationality behind each option/choice, while giving some attention to assumptions (whether tacit or explicit) (Kahneman & Tversky, 2000; Bell, Raiffa, & Tversky, 1988). Decision making studies have often been performed in laboratory settings or have used hypothetical situations, with a goal of being able to predict future behaviours from the study results (Koehler & Harvey, 2007). Studying the actual cognitive processing occurring during such decisions is, however, difficult, and not entirely reflective of real life situations (Over, 2007). Decision studies are often prescriptive; that is, they report on how decisions *should be made*, not how they are actually made in usual settings (Over, 2007; Bell, Raiffa & Tversky, 1988; Lipshitz, Klein, Orasanu, & Salas, 2001). This study seeks to uncover how farmers and supply chain members in the New Zealand wool industry context make decisions in their everyday environments. In this way, the study may additionally contribute to the ‘naturalistic’ field of decision making (hereafter NDM) (see Section 1.6 below, and Chapter 3, Section 3.10).

1.2 Some Previous Research into Farmer Decision Making

Studies of farmer decision making, in particular, have typically examined the roles farmers play as managers of farm resources, selectors of crops and treatments, adopters of technologies and agricultural environment schemes, and responders to policy changes (Ohlmer, 1998; Nuthall, 2004, 2006). Many such studies have been based on normative theory which assumes that all farmers are profit maximizers (or utility seekers). This model of research on decision making is useful in that it enables economic modelling of behaviour through measurement of utility (perceived, or measured in terms of monetary gains and losses) and it also to some degree can be accurate in predicting behaviours (such as in choice

modelling) (Binswanger, 1980; Collins, 1985). An increase in a person's utility can result from any number of events, such as pay rises or increases in subsidies, purchasing of new equipment, or an improvement in a local environment or context. However, the effect of that same event varies widely between people and between times in an individual's life. Thus, not all events bring about the same increases in utility every time they occur; hence, using normative approaches in modelling decision making becomes limited to explaining specific events, under two key assumptions; (i) that money and material items act as measures of utility and, (ii) farmers are rational profit maximizers (Willock, et al., 1998; Austin, et al., 1998).

The farming environment can be described as complex and uncertain. There are intricate and competing goals (such as being economically, environmentally, or otherwise successful) while, at the same time, there is the challenge of incomplete incoming information (including some uncertainties like weather prediction, and the unexpected closing of an international border). Farmers have variable levels of debt and income to manage due to the unpredictability of weather, and hence, outputs, from year to year. Farmers are often members of various groups, and seek information from other groups and members. Additionally, farmers have the need to learn and recover from past errors in judgment. In these complex situations, decision makers often rely on intuition and "gut feelings" in order to obtain what they feel are good, approximate answers (Yudkowsky, 2006) (See Chapter Three: Literature Review, Section-3.10). However, the tendency to rely on "gut feelings" without giving due attention to incoming information and calculating probabilities for outcomes can lead to repeated errors (Kahneman & Tversky, 1982). The ability to identify these errors in judgment sets the stage for comparison between successful users of intuition-based approaches and those who turn to other calculated evaluations of potential outcomes (Gigerenzer, 2004; Kahneman, 1991).

In the past, research on sheep and wool farming has concentrated on physical aspects such as inputs and outputs of the farm, sheep health and breeding, increasing amounts and quality of wool produced and on economic activity related to the industry (Boutonnet, 1999a; 1999b, Willock, et al., 1999; Paul et al., 2000; Statistics, 2002; Beggs & Tangney, 2003; Mitchell, 2003; No Author, 2005; Lillis, Fairwetaher & Sanson, 2005; Malcolm et al., 2005). Farming success as described in farm journals and in accounting records has been detailed in terms of profits, outputs, and other economic indicators (Austin et al., 1996). There have been some studies of farmers' decision making strategies, but these have tended to concentrate on farmers' use of decision support systems, and their generalized farm management strategies; they have not fully addressed the influence of contextual factors, including global pressures and supply chains on individual farmer behaviour (Gasson, Crow et al. 1988; Ohlmer 1998; Willock, et al. 1999a, b; Illukpitiya and Gopalakrishnan 2004; Nuthall 2004).

Three studies have concentrated on classifying farmers according to factors they 'weigh' in coming to management decisions (Ohlmer et al., 1998; Willock, Deary et al. 1999a, b; Nuthall, 2006). Six categories of decision makers have been presented (Morgan et al., 1995; Nuthall, 2006), but, farmers in these samples were described using a continuum of individual characteristics rather than by discrete classifications (Morgan, et al., 1995; Willock, et al. 1999; Nuthall 2006). It could be that other factors not studied in these works, such as supply chain relationships, influence farm decision making. It was apparent, then, that further research in the field of farmer decision making was needed, especially in the New Zealand wool industry.

1.3 Decision Making in Context

These examples from the literature illustrate that farmers' decision behaviours result from complex processes influenced by a range of socio-economic and psychological variables, while also being cognizant of the context, which does not easily lend itself to being

modelled by methods traditionally used by agricultural economists. Modelling decision making at more than one concrete moment in time also presents difficulties. How, then, to consider individual farmer decision making and provide rich information on farmer decision behaviour under multiple circumstances?

Perhaps it is the circumstances that are the key factor, and perhaps considering farmers as just farmers is too limiting. Farmers are, after all, people living their lives in particular circumstances. They are not purely business decision makers or professionals. During times of flux, people often spend more time contemplating options, and their own decision making, especially when approaching a significant decision, or one similar to those crucially faced in the past. In the telling, and retelling of difficult moments in one's life, people often become more aware of how they have overcome obstacles in the past, thus giving them insight into how to approach a difficult current decision (Connelly & Clandinin, 1990). An investigation of fundamental aspects of decision making in individuals and groups from a grounded approach is likely to complement normative decision making findings and serve to illuminate decision making theory.

More recently, decision making research has focussed on such 'organic' perspectives. The naturalistic decision making framework (Klein, Orasanu, Calderwood, & Zsombok, 1993), arose from descriptive accounts of how people actually made decisions in demanding situations. These accounts help to complement some of the controlled laboratory findings in normative research by providing observations and descriptions of cognitive processing that can lead to testable hypotheses and models of decision making. These studies also give salience to some of the personal factors described earlier (i.e., attitudes, values, and habits as antecedents to behaviours), especially when values, attitudes, and norms adapt to better reflect the changing directions of societies.

1.4 The Social Context as an Influence on Farmers' Decision Making

The societal shift that occurred in New Zealand with the 1984 deregulation acted as a watershed of change for the agricultural industry and for a generation of people in New Zealand (Martin, 2009, personal communication). What was formerly perceived as a stable and predictable industry became a risk-filled industry with its members very much interested in restoring stability, only now on an individual rather than societal level. With the knowledge that there would not likely be a governmental 'fix' to any subsequent problems, individual farmers were left to devise their own strategies for survival, particularly with the new circumstances of competing on a global scale. Given that there has been a quarter of a century since that restructuring, and the farmers once again are facing difficult times, gaining knowledge of how farmers survived and ultimately thrived in that exposed state may be important in rehabilitating the industry. The added reflection of farmers who persevered through risky times, might give key insights into how decision makers operate in times of flux, and how people manage exposure to risks in general through strategic decision making.

During this particular study, meat and wool prices were at very low levels, which may be one contextual factor influencing its findings; however, this possible bias may serve as a benefit. First, the context might bias the respondents to describe the approaches they used to combat poor financial returns, over other decisions of the farm. The financial stress forces the farmers away from thinking about tactical decisions on the farm - such as grazing management - to very fundamental decisions that are strategic in nature such as leaving or staying in the industry. The deep level probing in this study aimed to get beyond contextual factors including the immediate needs of the farmers in meeting their financial needs, in order to uncover their decision making strategies.

Additionally, the uncertainty that the farmers are experiencing, due to the financial stress, may have primed them for thinking about difficult decisions, but it may also have motivated them to increase their cognitive efforts and move towards the use of creative and

deeply intuitive decision making techniques. Conversely, there might also be the influence of experienced farmers recognizing the part of the socio-economic cycle in which they currently reside, taking comfort in knowing that they will come out of it as they did before. Hence, their commentary might not have been coloured by the current state of wool as an agribusiness, giving way instead to 'tried and true' decision approaches. During upward swings, and/or in the midst of successful short-term trends, the discussion might be impeded by exhilaration, rather than the frank descriptions of fundamental thinking that the farmers in this study gave.

This is a study of the rudimentary decision making of people who happen to live and work in the farming context; one laden with uncertainties and risk, both local and global in nature. This industry itself provides a good site for research since those characteristics reflect many sociological issues of today; how do people, as individuals, and members of various groups, effectively make decisions in uncertain situations? How do people develop their abilities to reason while navigating different roles and responsibilities?

1.5 The Importance of Reasoning

Logic is usually defined as a set of rules, or a variety of systems of reasoning, by which conclusions can be consistently deduced from initial statements or propositions (Stratton & Hayes, 1999). Logic has been of interest in psychology and social psychology because it can be regarded as perfect reasoning, and is therefore a starting point for analysing how people reason and make decisions. It turns out that people are much more sophisticated and rather less rigid in their thinking than the logic that has been invented, and there is not too much similarity between the two processes (Stratton & Hayes, 1999).

Formal reasoning is the cognitive process of looking for reasons for beliefs, conclusions, actions or feelings (Kirwin, 1995). Natural reasoning is that reasoning on problems that seem closely related to the kinds of judgments and decisions required of people

in their day-to-day lives. How do people learn and accomplish such reasoning? People as individuals or in groups, typically have been found to apply general rules of thumb (or heuristics) that usually work quickly and efficiently (Kahneman, Tversky, & Slovic, 1982). However, there are situations in which these heuristics are pushed past their limits. Such situations occur more frequently than a person thinks or realizes; reasoning that looks plausible and logical often is not. The question that follows is, are people poor decision makers to begin with and must they be taught (explicitly or through experience) to use sound decision-making techniques, in much the same way that logic and reasoning beg for training? Finally, there is the question of how logic, reasoning and decision making techniques are established and reinforced in human societies and groups; are evolutionary forces at play?

In the case of examining human reasoning, there is one further aspect to consider. The environment and context (in the combined physical, social, spiritual, evolutionary, and economic sense) in which we make decisions is often a major contributor to the style of decision making, and the pressures we feel while contemplating courses of action (Klein, 1989). A further complication to decision making is the framing used to describe the environment (or context) and requirements of an individual in a decision-requiring situation (Kahneman, Tversky & Slovic, 1982). With that, I will begin to explain some of the research describing individual and more specifically, farmer decision making.

1.6 Naturalistic Decision Making as a Research Field

A major contribution of the naturalistic decision making (NDM) community has been to describe how people actually make decisions in particular real-world settings (Klein, 2008). Prior to the emergence of NDM as a field in 1989, most decision making studies sought to identify optimal ways of making decisions (defined as choices among alternatives) in well-structured settings that could be carefully controlled, but the heuristics and biases paradigm (e.g., Kahneman, Slovic, & Tversky, 1982) demonstrated that people did not adhere to the

principles of optimal performance as expected. The initial NDM researchers tried a different approach. Instead of beginning with formal models of decision making, they began by conducting field research to try to discover the strategies people used (Lipshitz, 1993). Instead of looking for ways that people were suboptimal in their decision making, NDM researchers wanted to find out how people were able to make tough decisions under difficult conditions such as limited time, uncertainty, high stakes, vague goals, and unstable conditions (see for example, Orasanu & Connolly, 1993).

Through NDM's re-conceptualization of the decision making process to include prior stages of perception and recognition of situations, and the generation of appropriate responses from within and without (not just choice from among given alternatives), NDM researchers moved the study of human decision making from a domain independent general approach to a knowledge based approach exemplified by decision makers who had substantial experience (Klein, 2008). This perspective took advantage of advances in cognitive psychology such as knowledge representation concepts of scripts, schemas, and mental models, to contrast expert versus novice behaviour. At the heart of NDM theory is the decision makers' knowledge of their local context, but studies on how the intangible aspects of one's locale contribute to decision making are few.

NDM research continues to add detail to early models, to contribute general insights about decision making, and in doing so, has enjoyed relatively rapid adoption of its findings. However, there are still calls for more research in new 'naturalistic' settings in order to verify and expand on the knowledge hereto contributed by NDM researchers (Klein, 2008). This study aims to contribute by examining naturalistic decision making in the context of a New Zealand agribusiness chain, and on sheep/wool farms.

1.7 Social Science Approaches to Farmer Decision Making

In the attempts to model farmer decision making processes, social scientists have typically taken different approaches to that of agricultural economists. The central psychological concept in this type of research has been to concentrate on discovering how and to what extent attitudes (i.e., positive and negative responses towards an attitude object), act as the precursors for decision behaviours (Edward-Jones, 2006; Willock, et al., 1998; Edward-Jones, Deary & Willock, 1998). However, attitudes on their own are poor predictors of farmer behaviour (Willock et al., 1998), while personal and social norms, personal and social values, habits, expectations, and other factors have also been found to be involved in farmer decision making (Perkin & Rehman, 1994; Casebow, 1981; Coughenour & Swanson, 1988). The influences are also very context dependent; one's attitudes and values are also quite varied depending on the period of one's life, and one's social, economic, ecological, and cultural environment (Caspi & Roberts, 2001).

The characteristics of the farm household and the structure of the farm are two influences on farmer decision making previously described in research. The farm can at once be considered a family business in which lifestyle and personal considerations interact strongly with the business environment in which farmers make management decisions (Collins 2004). Farmers juggle the demands of their immediate families, their family traditions, peers, employees, and other agribusiness chain members' expectations and goals in their implementation of decisions. The social demographic history of the farmer and the wider social milieu within which the farm and farmer are found can also play a role in decision making. Farmers and farming families who have had multiple generations in the same industry and/or on the same farmland can have established beliefs and patterns used to manage their farms and those farmers also tend to be risk-averse (Morgan, et al., 1995). Conversely, farmers exposed to constantly changing social influences may have difficulty settling on one particular strategy for managing their farms (Gasson, et al., 1988; Ohlmer

1998; Willock, et al., 1999a, b; Illukpitiya & Gopalakrishnan 2004). This difficulty is also reflected in the influence of group dynamics on farmer managerial styles. Farmers perceived as good people managers, or leaders amongst their colleagues, often are not the most successful strategists when removed from group situations (Nuthall, 2006).

Recent research on farmers' decision making abilities has clarified some of the role that the psychological make-up of farmers plays in their decisions, particularly by using correlations between psychological test results and conventional farming-oriented questionnaires (Austin et al., 1998; Fairweather & Keating; 1994). These studies have concluded that some aspects of the person's psychology (for example, use of heuristics and biases, personality traits, intelligence, coping inventories, and measures of psychological distress) *and* of the environment are important antecedents of behaviour; lending support to a transactional theory of behaviour. These studies have also cautiously stated that there may be mediating factors between antecedents and outcomes (Deary et al., 1996; Willock et al., 1998). However, other studies have indicated that the psychological make-up of farmers and its influence on their decisions is best explained as a collection of individual characteristics that is not easily categorized on personality scales (Morgan et al., 1995; Willock et al., 1998).

The farming industry is fraught with uncertainty and risk (Deary, Willock et al. 1997; Lobao & Meyer 2001; Mitchell 2003; Ditto, Pizarro et al. 2006). Decisions made under these conditions do not always follow expected lines, yet offer opportunity for creativity in problem solving (Ondersteijn, Giesen et al. 2003, 2006). Improving the ability to deal with uncertain information in a straightforward and uncomplicated way might improve the quality of farm planning.

The wool industry globally has been declining for many years. This has resulted in increased pressure on New Zealand farmers to diversify in the current farming environment (Wood, 1999; Paul, Johnston et al. 2000; Carberry, Hochman et al. 2002; Statistics New Zealand 2002; Beggs & Tangney 2003; No Author 2005; Alpermann 2006). There are

additional pressures because of successes in other types of sheep farming enterprises, such as sheep-meat and lamb production, and implicit comparisons with other farm enterprises, especially dairying in the New Zealand agricultural system. Finally, with the current downward trend comes an increase in farmer departures from the industry. With a concurrent decreased entry into sheep farming and wool growing, there may be considerable, and unrecoverable, loss of the skilled labour force and the long-term knowledge they hold.

This study focused on the strategic decision making aspects of the wool industry; what the farmers believed were the main influences on their decision making, and how the complicated environment they found themselves in affected how farmers made decisions on the farm. It also explored how the sharing of information influenced farmers' uptake and belief in information sources. There is also the question of how traditional notions and meanings of being a sheep and wool farmer may be changing and how decision making approaches by farmers could be a part of that change. Finally, this research will discuss how and if relationships with others in the supply chain can alleviate the decline or adapt to an evolving knowledge system being used in the New Zealand sheep and wool farming context (Boutonnet 1999a; Champion & Fearne 2001; de Moura 2002; Beth, Burt et al. 2003; Hult 2004; Gorton, Dumitrashko et al. 2006).

1.8 On-Farm Decisions (the modern farming 'wilds')

On a day to day basis, farmers make decisions at several levels including strategic (or long-term highly complex decisions), tactical (medium term, more complex decisions), and operational (short-term, uninvolved decisions) (Piech and Rehman 1993; Murray-Prior 1998; Ohlmer 1998; Ohlmer, Olson et al. 1998; Illukpitiya and Gopalakrishnan 2004). Strategic decisions are those which are a key to a firm's or individual long-term success within an industry, and differ from the tactical (day-to-day) and operational decisions. These decisions are very much deliberate; that is, they include decisions that farmers take time to consciously

engage with, over a reasonable time-span as there are significant consequences to these choices (particularly the strategic ones). For each level of decision farmers may use different techniques, or rely on different inputs including those from their own beliefs and experiences and others' ideas, before settling on an option (Fairweather and Keating 1994; Beedell and Rehman 1999; Carberry, Hochman et al. 2002; Bergevoet, Ondersteijn et al. 2004).

Other members of various levels of the wool supply chain make different types of decisions regularly. These may include where to purchase supplies, how much to pay for them, how to process them, and at what price to sell those value-added supplies to buyers (Sankaran & Luxton 2003; Lee 2004; Martin & Jagadish, 2005; Patterson, Martin et al. 2005; Sahay, Gupta et al. 2006). They might also include who to trust for supplies and information, who to share information with themselves, how to protect their business from competitors, and how to capture a new market. These supply chain decisions can influence what decisions other members of the supply chain make, even though they do not necessarily occur within the same country, or continent, or under the same regulatory systems. In this case, they will influence decisions of farmers that supply the wool to the global wool and textile industries (Hirschl & Long 1993; Champion and Fearn 2001; Lobao & Meyer 2001; Beth, Burt et al. 2003; Bacarin, Medeiros et al. 2004; Farina, Gutman et al. 2005; Gorton, Dumitrashko et al. 2006).

In an important recent external development, the emphasis in European agricultural policy has changed from maximizing production to the promotion of schemes concerned with conservation of the rural environment (e.g., the EU set-aside scheme). This has led to increased interest in the attitudes, psychology and decision-making processes of farmers (Willock, Deary et al. 1999; Straete 2004). One reason for this interest is that detailed understanding of the motivation of farmers is required to design and present policy initiatives which both promote compliance and foster desirable social developments to support farmers in rural areas. In addition to interest in farming at the policy level, perspectives from other

disciplines such as sociology, economics and psychology can be used to derive insights in the study of farmers and farming (Ohlmer, Olson et al. 1998; Willock, Deary et al. 1999).

The farm often comprises a family business in which lifestyle and personal considerations interact strongly with management decisions (Collins 2004). The business operates in an environment containing a large and unavoidable degree of uncertainty (for example, with the weather, swings in the international economy and policy changes in associated countries). Because of this combination of attributes the issue of how farmers react to external pressures in general, rather than simply to policy changes, is a valuable area of study (Ohlmer, Olson et al. 1998; Willock, Deary et al. 1999). Finally, despite considerable interest in the topic, little is known about the actual nature of farmer decision making as it occurs which makes the question of how such decision making unfolds in this increasingly complex context an important one to ask.

1.9 The Emergence of the Thesis

This thesis emerged in a somewhat serendipitous way. While undertaking a literature review for a grant application on an ecological foot-printing project to identify best practices for instituting policies that would change farmers' environmental decision making and behaviours, a gap in the literature on studies directly examining farmer decision making using social psychological approaches was identified. Further study revealed that there had been an interest in uncovering more information on how farmers come to decisions (primarily to discover why there had been poor uptake of farming aids such as farmer decision support systems).

With that gap in mind, I set out to learn more about the decisions being made in the context of wool growing, and sheep farming in New Zealand. Through the examination of farm diaries and discussions with experts on the state of wool as an industry in New Zealand, I realized that this realm is rich in history, and experience, and exhibited a wide assortment of

decision and personal ‘contexts’ which suited research engagement at different ‘sites’ where different dynamics, dilemmas, deliberations, and decisions might be productively explored. Though the ecological foot-printing project is no longer in progress, the exploration of farmer decision making in dynamic contexts and in consideration of their multi-leveled membership in societies has just begun.

1.10 Summary and Thesis Description

This study focuses on the fundamental examination of decision making by individuals (alone and in groups), and the influences (from near and afar) on those individuals.

Two main research questions arise; *first, how do decision makers make decisions in their everyday environments?* This first objective has two specific areas of concern:

1. Do decision making processes vary as a result of uncertain and risky surroundings?
2. How do the influences of groups (i.e. supply chain members, social associations, or families) affect decision makers?

And secondly, how is decision making learned and improved through experience and contextual factors? These questions are explored using the two social psychological approaches (the psychological and the social) deemed necessary because of the intricate context of this research.

Chapter Two explores the context of the study in more detail. It explains how farmers are situated in various groups that are both local and global, and explicit or implied. Chapter Two additionally gives details on a socio-biological analogy that will be used later to help clarify the complex relationships between individuals and groups when it comes to making decisions that affect both in some way. Chapter Three presents a review of the literature in social psychology, decision making, uncertainty, and globalization (as it applies to local decision makers). Chapter three begins by describing some of the contribution that the ideas of implied presences of others, perception and its’ two meanings, and the different social

psychological approaches have made with regards to this study, and the decision field in general. The fourth chapter explains the methods, followed by the methodological and sampling details. The fifth and sixth chapters present the results firstly from farmer interviews, followed by those respondents from various levels of the supply chains used for wool products. The results are presented thematically by participant group (farmers, and supply chain members), but also by two broad decisions strategies that emerged during the coding process. The seventh chapter provides in depth analysis of three key decision 'journeys' that relate to the objectives of this project. The decision to remain in the industry, choose a pathway for wool to market, and secure buyers and suppliers set up the context through which social psychological processes move through the levels of the chain 'society', and present similar decision scenarios among the members of the chain.

The detailed analysis is followed by a discussion (Chapter Eight) and conclusion (Chapter Nine) which relate the results of this study to the literature, and suggest further areas to consider in light of the findings. Chapter Eight concentrates on how the specific findings expand the current models of naturalistic decision making, while Chapter Nine gives attention to how this study can contribute to overall understandings of decision making, using analogies from other fields to help understand social psychological phenomena, the applicability of this study to other fields, and future research directions. A closing section noting limitations can be found in Chapter Nine.

One final note of invitation comes from one of the farmers I interviewed for this study; as I walked down the ramp from the wool shed after the interview he expressed, "Well, you've caught me off-guard; I was not expecting a young, beautiful lass from America to show any interest in how we grow wool." To which I (curiously but not in an offended way) replied, "Do you think it really matters where I am from?" To which he replied, "Yes, lass, I reckon' it's the only thing that matters, where we're from. Each and every one of us."

Chapter 2: The Context of the Problem and a Socio-Biological Analogy (Supply Chains as Super-Organisms)

It never troubles the wolf how many the sheep may be.
-- Virgil (in Aeneid)

2.1 Introduction to the Context

The context of this study is complex, both historically and because it involves the interaction between global and local processes. There are at least two points of context to consider, that of the social context (both individuals and groups are making decisions while interacting with each other) and that of the physical context (farmers on their farms, and others in their supply chain locations around the world). To help clarify the complicated and chaotic circumstances within which decision makers are acting, I will be adopting an analogy from socio-biology. The multi-level selection analogy is a way of thinking about forces acting in this global industry and the pressures on the actors therein. The framework also helps to illustrate why actors in certain conditions seemingly give up their own interests to create well-constructed cooperative structures, in a context that, at first sight, should result in the players aggressively competing with each other.

This chapter describes the context of local farmer and supply chain members' decision making in terms of managing their industry with complicated supply and demand issues, and market circumstances. It includes considerations of historical, economic, and cultural factors, as well as influences of globalization on decision makers. Section 2.2 begins by examining the decline in the wool industry over the last several decades and the struggles that ensued therein. The same section also highlights some of the innovations that have contributed to local farming successes in this global context. Section 2.3 highlights aspects of the supply chain dynamics that managers navigate, including describing the types of supply chains traditionally used in the wool industry, and differentiating between functional and innovative

products. Section 2.4 describes the individual and group environments present in the wool supply chains with special attention to the sphere of social psychological interactions.

Beginning in Section 2.5, this chapter also explores the socio-biological analogy that will be used to help explain how the different decision making units existing in the wool industry are ‘constructed’ to act in dissimilar ways. Finally, social dilemmas are defined, and discussed as they apply in the supply chain situation in Section 2.6.

These explorations are intended to provide a broad understanding of the multiple factors that could impact farmer and supply chain member decision making, as well as demonstrating how interconnected those actors might be. Furthermore, this understanding is an essential prerequisite for exploring the complex set of constraints, opportunities, and dilemmas farmers face in their everyday lives while working to sustain their lifestyles and livelihoods. More generally, this approach aims to provide at least one framework for situating human decision making in a naturalistic context that extends beyond immediate social interactions through, ultimately, to the global scale.

2.2 Wool Industry Decline

The New Zealand wool industry has been in decline for decades (Maddever & Marsh, 2003; Preston & Cooke, 2007). Both wool export volumes and real prices have declined over time. For example, in 1969/70 New Zealand exported about 240,000 tonnes of wool (clean), while for the year ended June 2002 it exported 151,000 tonnes and has continued to decline each year thereafter (Ministry of Agriculture and Forestry New Zealand, 2008). While returns do fluctuate on a year by year basis, the long-term trend over the few decades has been for returns from wool to decline, primarily as a result of competition from synthetic and other fibres, and due to higher costs associated with sheep farming and wool growing (Scobie & Jacobsen, 1992).

Subsequent to the changes in the 1980's, the wool industry in New Zealand has existed in what is known as a near-perfect competitive market. Perfect competition exists when there are a very large number of small companies trading in the same or very similar commodities or services, and none of whom can affect the price by increasing output or restricting it (Chamberlain, 1935; Stigler, 1957). In addition, the entrepreneurs have perfect knowledge about costs and prices across the market. Everyone knows the state of everyone else's costing and has perfect information on the likes and dislikes of buyers. Finally, there are no barriers to entry into the market. Once the government subsidies were removed, the New Zealand system became a near-perfect competitive system, with some minor boundaries; there were recent increases in branding, niche's emerging and, the need to contend without 'perfect knowledge' (partly since there are no longer government subsidies tied to the system). The change in the system over the years and the near-perfect state allow for an interesting site to study the perceived control over the farm's financial and other performances.

The decline in the wool industry is not just as a result of changing conditions in the industry; it also parallels a growth in the dairy sector. Overall, total sheep numbers are estimated to have decreased 11.2 per cent from 43 million head in 2007 to 34.2 million in June 2008 (Statistics New Zealand, 2009). These were driven by decreases across all regions - the largest occurring in Marlborough-Canterbury (-18.2%) (Statistics New Zealand, 2009). Negative sentiment about the profitability and the future of the sheep industry were combined with dry conditions over much of the country and attractive alternative land uses. These factors, combined, produced one of the largest exits of farmers from the industry lowering sheep numbers to levels not seen since at least 1950 (Meat & Wool New Zealand, 2008).

Sheep farming and wool growing, once an industry of high-esteem and value in New Zealand society, is now an industry troubled with negative media coverage, disagreement, and a mass departure of skilled workers to other, more lucrative industries (Meijer, 1996; Rhodes, Willis, Smith & McCann, 2003). Additionally, once-rich pastoral land has been widely

modified for dairy support, forestry and cropping (Dexcel, 2003; Rhodes, Willis, Smith & McCann, 2003).

There are, however, innovations in the industry that have allowed some farms to remain viable, even highly profitable during the challenging meat and wool farming years, and with added pressures from successful conversion to dairy and dairy support looming. Examples (where the farmers have indeed pursued niches) include grower-driven cooperative supply chains, grower-driven contract negotiation, scientific research into highly specified and sought-after commodities provided by the sheep and wool industry, the diversification of wool product markets, and 'green' end-uses of wool-based products (Andrew, Forgie, Nielsen, Hodgson, Reid, & McDonald, 2005). These innovations may have come about through non-traditional means (i.e., some being farmer-led) along with market driven pressures from firms along the chain. Both the entrepreneurship and innovations of farmers themselves, in addition to those proffered by organized research and development firms have contributed to some of the flourishing initiatives.

2.3 The Complexity of the Wool Supply Chain

Traditionally, wool was sold by auction, but there has been a steady decline in the proportion of wool sold this way (Beggs & Tangney, 2003). Many farmers now choose to sell wool directly to private buyers and end-users. It is also claimed that farmers are keen to develop relationships directly with processors so that they can receive information from end-users, adjust their wool specifications to market requirements and thus increase their wool's value (Wool Equities Limited, 2005).

Unfortunately, the long and complex traditional supply chain makes it difficult for farmers to interpret market signals accurately and rapidly, especially those signals from the consumer (Ertek & Griffin, 2002; Patterson, et al., 2005). Additionally, it may be important

for New Zealand growers to be aware of, and adapt quickly to, policy changes in different countries for importing agricultural products.

Access to world markets for wool fibres is vital for New Zealand farmers for three main reasons (among many more). The first is that the domestic market for wool and sheep products is too small to absorb the current volume of production. Second, wool growing has a rich history in New Zealand and contributes to the “Clean and Green” identity of New Zealand on world consumable product markets, textile markets, and more recently in the tourism markets (Bell, 1996; Dew, 1999; Coyle & Fairweather, 2005; Tucker, 2007). Third, access to world markets for wool fibres helps farmers to be alert to new trends, thus positioning themselves for a sustainable future in the industry. Though it has been unclear what has driven changes in the relationships among farmers and their supply chain links, it is useful to explore to what extent effects at the market end of the chain, and other groups or entities along the pathway, provide feedback to the growers and how that influences their on-farm decisions.

One definition of a supply chain is "a group of semi-independent organizations, each with their own specialized capabilities, which collaborate in ever-changing constellations to serve one or more markets in order to achieve some business goal specific to that collaboration" (Akkermans, 2001, p.180). A farmer, or farming cooperative, is just one of many organizations along a chain. In the case of wool, the farm entity is the second entity, coming after farm input supplies (i.e., drenches, fertilizers), and thus one of the furthest removed from the final end-user. Often, entities within the chain may seek to maximize their revenue within their sphere of interest and thus compete fiercely with other entities at the same stage in the flow of raw material to finished product, but otherwise may have little or no knowledge or interest in the remaining players in the supply chain (Min, 2001).

Variations on pathways through supply chains exist but, in general, there are two different types of supply chains; cooperative chains (where costs, risks, information, and

decisions are shared amongst all entities involved, and the chain works as a single unit to fulfil its goals), and opportunistic supply chains (which form on a short-term basis to meet supply and demand using the idle capacities of numerous qualified entities in order to seize a quick market opportunity, and little or no attention is given to information sharing, long-term outcomes, or the survival of entities above or below in the same chain) (Hicks, Earl, & McGovern, 1999; Chandra & Kumar, 2000; Martin & Shadbolt, 2000).

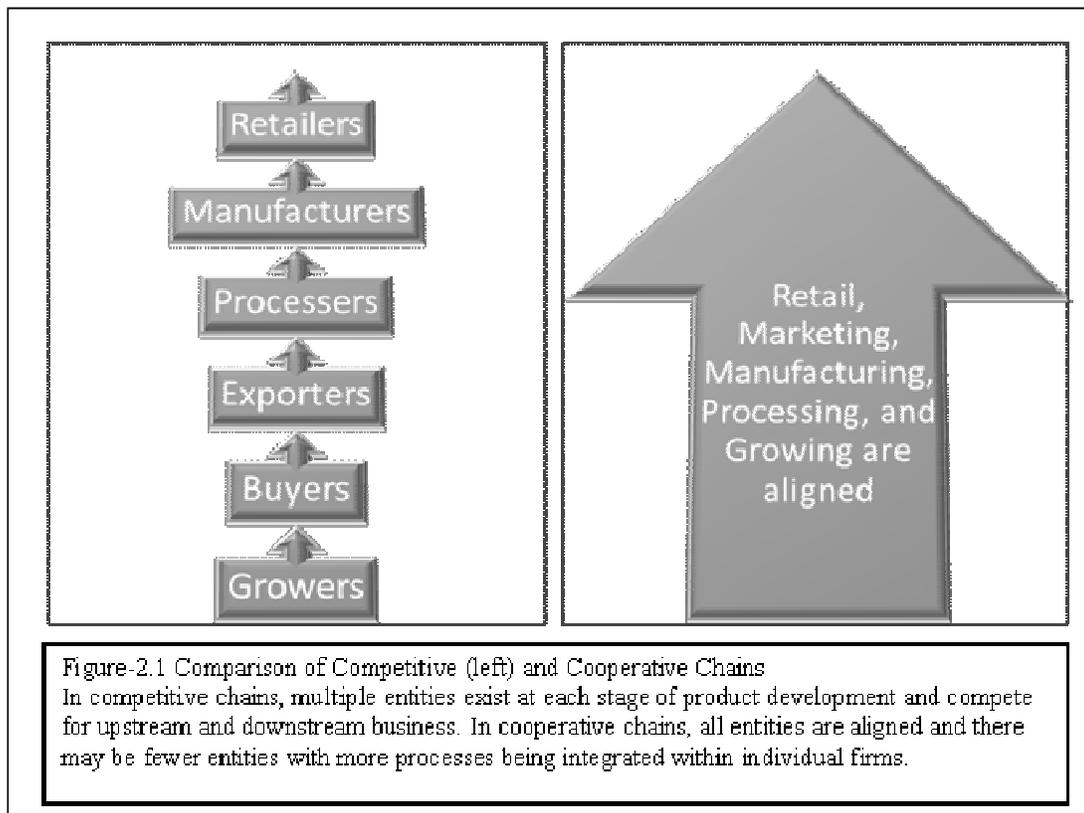
Supply chains also have varied mechanisms of governance. For example, Gereffi, Humphrey, & Sturgeon (2005) described five types of global value chain control; hierarchical, captive, relational, modular, and market - which range from high to low levels of explicit coordination and power asymmetry. They conclude that in a global value chain, focus needs to be on the nature and content of the inter-firm linkages, and the power that regulates value chain coordination, mainly between buyers and the first few tiers of suppliers in order to be effective (Gereffi, Humphrey & Sturgeon, 2005). However, it is important not to ignore the actors at both ends of the value chain since at the upstream end, raw material and equipment suppliers can exercise a great deal of power, while, at the downstream end, highly knowledgeable consumers can play a major role in determining the attributes and innovative trajectory of the products and services that global value chains generate (Porter, 1980; Gereffi, Humphrey & Sturgeon, 2005). “Consumer culture, whether it emerges from the home, street, school, or park, can subvert the original intention of producers by altering and ascribing meaning to products in ways that designers and marketers never intended” (Gereffi, Humphrey & Sturgeon, 2005, p.98). It is for this reason that the nature of information flows along the chain may be vital to ensuring the ends of the chains clearly communicate what supply and demand exist for a product (Porter, 1980).

Finally, supply chains often follow distinct strategies ranging from the most basic, ‘low-cost,’ to an intermediate ‘differentiated’ strategy, and to advanced systems, focusing on a particular buyer group, segment of the product line, or geographic market (Porter, 1980).

Each of the three generic strategies involve risk, and each may have been established in order to build defences against the competitive forces firms encounter. Firms have discovered many different approaches that earn superior return on investments, and the best strategy for any given firm may involve a unique construction reflecting specific circumstances (Porter, 1980). Firms that can align strategies along the chain they are in, might ease their vulnerability to competition. Strategy involves forming beliefs about what opponents and interacting agents will do in given circumstances, and then behaving in a way that achieves the goals of the individual or business entity that calculated opponents' original beliefs. Strategic behaviours are the manifestations of supply chain behaviours that are achievable under each specific context dictated by the wider environment. Sometimes the beliefs supply chain entities form can prove easy to categorize based on identities (i.e., 'brands') portrayed or marketed by other interacting agents. However, context again plays a major role in the wool supply chain in dictating how companies use identities to move their agendas forward. Because identities and thus the resulting strategic approaches are so pliable in the global arena, there are vast challenges to strategizing and positioning among the chain, resulting in power struggles between levels and within levels as will be highlighted in the following results section.

The two generic types of chains described earlier illustrate two particular group behaviour scenarios. In a competitive chain, groups may compete with each other for the attention of an end-user or market for their products while also competing internally for survival within that group. In a cooperative chain, a group's goal is to work together (without competing internally) to potentially overcome another group (if any) with a similar or the same product to sell in a market, while additionally sharing risks and responsibilities (see Figure 2.1 below).

Figure 2.1 Structures of Cooperative and Competitive Supply Chains



The situation of competing supply chains is analogous to multi-level selection in the biological world as described by Wilson (1995) (see Chapter Two: The Context of the Problem and A Socio-Biological Analogy, Section 2.5 below), where competing groups can increase their fitness through behavioural adaptations which may be costly to an individual, especially in the short-run, but, overall, work to ensure group fitness – and consequently, individual fitness - or functions are improved in the long term. The conditions under which cooperation can ‘evolve’ (e.g., Axelrod, 1983; Crawford & Salmon, 2004), it is suggested, can be used, through analysis and reflection, to understand the emergence of various supply chain forms and how they are underpinned by particular approaches to decision making. Of course, it is also possible that the analogy ‘fails’ at various points as an explanation of decision making and consequent supply chain formation.

An additional complication in coordinating supply chains is ensuring the right kind of chain is used for the type of product involved (Fisher, 1997). Functional products include the staples that people buy in a wide range of retail outlets, such as grocery stores and gas stations. Since these products satisfy basic unchanging needs, they have stable, predictable demand and long life cycles. But their stability invites competition, which often leads to low profit margins, and supply chains with many firms at each stage of the processing to choose from (Fisher, 1997).

Innovative products differ from the functional staples in that these products introduce an additional or novel reason for customers to buy them; the success of these products also depends on consumers changing some aspect of their values or lifestyle (perhaps upgrading from a staple product they have purchased for years) (Fisher, 1997). Although innovation can enable a company to achieve higher profit margins, the very newness of innovative products makes demand for them unpredictable. In addition, the product's life cycle is generally short because, as imitators erode the competitive advantage that innovative products enjoy, companies are forced to introduce a steady stream of newer innovations. The short life cycles and the great variety characteristic of these products increase their fickleness (Fisher, 1997). Supply chains have both a physical function (manufacturing, moving and storing products at various stages of readiness), and a market mediation function (whose purpose, or 'adaptive function' in evolutionary terms, is ensuring that the variety of products reaching the marketplace matches what consumers want to buy), and there are many costs associated with both functions (Fisher, 1997).

For staple products, less money needs to be spent on the market mediation function, thus, more can be spent on ensuring the physical aspects of the chain are efficient and effective (Fisher, 1997). For these chains, it makes sense to use a coordinated structure and lock into agreements which benefit everyone involved in the chain. Information sharing along

this chain is important to ensure that suppliers, manufacturers, and retailers meet predictable demands at the lowest costs (Porter, 1980; Fisher, 1997).

For innovative products, however, a vastly different approach needs to be taken in order to ensure early sales are captured, and in order to respond to uncertain market demands (Fisher, 1997). Suppliers are likely to be chosen for their speed and flexibility, not necessarily for their costs or long-term commitment. Other areas that supply chains for innovative products can improve include finding new sources of data to predict demand, or having different products share common components, and by reducing lead times and increasing the chains' flexibility (Fisher, 1997).

How do these types of chains manifest in the wool industry? Staple products in the wool market can include textiles like carpets, apparel, and insulation (among others). Recent innovative products include things like producing a very specific type of felt for tennis balls, concentrating solely on lamb's wool for baby apparel, or merino for fine and functional garments (with adapting characteristics like non-wrinkle easy-care suits and shirts, or wicking capabilities and self-heating mechanisms for athletic outerwear), and wool imbedded with technologies for protective clothing, and insect resistant textiles (AgResearch, 2009; Australian Wool Innovations Ltd., 2009).

Choosing the ideal supply chain strategy is very important for companies in order to match supply and demand, and to allocate resources within the chain appropriately. Choosing an appropriate chain is also important to ensure investments in chain responsiveness (for innovative products) or chain efficiency (for functional products) are rewarded (Fisher, 2007). Mismatches of supply chains and product types can result in breakdowns such as failure to capture markets, increases in expenses in managing the chain entities, and businesses folding. More significantly for this study, the mismatches can result in unfavourable relationships between the members of the chain, and clinging to erroneous measures of efficiency and effectiveness in chains wrongly chosen for the products being delivered (Fisher, 2007). This

has been evidenced in the New Zealand wool industry in arguments over culpability found in articles in the media (see for example Agridata Ltd., 2009; Cronshaw, 2007; Sutton, 2001).

Finally, examining farmers and supply chain members' perceptions of information flows and decision responsibility among their supply chain, should provide insight into how reasoning and decision making is affected by forces from within individuals, and between individuals on an individual and group scale. Below, I will begin to describe the complexity involved in simultaneous placement within these multiple groupings and levels – farmers and supply chain members - and what the perception of groupings revealed about influences on the farmers and firms' decision making, reasoning and behaviours.

2.4 Individual and Group Environment of the Wool Industry

This section attempts to describe the context of the study in terms of the relationships between people and groups in the supply chain as described in psychological literature. Establishing how the groups and individuals (including growers) who negotiate the supply chain and interact on a social psychological level, will contribute to clarifying the complexity in the chain.

For any one member of the wool supply chain, influence over individual reasoning and behaviours comes from four different social psychological sources; intra-individual processes, inter-individual processes, intra-group processes, and inter-group processes. At one and the same time, each farmer, wool broker, exporter, manufacturing agent, or retailer can be considered a multi-level decision entity as they try to balance forces coming from within themselves, with those coming extrinsically from and through the surrounding levels. The individual decision maker has to balance their role as person, worker, and supply chain member, complicating their decision making when these roles compete. For example, a farmer may be the third generation of farmers on that particular farm (hence, the implied presence of their father and grandfather may be at play), a father themselves and husband in a

family, chairperson of a local farming representative board, one of several growers contributing to a cooperative supply chain, and an entrepreneur holding several patents on wool products.

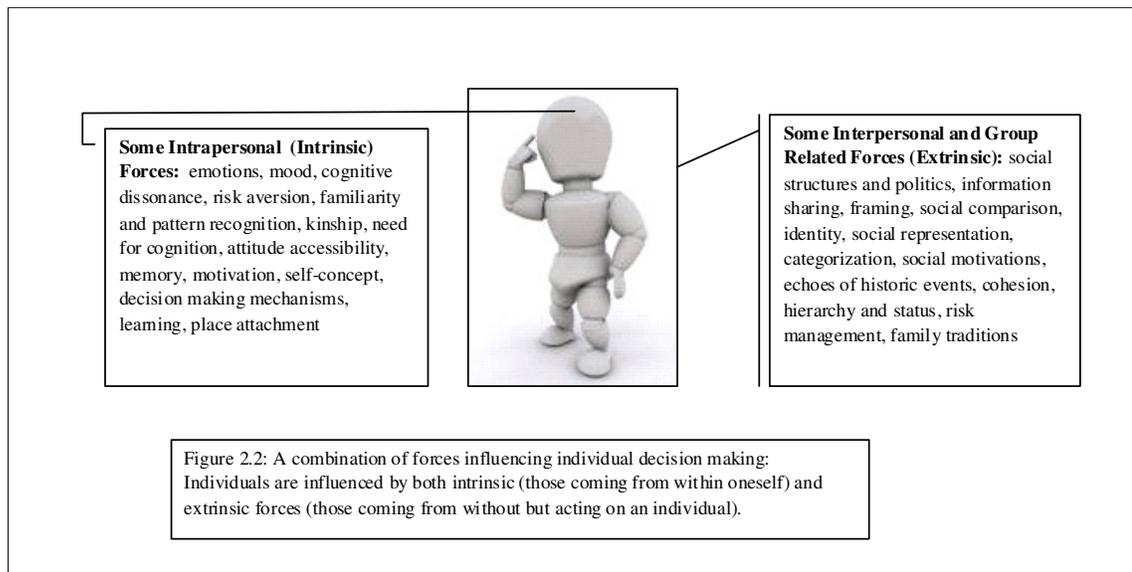
Intra-individual forces include two broad categories; those of social cognition (conscious and unconscious thought) and forces derived from social motivations (perceived or real) (Tesser & Schwartz, 2003). Social cognition includes factors such as memory and judgment (including heuristics and biases), knowledge accessibility and information processing, and normative forces, expectancies and social comparison. Social motivations include forces such as self-regulation and motivation, emotion and affect, attitudes and values, and behaviour in the face of adversity (Smith & Semin, 2004).

Inter-individual forces similarly include social cognition components and social motivation forces, but now acting on a level between individuals (also known as dyads) (Smith & Semin, 2004). Social comparison, affect and emotion, and information processing again play roles in determining how individuals are influenced by forces coming from other than themselves (including mainly people and the media), but now additional forces complicate decision-making and reasoning. For example, social structures and politics, attribution errors, identity maintenance, and framing effects may influence what individuals perceive as logical reasoning on their part. There is also the context to consider in this case as individuals, and interacting dyads, are situated within a social network containing embedded agents (those that regularly monitor and adapt to their surroundings) and third party sources (Gilovich, 1987; Smith & Semin, 2004, Smith and Collins, 2009).

Finally, intra-group, and between group forces point to further complexity in individual attempts to reason and explain why they have chosen certain paths or options (Brown, 1999; Kerr, Horowitz, & Park, 2001). Here, aspects of globalization media and discourse, embeddedness, social representations, the desire for maintaining identity, and forces of dually existing in the business world and in a personal world have affected the

explanation of seemingly maladaptive behaviours for survival in a multi-level system (Brown, 1999; Abrams & Hogg, 2001; Kerr & Park, 2001; Garcia-Pont, Canales, Noboa, 2009). Please see Figure 2.2 below for an explanation of how these intrinsic and extrinsic forces operate.

Figure 2.2 The Combination of Forces Influencing Individual Decision Making



In choosing to examine the units of analysis as both individuals and groups in this study, the sociological and psychological factors are complicated by the need to maintain separation between levels of analysis when describing influences on decision making, while recognizing that without the different levels forming part of the explanation it would be difficult to account for the logic and decision-making that they describe.

2.5 The Use of Analogy in the Social Sciences

Analogy is a very important psychological process involved in creative thought and reasoning, and has been the focus of intense investigation resulting in a number of detailed models of the cognitive processes involved in analogical reasoning (see for example, Achinstein, 1964; Forbus, Gentner, & Law, 1995; Holyoak & Thagard, 1989, 1994).

Accounts of analogy distinguish between two components of an analogy; the target and the base (Dunbar, 2001). The target is the concept or problem that the researcher is attempting to solve or explain. The base is another piece of knowledge that the researcher uses to understand the target, or explain the target to others. What the researcher does when he or she makes an analogy is to map features of the base onto features of the target. By mapping the features of the base onto the target new features of the target may be discovered, or the features of the target can be rearranged so that a new concept emerges. Furthermore, the researcher can use the analogy to highlight a specific feature of the target for other people (Dunbar, 2001).

The view of analogy in the philosophy of science, and the creativity literature has been that when a researcher makes an analogy it is (a) usually from a very different domain or field, (b) the role of analogy could be to restructure the current state of knowledge in the field, and (c) even though the most detailed analogies can work to give insight in developing logical consequences of a set of given empirical assumptions, the analogy is not sufficient for the purpose of generating additional plausible assumptions (Achinstein, 1964; Boden, 1993; Dunbar, 2001; Koestler, 1964). A proposed analogy provides important guides for the development of theories, but must be understood in the light of this fact (Achinstein, 1964).

In the case of the current study, the analogy I use comes from quite a different field (socio-biology), and acts as a base in order to help understand how and why the decision making strategies of farmers (the target), in the New Zealand wool supply chain happen, and how that decision making is affected by the dynamic context, and the influences of groups. The analogy offers a restructure of the current state of knowledge for farmer decision making since that decision making has primarily examined through other means (see Section 1.2). The analogy does not seek to be prescriptive.

2.6 Evolutionary Social Behaviour Models

Darwin's theory of evolutionary natural selection is an attempt to explain how species become endowed with the functional design required to survive and reproduce in their environments (Sober, 1995). Similarly, humans come to organize their behaviour to achieve various goals in their everyday lives. There are similarities between units of action (by this I mean gene, cell, organism, group or population) in the biological description of the mechanisms involved in surviving as an individual among a group or an entire species. These include possessing the ability to adapt, and having function, and, in design terms at least, intention, and purpose. These abilities are also applicable to the 'mechanisms' involved in surviving within and among groups (Wilson, 1995). Some social scientists have described culture, and society as "super-organisms" in which individuals are like cells (Wilson, 1995). Others have regarded large entities as collections of organisms without themselves having the properties of organisms (Hamilton, 1963; Gould, 1982; Wright, 1994). The latter has been criticised as a regression in the progress of human sciences since it implies that humans en masse behave 'automatically' as programmed (Dawkins, 1982; Wilson, 1995).

The extent to which other entities and levels of organization in human social settings (culture) affect individuals is of interest to social psychologists. In this way, processes affecting individuals' decision making (or other behaviours) might be found to be generated from and transmitted through many levels of a system as it evolves, rather than processes occurring as programmed and in response to an organized pathway for a 'super-organism'.

There is an alternative to the 'individualism' used in explaining human behaviour. The alternative, though, requires some explanation of biological units of adaptation, and the evolution of altruistic or cooperative behaviours. In biological data, thought experiments and models (see for example, Wilson, 2006), altruistic behaviours (such as sharing food with unrelated others among a population or giving alert calls when predators are near) are seen as costly to individual donors, while usually only benefiting the recipients. That cost equates to

fewer offspring being produced by the altruistic donors because of the cost to themselves of their behaviours, while more offspring are produced by recipients with an eventual outcome, after a number of generations, of the altruistic behaviour decreasing in intensity and frequency among generations until it is eventually made extinct (Cronk, 1994; Wynne-Edwards, 1986).

Multi-level Selection (MLS) theory (Michod, 1997; Wilson, 1997), however, explains the evolution of altruism by considering the action of natural selection not on an individual but on a group level. Consider, for example, an animal population made up of warring tribes. This would entail two levels of selection - between groups and within groups. Within any one tribe, altruistic behaviour (for example, giving up a portion of one's gathered food to another) would be deselected by the dominance of selfish behaviour (taking gathered food from others, and keeping one's cache to oneself). However, if altruistic behaviour increased the overall fitness of the group, then the groups with the highest proportion of altruists (sharing food amongst all members so the overall fitness of the group is better) would outperform the more selfish ones (having only a small proportion of individuals within a group in prime physical form). Under appropriate conditions, this alternative selection pressure could dominate the disadvantage of altruism for the individual (McAndrew, 2002). Multi-level selection does not only occur on these two levels, since animals may be a part of various groups - close family group, extended family, tribe, etc.. It is possible to consider evolutionary selection as happening on each level simultaneously (Wilson, 1997).

This explanation of altruism has some support from anthropological studies which view groups of humans as adaptive units. According to Sober and Wilson, (2001, p.193) "the concept of human groups as adaptive units may be supported not only by evolutionary theory but by the bulk of empirical information on human social groups in all cultures around the world." Humans have found themselves in situations of warring tribes, interpersonal competition as well as intergroup competition (i.e., competing for promotions within a company, while that company competes with other firms).

Although the case for the existence of multi-level selection (MLS) is quite compelling, this does not in itself provide evidence for MLS as an evolutionary mechanism for developing altruism, which is only one of many behaviour patterns that could 'evolve' to increase the survival fitness of groups. Multi-level selection may be supplemented or replaced by other forms of intergroup interaction (e.g., 'social control') that are more evolutionarily stable (Damuth & Heisler, 1988; Wilson, 1997). It therefore seems likely that a proper understanding of the relationship between MLS and altruism requires consideration of other mechanisms (Damuth & Heisler, 1988).

In any case, when human behaviour is measured against the dual standard of effects on self and effects on others, it appears to show the full range of potential; that is, individuals have sacrificed their lives, businesses, and values for the benefits of others, and they have sacrificed the lives, businesses, and values of others for their own trivial gains. Viewed at the sociological level, some human groups are so well coordinated that they invite comparison to single entities (organisms, or cells), while others show all the disorganization of a school-yard scuffle. How does the continuum of utility (benefit) that ensues survive over a purely maximization-driven state (Wilson, 1995; Axelrod & Hamilton, 1981)?

When thinking about a person as a decision maker, social scientists imagine the decision maker to be only working from an individual level. However, decision makers often are embedded in several groups, and are affected by the intentions, functions, and goals of those groups as well as their own personal drive. This may interfere with a decision maker choosing to take an intuitive direction in their decision making, when the group (presently, or implied) calls for a different approach (otherwise vice versa).

Species also have to adapt to their environments in order to survive (or migrate – an adaptation in itself). Having the ability to adapt the decision making to suit the circumstances is much like a species having the tools to solve their survival pressures; be it finding shelter, food, escaping from prey, or procreating. In addition, the adaptability should be a process,

much like curiosity in animals who approach something attractive, but also hold back, ensuring an escape or ability to back-up when unsure. Being able to start down one decision path yet still catalogue other options, and keep other decision paths open could be a solution to some decision makers' dilemmas.

One further complication for the decision makers in supply chains is whether to share their decision making expertise, information, or experience with other members. An advantage to the sharing would be the potential for reciprocation when needed, in addition to building relationships and sharing risks and uncertainties. However, there are also disadvantages to a seemingly helpful act; that is, competitive advantage as a business will decrease if a company overexposes their information sources and knowledge base. Information sharing is crucial to both offensive and defensive competitive moves in business (Porter, 1980). In that way, members of the supply chain are in a social dilemma situation (described below). The same can be said of the wool growers. There are, however, a few nuances that need to be explained.

2.7 Social Dilemmas and Sharing Risks

A social dilemma is a situation in which one person/groups' interests are at odds with collective interests (Hardin, 1965). Such situations arise because people frequently attach more value to their short-term self interests than to the long-term interests of others, the group, organization, or society to which they belong. Dilemmas can be complicated by interpersonal, group, and widespread societal inequities and cultural misunderstandings (Dawes & Messick, 2000). Though, for example, a farmer's wool itself is not a common resource, the collective interest of New Zealand growers' success in the global market could rely on growers acting in a cooperative way to share the risks, uncertainties, and decisions among them as a group. In this way, the context in which this study is situated can be thought

of as a problem where the interest of a single farmer/business/supply chain may be at odds with an overall wool market population, and an overall global business environment.

2.8 Where to from here?

This thesis seeks to clarify the differences between individuals and groups when evaluating how decision making occurs within a human social system. However, the forces at play that influence the decisions act at both the decision maker's personal level, and on multi-level playing fields with numerous entities. By contextualizing broader structural factors and processes, focusing on aspects of history, economy, culture and society, and their relation to individual decision makers among global supply chains, it is possible to add an additional perspective to those found in previous models of decision making and explore decision making with an eye to multiple level situations. Logic and reasoning previously have been thought of as acting on an individual scale, yet their outcomes emerge at multiple levels in the form of social behaviours and survival strategies seemingly at odds with survival of the individual in the globalized world (or among a larger entity).

This study explores an example of a multiple level human system; that of the New Zealand wool supply chains. It is in that context that influences on decision making may be occurring beyond what the current understanding of individual decision making is. There may be more than the 'here and now' and 'local' context to consider when players exist as singular entities, dyads, and groups traversing not only geographical, but other boundaries. How does that complicated context affect the emergence of decisions from either organic sources, or more calculated reasoning? I seek to confirm or expand notions of decision theory through this grounded study. The results are described using the MLS analogy to help clarify the understanding of the 'context' in which decision making units exist.

Prior to exploring the results of this study, I will introduce the aspects of individual decision making and group behaviours in more detail through a review of the literature. The

subsequent two results chapters will describe the influences on decision making in detail, but also set the stage for whether, and subsequently how and why, the forces have emerged and what their future direction might be.

Chapter 3: The Roots of Social Psychology, Perception, and Decision Making Theory

It is a very sad thing that nowadays there is so little useless information.
-- Oscar Wilde

3.1 Introduction to the Literature Review

In this chapter I explore the foundations of decision making, and groundwork on social psychological approaches to decision making in order to prepare for the analysis of my participants' narratives. I explore historical approaches to studying decision making including rational analytical models, bounded rationality, and recognition primed decision making, eventually leading towards newer directions including naturalistic decision making and intuition. The idea that context and experience are of prime importance for decision making research is also investigated in this review, especially for the case of uncertain, complex and risky decisions. One final aspect considered in the review is how being members of groups influences an individual's decision making. Important considerations from research on group cooperativity include information sharing, trust and suspicion, and positioning oneself amongst the group's hierarchy. Recent experimental studies have shed some light on strategic information sharing in group decision making scenarios.

3.2 The Approach to this Study

Social psychology is the branch of psychology which is particularly concerned with the nature and form of social interaction and how people come to influence each others' behaviour; that is, it explores how both social and mental processes determine action. Its focus of interest is on the social nature of each individual person (Allport, 1953). This definition was furthered by Allport (1968, p.3) as

“an attempt to understand and explain how the thought, feeling, and behaviour of individuals are influenced by the actual, imagined, or implied presence of others. The term “implied presence” refers to the many activities the individual carries out because of his position (role) in a complex social structure and because of his [or her] membership in a cultural group.”
(*Emphasis in original*)

This “presence of others” has been understood from a range of perspectives, each of which endures in modern social psychology. The first perspective involves the question of how to define social reality. Secondly, the nature of the individual is often contentiously debated, and finally, efforts are made to explain the links between individual existence and the social world (Nash & Calonico, 1996). The real, implied, or imagined presence of others, is one of the most prominently examined features in cognitive schools; that is, having an audience, or co-participants, affects individual behaviours (sometimes in positive, sometimes in negative ways) (Guerin, 1993). Finally, by including the implied and imaginary presence of others in his definition, Allport (1968) suggests that people feel the effects of social influence even when there are no other people physically present.

There has been much debate on the historical basis of social psychology as a research field (see for example, Farr, 1978, 1985a, b, 1987). At least five different perspectives of social psychology arose from these debates; ranging from those that were mostly psychologically-based to the more “social”; they included psychoanalysis, behaviourism, cognitivism, symbolic interactionism, and social construction. Whether singular or collective behaviours are being studied, in any particular situation it is difficult to determine how much weight should be given to the social, the psychological, and the interaction between the two when unravelling research results (Farr, 1987). It is, nevertheless, important to ensure that the assumptions one makes about human nature are made clear in a social psychological study (Farr, 1996).

Social psychologists can approach the study of individuals in two ways; examining how the thoughts, feelings, and behaviours of the individual are influenced by other people in an immediate social situation, or by examining how interactions and exchanges affect the

behaviour of a group. One difference between these two approaches is in the chosen unit of analysis. A *unit of analysis* is the major entity that is examined in a particular study, for example an individual, group, artefact, geographical unit, or social interaction (Trochim, 2006). In this study the unit of analysis has three parts; the decision that is being made, the influences on that decision, and the person/people making that decision. These units are considered both individually and holistically in order to avoid making ecological (the spurious inference of individual characteristics from group-level characteristics) and exception fallacies (reaching a group conclusion on the basis of exceptional cases) (Robinson, 1950).

In *psychological social psychology*, researchers pay primary attention to the bearing of thought processes and personality characteristics of individuals, and how these features change across one's life-cycle. The closed, stereotypic thinking of authoritarians, for instance, makes them more likely to be prejudiced and to join extreme right-wing political groups (Kearl & Gordon, 1992). Conversely, *sociological social psychologists* are more interested in understanding the relationships between group structures and processes (classifying groups much like psychologists classify selves as the first step toward predicting their activities). Sociological social psychologists are inclined to give greater attention to the social settings and individuals' roles contained by that setting (Kearl & Gordon, 1992; Farr, 1996). Psychological social psychologists focus on the self and its inner workings as a baseline, while sociologists' attention is first and foremost directed toward human connections and the social space thus created (Farr, 1996). Sociological social psychologists are concerned with a variety of demographic, social, and cultural issues in terms of human social interaction (Farr, 1996). In this way it is an exploration of how non-local, even global, forces are perpetuated from group to group and generation to generation. Examples of areas of study include the family, addressing issues such as marriage, divorce, child-rearing, and domestic abuse, the ways these things are defined in different cultures and times, and their effect on both individuals and institutions (Harrod & Diamond-Welch, 2007). Large social organizations

such as businesses and governments, social movements, and political protests may also be examined in order to uncover their effects on individual decisions and opportunities.

In both cases, connectedness with others is a commanding personal drive, and the bonds produced comprise the social psychological fabric of relationships. The strength of this social fabric is determined by the array and quality of connections individuals and groups (both large and small) have with each other. In social psychological studies it is often difficult to decide which environment (that of the inner self, or the projected outer one), should be emphasized in the analysis. Often, the dilemma can be solved by selecting which decision making unit to follow.

A decision making unit is one or more individuals involved in a decision who share the same objectives and risks in making the decision (Cottam, 2004). For example, the members of a household are often a decision making unit with regard to which television show to watch. In the case of this study, decision making units can include but are not limited to, the solitary farmer, the farmer and their family (close, extended, implied), an employee of a supply chain entity, or the entire membership of a chain.

When taking a *psychological approach*, the measurable units include those thoughts, feelings, and behaviours of individuals as affected by others (real, implied, or imagined) (Allport, 1985). However, the thoughts and feelings of individuals can only be studied through the descriptions of the participants being studied (Rubin & Rubin, 1995). The behaviours of individuals can be explained by complex interactions between invoked cognitive states and the environment (social, ecological, economic, and cultural) (Klemke, Hollinger, & Kline, 1980). For this study, the community of wool growers in New Zealand was selected as a good starting point to explore the effects of the global forces on the local decision makers. The psychological emphasis of this study will be on the individual processes that lead into making strategic decisions.

The *sociological approach* to socio-psychological research involves the study of behaviours in groups and how groups' interact (Stolte, Fine, & Cook, 2001), with the goal of achieving a better understanding of how societies work. The measurable units in the case of sociological social psychology can include observed patterns and information from collected cases and experiences of individual human actors, social structures and organizations, corporations, cultural objects, or social networks. Sociologically-inclined social psychologists are more likely to examine how individuals' perceptions, belief systems, moralities, identities, and behaviours are determined by their positions in social space including the traditions of their principal socializations (Farr, 1996), and the social history intersecting their biographies (Kearl, 2006), such as growing up on a sheep farm or property during a time of dairying success. Other influences might include a person's role within the institutional orders of religion, work, community, and family; the geographic context of their childhoods, such as region of the country or the size of cities wherein they lived; and their memberships in and relative identifications with various social groups, like national representative bodies, or local rugby teams.

For this study, the socially-based socio-psychological units of interest included the effects of the historic political events on New Zealand farmers, the farm family dynamics, the role of farmers within supply chains and local farming groups, the roles of supply chain members with respect to each other, and competitors, the information 'age' and the global economic arena, and the comparative settings created by the media as perceived by farmers.

While it is an ambitious starting point, this study will be drawing on both psychological and sociological approaches to social psychology in the investigation of farmer and supply chain member decision making. The selection of this approach is based on the assumption that decisions in this rich context (involvement in quite a volatile commodity export industry) inevitably interact with and are influenced by a broad range of social, as well as individual level, processes.

3.3 Uncertainty, Risk, Complexity and Decision Making

Farmers in New Zealand have described themselves as working in uncertain times and involved with risky business (see for example Basham, 2009a, b; Taylor, 2009; Stringleman, 2008). But, what exactly is uncertainty and how does it differ from complexity and risk? One view is that uncertainty (in a Brunswikian sense) means functioning in an environment where an organism cannot perceive with complete accuracy when and where their actions may not be effective (Goldstein, 2007). It is the inability to forecast the correct value of a quantity of interest and, also, something that is subject to change without notice (Schoemaker, 2007). Complexity¹ is the quality or condition of having an involved or intricate structure, having many variables that interact deeply (Dawes, Faust & Meehl, 1989). The difference between uncertainty and complexity is that with accurate information and effective information gathering, complex questions can be solved, whereas only probabilistic solutions for uncertain problems can be obtained. Risk, on the other hand, can be viewed as one's exposure to hazards, peril, or mischance. In the context of this study, risk is the chance of commercial or personal loss, specifically in the case of fortune, property or goods, and that which is accepted in economic enterprise (Tversky & Kahneman, 1992, Tversky & Fox, 1995).

The difference between risk and uncertainty is that risk defines decision situations where the probabilities are objective, such as flipping a coin or rolling a dice. Uncertain situations are those in which probabilities are subjective (the decision maker can only estimate outcome probabilities). Recently, decision researchers have purported that many of the principles underlying decision making in risky situations can be applied directly to uncertain situations (Tversky & Fox, 1995; Fox & Tversky, 1998; Wu & Gonzales, 1999), and that decision makers who are able to manage risk would also be better able to deal with uncertain situations (Wu, Zhang, & Gonzales, 2004). When decisions are being made in any setting, there is concern over whether decision makers identify the uncertain or risky aspects of their

¹ While in some sense it might be applicable, I will not be adopting a complex systems theoretical framework in this study.

decision environments. The importance of this conclusion from the research for this study may be uncovered from the participants' pre-cognition of decision environments. If there is no conscious pre-decision determination of uncertainty or risk (i.e., decisions are made in an 'intuitive' way), the distinction between these two terms might not be needed.

This study entails research into the decision making of individuals who are influenced by other individuals, groups, the implied presence of others, and how global forces work their way through businesses, cultures, and the media on their way to the individual decision making unit. It is a study of how the individual's reasoning and decisions, as they describe them, are influenced by others, and at the same time, it is a study of how groups influence each other within the supply chain. It is a study of how members of the supply chain deal with uncertainty, risk, and complexity; on individual and group scales. Hence, both a psychological and sociological approach to the dilemma is performed in describing the results.

3.4 Decision Making in General

This section reviews current research directions in decision making theory. It compares two approaches to decision making; *rational-analytical processes* which include comparative evaluations that prescribe an optimal (or best) choice among a variety of options (Carroll & Johnson, 1990), and the *intuitive approach* which regards decision making as non-rational processes driven instead by the recognition (consciously or not) of a set of circumstances (or environment) which suggests a strong particular feeling towards a solution (hunch, rule of thumb, or gut feeling) (Gigerenzer, 2007).

Decision making is fundamentally about making choices between alternatives. Some decisions are more complex than others, unfolding decision making as a multifaceted process that can offer many possible approaches to reaching a decision. Many factors can influence decision making, but individual perception at the most personal level is, in one sense, the

primary influence (Merleau-Ponty, 2002). *Perception* is the medium through which individuals approach sources and take in different types of information. The way a person lets intuition and creativity influence their decision making strategy is likely to vary from person to person. Each of these factors can also give rise to biases that form and influence our decision making, and might well be the cause for human error in decision making (Nutt, 2002; Kahneman, Tversky & Slovic, 1982). This raises the point that the concept of perception can have two, distinct, meanings.

Earlier definitions of perception described it as all those processes that give coherence and unity to sensory input (Broadbent, 1958). Perception can be a synthesis or fusion of the elements of sensation, but it can also be an awareness of the truth of something (Kahneman, 1973; Stout, 1899). The last sense is primarily esoteric and indicates a kind of unspoken, intuitive insight. In essence, the concept of perception is extensive and begins with the appreciation of the fact that what is perceived is not only determined by physical stimulation but also depends on how that physical stimulation is received and categorized by a person (Reber, 1993). Robbins calls it “a process by which individuals organize and interpret their sensory impressions in order to give meaning to their environment” (Robbins, 1993, p.135). Therefore, one could argue that people’s decision making is based upon their perception of reality, and not on the objective fact of what reality is. This makes perception one of the important factors in decision making.

Perception also comes into play in differentiating between psychological social psychology approaches. Many cognitive psychologists would argue that the mind is a representational device, that is, a system capable to be in a state that is about something else (outside in the world) (Neisser, 1967; Chalmers, 1995). Dretske (1995), a supporter of such a view, claims that the function of perception is to represent objects, properties, and facts. But, there are difficulties with that notion; the representations themselves are thought to be merely information about the world, and not directly measureable in any way (such as wavelengths of

light representing images we see). Gibson (1977, 1979), by contrast, famously argued that the environment actually provides what he termed “affordances,” which he defined as all “action possibilities” dormant in the environment, objectively measurable and independent of an individual's ability to recognize them, but always in relation to the actor and therefore dependent on their capabilities. For instance, a set of steps which rises four feet high does not afford the act of climbing if the actor is a crawling infant (Gibson, 1979). Following Gibson, many scholars (i.e., Greeno, 1994; Snapp-Childs & Bingham, 2009) agreed that the function of perception is to adapt organisms to their environment, rather than to construct a representation of it.

Intuition is described as “a recognition-and-retrieval process, where large numbers of behaviour patterns, based on experience, have been retained in a person’s long-term memory and can be retrieved and combined as the situation requires ” (Simon, 1987, p.57). Some might consider intuition as ‘good guesses,’ hunches, or hypotheses thrown up by the unconscious (Gigerenzer, 2007). The unconscious mind may offer an overall ‘take’ on a situation as an inkling or an image. “Behind the scenes, the ‘undermind’ may have integrated into this tangible prompt a host of different considerations, including analogies to past experiences and aspects of the present situation, of which the conscious mind may not have even been aware” (Claxton, 2000, p.50). Intuition has been described as a mode of understanding or knowing characterized as direct and immediate and occurring without conscious thought or judgment (Fishbein, 1987; Greer, 1988). It is a response to subtle cues and relationships apprehended implicitly and unconsciously. This hints at a number of difficult but fascinating problems in the study of human behaviour when confronted with complex situations (Reber, 1993). The unconscious intelligence is a term by which cognitive science gives the unconscious mind a particularly valuable role, and confirms that there is intelligent work going on “behind the scenes” (Fishbein, 1987; Gigerenzer, 2007).

Having looked at perception and intuition, there may be good reason why researchers are concerned with their common influence on decision making. *Human error* is a factor in decision making, and decision making models and assistive technologies have been developed that seek to eliminate it, by reducing errors in perception (i.e., by using intricate devices to detect data) and reducing the chore (intuitive effort) of having to discover all possible alternatives to a problem (by listing options instead of relying on an individual to catalogue all possible selections) (Baxter & Bass, 1998). Still, human error is a cause for apprehension, and much research has been done in the area of human bias and its effect (Rothwell, 2007).

Decision bias can be described as the concept of people making bad decisions because of a predisposition to do so (Kruger & Dunning, 1999; Stanovich, 1999). This could be a result of pre-existing conscious beliefs (Gilbert & Malone, 1995). The reasons can be many, and often include inherited tendencies, like over-reliance on more readily available (or apparently more reliable) data, inaccurate self-assessment, or inaccurate use of base rates (Kahneman & Tversky, 1973; Tversky & Kahneman, 1974; Larrick, Burson, & Soll, 2007). The tendency not to take sample size into account and difficulty in reaching logical conclusions are other examples (Klein, 1989). One final recently demonstrated partiality is that people are even biased to think that they are less biased than others (Pronin, Lin, and Ross, 2002).

Individuals also have a limit for processing data. Research indicates that, on average, when an individual is working with more than approximately seven pieces of information, the result will be *information overload* (Miller, 1956). This can result in lost information, and it is reasonable to assume that in this situation the information that gets lost could be important. In order to avoid the danger of information overload, decision makers often rely on judgmental shortcuts, or *heuristics*, in decision making (Tversky & Kahneman, 1974; Hammond, Keeney, & Raiffa, 1998; Gigerenzer, 2007). The following section describes, first, theories on how decision making techniques are learned then, second it describes the rational analytical

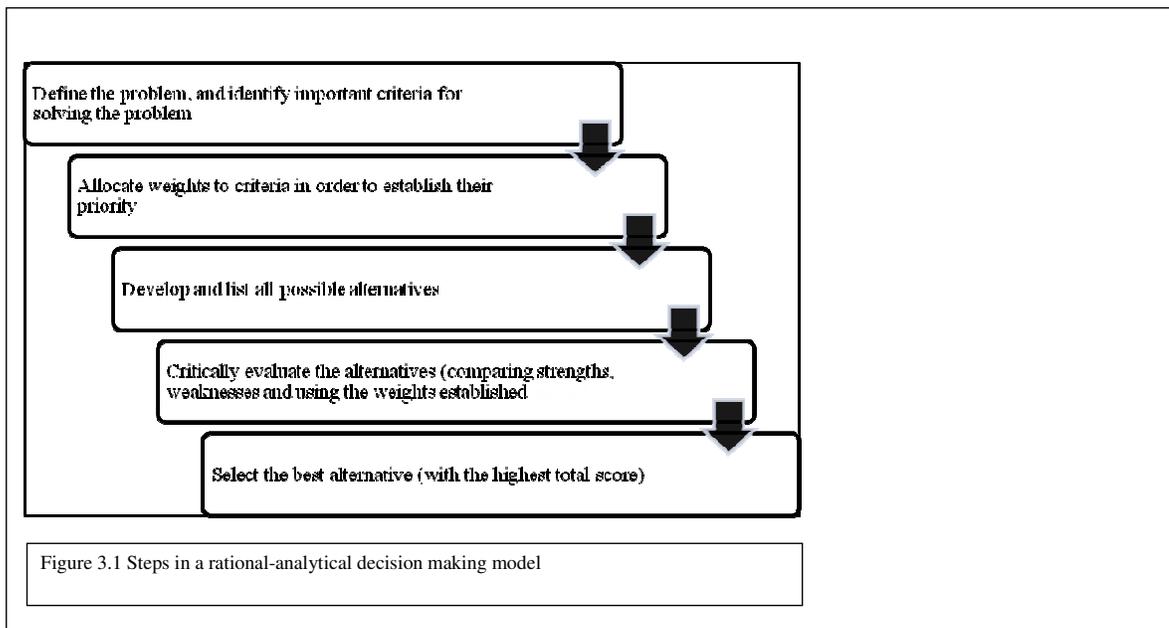
approach to decision making, examines its strengths and weaknesses, then continues with an explanation of the intuitive approach with special regard to heuristics.

3.5 A Review of Rational Decision Making

The *rational decision maker* makes consistent, value or goal-maximizing choices within specified constraints (Simon, 1957, 1983; Evans & Over, 1996). These choices are made following a multiple step rational decision making process. The main steps in the rational decision making model are presented in Figure-3.1. First, the decision maker must define the problem. Many poor decisions can be traced to the decision maker overlooking a problem or defining the wrong problem. Once a decision maker has defined the problem, he or she needs to identify the criteria that will be important in solving the problem. In this step, the decision maker determines what is relevant in making the decision. This step brings the decision maker's interests, values, and similar personal preferences into the process, yet, initially it may also be the case that the values, interests and personal preferences help define whether something is a problem. Identifying criteria is important because what one person thinks is relevant, another may not, making this step subjective. Importantly, any factors not identified in this step are considered irrelevant to the decision maker. The criteria identified are rarely all of equal importance, thus, the third step requires the decision maker to allocate weights to the criteria in order to give them the correct priority in the decision. The fourth step requires the decision maker to develop alternatives that could succeed in resolving the problem. No attempt is made in this step to appraise these alternatives, only to list them. Once the alternatives have been generated, the decision maker must critically evaluate the alternatives. The strengths and weaknesses of each alternative become evident as they are compared with the criteria and weights established in the second and third steps. The final step in this model requires the decision maker to select the best alternative (Bazerman, 1994).

This is done by evaluating each alternative against the weighted criteria and selecting the alternative with the highest total scores (Simon, 1957, 1983).

Figure 3.1 Steps in a Rational-Analytical Decision Making Model (adapted from Simon, 1959, 1979; Doyle, 1999).



According to rational theory, a decision maker should be able to make the best decision if they had boundless information and time to consider all options. ‘Perfectly rational decisions,’ however, are not common.

The rational decision making model just described contains a number of assumptions. These include problem clarity (i.e., the problem is clearly defined and unambiguous); the decision maker has complete information, and they can also identify all possible options. In addition, the decision maker can classify all the criteria, list all workable alternatives and possible consequences of those alternatives, and the alternatives can be ranked and weighted to reflect their importance. Moreover, the decision maker is aware of all possible consequences, has clear preferences, and constant preferences over time, and no time or cost constraints. Furthermore, in the case of rational decision making, it is assumed that the

decision maker goes for maximum payoff in each decision (Simon, 1955, 1956; Becker, 1962).

Do decision makers actually follow the rational model? Do they carefully assess problems, identify all relevant criteria, use their creativity to identify all workable alternatives, and painstakingly evaluate every alternative to find an optimizing choice? When decision makers are faced with a simple problem with few alternative courses of action, and when the cost of searching out and evaluating alternatives is low, the rational model provides a fairly accurate description of the decision process (Arrow, 1989; Hammond, 1996). However, such situations are the exception. Most decisions in the real world do not follow the rational model. For instance, people are usually content to find an acceptable or reasonable solution to their problem rather than the best possible one (Gigerenzer, 2007). As such, decision makers generally make limited use of their creative problem solving skills, instead staying with customary (and comfortable) patterns of behaviour (Keeney, 1994). Thus, the rational decision making model often conflicts with descriptive accounts of how decision makers really operate.

Much of the previous literature on farmer decision making attempted to understand and model the process of decision making on farms by focussing on the behaviour of farmers, rather than focussing on specific farming decision scenarios, and aspects of rural sociological and psychological complexity (Bingswanger, 1980; Collins, 1985, Austin et al., 1998). Farmer decision making as described in farm journals and in accounting records was aligned with success in the farming business environment in terms of profit, outputs, and economic indicators. The research was based on the assumption that farmer decisions can be modelled purely in terms of the individual acting to maximize profits (utility) rather than exploring alternative variables such as lifestyle, enjoyment, family tradition, challenge, and connection to the outdoors and natural order (of which farmers have indicated great importance) (Gasson, 1973; Fairweather & Keating, 1994; Austin et al., 1996).

Questions still arise as to what extent farmers use rational methods of decision making, and whether in changing economic times or when exposed to media illustrating successful trends in other businesses, farmers pay more heed to the utility of their decisions. In the aforementioned types of psychological studies many responses that are incompatible with normative considerations have been documented and studied (Hume, 1976) and the suspicion arises that people are not just inaccurate or lack the skills for calculating probabilities, but that they use an entirely different approach from that of economists and mathematicians in their decision making (Keren & Tieggen, 2004).

3.6 Alternatives to the Rational Decision Model

The *bounded rationality model* differs from rational models in that not all relevant information is assumed to be freely available to everyone. Instead, this decision making framework assumes that most human decision making scenarios do come with some constraints; like time, cost, knowledge, or resources (Simon, 1955; Gigerenzer, 2007). The term ‘bounded’ can refer to limitations in the decision environment, such as information, but it can also refer to limitations of the mind, such as limited memory. Simon (1955) argued that no person exists who has complete knowledge, a genuinely stable system of preferences, and unlimited computational skills for any given decision environment, thus there only exists bounded rationality in human decision making. Rather than focus studies on *what* decisions are made, studies needed to focus more on *how* decisions were made (Simon, 1981). Understanding decision processing should then reflect the connections between cognitive boundaries and the demands of decision tasks, and the connections between the human information processing system and decision environments (Payne, 1982). Explorations of bounded rationality in decision making then resulted in the discovery of patterns in decision making that were reproducible in laboratory settings and in descriptive accounts of decisions (Gigerenzer, 2007).

Three different programs of study arose from the concept of bounded rationality; the study of cognitive illusions, the study of optimization under constraints, and the study of heuristics (Gigerenzer, 2007). The study of cognitive illusions arose to demonstrate that people's judgments do not actually follow the laws of probability or maximization. Cognitive illusions are reproducible digressions from norms, which are interpreted as cognitive fallacies that lend support to irrationality rather than rationality (Camerer, 1998; Gigerenzer, 2007). The study of optimization under constraints (sometimes called sub-optimization or as-if optimization studies) evolved by adding one or more constraints to a problem and studying the decision process and outcomes with the aim of demonstrating how optimization results (see for example Day, 1963, Day & Cigno, 1978). These cases supported rational decision making theory, although, examples of optimization under constraints have been explained using heuristics and other forms of intuitive decision making (Conlisk, 1996; Shaffer & McBeath, 2002).

Recognition primed decision making builds on the ability to recognize a given situation as being similar to past experience. As new information is processed, the decision maker will develop *situational awareness* incrementally (Endsley, 1997; Harwood, Barnett, & Wickens, 1988; Zsombok, 1997). The working memory is then used to look into the future, based on possible solutions. When a solution is found, it is selected. The cognitive process of making a decision is incremental and intuitive. Recognition primed decision making uses the concept known as 'satisficing' (Simon, 1957, 1983).

Recognition primed decision making is about choosing the first option that works, and not about optimizing the outcome. This way of thinking is linked to the research of Simon (1957), who identified a strategy for satisficing, which means developing options based on experience and recognition before choosing the first option that satisfies the need for a decision in a particular situation. Optimizing, which is the goal in the rational analytical model, is difficult and takes a long time, while satisficing is more effective in realistic

decision environments. Under appreciable time pressure, the use of satisficing is argued to be ('boundedly') rational, and a form of optimization (Simon, 1983).

The recognition primed model works for highly experienced people in that they are better able to assess a situation and judge it familiar, quickly choosing a solution that works, rather than comparing options (Klein, 1998). Research has demonstrated that experienced decision-makers concentrate on understanding the situation, whereas the inexperienced decision maker tends to focus on the selection of the correct response (Cohen, 1993; Klein, 1998). Courses of action, in the case of experienced decision makers, are quickly evaluated by imagining how they will be carried out, instead of by formal analysis and comparison. Usually, experienced decision-makers look for the first workable option they can find and not the best option. Often the first option the experienced decision-maker considers is workable, and he or she does not have to consider a large set of options, thus the decision is based on recognition rather than evaluation (Klein, 1993). The options are generated one at a time, and the decision-maker does not spend time comparing the relative advantages and disadvantages of alternatives. Imagining the option being carried out helps the decision-maker to spot weaknesses in it and find ways to avoid these, thereby constantly improving the option. Keeping a catalogue of prototypical situations also improves speed of response to decision situations, not only by recognizing variables that are similar between events, but also by recognizing differences from past events (Klein, 1998), thereby learning to ignore noise and concentrate on important cues (Canon-Bowers & Bell, 1997).

This can be an advantage over the conventional model of decision making, which selects the best option after having compared courses of action, thereby placing less emphasis on the possibility of improving the various options. By using the recognition primed decision making model, the focus is placed on being poised to act as soon as possible, rather than being paralyzed until all the evaluations have been completed (Klein, 1998; Klein, Calderwood & Clinton-Cirocco, 1986; Fischhoff, 1996).

3.7 Criticisms of Rational Decision Making Models

Decision styles have been the subject of criticism (Webb & Sheeran, 2006).. This section begins by looking at the main criticisms of the rational-based models.

The rational-analytical approach assumes that people combine multiple differentially weighted cues in a compensatory way, so, for example, a low weight attached to one cue is compensated by a high weight attached to another cue (rather than multiple cues with high or similar weights). This is a disadvantage for two reasons; first, questions arise as to how many of the available cues an individual can and should use. Experimental and descriptive studies have demonstrated professional error due to paying attention to very few cues, when other cues are also relevant (see for example, Dawes, 1979; Dawes & Corrigan, 1974; Einhorn & Hogarth, 1975; Balzer, Doherty & O'Connor, 1989). Second, it is difficult to determine the number of cues that should be used, and what constitutes a 'significant' number of cases studied in order to determine the number of cues needed (Beckstead, 2007; Phelps & Shanteau, 1978)

Additionally, the rational analytical approach assumes large attention, memory, and processing abilities, and ignores the impact of sequential processing (e.g., Dhimi & Harries, 2001; Gigerenzer, Todd, & the ABC Research Group, 1999). This approach is also inflexible because it assumes the same cues are used to make decisions on different cases and in very different environments. Furthermore, policy-capturing researchers have overlooked the fact that decision strategies are usually adapted to the demands of the task. For instance, under conditions of time pressure, people tend to use fewer cues and simple non-compensatory strategies, so, for example, an initial leaning toward a decision based on a cue with a high weight will not be altered by cues with lower weights (e.g., Payne, Bettman, & Johnson, 1993; Rieskamp & Hoffrage, 1999).

Another criticism of rational analytical decision making includes not having a mechanism to explain learning. Though people's rationality is sometimes bounded, they can

learn optimal decisions through practice, and in the end act ‘as if’ they were unboundedly rational (Conlisk, 1996). Learning is encouraged by favourable conditions such as rewards, repeated opportunities for practice, good feedback, unchanging circumstances, and a simple context, and hindered by the opposite conditions. According to rational theory, decision makers should continue to repeat the steps of decision making for each decision, regardless of learning, but that is not what is seen in practice (Conlisk, 1996).

Furthermore, rational decision making has been criticized for using a survival argument; that is, agents who do not optimize should not survive, especially in the case of firms in competitive environments. However, there are many accounts of non-optimizing firms surviving (Alchian, 1950; Friedman, 1953; Conlisk, 1996; Tilstra, 2002; Edick & Downing, 2002).

3.8 Would People be Better Decision Makers when Boundless?

It has been hypothesized that most poor decisions result from inadequate knowledge and expertise (Klein, 1998). That could be a contributor to the development of more advanced rational analytical decision models. There are four key suppositions in rational analytical decision models; one, that people are generally effective at pursuing their goals, especially when they have the opportunity to learn from mistakes, and gain incentives from correct decisions (Brunswik, 1966; Hogarth, 2001). This makes the rational analytical model one based on maximization. Second, competition tends to favour rational analytical individuals and businesses since optimal decision making increases the chance of success (survival) in a competitive environment (Tversky & Kahneman, 1986). Third, the intuitive appeal of rational models makes them seem like they provide an acceptable, if not excellent, account of actual decision making (also, some time and effort was invested in creating rational models, thus, on one set of assumptions, they ‘must’ have some degree of effectiveness) (Calvert, 1985). Finally, rational analytical decision makers are not limited by time, the ability to come

up with many possible options to choose from, cost, or the ability to rank and weigh criteria and preferences as noted above.

However, there are counters to each of the presumptions listed above, and descriptive accounts of decision making do not always support rational analytical models because of those limitations (Tversky & Kahneman, 1986). In order to be effective at pursuing one's goals, it is imperative to pursue the best possible methodology of making decisions. In the case of rational analytical decisions all information relevant to a decision must be obtained in order to achieve certainty (Simon, 1979). This leads to a paradox in that the more information gathered, the longer it will take to process it, thus reducing the effectiveness of pursuing one's goals. The result may be a more confused situation, where it becomes difficult to separate the important, relevant, and reliable pieces of information from the unimportant, irrelevant, and unreliable ones. The classic analytical decision making models demand that all relevant information be obtained to gain full situational awareness before reaching a decision (Bettman, Johnson, Luce & Payne, 1993; Hammond, 1996). That concept emphasizes a shift from studying decision making in laboratory situations, to going back to the field (farm, office, or warehouse) where a person's situational awareness is at its peak.

The way decisions are made has been the subject of a large number of studies, both experimentally, and through descriptive accounts. In a broad sense, researchers identify two approaches; rational analytical decision making models and the naturalistic (intuitive) decision making models. Recent theorizing has argued that the two modes of thinking which are characterized by different properties, lie on a continuum rather than existing as discrete categories (Hammond, 1996; Sloman, 1996). In the literature, intuitive decision making is called System 1; and is characterized by relatively unconscious, automatic, rapid, contextualized, independent of language, early evolving decision making which generates feelings of certainty (Slovic, Finucane, Peters, & MacGregor, 2002). The rational analytical decision making as described above is known as System 2. It is controllable, conscious,

constrained by working memory, rule-based, develops with age but is vulnerable to aging, is related to language, and is less commonly associated with generating certainty (Hogarth, 2001; Kahneman & Frederick, 2002). Simon (1983), a strong supporter of System 2 decision making, also argued that any kind of serious, complex thinking employs both analytical and intuitive thought in varying proportions and in various ways.

3.9 Strengths of the Rational Analytical Approach

The rational analytical models have their strengths in breaking down and analysing complex problems in their individual parts, before the results are synthesized and options are compared to each other to find, if possible, the best solution (Simon, 1954; Spohn, 2002). One advantage of this method is that relatively inexperienced persons, including new farmers, following a procedure like the multi-step model described above, can theoretically arrive at the same decision as would more experienced individuals when given the same information and criteria. Rational analysis is a tool used to make fine discriminations when faced with complicated and unusual problems requiring the calculation of inexact data to find solutions (Bicchieri, 1993). Rational decision making is valuable in an extensive search for many options, and reduces the chance that an important option will be overlooked. Rational analysis has also been important in the development of technology and science (Stenmark, 1995) including decision support systems, with uses in everyday items such as cellular phones or in medical diagnoses.

3.10 Heuristics and Biases

In situations such as the farming environment, when a goal of being economically effective is challenged by incomplete incoming information (and perhaps, information overload), unexpected natural and political events, processes of social and economic change,

analytical judgments on the likelihood of outcomes, and the need to learn and recover from historic errors in judgment, decision makers often rely on intuition and “gut feelings” in order to obtain what they feel are good, approximate answers (Yudkowsky, 2006). However, the tendency to rely on “gut feelings” without paying enough attention to external information and computing probabilities for outcomes can lead to replicated errors in judgment (Gigerenzer, 2004; Kahneman, 1991). The systematic experimental study of reproducible errors of human reasoning is known as the heuristics and biases program in cognitive psychology (Kahneman, Slovic, & Tversky, 1982). The focus of the heuristics and biases program was originally within the field of prediction under uncertainty and in the estimation of probabilities and frequencies. In these areas many responses that are incompatible with normative considerations have been documented and studied (Hume, 1976) and the suspicion arose that people are not just inaccurate or lack the skills for calculating probabilities, but that they use an entirely different approach from that of economists and mathematicians in their decision making (Keren & Tieggen, 2004).

The tendency to use “rules of thumbs” or heuristics, and thus to produce biased outcomes, has been noted across the range of judgment and decision making (Evans, 1993; Kahneman, Knetsch, & Thaler, 1991) and is an aspect of farmer reasoning worth continued study. When making decisions in environments of rapid change or in ones quite distinct from those within which such heuristics were apparently adaptive, overdependence on heuristics could (at least in theory), produce higher rates of error than they would have by using rational-based decision methodologies (Kahneman, Knetsch, & Thaler, 1991).

3.11 Some Heuristics Explained

There are many heuristics and biases identified in the literature, but most have at their core the goal of making more effective or faster decisions in situations that are experienced regularly (Kahneman, Slovic, & Tversky, 1982). *Availability* and *representativeness* are two

common categories of heuristics that both create bias in judgment (Tversky & Kahneman, 1972; Keren and Tieggen, 2004). Another bias among decision-makers that follows from these two is the tendency to *escalate commitment* to a failing course of action (Whyte, 1986). Availability bias is the tendency to base judgments on information that is readily available, while the representative heuristic and corresponding bias comes into play in assessing the likelihood of an occurrence by drawing inaccurate analogies and seeing identical situations in places where they do not exist (Tversky & Kahneman, 1972). People tend to assess the likelihood of an occurrence by trying to match it with a pre-existing category. In contrast, escalating commitment “is an increased commitment to a previous decision in spite of negative information” (Whyte, 1986 p. 436). This may be a result of trying to show consistency in the pursuit of a particular course of action (Navarro & Fantino, 2009). If it is felt that too much has already been invested into a project, it could become extremely difficult to cancel the project (i.e., *sunk time effect* or *sunk cost effect*) (Navarro & Fantino, 2008, 2009). Cultural differences can be another explanation for different reactions in particular circumstances, and are often an issue in international assemblies or businesses (Hendry, 1987; Keil, Tan, Wei, Saarinen, Tuunainen, & Wassenaar, 2000; Beebe & Masterson, 2000; Mann, 1986; Yi & Park, 2003). *Confirmation bias* describes the fact that humans are notorious for overvaluing information that supports their assumptions and ignoring that which challenges their pre-conceptions (Evans, Barston & Pollard, 1983). These biases have been discovered to occur when rational analytical decision making models are being followed.

3.12 The Intuitive Approach to Decision Making

Naturalistic decision making (NDM) originated from the need to consider three themes in decision making that were brought to the attention of behavioural research scientists during an Army Research Institute conference in 1989 (Lipshitz et al., 2001). The first of these three themes was the importance of time pressure, uncertainty, goals, and other

complexities involved in real world settings. Second was the importance of studying experts as they made decisions. The third notion was the apparent action of decision makers evaluating circumstances of decisions in a more detailed and critical way than evaluating possible options (Lipshitz et al, 2001). These three characteristics of real-world decision scenarios were found throughout varied and numerous domains, and prompted a new research paradigm named naturalistic decision making. Naturalistic decision making researchers seek to comprehend how people make decisions in actual contexts that are important and familiar to them (Lipshitz et al., 2001).

Much of human mental life is unconscious, based on processes occurring entirely without conscious attention and energy. People have intuitions, feelings, hunches that are acted on for sports, friends, business transactions, and even in subscribing to political conspiracies. But, in the day-to-day lives of individuals, it is unusual to ask where these 'gut feelings' come from or how one knows something one has not deliberately thought about.

The intuitive (also known as 'Naturalistic' or 'System 1') decision making model is another approach to decision making. This theory focuses on understanding how people think naturally, and the ability to observe the setting or context of any given situation is the core building block of this method (Klein, 2001). Intuitive decision making can be described as "an unconscious process created out of distilled experience" (Robbins, 2001, p.137). It has been claimed that intuition is a natural ability that is simply more predominant in some people, (Sadler-Smith, 2008) while others (Claxton, 1999; Gigerenzer, 2007) support the view that intuition can be developed.

A gut feeling (sometimes called an intuitive judgment or hunch), refers to a judgment that is usually quick to appear in consciousness (self-evident), whose underlying reasons are not immediately known or made aware, and is strong enough to be acted upon. They have been described as similar to perception, in which one "just sees without argument that they are and must be true" (Harrison, 1967, p. 72). Intuitions are a kind of cognition, but do not

involve conscious reasoning (Haidt, 2001). Gut feelings in the social intuitionist model (in which gut feelings arise from quick moral intuitions and may involve subsequent or later moral reasoning and reflection) contrast with rationalist models of judgments which stress the rigorous weighing of issues and results prior to passing judgment in a situation.

One theory of how gut feelings work is that their rationale consists of two components; first; simple rules of thumb (heuristics) which take advantage of the second component, evolved capacities of the brain (Gigerenzer, 2007). In this description, the term 'evolved' does not mean it is a skill made by nurture or nature alone, but instead describes nature endowing humans with a capability, for which extended practice and nurture turn it into a capacity. Gigerenzer (2007) also suggests that without evolved capacities, a simple rule or heuristic would not be successful, but without the heuristic, the capacities alone would not solve a problem either. It is the combination of evolved capability and practice through experience, which hones a gut feeling or intuitive capacity to appear unconsciously in appropriate complex situations (Gigerenzer, 2007).

3.13 Criticisms of Intuitive Decision Making Models

It is difficult to put conviction based on intuition into words, often people just 'know' what is the right decision, but cannot explain their rationale (Giannini, Daood, Giannini, Boniface & Rhodes, 1978; Giannini, Barringer, Giannini & Loiselle, 1984). In some situations, a clear and explicit grasp of situations is necessary where there is a need for communicating decisions to other people (for example, in military situations when reporting to seniors, for outdoor leaders and instructors, or in group situations where justification for leaders' decisions are necessary) (Klein, 1998; Raiola, 1990; Poole, 1981, 1983a,b). The ability to articulate one's own ideas is paramount in good and precise communication, thus, the ideas generated by the unconscious by intuition must be tested and refined, and aids for

articulating intuition should be explored (DePaul & Ramsey, 1998; McCutcheon & Pincombe, 2001).

Another fault in intuitive decision making is that humans do have fallible memories, yet also do not always recollect altering their decision histories and memories (Offer, Kaiz, Howard & Bennett, 2000). As a result, humans make errors they have made in the past (hence not demonstrating learning), and also do not consistently choose the same selection when that selection has been successful in the past. Additionally, intuitions are affected by moods (Bolte, Goschke & Kuhl, 2003; de Vries, Holland & Witteman, 2007). Humans also frequently incorporate misinformation into their memories (Loftus & Hoffman, 1989). Consequently, this leads to one other shortfall of intuitions; intuitively perceiving relationships between variables where none exist, otherwise known as the illusory correlation (Chapman, 1967; Hamilton & Gifford, 1976).

3.14 Criticisms of the Alternative Models

Research into bounded rationality has been criticized for not following Simon's (1957, 1979) original formulation of it, but instead describing it as sub-optimal rational decision making (Gigerenzer & Selton, 2002). Gigerenzer and Selton (2002), instead proposed that in the examinations of simple alternatives to full rationality, bounded rationality has been shown to be less effective than simple heuristics, and 'gut feelings' frequently lead to better decisions than the theoretically optimal procedures set out by bounded models. Others have suggested that bounded rationality still requires lengthy periods of contemplation through describing the 'bounds,' much like rational models require lengthy periods listing and evaluating all possible alternatives (Elster, 1983).

The recognition primed model has not been without criticism either. Though the decision model is widely accepted as valid for experienced people working in recurrent situations (Klein, 1998), it has been described as prone to serious breakdown in unusual or

misidentified circumstances (Bond & Cooper, 2006). Additionally, novices, lacking the experience of experts, must still take the time to cycle through different possible alternatives when faced with an uncertain situation, and tend to use the first course of action that they believe will work (Simon, 1983; Bond & Cooper, 2006).

3.15 Complementarity of the Models

Rational analytical and intuitive models of decision making (and two alternatives) have strengths and weaknesses but, notably, they have characteristics that complement each other. Perhaps, then, it is a combination of both that may lead to the most successful decision making strategies. But then the question of when to use each arises.

In fact, a line of research (called debiasing) and associated cognitive training strategies have developed in order to try and solve the problem of when to avoid using intuitive decision making (Larrick, 2004). However, the literature also demonstrates that there are miscalculations present in rational-analytical techniques (Sen, 1977; Fischhoff, 1982; Stanovich, 1999). The literature contains decades of research indicating that rational theories from economics, statistics, and logic demonstrate that descriptive accounts of decision making fall short of normative ideals (the so-called normative-descriptive gap) (Larrick, 2004). Also, newfound developments in decision making theory, such as the growing focus on how affect, motivation, and self-esteem act as influences (Larrick, 1993), and the growing interest in the robustness of intuitive approaches (Gigerenzer, 2007, Gigerenzer et al, 1999) need to be considered.

There may be a need both to generate ideas by intuition and to evaluate them by analysis: “It is by logic we prove; it is by intuition we discover” (quote: Poincare, 1998; as cited by Claxton, 1998). Conversely, by approaching problems initially in a rational-analytical way, unconscious decisions may be brought to awareness (Gigerenzer, 2007). How then, are actual decisions made?

3.16 Real Life Decision Approaches

The ways in which decisions are made in reality often do not strictly follow a particular representation, but instead rely on a combination of several models, sometimes drifting between models as the demands of situations change (Dreyfus & Dreyfus, 1996; Dreyfus, 1997). Very often individuals make decisions by constructing simplified models of the problem that extract the problem's essential features without capturing all their complexity. This has been studied in the military world, but is also a common feature of decisions in everyday life (Klein, 1998). Bounded rationality will most often lead to decisions that are "good enough." Once the decision-maker has identified a number of criteria, and listed a number of alternatives, the reviews of the alternatives begin. The list might be far from exhaustive. When the first alternative that is "good enough" is reached, the decision is made. It is important to note here that the order in which the alternatives are reviewed is critical in reaching a particular decision. There might be several alternatives that are "good enough," and the order in which they are examined might then determine which one will be selected (Klein, 1993).

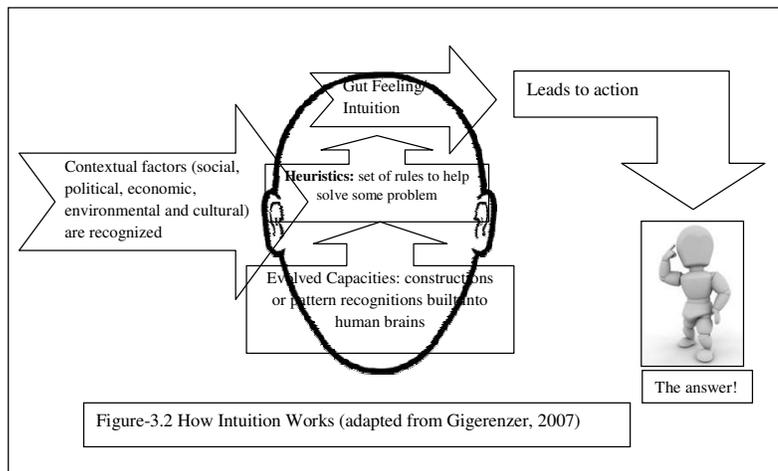
3.17 Effects of Training, Past Errors, Sources, and Socialization on Decision Making

There are several theories about how people learn to make decisions. Some theorists believe the ability to use intuition and emotive reasoning is innate (perhaps neurally-based), expressed when situational factors make these intuitions enter peoples' awareness and activate pre-programmed capacities (Gigerenzer, 2007; Gonzales & Fu, 2006). Others champion personal constructs (such as attitudes) as the main influences on decision making (as a behaviour) and thus believe that decision making arises from experience and nurturance (see for example, Ajzen & Fishbein, 1970; Allport, 1935; Triandis, 1975). These beliefs arose from testing of the theories of planned behaviour and reasoned action (Kraus, 1995). Still

others suggest that the behaviour of decision making evolves in much the same way as other physiological mechanisms, making decision making subject to adaptation in order to solve impasses commonly faced in human ancestral environments (see for example Buss, 2005; Durrant & Ellis, 2003; Pinker, 2002; Tooby & Cosmides, 2005). Similarly to the innate model, another concept recently proposed as the means by which decision making procedures are rooted, is similar to language acquisition. Decision making may be an *emergent behaviour*, where an individual has a set of mechanisms ‘waiting’ for exposure to certain social circumstances that bring out decision abilities (Dosi, Marengo, Bassanini & Valente, 1999). In that way, decision making is a cultural property passed from generation to generation.

Problematically, few have actually suggested how decision making as a skill is genuinely developed in a person. Gigerenzer (2007) did put forward a model of how gut feelings are activated (see Figure 3.2 How Intuitions Work, below), and goes as far as saying that intuitively-based cognition evolves similarly to examples of instinctual behaviours from the biological world, with “successive and slight modifications of simpler instincts” (p. 40). Further, the Brunswikian approach detailed that adapting to an uncertain and fluctuating world requires that people learn to use probabilistic data about the world in their reasoning (Brunswik, 1943; see also Gigerenzer & Murray, 1987). Intuitions arise from an “adaptive toolbox” of instincts which help individual’s extract solutions from sometimes incomplete information (Gigerenzer, 2007; Brehmer, 1994; Gigerenzer & Murray, 1987). Again, the context (in both a temporal and physical way) affects how these instinctual behaviours are developed and reinforced and triggered (for example, see Garcia-Retamero¹, Takezawa, Gigerenzer, 2009).

Figure 3.2 How Intuition Works (adapted from Gigerenzer, 2007)



Few decision models have been proposed as effective in describing decision making when the actors are embedded in multi-context situations such as being a member of a global supply chain. How do non-local factors and processes such as globalization affect decision makers? Providing some more information about that particular question is one of the objectives of this research. Below I will begin to describe how globalization offers a different context in which to examine individual decision making. The next section will begin by detailing what globalization is. The following sections will work to build the literature on what potential individual and group decision scenarios and influences may be found in this study's context.

3.18 Globalization as an Influence on Decision Making

Globalization has been defined (problematically) as 'internationalization,' 'westernization,' 'deterritorialization,' and 'liberalization' (Sholte, 2000). It is also described as an integration of economies and societies around the world (Moghabdam, 2005), transcending the boundaries of the nation state (Kay, 2006), particularly through international trade and the flow of capital, ideas and people, the transfer of culture and technology, and the development of transnational regulations (Scholte, 2000). Globalization, it has been argued,

has lowered the barriers for both small and large organizations to expand and find the right resources irrespective of their location (Sheelvant, 2008; Zobrist, 2004; Laxer & Halperin, 2003). At the same time, it has been noted that decisions made in one place increasingly affect the lives of those living in another (Frew, 2009; Turk, 2000, Krut, 1997).

There is evidence that globalization is influencing the way individuals and groups make decisions (see for example, Beinhocker, Davis, Mendonka, 2009; Bohr & Tse, 2009; Alter & Kwan, 2009; McIntyre & Meric, 1994; Konefal, Mascarenhas, & Hatanaka, 2005). Some researchers have declared that globalization drives different types of firm behaviours; some aspects (such as increased market and supplier access) promote competition, while others (improved global communication systems, access to diverse labour forces) promote improved collaboration or cooperation (Polenkse, 2004; Sheffi, 2001; Marquardt, 1998). Yet, it is difficult to describe exactly how the forces of globalization reach individual decision makers. Perhaps it is through information channels and sharing (or the lack of), that pressures are exerted on individual decision makers? Other questions arise about how decision makers in the wool supply chain context perceive globalization as it relates to strategic decisions.

3.19 The Problem of Information

Recently, research has emerged examining the effects of information sharing during negotiations and group interactions, such as in supply chain contexts. It was often assumed that in group circumstances, group members worked cooperatively and exchanged information in an objective manner with the goal of making the best decision for the group (Wittenbaum et al., 2004). However, a great deal of research now suggests that groups fail to work cooperatively (Tindale & Sheffey, 2002) because their members fail to pool unshared information (Larson et al., 1994; Stasser & Titus, 2003). It appears that within a group, there are mixed motives; one, to help the group make a decision, and two, *conversely*, to position oneself strategically within the group (De Dreu et al., 2008; Toma & Butera, 2009). This

suggests that at one time, when facing one decision, a person might have to evaluate their choices from two lenses; that of an individual, and that of a group member (each perhaps, having different and/or competing goals). The competition is similar to the struggle (unconsciously) for a biological unit of function to increase its fitness, while at the same time, contribute to the fitness of the overall entity to which it may be a part (see Chapter 2, Section 2.6).

Some of the other important findings from research on information sharing in groups include how the amount of trust, suspicion, and underlying self-interest of individuals (when exposed) affect the way that decisions are made. Harinck & Ellemers (2006) showed that in anticipation of negotiations, participants placed more trust in a fellow group member and were more willing to exchange information with a negotiation partner who revealed his/her self-interest. Their results showed that negotiations with members within a group were more cooperative when they shared, rather than not having shared, information about their intentions. By contrast, negotiations with unconnected people were more cooperative when they did not share, rather than shared, information about their underlying self-interest (Harinck & Ellemers, 2006). Toma and Butera (2009) also found that in a competitive situation, group members were more likely to withhold information. In competition, compared to cooperation, group members were also more reluctant to give out personal details, such as initial preferences. Decision quality was also lower in competition than in cooperation (Toma & Butera, 2009).

In a way similar to an effect known as the “information dilemma”, negotiation research (Murnighan et al., 1999) has found that group members in competitive settings tried to preserve their individual advantage by withholding concealed information (Toma & Butera, 2009). Some suggest that this ultimately leads to poorer performance on the parts of both the individual and the group. Being faced with having implicitly to divide attention between the groups task or decision, and one’s own desire to advance one’s position in the group results in

decreased performances (Locker, Jr. & Pratarelli, 1997). Toma & Butera (2009) continue by explaining that, in competition, some members' pooled shared information as much as the group members in cooperation, perhaps in an attempt to trigger others' cooperation and unshared information. This is in line with social exchange and reciprocity theories (Blau, 1964) suggesting that pooling shared but not unshared information signals understated forms of deception that disguises the opportunism found in competitive situations (Wong, Tjosvold, & Yu, 2005). This would suggest two things; first, within a group (where some level of dependence is present) it is better to behave in a transparent way, pooling all information, particularly when there is no (perceived or otherwise) pressure or incentive (such as promotion within a business or tenure achievement) to perform as an individual. Secondly, in competitive environments, people perform deceptively in order to strategically position themselves by coercing others to share withheld information (Hollingshead, 2001). This behaviour often results in poorer group performances by allowing the strategizing to be a distraction, and by promoting mistrust among competitive players.

In the globalized business world of today, there is increased use of the internet and intranet for business interactions, drawing workers into a virtual environment where information concealment is difficult to detect, but also fosters the possibilities for resource-oriented knowledge exchange in large groups of people working in parallel. However, the individual decision to contribute information to a shared pool builds up a social dilemma, and people are often discouraged from sharing knowledge because of strategic reasons as listed above. Additionally, the highly anonymous situation where knowledge exchange takes place could further amplify the tendency to withhold knowledge (or use some other strategy such as give misleading information): this situation provides almost no meta-knowledge about the importance of one's information for the others and almost no social cues about quality and quantity of knowledge exchanged (Cress & Kimmerle, 2007).

Globalization may accentuate the difficulty of making decisions by increasing the complexity of the context that individual decision makers must navigate. By removing the boundaries of corporate dealings, decisions themselves are being driven offshore. Questions arise as to how, in the light of globalization, people make decisions, and what implication that has for the context of decision making. In addition, globalization may increase group memberships of decision makers (i.e., a farmer might be a member of a local board for a cooperative body, but, that cooperative and its members may also act in an international sphere).

3.20 Group Decision Making Influences

The processes involved in group decision making have been considered from both mathematical and behavioural approaches (see for example, Clemen & Winkler, 1999). Models have been created in efforts to maximize the accuracy of group performances given different compositions, expertise, and aggregations (Clemen & Winkler, 1999). Some of the influences on group decision making include social factors such as team cohesion, communication, and acceptance, and individual factors including biases, expertise, and prior experience (Davis, 1992; Sorkin, Luan, & Itzkowitz, 2004).

One of the most basic properties of a group is its cohesiveness (solidarity, team spirit, morale), the way it works together as a tightly knit, self-contained entity characterized by uniformity of conduct and mutual support between members. Cohesiveness is variable; it differs between groups, between contexts, and across time. It is both a descriptive term, used to describe a property of a group, but it also acts as a psychological term; describing the individual psychological process underlying the group dynamics. Definitions of cohesiveness were difficult to formalize in early research (Hogg & Vaughan, 2002), but factors that increase interpersonal attraction (such as similarity, cooperative acts, interpersonal acceptance, shared threats) elevate cohesiveness, and that elevated unification produces

increased conformity to group standards, accentuated similarity, and improved communication and liking between group members.

Hogg (1992) suggested that perspectives on group cohesiveness should reflect a much wider social interdependence in social groups. Researchers have yet to fully operationalize cohesiveness. Thus, questions still arise about the influence of personal attraction (liking someone based on individual preferences and interpersonal relationships) and social attraction (liking someone based on common group membership and determined by the person's idea of how the group functions) among group members (Hogg, 1992).

People often make decisions that conform to the opinions of those around them (Sorkin et al, 2007). One explanation is that this behaviour is due to the pressure to fulfil others' expectations, be they explicit or implied (Greenberg, 2004). Others have argued the opposite; that conforming pressure exists not because of social demands, but because conforming usually leads to better decisions (Penner & Davis, 1969). Sometimes, however, it is difficult to determine the informational from the social influences in a group decision making scenario (Turner, Pratkanis, Probasco, & Leve, 1992), perhaps even more so when groups are interacting 'virtually.' An additional complication to the new 'globalized' group decisions may be that the initial preferences and biases of individuals within the groups remain hidden, leading to mistrust as explained earlier (Section 3.16). With an increase in complexity and uncertainty in decision making as a group, individuals, such as those in this study, might be able to provide insight into how being members in these groups influences their own decision making.

It is evident that both individual and social factors have a part in determining the effectiveness of group decisions. Do these factors expand in a fractal way to groups competing against other groups on global scales? By this I mean, are decision making units similar in behaviour when the 'unit' is considered an individual actor? But do contextual factors also have a role? In that way, do pressures of globalization act on individuals

seemingly removed from the global arena – such as farmers in New Zealand? When groups are competing on a global scale, do they feel the same pressures as they do when acting individually within a group? Finally, do decision making units rely on intuitive (or rational-analytical) decision making in the same situations as individual people when faced with similar circumstances?

Still more questions arise over the importance of ‘situations’ on decision making. One key aspect of situation is a person’s familiarity or attachment to it. The next section will explore place attachment as it relates to individual decision making.

3.21 Place Attachment and Decision Making

The importance of the physical environment in maintaining self and cultural identity is firmly recognized in psychological and sociological literature (Steele, 1988; Shreyer et al., 1981). Place attachment (or sense of place) is associated with an emotional or affective bond between a person and a particular place. This bond can range from an immediate and short-term attachment to that of a deeply rooted connection (Tuan, 1974). Russell & Ward (1982) defined sense of place as a psychological or perceived unity with a person’s surrounding environment. Sense of place has also been described as an experiential process, created by the place, and the experiences that a person brings to it; that is, to some degree, people create their own places, and places (geographic locations endowed with meaning) do not exist independently of people (Steele, 1981). Place attachment may also be reflective in different ways of interacting with a place. Tuan (1977) suggested that there are “modes” of experiencing place; ranging from direct (as perceived through the senses), to indirect (through cognitive or symbolic processes).

There are two additional terms associated with the research in place-based meanings that are important to this study because of their contribution to individual ‘uniqueness’ on a global scale. These include ‘place dependence’ and ‘place identity’. Place dependence is a

form of attachment associated with a particular place to satisfy the needs and goals of an individual and the assessment of how the current place compares with other available settings that fill the same set of needs (Stokols & Shumaker, 1981). Proshansky (1978) defines place identity as “those dimensions of the self that define the individual’s personal identity in relation to the physical environment” (p. 155). Place identity can be based on personal emotional ties, or on more abstract or symbolic meanings (for example, the site where a child first planted a tree, or the symbolization of the childhood that tree represents) (Williams, Patterson, & Roggenbuck, 1992).

Feldman (1990) expanded the concept of place attachment and place identity to also include psychological bonds with types of places rather than only attachment to specific places (i.e., a farmer could be attached to farms in general, not just their individual farm). In that way, policy or management regulations, or changes that affect a general type of place, may be seen as having some bearing on a person’s identity, hence, resulting in often compellingly rich responses from those perceived to be affected.

The research into ‘place’ reveals that places are not just the sum of different features, but whole entities valued in their entirety (even having effect as ‘implied’ presences). Environments can be ‘loved,’ and in fact, a line of research on the environmental relationship exists. An environmental relationship is an association that persists across time and is characterized by the continuing affective, cognitive, and behavioural attachment exhibited by a person toward a specific location (Steel, 2000). In that way, places (in this case farms), and their associated resources (stock, crops, or flocks) are not just raw products to be used (exported), but more importantly, “places with histories, places that are cared about, and places that for many people embody a sense of belonging, love, and purpose that gives meaning to life” (Williams, Patterson, & Roggenbuck, 1992, p. 44).

This selection of literature on place attachment and related concepts has been described because places are important for (some) farmers. I will be exploring how places (and the attachment thereto) affect decision makers in this study.

3.22 Summary of Literature Review

This review provided some background information and definitions on decision making in general, two main models and two alternatives to the main models. The two primary decision making models (rational-analytical, and intuitive) have their strengths and weaknesses, as do the alternatives that have been presented. One way to help reduce the effects of human error might be to learn to use the approaches in appropriate situations, while allowing for backtracking or adapting strategies as one goes along. Some researchers have recently described decision making strategies as lying on a continuum between those more rational in approach, and more intuitive in approach. Decision makers may be able to choose and adapt strategies based on the context in which they find themselves. Furthermore, aspects such as experience, group embeddedness, and social psychological factors (such as implied presences of others) may play a role in determining which decision making strategies are relied on.

This review also examined some aspects of the situations in which individuals and groups make decisions. Some valuable influences were detailed including personal (intrinsic) forces like place attachment and perception, as well as group-related forces like cohesion and cooperation.

The sharing of information is a valuable act; a cooperative act when in a group decision making position, which can help improve a group's performance. However, that information (when concealed) might also carry added value for the bearer in terms of being used to strategically increase their competitive advantage or position within a group. While it was previously assumed that groups would implicitly work cooperatively to solve a dilemma,

there is increasing evidence that individuals within groups sometimes value their own personal advancement (or attainment of high status, proving competence, or taking credit for a group's success) more than they value the group coming to the right decision. How does this potentially play out in the real world with groups competing on a global scale?

With groups and individuals interacting in the wool supply chain, it is evident why both psychological and sociological social psychology approaches were necessary, and why examination of various decision making styles was prudent. Since the supply chain (and its members) exist in an international, 'virtual,' competitive and cooperative, complex and uncertain, multiple level decision unit and units of analysis, 'real' and 'implied' context (and valued places), one decision making model or strategy might prove ineffective in solving the range of decisions that emerge. It is for this reason that a grounded approach to this study was deemed necessary. Lastly, it is anticipated that the 'information' provided in this literature review and the context chapter (Chapter Two) provides enough detail to understand the decision making processes that will be presented in the results and analysis chapters.

This literature review began with an examination of the approaches to social psychology. After describing the context in Chapter Two, and detailing the differences between social psychological approaches, it is evident that this study requires both psychological and a sociological social psychology lenses. These lenses reveal that there are many different influences on decision making units, and it may be that context plays a pivotal role. The next chapter examines the methods used in this study and prepares the reader for the results. Following the methodological information are the results divided between the farmer and supply chain members I interviewed, then detailed in the exploration of three key decisions that speak to the objectives of this project.

Chapter 4: Qualitative Interviewing among Farmers and Supply Chain Personnel

By three methods we may learn wisdom: First, by reflection, which is noblest; second, by imitation, which is easiest; and third by experience, which is the bitterest.

-- Confucius

4.1 Research Objectives and Methodology

It was a primary goal of this research to understand farmer decision making in as detailed a way as possible so as to develop a better understanding of how the context, and groups influence farmer decision making. Furthermore, this research enabled reflection on decision making theory that could contribute to the debate over how best to characterize decision making in general. This research could potentially help farm managers, analysts, and policy writers understand how farmers in the New Zealand wool industry recognize the situations they are in, whether those situations (perceived or real) explain decisions that are made, and contribute to the development of their overall decision making strategies.

It was a further goal of this research to uncover how the entities within the wool supply chain (as both external influences, and as decision making units) interact with, and influence sheep and wool farmer decision making. The contributions from this aspect of the study may include supplementing knowledge and understanding on how pressures from different levels of the chain feed into the decisions made at stages removed from the source of that pressure. An additional contribution could be advancing what is known about how intangible influences and social psychological processes (such as one's attachment to place, forces of globalization, or sources of information) affect locally-placed individual decision makers.

This study needed to be carried out in considerable detail in order to accurately describe the context, and to point out the similarities and differences between this case study and others of the same type. Using a grounded theory approach, and qualitative interviewing

as the main data collection method allows for the required detail to be collected while ensuring that I created an account of method and data which can stand independently so that another trained researcher could analyze the same data in the same way and come to essentially the same conclusions. In order to remain rigorous and to overcome researcher bias, I have included extensive sequences from the original data in the form of quotations throughout the results chapters followed by detailed commentary in order to produce a plausible and coherent explanation of the trends under scrutiny.

Below I describe the background to grounded theory and qualitative interviewing. This chapter continues by describing sampling considerations, the recording and verifying of data, and the categorization and identification markers for participants. The chapter ends with a brief discussion on the selected units of analyses. For a discussion of the limitations of the methodology and sampling, please see Chapter Nine: Conclusions, Section 9.6.

4.2 Background to the Methodology

Grounded theory is the discovery of theory from data systematically obtained from social research. The role of theories in general in the social sciences is to enable prediction and explanation of behaviour, to be useful in theoretical advance and to be usable in practical applications (Corbin & Strauss, 2007). Theories for prediction and explanation should be able to give the researcher (and practitioner) understanding and some control of situations, and to provide insightful perspectives on 'real world' behaviour. Theories usually present a stance to be taken towards data, and guide and provide a style for research on particular areas of behaviour (Glaser, 1999). In contrasting the method of grounded theory with the logico-deductive method and discussing and assessing their relative merits in ability to fit and work (predict, explain, and be relevant), Glaser and Strauss (1967) take the position that the adequacy of a theory cannot be divorced from the process by which it is generated. Hence, they argue that although an awareness of different theories is required for social scientific

study, choosing a theory prior to, and for, framing the study is no longer necessary, but actually can hinder the creation of new theory by being too narrow, or forceful in attempting to prove hypotheses.

Grounded theory, by contrast, involves discovering “what is”, not what should be, could be, or ought to be (Glaser, 1999). A grounded theory research question should only take the form of identifying the phenomenon to be studied, and what is known about the subject (Strauss & Corbin, 1990). Qualitative analysis is a cognitive practice, and each individual researcher will bring a different cognitive style to the analysis (Heath & Cowley, 2004). On a personal note, I am fully aware that my knowledge, skill level, and experiences have in this way affected the emergence of new theory in the use of this method.

Decision making includes the dual processes of identifying and solving problems. Two competing approaches to decision making studies in the social context that I am interested in are the rational-analytical and intuitive (naturalistic) approaches. Each perspective is defined by the process by which the decision is made (barring there is a pre-decision cognition), the method used to collect decision making information and the context in which the studies are conducted (Beare, 2001). Behavioural studies and meta-analyses have pointed to flaws in both approaches to decision making (Webb & Sheeran, 2006). Using grounded theory, the decision making strategies or a new strategy in general in the context of the farmer in the wool supply chain had become apparent as the study progressed. That is, a grounded approach to theory construction did provide the best opportunity to examine an interesting context of decision making without prior commitment to one particular decision making theoretical paradigm. Yet it also allowed me to be aware of the range of theoretical ‘options’ currently available. I did explore classical and naturalistic approaches to decision making, and settled on an analogy of a socio-biological theory in a human setting. In this way, the research was truly a grounded approach with the units of analysis dictating the theoretical contributions.

4.3 Qualitative Interviewing

At the most basic level, interviews are conversations (Kvale, 1996). Kvale defines qualitative research interviews as "attempts to understand the world from the subjects' point of view, to unfold the meaning of peoples' experiences, to uncover their lived world prior to scientific explanations" (p.14). Interviews for research purposes promote understanding and change but the emphasis is on intellectual understanding rather than on producing personal outcomes (Kvale, 1996). During qualitative interviews, open-ended responses to questions provide the interviewer with quotations, which are the main source of raw data. Patton (1987) notes that quotations reveal the respondents' ways in which they have organized the world, their thoughts about what is happening in their world, their experiences, and their basic perceptions. The task, then, for the qualitative researcher is to provide a framework within which people can respond in a way that represents accurately their point of view.

Qualitative interviews may be used as an exploratory step before designing more quantitative, structured questionnaires to help determine the appropriate questions and categories. Conversely, interviews may be used after results of more standardized measures are analysed to gain insight into interesting or unexpected findings. While quantitative results are sometimes dismissed on methodological grounds by those who disagree with the findings, it can be harder to dismiss the actual words of participants which convey their powerful emotions (Patton, 1990). While much of the value of qualitative interviewing lies in its flexibility and openness, it remains extremely important for the evaluation of the data to think through the process and provide the basic structure and framework which will make the study useful and worthwhile (Silverman, 1993).

The ethical issues foreseen in conducting interviews include; confidentiality, informed consent, risk assessment, promises and reciprocity, and interviewer mental health. I had also foreseen that in using qualitative interviews for research, there are the following disadvantages; interviews may be experienced by participants as more intrusive and time

consuming than quantitative approaches; participants may say more than they intended to say, and later regret having done so; interviewees may be more reactive to personalities, moods, and interpersonal dynamics between the interviewer and the interviewee than methods such as surveys. Furthermore, conducting interviews can be expensive and time-consuming, because qualitative interviewing requires considerable skill and experience, analyzing and interpreting qualitative interviews is much more time-consuming than analyzing and interpreting quantitative interviews. Finally, qualitative interviews may be more subjective than quantitative methods because the researcher decides which quotes or specific examples to report (Kvale, 1996; Patton, 1990; Creswell, 2003).

The methodology thus employed in this study included in-depth qualitative interviewing of two main groups; sheep and wool farmers, and members from other levels within the wool supply chain. This study involved interviewing thirty three farming people in total (nineteen interviews with farmers and their families), in addition to fourteen members from levels of the supply chain at minimum once removed from farmers. I was satisfied that saturation (as per Guest, Bunce, & Johnson, 2006) was reached with these two groups.

The interviews themselves are only one part of the rich information that needed to be absorbed from each member of the sample. Detailed histories of the industry, specifically in the New Zealand context, as well as each farmer's ethnography were developed through this study. Interviews, whenever feasible, took place on-site in order to allow the farmer to feel at ease and in their natural surroundings. When further interviewing was deemed necessary, this continued with the permission of the farmer once the initial verified transcript was returned. For more information on the sample that was finally accepted for analysis, please see the results in Chapters Five and Six.

The first stage of interviewing was with the farmers to begin to develop an understanding of their perspective. Following this, a second round of interviews was conducted with other members of the wool supply chain. In this regard, the main results from

the first sample, those from whom I was interested in uncovering decision making strategies (the farmers), created the basis for the questioning of supply chain members.

Below I will provide a more detailed explanation of the methodology and sampling used in this study.

4.4 Introduction to Methods and Sample

Prior to the interviews with supply chain members, face-to-face in-depth qualitative interviews were conducted with farmers to test the conceptual universe of potential farm and supply chain relationships, establish farmer decision making strategies amongst their environments and experiences, establish common decision making scenarios between farmers and connected industry groups, and gain insight into information sharing and acquisition behaviours among supply chains. While the literature had provided the basis of these constructs, I was concerned that the re-conceptualizing of some variables would confuse the original environmental and relational contexts I described in the literature review, thus affecting their underlying psychological and sociological properties. For example, farmers might sell part of their wool to private buyers, and part through the auction system, making them at one time individuals, and interactive dyads embedded in a social network, while additionally members of a supply chain. Each of these decision environments may influence the way farmers and supply chain members interact with each other (i.e., when and with whom to bargain, share information, or trust).

The advantage of qualitative interviewing techniques in this regard (and in this case of open-ended questions and in-depth interviews) is their ability to generate insights that help clarify these sorts of problems in describing complex environments and relationships (Miles and Huberman, 1994). Further, their flexibility and open structure allowed me to probe deeper and gather information that is not normally achieved through structured survey-based or other quantitative approaches (Aaker, Kumer, Day and Lawley, 2005). Test interviews also can be

conducted quickly and tend to be less expensive if fewer in number, although gaining access to busy farmers and executives can be difficult.

While the analysis can produce more depth in identification and elaboration of themes, rich descriptions and possibly deeper connections, qualitative procedures have been criticized for their ambiguities and disagreements in the coding processes (Mays & Pope, 1995; Sandelowski, 1986). Moreover, Gould (1999) suggests that determining the number and description of the categories of data can be difficult, suppressing some types of themes in favour of others. Interviewer bias also plays a role in the incomplete description of given results. It is for that reason I followed consistently the qualitative data analysis and coding techniques as described by Denzin & Lincoln (1994), Coffey & Atkinson (1996) and Creswell (2003).

Since the aim of the research was to examine potentially long-established patterns of behaviours, conducting a set of pilot interviews with the presence of an expert practitioner from AgResearch (formerly Canesis Network Ltd.) was considered prudent. The consultations with this expert also helped me to assess if there were any other underlying dimensions of farmers' and supply chain members' behaviours that had been inadvertently overlooked.

A total of two face-to-face in-depth interviews were conducted with farmers, and with the experienced industry practitioner who was knowledgeable in the context of wool growing and sheep farming acting as support while I tested the interview guide and my probing questions. As the practitioner/researcher also has extensive industry experience and was known to the interviewees, rapport was quickly established and there were no obvious impediments to the free flow of information. The two interviews lasted 50 minutes and 120 minutes, respectively, in duration. While the pilot interviews followed the broad outlines of the interview guide (see Appendix 1.3), generally the interviews were open-ended and unstructured in nature. Feedback was requested from these two initial farmers on the actual interview processes itself. Comments were positive in nature and encouraged me to conduct

the rest of the interviews on my own while paying close attention to the media that farmers are most often exposed to, in order to ensure my probing questions were appropriate, timely and posed with correct terminology.

The bulk of the research data collection began once I was satisfied with my pilot interviewing skills, and comfortable in the context. At the end of each interview, a general open-ended question was used to elicit any further thoughts or reflections from each farmer or spouse/dependant (see Farmer Interview Guide, Appendix 1.3). Information on data verification processes were also explained at this time. At the end of each interview, the respondent's efforts and contributions were formally acknowledged and thanked. Further, light conversation was initiated as time and context permitted so as to end the interview on good terms.

When recording observations made on location at farms or in places of business, I had three major choices for managing and recording the data; via an audio tape or recorder, field notes, and my own memory (Singleton, Straits and Straits, 1993). Given that memory is a very poor data repository (Bernard, 1995), the best way to record the qualitative data was via a digital voice recorder (DVR), complemented with fields notes taken during the interview. The DVR allowed the verbatim recording of everything that was said, and the non-verbal clues, environmental context and other impressions were recorded on the field notes. However, the DVR can have a disadvantage of being intrusive and it is acknowledged that respondents may modify their behaviour somewhat when they know they are being recorded (Lofland and Lofland, 2006). However, to minimize these effects, each respondent was asked for permission prior to the recording being started, and the DVR was a slim and compact unit that was placed on the table equidistant between the researcher and the respondent. Further, the DVR was sensitive enough to pick up the ambient conversation clearly without having to be handed between the participants or requiring anyone to speak directly into a microphone, and in this way it quickly became unobtrusive allowing the conversation to flow. The

advantage of the DVR was that it allowed me to concentrate on what was being said and also on making field notes without distracting my participants.

4.5 The interview guides explained

The questions selected for the interviews with farmers were chosen to elicit replies with both content and format. I sought to use open-ended questions throughout to allow the respondents to include more information, including feelings, attitudes and personal constructs while describing the ‘content’ of decision making scenarios they had faced. The open-ended questions also cut down on two types of response error; respondents were not likely to forget the answers they have to choose from if they are given the chance to respond freely, and open-ended questions simply do not allow respondents to disregard reading the questions and just "fill in" the survey with all the same answers (such as answering in the "no" box on every question).

After having read farm diaries and other related materials, I decided that each farm had a unique ‘life story’. As such, I began with two questions aimed at letting the farmer highlight the parts of their story they thought most interesting. These included asking their general views on wool and sheep farms, and on how the industry had changed over their lifetime. In the pilot interviews these two questions elicited some key points in the farmers’ lives where they had to make important decisions. These decisions were then probed and served to begin the in-depth exploration of the farmers’ decision making. Likewise, when asking questions to the supply chain members, similar opening questions spurred more detailed explanations on key decision they had made.

The next topics of discussion were chosen in order to reveal participants’ perceived roles in their industry, family, or farming environment. Once these roles became clear, I could probe about how the participant believed they fit into the ‘system’ of wool growing and processing, and ask further questions on how they communicated with other members of that

system (if at all). During this section of the interview, I was also interested in how events around the globe (social, political, economical, or ecological) affected the way the participant made decisions. I used this section of the interview to uncover how social psychological processes moved through the chain.

I chose not to ask directly about how the participant made important decisions until the end of the interview. This was done for two reasons; first, I wanted to uncover their decision making approaches organically, and allow the conversation to target their recollection of important decisions, rather than ask for a 'formula' without evidence. Secondly, I wanted to ensure I had some examples of key points in the farmer or supply chain members' lives to turn to for probes when I finally enquired about their decision making approaches. For the interview guides please see Appendix 1.3 and Appendix 1.6.

The guides for the interviews had to be adaptive themselves because of the unique contexts of each farm, farming family, supply chain entity and mix of 'roles' that participants identified. As the data collection period went on, there emerged several examples of global events that the participants described as influencing their current and recent important decisions. I had to be attentive to those events and ensure my probes were appropriate and timely.

Next I will turn to describing the sample characteristics for the study beginning with farmers, then supply chain members.

4.6 Details of Farmers

Between the months of November 2006 and January 2008, nineteen interviews were conducted with sheep farmers/wool growers in New Zealand. Interviews were conducted with sole farmers, farming couples, and farming families (three or more persons). A total of thirty-three people contributed to the interviews including farmers, their spouses and, in two

instances, the children of the farmers (with permission from both the children and their parents).

Prior to any data collection, this study was assessed by the Lincoln University Human Ethics Committee (HEC). The application detailed confidentiality, security of data, obtaining informed consent of participants (see Appendix 1.2), and their rights throughout the study. The application also included telephone scripts (see Appendix 1.1), participant information sheets (Appendix-1.2), and interview guides (Appendix 1.3). The HEC approved the project in November 2006.

Stratified and snowball sampling were used. A list of farmers who had been involved previously with research projects conducted through Canesis Network Inc. (now AgResearch Limited), had been provided to me. I initially selected ten farms from the list varying by geography, farm size, farm management techniques, education level of farmer, gender of key farmer, and on-farm experience (one farmer was retired) (see Table 4.1 for details of Selection Criteria for Farmers, and Table 4.2 for the Sample Summary and Identification Codes for this study). The farm classification system used followed that of the Australian and New Zealand Standard Industrial Classification System and attempts were made to ensure that the sample was broadly representative of the population of sheep farmers in New Zealand (Statistics New Zealand, 2002; 2006a,b) and varied beyond the initial list I used for the stratified sample. Farms also varied greatly by geographic location, size (in hectares), ownership, pathway for wool to market, and farmer experience in the industry, as noted in Table 4.2.

The farmers were contacted via telephone using a pre-written script approved by the Lincoln University Human Ethics Committee. Subsequently, farmers who agreed to be interviewed were sent research information sheets by post with consent forms and pre-addressed return envelopes (see Appendix 1.2). Interviews were conducted on location at the farmers' home in the South Island, or at specific locations within the Canterbury province

when farmers and families from the North Island were available through agricultural shows, conferences or other appointments. One interview occurred entirely over the telephone, but in other cases this was avoided due to the poor quality in recording the interview. Verification of the transcripts occurred in all cases. Two re-interviews occurred at the request of the farmers who indicated that they had more to share after reflecting on their first interview. Farmers, though unprompted to do so, also provided the names of other farmers not listed on the Canesis Network contact list, who they thought would be interested in contributing, or would have different views to add to the study. Nine further interviews occurred with contacts obtained from farmers after the initial stratified sample. Farmer interviews were solicited until thematic saturation was achieved (see Guest et al., 2006; Sandelowski, 1995; Fossey et al., 2002; Creswell, 1998). The process of interviewing farmers and thematically coding their interviews took approximately 16 months, with a break in interviewing occurring over the lambing season in order to allow farmers time to concentrate on farm work.

The semi-structured interviews ranged in duration from forty-five minutes to almost three hours, and were digitally recorded with permission from the interviewees. The interviews followed an interview guide consisting of ten open-ended questions (see Appendix 1.3). Interviews were transcribed, then sent to the interviewees for verification and subsequently returned to the interviewer. One copy of the transcript was provided for each member of the farm family who contributed to the interview with explanations on completing the verification independently, and the farmers/families were asked to return the transcripts with each contributor's individual comments. The interview transcripts were then open- and thematically-coded using QSR NVivo software.

Table 4.1 Selection Criteria for Farmers

Selection Criteria	Options
<p>Australian and New Zealand Standard Industrial Classification (ANZSIC). I initially chose two to three active farms from each option that included sheep farming (A012200-A012400), one dairy conversion (A013000), and one retired sheep farmer. My sample snowballed from there.</p>	<ul style="list-style-type: none"> • A012200 (Grain-Sheep/Grain-Beef Cattle) • A012300 (Sheep-Beef Cattle Farming) • A012400 (Sheep Farming) • A012500 (Beef Cattle Farming) • A013000 (Dairy Cattle Farming) • A015910 (Mixed Livestock) • A015990 (Livestock, Not Easily Classified) • A016990 (Crop and Plant Growing NEC) • A021900 (Services to Agriculture NEC)
<p>Geographic Location</p>	<p>Across New Zealand, varied topography and crop potential</p>
<p>Size (in hectares)</p>	<p>Numerical Range (18 – 2000 hectares in this study)</p>
<p>Ownership</p>	<p>Single person, family, partnerships, lease, concession of pastoral land from DOC, previously owned but now sold (in retirement)</p>
<p>Pathway to wool market</p>	<p>Auction, brokerage, exclusive contract, contract options, other</p>
<p>Farmer education and experience in industry</p>	<p>Years: ranged from just starting, to over 50 years in farming Education: ranged from some with no post-secondary education, to more commonly having a diploma (in agriculture, or farm management), undergraduate degree, and one participant with a postgraduate degree</p>

Table 4.2 Farmer Sample Summary and Identification Codes

Identity Code*	ANZSIC Code**	Geographic Location (NZ Region)	Size (in Ha) ***	Ownership	Pathway to market****	Farmer Experience (Y=years, Ed=Education Ag = agriculture, FM = farm management)
INTF1 INTF1S	A012300	Hawke's Bay	350	Family	Auction	Y: 3 on farm Ed: Diploma Ag.
INTF2	A012300 A021900	Waikato	200	Single	Auction	Y: 27 sheep, 12 beef Ed: Diploma Ag.
INTF3 INTF3S	A012300	Bay of Plenty	18	Family	Auction, small contracts	Y:22 on farm Ed: secondary
INTF4 INTF4S INTF4D	A012200 A015990 A021900 A030100	Hawke's Bay	640	Family concessions	Auction, contract, Cooperative, Mohair Stud, crops, forestry	Y:30 on farm Ed: Diploma Ag.
INTF5	A012400 A011400	Tasman	100	Single	Contract	Y:7 on farm Ed: Degree in Viticulture
INTF6	A012400 A014200	Marlborough	1200	Single lease	Contract	Y:35 on farm Ed: secondary
INTF7 INTF7S	A012400 A011400	Marlborough	2000	Couple concessions	Contract Retired to vineyard	Y:36 between three farms, Ed: Degree in Ag., regional studies in viticulture
INTF8	A012400 A011500	Nelson	200	Family	Auction	Y: 14 on farm Ed: Diploma Ag./FM
INTF9 INTF9S INTF9D 1 INTF9D 2	A012300 A021900 Then A013000	Greater Wellington	700	Family	Auction Contracts	Y: 17 on farm Ed: Diploma Ag.
INTF10	A012300	Marlborough	315	Single	Auction and private buyers	Y: 31 on farm Ed: secondary
INTF11 INTF11S	A012300	Marlborough	800	Couple	Auction	Y: 8 on farm Ed: Bachelor of Commerce, MBA
INTF12 INTF12S	A011300 A012300	Canterbury	600	Family	Auction	Y:12 on farm Ed: Diploma Ag. (both)
INTF13 INTF13S	A012400 A012300	Canterbury	1057	Couple concessions	Contract	Y: 17 on farm Ed: secondary
INTF14 INTF14S	A012300 A016990	Canterbury	850	Couple	Auction Contracts	Y: 13 on farm Ed: Diploma of Ag./FM
INTF15	A012400 A015200	Canterbury	90	Single	Storage, private buyers	Y: 50 on farm Ed: Diploma in Ag.
INTF16 INTF16S	A011300 A012300	Otago	1200	Couple, concessions	Contracts	Y:23 on farm Ed: Bachelor Degree in Ag.
INTF17	A012300 A013000	Southland	80	Single retiree	Auction	Y:45 on farm Ed: Diploma Ag.
INTF18	A012200	Canterbury	470	Single	Auction Contract	Y:5 on farm Ed: Diploma in FM
INTF19 INTF19S	A012300	Otago	1300	Couple, lease	Contract	Y:11 on farm Ed: Diploma Ag.

*INTF/S/D = Interviewed farmer, spouse, child; ** Some farms reflect more than one category or have undergone a conversion; ***One hectare = 2.47 acres; ****Some farmers sell parts of their wool through different conduits

4.7 Details of Supply Chain Participants

Between the months of April 2007 and March 2008, fourteen semi-structured interviews were conducted with members of the wool and animal fibres supply chains (wool chains are often also conduits for mohair, alpaca, and other animal fibres) within New Zealand (see Appendix 1.6 for the interview guide). Interviews with representatives based overseas occurred while they were in the South Island for business purposes (an international conference was hosted at Lincoln University allowing for the interview of two of these participants over one weekend).

Stratified and snowball sampling were used. I began with a list of company executives obtained from Canesis Network Inc., (now AgResearch Limited), then expanded to include wool brokers and exporters introduced through wool auctions and agriculture shows that I attended. Contacts were also obtained from farmers, rural newspapers, brokers themselves, and one contact was an author of a history text I was given on the New Zealand wool buying market.

Interviews were conducted with retailers, manufacturers, scourers, brokers, exporters, members of cooperatively owned and managed wool firms, an historian, a representative from an industry organization, and a representative of a farmer lobbying group (please see Table 4.3 for a summary of the interviewee characteristics).

Meat and Wool New Zealand (2006) identified eight stages in the wool supply chain; however, these can be categorized into four processes; growing, scouring and exporting, manufacturing, and retail. I initially set out to ensure at least three interviews within each process of the chain in New Zealand (broker/exporters, manufacturers, retailers). A broker/exporter represented one step in wool processing removed from the farm in the chain, manufacturers represented at least two steps removed from the farm, and retailers were usually three or more wool processing steps removed from the farm (for a more thorough explanation of the steps in wool processing please see Chapter Two, The Context of the

Problem, Section 2.3). Often, participants told me the steps the wool had been through prior to their company's acquisition of the wool, the further processing that they would perform, and the destination of the product beyond their location. This information helped to situate influences on decision making within different parts of the pipeline.

The initial New Zealand-based study group was expanded to include some international participants in order to gain a better understanding of how global information and influences flow through the chain. Furthermore, New Zealand wool is an export-dependent product; hence, an international perspective was required in order to represent accurately where the products of New Zealand wool growers were actually processed, manufactured, and ultimately sold, as well as elucidating details on aspects of cooperation and competition in the global wool market, and the sources (global and local) of inputs for the decision processes of farmers and supply chain members.

Interviewees were telephoned to request participation using a script approved by the Lincoln University Human Ethics Committee (Appendix 1.4). Interviewees who agreed to be involved were then sent a research information sheet and consent form (see Appendix 1.5 for copies of these forms). Further correspondence and organization of interview times and dates occurred by telephone and email. The interview guide can be found in Appendix 1.6. The interviews ranged from fifty minutes to two hours and ten minutes in length and were subsequently transcribed, verified by the interviewees and thematically coded using NVivo software as per the farmer interviews. Verification took place via email for participants who were located overseas. Verification of transcripts occurred in all cases. Interviews continued until thematic saturation was reached.

The process of interviewing, verifying supply chain participant transcriptions and thematically coding the results took approximately eleven months, overlapping with the later part of the farmer interview stage and as participants became available. For a summary of

details on the supply chain participants' roles, location, and experience with the wool market, please see Table 4.3 below.

Table 4.3 Supply Chain Participant Details

Identity Code	Geographic Location (bold reflects outside of NZ)	Stage in supply chain (steps removed from farm gate)	Participant Experience (Y=years, Ed=Education Ag = agriculture, FM = farm management, BM = Business or Management)
INTSC1	Auckland	Broker, one step removed	Y=15, Ed= degree in farm management
INTSC2	Napier	Auctioneer, broker, exporter one step removed	Y=12, Ed=degree in BM
INTSC3	Christchurch	Broker, one step removed	Y=17, Ed=diploma in Ag
INTSC4	China	Manufacturer two steps removed	Y=7, Ed=degree in BM
INTSC5	United Kingdom	Exporter, manufacturer two steps removed	Y=24, Ed=degree in Economics
INTSC6	Christchurch	Manufacturer involved from two steps removed to final product	Y=18, Ed=polytechnic certificate in textiles
INTSC7	China	Manufacturer, finished product four to five steps removed	Y=4, Ed=degree in BM
INTSC8	Timaru	Scourers, Exporter one to two steps removed	Y=29, Ed=secondary, some post secondary in BM
INTSC9	India	Manufacturer, three steps removed	Y=8, Ed=secondary and apprenticeship
INTSC10	Auckland, Christchurch	Cooperative business, author, all steps	Y=13, Ed=degree in BM
INTSC11	Auckland	Industry organization, all steps	Y=9, Ed=degree in FM
INTSC12	United States of America	Manufacturer and retailer, three to four steps removed	Y=12, Ed=degree in Economics
INTSC13	Christchurch and Wellington	Farmer lobby group representative	Y=10, Ed=degree in psychology
INTSC14	France	Exporter, Manufacturer two to five steps removed	Y=21, Ed=degree in English Literature

Six of the fourteen interviewees were from overseas; however, many of the domestic participants had widespread overseas involvement with their organizations/companies. Two of the overseas participants had started their careers within New Zealand, and thus could contribute aspects of both local and global influences.

Overall, I believe that the sample of wool growers and supply chain members was reflective of – though not thoroughly representative of - the New Zealand population and the major players in each stage of the global wool journey (for a discussion on the limitations of the sample and the research methodology, please see Chapter Nine: Conclusions, Section 9.6).

4.8 Units of Analysis

The units of analysis for the project were initially defined as the descriptions of decisions given in the verified transcriptions returned from the farmers and supply chain members after their interviews. However, it rapidly became clear that the units included three parts; the decision that is being made, the influences on that decision, and the person/people making that decision (see Chapter Three: Review of the Literature, Section 3.2). The units of analysis were chosen as such due to the interest in how farmers' decision-making (as the farmers personally described their processes) is influenced by supply chain entities and global events, something not directly observable but, given the assumed influence of such events over farmer decision making, only uncovered through descriptions.

Given that I was interested in how farmers personally described the influences that are involved when farmers are coming to decisions, the basic unit of analysis was set as the descriptions of decisions that individuals gave. Over the data collection period, however, I became aware that decisions were being made and described from an individual level, family level, small business level (including as the small business aspects of the farm, and small wool supply chain firms), right to the level of the larger business entities, and finally at a complete supply chain coordination level. Comparisons of decisions made while working

with other entities removed from the wool supply chain, or individual farm systems were also presented, further complicating the elucidation of influences on individual farmer decisions and their fields of existence (the perceived multi-dimensional space that frames their cultural, social, and economic reality). The single units of analysis of individual transcriptions were then no longer adequate to illustrate the whole picture in which global forces, local forces, exogenous (originating externally from themselves) and endogenous forces (proceeding from within) were influencing farmer decision making. It became clear to me that decisions were not manifest through one-off descriptions of events, or describable in terms of a consequence of individuals' thoughts, recollections and accounts, but were actually processes that evolved over time with varied inputs, influences, changes in affective states, adapting levels of trust for information sources, and complicated navigation through cloudy environments. I could not isolate one farmer's transcript of described decisions as a unit of analysis without considering the connections that farmers perceived they had with other levels in the chain, and their particular endogenous and exogenous influences. Hence, I chose to look at themes emerging from the transcripts and described the decision making as a process involving interacting individuals, social groups (e.g., family groups) and other entities rather than as a concrete selection of a choice at one moment in time. This confirmed what others (Simon, 1983; Hammond, 1996; Sloman, 1996; Kahneman & Frederick, 2002; Payne & Bettman, 2004) have been advocating; that is, making decisions is a multifaceted process that can be performed using many possible approaches. Additionally, there are numerous influences on decisions, and these influences change with time, thus, exploring decisions at a specific point in time might not be reflective of the influences on, and processing that went into, that decision (see Chapter Three: Review of the Literature Section 3.4).

4.9 Summary of Methodology and Sample

The methodology allowed the parallel comparison of group decision making (i.e., families, businesses, cooperatives, or other decision processes directly involving more than one person working out a solution to a situation). In-depth qualitative interviewing of both farmers and supply chain members allowed for the examination of decisions and decision making scenarios from multiple viewpoints. These separate, but overlapping approaches helped to shed light on the nuances of decision making for an individual but, at the same time, understanding that process as part of a much larger consortium of people working to bring a product to market. Decisions in this context, can be made by groups of individuals working together; one other consideration that I needed to include in my analysis.

The following chapters (Chapters Five and Six) deal with results, presented by thematic issue, arising from the transcripts separated initially by interviewee classification (farmer and family, supply chain entities), then, Chapter Seven proceeds to give analysis of decision processes through examination of several key decisions commonly made in the chain. Chapter Eight provides a general discussion of the results and Chapter Nine gives the conclusions and limitations.

Chapter 5: The Perceptiveness and Perceptions of Farmers

...what sort of concepts we apply to experience determines what we can find there, [but this] is to be understood in the unexciting way in which one understands the statement that the size and mesh of a net determine not what fish are in the sea but which ones we shall catch.

--David Wiggins

5.1 Introduction

The results of this study have been divided into three separate chapters. This chapter (the first of three) presents themes emerging from interviews with farmers and their families. Farmers responded to questions about their perceptions of being a sheep and wool farmer, how the industry has changed over their lifetime, the main influences on their decision making, and about strategic decisions they have made, are presently considering, and foresee in the near future (see Appendix 1.3 Interview Guide for Farmer interviews).

The next chapter (Chapter Six) reveals the results of the interviews with supply chain members. These participants were asked general questions about their perceptions of the wool industry, sheep and wool farmers, how events around the globe affect their industry, and the pressures they feel when making work-related decisions (please see Appendix 1.6 Interview Guide for Supply Chain Members). They were also asked about their means of communication with farmers.

The final results chapter (Chapter Seven) describes and analyzes three key decision making events that both farming and supply chain member participants detailed in their interviews. These descriptions help to reveal the complexities of the context in which individuals and groups are making decisions, and the ways that information flows through the chain.

5.2 Results of Farmer Interviews

The following section describes the themes that emerged (Boyatzis, 1998) from the interviews with farmers and their families. Decision pressures were described from four different contexts: those within the individual (intra-individual), between two or more individuals (in person, or through an implied presence), between members within a group (intra-group), and between two or more groups (inter-group).

Eight major themes were garnered from the interview data provided by the farmers and their families. The main themes stemmed from diverse decision-making influences. These influences were well-described during the interviews, but also were consistent with many of those described in previous research on farmer managerial style, cognitive approaches, and use of technology as discussed in the literature review. The influences will be further considered in terms of their roles in the four overlaying interpersonal contexts of influence on farmers' decision-making. Through the farmers' stories about, thoughts on, and prescriptions for decision-making, individual and group processes occurring during decision-making situations are made clear. These processes help to describe the two broad strategies of decision making used by this sample of farmers. These strategies (termed rational-analytical and intuitive) are formed by knowledge, cognitive style, considerations of fairness, and experience in the wool supply chain as perceived by the farmers in day-to-day, or in the short- and long-term interest of their farms. The strategies are also determined to a degree by the types of decision being made by farmers.

5.3 Introduction to Thematic Farmer Interview Results

The following subsections reveal the themes that emerged during the coding of the interview transcripts. Many of the themes supported the previous findings from the literature, but some new themes surfaced, including the role that the implied presence of former farm family members has on present day farmers (see Section 5.7) and the influence that a

disposition for cognition has on farmer decision making (see Section 5.11). In order to ensure that the themes are well-developed and described accurately, I have included extensive evidence in the form of quotations coming from the transcriptions of the interviews.

5.4 Theme One: Economies and Realities

The first question asked during the farmer interviews was “Tell me what you think about farming sheep and wool?” This question was generally answered in two ways; farmers either reflected that they thought of their farm as a business producing a product, or as a lifestyle to be enjoyed (with several nuanced responses, see Section 5.3.3). These reflections were described as contributing to their general leaning toward a dominant mode of decision making; either rational-analytical, or intuitive.

By aligning the perception the farmers had of their farms, with their descriptions of how they came to decisions, the differences between the main influences and other considerations for decisions was made clear. The analytical evaluation of potential outcomes, or the use of intuition in order to make particular decisions under uncertain conditions, were behaviours that clearly differed amongst those farmers who considered their farm more of a business or more of a lifestyle.

As a contextual note, meat and wool prices were very low during the period that the research was conducted, potentially introducing a focus on business and financial aspects of the farm first and foremost during this period. That being said, wool prices have been declining for decades while the costs associated with shearing and animal husbandry have been on the rise, and the number of service providers have also been declining. These compounding pressures may have influenced the perceptions that farmers have of wool growing, especially when taking on large debts when entering the industry.

The process of thinking of farming as a business with themselves as the managers, was described by about half of the farmers I interviewed. These farmers, compared with

others in the sample, tended to have less experience on the farm, were new to the particular farm site they were working, or had recently changed from sheep/beef farming to an alternate farm type. Some of these farmers had recently graduated from degree and diploma programmes in agriculture and farm management. Their newness and focus on financing issues on the farm also suggests that these farmers were under financial pressures which provide their main sources of stress and, thus, are the focus of the main cognitive energy of the farmer. Without the liberty (or luxury) of considering other psychological and social aspects of the farm, strategic farming decisions seemed focussed on relieving debt, and ensuring business success. For example,

“...the biggest challenges in this business are trying to make ends meet probably, and strategically, to end up with enough money at the end of the year to be getting out of debt and to enjoy your lifestyle.” INTF1

“I mean obviously you have got to be profitable so I guess foremost it is a business. Having said that, it probably has a hell of a poor return for a business but that's a fact of life, we know that.” INTF5

“It is a business, it's a poor business, it's not returning. Several old sayings and you know, we're asset rich and cash poor, and there's nothing truer than that at the moment. We're just not generating cash. I think it's something like 70 percent of farmers aren't going to make a profit this year. And I haven't made a profit for the last five years. So it's not a money making venture at the moment but it is great being self-employed.” INTF6

“Our sheep..., they are not intelligent animals. They are hard-work, hard to handle, heavy, hard work. Working with the wool has no profit, just somethin' we have to do. Really a pain in the neck and goddamn' expensive. Costs me more to deal with than I get back so it really doesn't make sense business-wise.” INTF11

For most of this group of debt-attentive farmers, wool was viewed as a commodity item, almost something of an unpleasant task to undertake. Here they describe the further pressures of being wool growers during a difficult financial time;

“You want to come in at the end of the day and say ‘it's all worth it' you know? But we're digging out a pond with a spoon. Should we just cut our losses? Can't really enjoy the place when you're always aware that ends aren't going to meet and you're trying to figure out the solution, calculating and cutting costs. Only so much you can do with wool. Doesn't work out like in the textbooks, the ledger you know? Money comes in after the auction, then out it goes, even faster.” INTF1

“...Only get a couple of paycheques a year for wool so we have to plan smart what to do with it when it comes. ‘Gotta think about all the bills coming in, and how to divide up what we have to pay out. ‘Gotta be practical about the farm. No use dreaming about how things used to be, or trying something new.”
INTF6

“It’s frustrating. I studied farm management so I should know how to make it work. The wool - it’s just this small part of the farm, really small, but it takes up so much of my resources, my time, energy, and for what? It doesn’t give any return, but we have to do it.” INTF18

Obvious frustration with financial aspects of growing wool as a part of their farm forces the focus of the decision making of these farmers on feasibility and financial survival. Decisions around strategies for farming were based on maximizing income in order to meet debt requirements. Farmers perceived the shearing of wool as a mandatory chore for animal husbandry purposes, and a ‘must-do’ according to New Zealand agricultural policy (Animal Welfare Advisory Committee, 2008). However, they described the financial aspect of shearing and selling their wool as non-profitable, a waste of time, and a general obstacle to enjoying the farm lifestyle.

Farmers who considered their farms as businesses also relied more on the use of consultants for help in coming to decisions, and the broad diversification of their farms as a main strategy thereby avoiding choosing one alternative among many (specializing in only one crop/stock) which they deemed too risky. They also used negotiation more often (i.e., when considering contracts), and used listing and ranking alternatives as a strategy. Financial and market information is important to these farmers.

In general, the farmers believed their wool businesses were not doing well judging by their financial returns and ability to balance the books (a rationally-based, analytical approach). They attributed their poor returns to wool market decline, poor marketing of their products, increased cost of managing the wool, and a lack of control over what the final products are actually worth. With follow-up questions on how farmers come to decisions on strategic matters (for instance, the chosen direction for wool sales), the same group of farmers

replied that, for them, the use of consultants, information gathering from multiple sources, paying close attention to market details (i.e., auction reports), and considering how their decisions as managers will advance the farm as a business were most important. I could also discern that the farmers often compared their own outlook and potential for success on their farm, to those in other fields:

“I guess I do a lot of sitting at the table with my reports, HB [pencil] and paper. If a change isn't going to be financially viable, I mean if you don't know where the money is going to come from or go to, you just can't do it. The business will fail. We have to be managers sometimes, not just farmers.” INTF6

“I tend to do things to try and keep costs low. I tend to think that people that get into the system where they have very high inputs and they can't dictate their revenue can paint themselves into a corner a wee bit. You have to be a smart businessman. The bottom line does matter because we could end up carrying too much debt for what we get each year, and only a couple of times each year – it's not a regular income but you do have regular expenses. I definitely spend a lot of time working the numbers, because in the past, when the raw numbers have been ignored and the carpet was pulled out from under us, we weren't ready.” INTF14

“The best thing I did for our business was to start listening to the accountants and products guys who kept knocking at my door... There was no way I could have read and learned everything that's out there to learn about crops and stock and breeding. They're the experts, why was I fumbling along? I was taking too many risks, now I ask them what I need to know, and decide based on their advice. I reckon' that's how good business works. That, and don't count your chickens.” INTF16

“When I'm tryin' to decide on somethin'...um... I think about the numbers. I think about where I need to be in a few months, what bills to pay, what unexpected things could be comin' up. Sometimes I just have to be ruthless. You do in a business right? If the market isn't performing, you've got to get out or do somethin' major to position yourself for the next big blow.” INTF11

“The prices keep going down, not like wine, not like dairy, they're booming, but we'll keep listening to the Board, and to the consultants, they've been right before about when things were going to change. They say the others [dairy, wine] won't last and we have. It'll swing back.” INTF12S

There were few hints during interviews with this group of farmers that emotive or affective reasons (with the exception of risk aversion and, thereby, fear) for decisions were not actively considered. There was not a broad approach (where the farmer considered their context and experiences) to their management strategies but, instead, rational economic

approaches dominated. Information from what they considered reliable sources was sought, evaluated, and then applied to the decision making scenario. Anchoring on one solution meant that consideration of alternatives (whether alternative options, or ways of thinking about the options) was superficial at best. For example, a farmer discusses why he did not expand his farm by purchasing a nearby parcel of land:

“I was right about not buying the block three years ago, and now its listed again. We thought about buying it, but at the time I thought the price was too high, and [parcel owner] was never a negotiator so we didn’t even bother trying. There were other blocks around. The orchards’ bought it up but it’ll never be worth their time, now they are asking too much again. Yeah, I do sometimes look at the listings at [rural services provider] to see the prices around here, but they are, um... the price is inflated. I know what the land is generally worth, especially when it’s right next door. I wanted to just wait until the market came down to my price. Price was what mattered to me then.”

INTF8

Interviewer: “Can you tell me if there were other land characteristics you were looking for?”

Respondent “Well, even if the land would suit finishing, yeah, we have a shortage here, it would attract a higher price, wouldn’t it. So it comes down to price.”

In addition to the focus on one particular criterion for making a decision, and recalculating other characteristics to the price format, this farmer also indicated a reliance on his own (internally-based) judgment for accuracy instead of pursuing other evaluative sources (i.e., assumptions about the willingness of the first owner to negotiate, and his indication of the high listing prices of the land without mentioning other comparative sources).

This group of farmers mentioned wanting to enjoy the lifestyle, and there were also a few short allusions to the benefits of working for oneself, but the frustration of having to constantly evaluate their financial standing seemed to interfere with consideration of the more social or sentimental components of farming, and growing wool and how these components might play into their farming decisions (as described by the other half of the farmers involved). What these results suggested were that for strategic decisions on the farms, these farmers maintained an identity of “manager” or chief financial officer for the farm. They had

a need to uncover ways to increase earnings through better financial management, often blaming external factors for their current situation, for example changes in policy and regulations, quality of advice from consultants, or market downturns.

“The outside influence on the farm itself was minimal when we first took over and now it is a major thing, I mean, various things like all to do with the regional council, it is just the system that, you know, we are not allowed to do blah blah blah without burning, or anything to do with water, or anything to do with the likes of weeds, or trying to find new markets ourselves...too many hoops to go through now. It’s better to just pay to piper.” INTF1S

“Gotta use the advisers...er... consultants, because we just can’t keep up with all the new products ourselves. But how do you know when what they’re saying isn’t all manure? We have had bad advice come our way before, but we couldn’t have known then. How could you?” INTF6

“There’s so much information out there to gather and analyze before you decide to do something big like change breed, or try cropping. You just have to do it [gather information] to weigh all your options. You have to watch what is happening in the other sectors too. You really have to know what’s happening in the markets, and they are really unpredictable and can blind-side you. It’s not easy, but you’re running a business and you have to keep that in the forefront all the time. Do what’s going to get you the best return, regardless.”

Interviewer: “Regardless of what?”

Respondent: “Regardless of your gut or what happened before. Each situation is different and you have to keep in mind all the factors that can contribute, not just how you feel about something. Step aside and think about it from a business... ummm [pauses] would you follow a hunch if it could mean three hundred jobs are lost? No, just like here, you can’t just change something on a whim and hope in three years your lambing rate will go up, or you’ll get better wool colour. It’s not smart management.” INTF8

More evidence of the rational-analytical based approaches can be found in the rejection of naturalistic decision making among these farmers;

“The solution never comes to you suddenly through some esoteric communal communing with nature or land. I think it’s more - for us anyway, I would like to think it’s a bit more logical than that.” INTF1

“I list the ‘pros’ and ‘cons’. Simple as that. No waiting for the answer to come or fall from the sky. It just doesn’t, well, only in the movies [laughs].” INTF5

“Maximum gain, minimum effort. That’s what he looks for. He narrows our options down to the ones that will meet most of our needs, then chooses one. When we downsized and started concentrating on the stud farm, it seemed the best choice. We thought about how much work and cost was going to go into deer, or dairy for that matter, and what we had available here now, and thought about what we could actually do if we got off the land entirely, I mean we both

have agricultural degrees, but our options were slim. We had to be realistic and not just imagine that a solution would come our way. With the kids moving on we couldn't count on them to help either. It seemed the right choice." INTF14S

On a social level, this group of farmers considers other farmers and farming organizations as repositories of information that they can use to help make decisions. They describe the influence of their peers on their decisions as follows:

"When I see them [his friends] at the shows, or in town, we talk about what's going on. Usually end up following someone's lead when there's a new trend, you know? I don't like to be first, but I like watching what happens and then choosing for myself." INTF18

"They get a group of guys here for the test match, and then they just debate all afternoon. Talk more about the farm than the match. Between them all they've tried so many different approaches, they should all be experts by now, but they go on and on, even looking things up on the computer when they can't figure out who's right. I think they just like to give themselves a pat on the back every once in a while, or hear that they aren't doing quite as badly as someone else. They like to be asked for their opinion too." INTF11S

A final trend uncovered in this group of farmers' interviews was their repetition of how events of the past have influenced their current decision making, even if the farmers were not actively involved with farming during that particular point in history.

"Oh yes, yes, my father told me. The 1960's were a bad period. Everything which came on the farm, wool, sheep, cattle, were all [pauses] prices were all depressed but you learn and change your pattern of farming to avoid it again. When I think about it, two decades later, they all picked up and you had a great boom again. Wool was great, lambs were great, cattle were great. Very cyclic thing farming. I wasn't on the farm then, but the 1980's were bad period again too. You lost your power as a farmer, started being told what you had to do when you already knew it. But even then I was only starting out, doing my practical work. But you just can't ignore what happened in the past... doesn't make sense." INTF14

"As far as the general rural community, I think that it is probably a little bit poorer now than it was 20 years ago because there aren't as many people involved and there's too many pressures on you. All the properties - the farmers are working harder and leaner I should say. They don't employ as much staff, they don't have the fencing contractors, the scrubcutters, those sorts of people coming through the farm property. Most farmers try to do that themselves now. Because of the sheer economics, and in that respect, yeah, we are a little poorer, but it's because of what we have to do to survive with so many demands on us." INT11

“Yeah, we studied a lot of the ups and downs at [Agricultural College]. Helped to make us aware of everything that we need to consider when we’re changing anything. It’s part of the practical work too – gaining information from the farmers you work with. You had to write a report about it. They have some horror stories to tell you about the eighties, do you know what happened then?”

Interviewer: “yes, please tell me more about what you learned from these farmers?”

Respondent: “ Some’ll tell you they still can’t break even, tried everything... They said stick to a plan. Don’t go changing things on impulse.” INTF12

From these results the characterization of this group of farmers can be defined: the rational-analytical farmer is one who focuses on rationality and echoes of historical experience when intra-personally considering their decision options. On an interpersonal level, the rational-analytical farmer perceives themselves as risk-averse or already carrying more risk than they are comfortable with, relying on social influences (what other farmers, or consultants say), framing, and mechanized decision-making styles, often and repetitively using the technique of sitting at the kitchen table working out the pros and cons, or narrowing options, until one is selected that is perceived to provide the most utility. In group and inter-group processes, the business-minded farmer self-categorizes into a reference population reliant on past events for their current identity; they do not like to be the risk-taker (or leader), trying out a new strategy first without the knowledge of someone’s else’s experiences to learn from. Almost all of these farmers made mention of what they consider extrinsic factors causing their current financial situation (markets, weather, government intrusion on farms), and having little control over the business of farming. However, they consider themselves to be ‘managers’ or the chief decision makers on the farm. They perceive that role to involve using logical, rational decision making techniques for strategic farming decisions.

The collection of information from many sources including friends, consultants, and advisors was deemed particularly important by this group of farmers. This interpersonal and group process again situated these farmers among those who considered the foundations of decision making to lie beyond the realm of the individual’s affective and emotive domains.

The rejection of naturalistic decision making and 'eureka' moments further supported this claim.

In considering their farm as a business first and foremost, these farmers shed light on how they perceived the business (global) world to be managed; fiscal responsibility was deemed of primary importance, sometimes at the expense of innovation, other values, or the implementation of 'gut feelings'. They seemed to imply that intuition and gut feelings were not justifiable business choice models. As such, a reliance on their internalized 'formulae' for decision making might interfere with them noticing cues from their environment that could benefit their data collection and characterization.

This group of farmers did compare themselves with other groups in the farming population (dairying, viticulture, crop or support farmers, and those who left the industry), but their comparison anchored on the current success of those trends, rather than historic downturns or future projections. Contrarily, the influence of historic events in the wool industry did play a role in how these farmers approached decisions. This group considered that the success of wool was historically cyclic, though they did not perceptibly recognize that they could be in a current bottom part of a cycle, or that the other industries could simply be at the top of a cycle and were about to enter a decline phase. The farmers also noted that these historic factors were part of their education, and thus should be implicitly considered as information sources when making decisions. However, even though the farmers recognized that history was important, they focussed instead on the current pressures they were facing as individual farmers, businesses and rural communities when describing how they come to decisions.

5.5 Theme Two: Lifestyle² and Making a Living

The other farmers I interviewed had a markedly different approach to the way they thought about growing wool and making strategic decisions for their wool operations. These farmers described the farm as a lifestyle choice, describing personal, social, and psychological benefits of the farm while concentrating less on the financial aspects and pressures that plagued the first group. These farmers tended to have more experience in the industry and be older; less recent formal education (most had a diploma in agriculture), a family history in agriculture or on the farm site, and more connections with other industry organizations. These farmers could describe what their wool eventually became, and continuously gave support for wool as a natural fibre that the world needed to take more notice of, often mentioning the oil crisis, or global waste issues as arguments against choosing synthetic fibres.

When asked to describe what the farmers thought about growing wool, these farmers tended to describe first their way of life, then aspects of managing a business, or working for themselves. They described patterns of social relations, consumption, entertainment, manner, daily activities and even ways of dress and experimentation with their wool products. A lifestyle description typically also reflected an individual's attitudes, values, or worldviews, and these were also expressed during the interview in more detail. There was a sense of certitude to the responses which may be indicative of contextualized, highly affective thoughts on their chosen profession, attachment to place, and commitment to the industry.

Here the farmers in this group begin to describe their nuanced perceptions of wool growing;

“It is not a very pleasant way to make a living really. It's worse than gambling (laughter). At least a gambler, you know, they have put everything on the line at once. But I guess being farmers' means we get to stay here, raise our kids here. It's beautiful outside. Why sit in an office all day when you could be here? ”INTF4

² As a contextual note, the term 'lifestyle' in this thesis does not refer to a 'lifestyle block' otherwise known as a hobbyist, or hobby farm i.e., a person who works in town and hobby farms.

“I think of it as a lifestyle now at my age. You try and think of it a bit as a business but if I was thinking of it purely from a business point of view, I would sell out, invest the capital and be having a better living than what I am now monetary wise. But as far as lifestyle goes, you can’t beat it. So it is a lifestyle with a business on the side is the way I view it now. I tried to view it as a business earlier on and the figures just seem to stack up.” INTF13

“We went farming in dairy farming first and progressed to sheep and beef because of the lifestyle we could live here and the location as to where we lived and the landscape which was fairly important to us and our recreational interests. We wanted our kids to grow up outside too.” INTF16

When asked to further describe the ‘pros’ and ‘cons’ of growing wool, the lifestyle approach became much clearer;

“It’s all ‘pros’, we live and work outside every day in the most beautiful spot. We are our own bosses; we can choose to do what we want with the land or the house, or what we’re going to do any given day. Wear the same thing we wore yesterday. I once wore my merinos for seventeen straight days before my wife noticed. No smell to it. It’s nature’s perfect material and I really believe in it. You can’t approach it like a nine to five [i.e., typical business workday] because it isn’t ever like that. We can wander into town, have friends out, and even chat with you [indicates interviewer]. Time’s on our side as long as you get over the need to run profit each and every year.” INTF3

“You learn something new every day with this job because you’re doing something different every day. ‘Never a dull moment’. You know, you can sit in an office job for years and just do the same thing, never really get anywhere. But from one day to the next out here, you never know what’s coming. It’s so much more exciting, more of a chance to really develop the way you think, react, and learn from your mistakes in the real world, not on paper, or I guess in this day and age, on those computers. There’s no ‘undo’ button on life.” INTF7

Particularly important in this last group of quotations is the idea that one learns something new, or does something different every day on the farm. These farmers seemed to describe a proficiency in reading their environments (in social, ecological, economic, and cultural ways), and being generally aware of the happenings around them.

Farmers who viewed their farms as a lifestyle choice, tended to illustrate decision-making styles that were less mechanistic, and more context-driven. These farmers considered multiple systems in their decisions, considered their family members’ input, and also described enjoyment at discovering unique, innovative ways to solve problems and frustrations at failed attempts.

“I guess we do a lot of talkin’ ‘bout what we’re doing with everyone at tea. My daughters tell me to be ‘greener,’ and I laugh at ‘em, but later I do think ‘bout it later on. I surprise ‘em sometimes, they say they think I’d be a good politician because I do things differently and listen to what they say [pauses]. Yeah, the money matters a little, but knowing that in ten years, my land will still be strong, my sheep are healthy and happy, I still fill a need for wool products and produce lots of it, and my family feels like they are important and give me their opinions. In the end, I’ve never felt guilty for making a bad choice, even when my gut told me otherwise, because I know that all of us learned from it, like when I kept those lambs too long thinking I’d get a better price. In the end, I didn’t and it cost a fortune in feed, but the next year, I started two flocks, an A and a B, and we all had to help out more, but it worked for us. Teaches me to be less greedy I suppose’...” INTF10

“You’ve just got to act with what Mother Nature brings... not to whoever comes knocking... [Begins to describe his process for finding a new fertilizer]...I have tried a few strange and different brews and things, and none of them have been cheap I don’t think. I just saw them at shows. At the end of the day, I think no, I would have been better off just sticking to the tried and true and we have got a block right up the top of the farm which potentially is a really good summer crop but it won’t grow fast and we’ve tried fertiliser around it and done all sorts, spent a bloody fortune on it really, and there was an old bloke, well he wasn’t old, he was about my age, from the North Island advertising this stuff in the paper so I rung him up and he happened to be down here so he came and saw us. I did a couple of test plots and I just went and had a look at it on Saturday and some of the leaves were growin’ and it was the very last thing I wanted to see. I thought, it is a waste of time but anyhow, he seemed like a nice bloke and I thought I would just try it and it is quite unreal so you just have to keep trying I suppose. I trusted him from the start, but should’ve just stuck with the wife’s advice.” INT4

Lifestyle farmers, like those just quoted, described how their moods, drive to try innovations, ‘gut feelings’, identity, and need for cognition influenced their decision making. Their decision making processes were often driven by intra-individual processes such as emotions and moods, cognitive dissonance, familiarity and pattern recognition, and a desire for learning.

There was one farmer whom upon consideration was an intermediary between intuitive and rational-analytical in his decision making style. He reflected that even though he still feels the need to collect as much information as possible before making an important decision, he tried to model what all his options were, and then envisioned himself following some of the options to see where they would lead. He says;

“I get nervous sometimes so I keep looking for more answers, more routes to where I want to be, something I used to do when I first started out here. I spent hours and hours writing out everything I could find. But at some point I realized that I’m wasting time collecting information or opinions that just don’t get me closer to an answer, then I’d back up and start again at the last place where I felt I was getting somewhere, trying something different in my head until I can see myself getting where I want to be, like debt free or with a stronger stock. ‘Like when you’re driving and a road is closed, you try other roads, back up when you hit a dead-end until the last fork in the road, and go the other way. There may be a step backwards to deal with, but eventually you get to your destination when you keep your options open, and not backtrack to where it was you started from.” INTF3

The farmer’s hybrid approach deserves some explanation. He does describe one of the criticisms of the rational approach; that is, the time spent gathering information is a trade-off against the speed of making a decision purely intuitively, but when he is in unfamiliar territory, his approach does allow him to retreat to a last situation of comfort. In this way, he is balancing the accuracy of rational approaches, with the speed of intuitive approaches. No other farmers in this study specified actually using an approach like this, though some did indicate that they did think of possible scenarios in their decision making, then followed what they perceived was the best choice. The difference was that other farmers gave beginning and end points to their scenarios, whereas this farmer did not in certain terms. He describes keeping options open rather than committing wholly to one ‘route’. Other intuitive farmers gave evidence of how they remained committed to their personal constructs. Here three experienced, intuitive farmers describe when their values, feelings, and more emotive personal motivations have driven their decisions;

“And I can still see me standing on the bloody fence now but that was a time when, for no reason, I just had a sixth sense that I should shift that horse and I didn’t it just about buggered him, it didn’t, we have still got him, that was a long time ago but there would be other times too when I think, too busy doing something else and then [pauses]...or I’ll be driving ‘round on the bike, and feel like I’m missin’ something either something small, or something in life, then I’ll come home and my wife and I’ll have a yarn and decide to buy something we’ve been thinkin’ ‘bout. Funny thing is she too will be feeling the same thing. The uneas... uneasiness.” INTF2

“Farmers believe the land tells them what to do - I really believe in that - but in farming, it's also the animals. When something happens to them, you are really affected. There's a lot of pride in producing something of really high

quality and you get to see that in farming more than in other industries...the outcome of all your efforts.”INTF4

“You learn as you go and you get better and better at it. Then you want to keep learning. You start to remember things and get reminded of things when you’re out walking. You might remember a smell or the breeze from a few years back and then think, ‘...hey, it was dry then too, but I remember that the rain did come late, but it came in droves.’ Then you know what to do.”
INTF16

Somewhat like the rational-analytical farmers, these farmers considered many alternatives and information sources when they were researching outcomes, and tended to display a steadfast scheme where they would be satisfied with higher inputs now if it meant that the utility of their choices would increase with longer time periods and they would increase their options with time (i.e., ‘open doors’). They envisioned themselves as negotiators, and saw their products as having a high value, sometimes initiating powerful deals in the wool chain. The difference is that these farmers were willing to spend more time judging the value of the information source and information itself, while thinking about a long term solution to a current situation;

“I guess when we had the Australasian goats their fibre wasn't wonderful, but I could see the other benefits they had to the farming enterprise like eating thistles and things like that in improving pastures. And I think, you know, New Zealand is sort of regarded as a green country, although we may well not be so, but all the travel guides, and vacation brochures sell us as that. But, I think getting away from hormone sprays things like that, I think is, you know, it can only be a plus, a win-win situation. There is absolutely no doubt that the affluent people in the world are going to demand a higher level of food, a higher level of fibre or natural fibre or whatever in the long term. I’ve been reading newspapers from around the world on the internet, such a great thing eh?, but what I keep coming across are ways for us to find a niche. We can do things a little differently. The social trends now are away from oil and synthetics made from it – the ‘affluents’ are going to demand clean and green products. It’s an untapped market for us.” INTF4

“The other thing we learned too, talking about the market, which you consider really good now, if oddments in one particular sale have gone a step above what their level is relative to fleece wool, you know that the market is going to be stronger in the future so if that happens, what you really should do is halfway through the sale, put a higher reserve on your fleece wool because if you held it over till the next sale, you are probably going to get more money for it. They seem to buy oddments before they buy fleece wool rather than the other way around so that is sort of a trend that has only happened in the last few years, couple or three years, but it has become quite obvious now, if that

happens, the market is going to lift in the future whether it is two or three days or ten days or whatever. That taught us, yeah, we can negotiate or not sell if we know a little bit more about what's going on." INTF15

"Sometimes you have to put in the effort now to make the benefits happen long ways down the road. You think about ten years' time, not tomorrow even if it means today you'll be breaking your back. There are flow-on effects – not just financially, but you as a person too – you might be a little nervous for [a] while, people might think you're off your rocker putting in something now that you won't see the benefit of for years, but when it works, it pays off, and it's nice to have that 'I told you so' moment."

Interviewer: "Could you tell me about a time when that happened here?"

Respondent: "Yeah [chuckles] this year. We've been supplementing the ewes from September through to November every year for the last three. My neighbour would roll his eyes at all the work, extra feed, extra cropping, extra work for us. But this year's clip paid off royally in the first auction. Just perfect. And the lambs are heavy." INTF10

The lifestyle farmers have described a tendency to enjoy farming for the sake of farming, for the lifestyle it provides, for the challenge and stimulation of solving problems at multiple scales, and for the pride they have in their ability to produce their products and learn to be empowered while under increasing social, economic and environmental pressures. Their reliance on intra-individual and inter-personal processes for making decisions provides the distinction between them and the rational-analytical farmers who concentrate on extrinsic motivations for farm management approaches. Intermediate to these groups are those who operate using a mixture of both methodologies; collecting information from extrinsic sources, then using and judging that information in mental models while thinking about a long-term target. The ability to intuitively know what steps will provide achievement of an objective only happens with time and experience for these farmers.

5.6 A Graded Response

Though most of the farmers did indicate that they had a preferred style of approaching decisions, there were a few who indicated that at different stages of their careers and lives, they approached their decisions in different ways from those that they had later settled into. Some mentioned that early in their careers they did use more rational models, and frequently

tried out decision support systems. They concentrated on weighing options before settling on what they perceived was the best option amongst those presented to them (rather than seeking out other choices, or using their own creativity to find new options). These farmers indicated a desire to use what they had learned during their education, and perceived rational models (at that time in their lives) to be the best way to solve farm decisions. Several farmers expressed that they were glad they made some of the mistakes they did early in their careers, because the mistakes were valuable lessons contributing to their current abilities. This indicates that there may be a developmental process occurring leading to different decision making styles amongst the wool growers in this study.

One farmer thought that growing wool was a journey, reflecting his style of making decisions; that is, collecting and mapping information, mentally modelling all possible scenarios, then following one path as if walking through the actual experience. Once the decision was made, he could shed the weight of that decision, and concentrate on the next.

He explains:

“I started out thinking I knew everything, but ended up knowing nothing [laughs]. It’s a journey, growing wool, I mean, you shear, then work hard to keep the ewes healthy and fed, read the signs... umm, whether it’s going to be dry or wet, and then build them [the ewes] up every way you can... Umm..Use drenches and feeding schedules, scans to find out which ones are carrying multiples. You concentrate on the ones with more value, umm, the twin flock. Then you get your gain [the lambing profit], shear again, and do it all over. Only this time, you’ve learned more and you do it better... Same goes for how you manage your farm. Each decision, you learn to read the signs along the way. Put more effort into the decisions that have more at stake, then once a decision is made, cut your losses if any, and learn from it for the next one.”

INTF13

The results thus far illustrate that the approach farmers have to making strategic decision on their farm depends on financial pressures and a farmer’s internal reactions to them or, conversely, involves an acceptance of financial pressures, along with a concerted effort to ensure other aspects of living including goals for personal growth, pride in product, problem solving, and seeing their lifestyle aspiration come to fruition. These pressures are mainly intra-individual in nature, but can also have social (interpersonal, and group) value. For

example, there was the indication that successful farmers often became chairs of local and national boards and representative bodies; positions held in esteem by other farmers. In this way, being able to make successful strategic decisions was a way of gaining acceptance from other farmers, and being recognized as a leader among a social group.

But what of other social pressures on the farmers? How do the characteristics of the farm, the community, and the social milieu influence the way farmers come to decisions? These questions will be explored in the following two themes uncovered from farmer interviews.

5.7 Theme Three: Farming Families, and Families that Farm

A family is a recognized agent of socialization (groups or social contexts in which significant processes of socialization occur) (Giddens et al., 2007). A family is a group of people directly linked by kin connections, the adult members of which assume responsibility for caring for children. Kinship ties are connections among individuals, established through marriage or through lines of descent that connect 'blood relatives'.

Families also influence a person's psychological development. Family systems have unique boundaries, some being enmeshed (openly sharing details of their thoughts and lives), others disengaged (not as uniformly open), and others growing family alliances that interfere with the family's connections with other groups in society, or with their inter-connections and competition within the household itself (Giddens, 2006). Roles can be well established, perpetuated over time from one particular archetype member to another, or reversed when the environment changes unexpectedly. Families are not just physically attached to locations (such as homes, hometowns, and neighbourhoods), and living members, but the concept of family also includes the existence of strongly held memories, or reflections on deceased members who nonetheless play a role in the decision making of family through their implied presence at particular times and in particular contexts.

The theme of following family traditions in the management and decision making of the farm was evident through the use of phrases concerned with aggregates of attitudes, ideals and ideas, and the environment, which a person inherited from his/her parents and ancestors. We often hear variations on the proverb, "Like father, like son." This rings true in the way the two farmers below described how they learned to make decisions by following examples given by their parents.

"I'm on my father's farm, which was my grandfather's so I'm third generation on the farm. I learned everything I know about farming from them, didn't always learn it the easy way tho'... They were so proud, and so stubborn, but I am too now. I understand why now." INTF6

"All of what [name of farmer] knows he has learned at his father's knee, really. It has just gone on to autopilot and that is what I am saying about farming in a familiar environment because it is what you know. You do things the only way you know, but that way seems right... His father was a very good farmer. A very good farmer. A conservative farmer. He didn't - he used to say to us when somebody is running to chase the market, you turn quietly and walk the other way. He wasn't one to chase after everything." INTF12S

Those sentiments were echoed by others;

"I worked with my dad when I was younger. He used to ask me what I thought about the farm, the land, the weather... umm... Picked up a lot from watching him but I really learned the most when he let me do things on my own. There are some times now that I think; 'Well, what would my dad do?' and then I figure out what I'm going to do. Like the weather... it's like sometimes he would just know it was going to rain." INTF16

"He [farm spouse's father] had this quiet confidence about him that really set him apart from the other guys around here. It looked like he was relaxed all the time, but I think he was always looking at the smallest details and picking out problems to solve, making his plans or something like that. He'd read and read, read while he sat on the tractor too, but never wanted to learn about the internet or use the computer. My mother used it for her recipes. But he would read and read; the newspaper in the morning, my old textbooks, the farm diaries, books, and brochures people dropped off or that he collected at the shows, whatever he could get his hands on. He didn't ask us about what we were reading or learning in school. Maybe he was working on some big research project of his own? He never really talked about it [what he'd read] though, just kept it to himself. It often made me wonder whether he read to get away from us, or it was his way of trying to outsmart someone, keep up with the times in his own way, or solve the world's problems. I don't think I got it [the reading habit]; I just look things up online now if I want to know something. No leisure reading, we're too busy on the farm, but I'll use the computer to answer immediate problems. In that way maybe I've got my

father's habit of wanting to find an answer, but I can't stand wading through piles of paper the way he used to. I definitely don't have his patience." INTF7S

"My parents farmed here before we took it over. They loved the land and the animals, and, I think, the freedom that being here gave them. Rubbed off on us, we love it here too. Being stuck inside when my dad got sick was the worst thing that could have happened to him. His land was everything to him and he took a trip around the whole gamut at least once a month, probably a lot more but we were just too busy to notice when he was gone for a long time instead of just a few hours here or there. He always told us to respect the land, the animals, the weather, and what his dad, and he had done to bring the farm to where it was. When we signed it over, he said it had taken two generations to figure out how it worked, and tinkering with it wouldn't get us anywhere, we should just stick with the basics."

Interviewer: "Is that the approach you follow?"

Respondent: "For the most part we do, lately it's been a little unpredictable with the weather, last few years you know, and the value starts lower than before, so we do move things back a little time-wise, but we still use the same rotation, and treatments on the paddocks, same breeding, we scan now, every year, and he didn't, but I think he could just read them better." INTF9

Farmers described to me how they were able to identify with their fathers (in these examples, in others grandparents, uncles, and other relatives have played roles). Interestingly, the attachment to place and previous farmers is an important linkage between generations. Three different techniques of transmitting decision making styles are displayed in the above quotations; the first, a father testing his son by asking his opinion, the second, a father passively displaying his need for cognition (see Section 5.10 Theme Six: Advice and Information Gathering) through a reading habit, and the third, strict instructions on following the basics were given when the land was transferred.

Each of these comments illustrates aspects of how the echoes of members of the family from the past, and the early experiences of farmers with parents and family play a role in the decision making of farmers today. Family tradition in farming influences how farmers approach decision making, especially for situations where they have recollection of fathers, or previous generations facing similar uncertain environments. A question arises in this context; does a farming family pass on decision making abilities and styles to the next generation, or does the complex environment of each farm influence a farmer's decision making style, hence perpetuating a context-dependent, evolved decision maker? Perhaps both are equally true:

“When I got married and we started out with our flock I realized just how much I’d turned into him [his father]. Same gut feelings, same connection with this place, same way of pacing around waiting for who knows what? ‘Something to just feel right? We were in the [location name] before this place, and then came here when it was on the market because I knew it better. It reminded me more of where I’d grown up with the same air, winds, and the same heat in and around February, but it had more potential for what we wanted to do. It was easier for me to feel comfortable. So now we’ve got our two-flock system going, and beef, some silage, planted a block of pine, some natives, and I’m getting to know what else will work. Lots of water, it’s pristine. Nowhere else like it in New Zealand. You know, the land tells me what it needs and it’s not forgiving if you don’t listen.” INTF4

From the above comments it is evident that aspects of kinship, place attachment, and the structure of the farm and household play into the way farmers come to decisions.

Historical family traditions also are evident in the generationally-connected farmers. Farmers have stated that they can identify with the characteristics of their farm location, learning what is needed for the land and for farming success in each particular context. Passing on farming knowledge and personality traits such as decision making style also occurs between family members and context-dependent situations. The group dynamics of farming families also play roles; for most of my interviewees, the father acts as the head of the household and primary decision maker on the farm. The father’s decision making abilities or style, however, can also be observed, and absorbed by daughters, though generational variations do occur through the existence of a range of socializing agents in modern societies (i.e., seeking knowledge through books, or through the use of the internet, the inherited/evolved behaviour being knowledge seeking).

A circular migration (in this case, the movement away from the farm, then returning to it after a foray in another industry) was common among these farmers, as was the idea that uncertainty was higher now than when their ancestors were farming, or when they were young children on the farms of their parents. Farmers felt it was important to preserve the memories of their ancestors while farming, often reflecting on what their fathers would do in similar situations, and comparing their success to that of their fathers’. This was perhaps due to fears of comparison among social groups and communities familiar with their family history, a fear

of inadequacy, or not living up to memories of ancestors, or perhaps in also demonstrating the ideologies of their parents in honouring the land and animals.

Consequently, the question arises as to whether farming families are made through interaction and the passing on of cultural knowledge and decision making styles to each other, and perpetuate farming identity in that way, or whether it is through farming that families create the ideologies, attitudes, and cognitive styles that run consistently from one generation to the next? In that way, farmers may be represented in a certain way, and this representation imposes itself back on the next generation of farmers. The representation's power comes exactly from the fact that they control the reality of today through that of yesterday, may it be through tradition, social institutions or media. These representations are not beliefs, which are constructed by each single individual, but instead reside in the collective mind, they are shared by many, and persist (Moscovici, 1984). Additionally, these social representations can change, or evolve over time.

The immediate family and memories of past family members are not the only social influence on farmer decision making. Groups including farmers' peers, local community members, farmer representative organizations, and national bodies also have been mentioned by the participants as having sway over their decision making. Peer groups and relations are likely to have a significant effect beyond childhood associations and adolescence, and this was shown to be true through the importance some members of my sample placed on their friends. Informal groups of people of similar age, occupation, locale, or other characteristic were mentioned as having enduring importance in shaping an individual's attitudes and behaviour. Peers were often mentioned as having roles in the development of decision strategies.

5.8 Theme Four: Groups and other Social Influences

Most often, reflections on groups outside of family members were given when farmers were asked to describe their information sources, but group processes were also suggestive as influencing farmers' individual decisions which may impact on his/her personal identity, or influencing a farmer's role within a group when a group was faced with a decision problem.

Complementing the two ends of the continuum introduced earlier when describing decision making strategy (between the affective-intuitive decision makers, and the rational-analytical decision makers), reactions to group and peer influences provided another layer to the differentiation among decision makers in my sample.

Decision makers who more often turned to rational-analytical techniques described peers as people to bounce ideas off, sources of information, examples to (or not to) follow and learn from, success stories or failures, and in terms of their perceived intellectual abilities.

Three analytical farmers describe their best friends:

“He’s a long way from making ends meet on his farm. I reckon’ he just can’t count, can’t keep track of the bulls and the books at the same time [laughs]. Just converted last year though, so I go to him when I want to know anything new ‘cause now he’s really connected to the [farmer representative group]. I kept telling him he was jumpin’ the gun a little, yeah, we used to talk about it [whether to convert to dairy] all the time; he kept telling me I was being stubborn, and feeding me more numbers and prospects but I could tell its just gonna be a fad. Can’t keep up those kinds of payouts for too long and they can’t keep going up. Just doesn’t add up. I don’t think he really sat down and added it up like I did.” INTF14

“Yeah we bounce ideas off of each other. I trust him to tell me when I’m making a mistake, and he does the same you know? We got the same education, but I’m better with the accounting and he’s better at negotiating contracts and planning around new projects. ‘Been nice to have someone who thinks along the same lines and wants to keep doing better, you know? Not just gettin’ by, but really figuring out what’s coming next, drawing it out. We used to talk with ... and ... [names of two other local farmers] but they haven’t been around as much this year. Sometimes I’ll see [local farmer] at the pub, but we don’t talk farming much since he passed on the contract last year. I thought that was a mistake for him since he needed it. Only got a few years left till he retires but he just didn’t want to change.” INTF6

“I consider [wife’s name] to be my best friend, but she’s smart – got a real eye for details and she’s very logical when I’m lazy or want to just get someone else to feed me the facts. She’s got common sense, knows what’s going to be

practical for us here. She's good at the books and telling me exactly what I need to know without putting it in a way that sways me in one direction or another, lets me know all the options and I like that she doesn't leave any out, even ones she thinks are bad ideas. We make decisions here together but I think she does know more about the business end than I do... umm... because she's here working on the books all the time and I'm outside. And I know she likes those moments when I argue with her and then she can show me where she's right. [Laughs]. She's a good source of information, a walking dictionary too (looks at wife who smiles)." INTF19 Interviewer: "Would you like to add anything?" (to spouse), Spouse: "I would say that I do know more about the books and the behind the scenes research that you have to do to keep on top of things, but he's the one that makes the decisions in the end. I think I would be second-guessing myself a lot but his confidence when he's made a choice makes me feel better. I can add things up on the spot and let him know where he's making mistakes, but I don't know if I could do it [manage the farm] alone. Two heads are better than one." INTF19S

The intuitive decision makers made little mention of best friends as influences in their decision making. Two examples were given, however, when on reflection notable friends had made an impact, though not in a palpable way at the actual decision point:

"When I sold the block, I felt good about it, it felt right, it wasn't feedin' anything and we needed that money. But then when [friend's name] came to visit and he asked me about it, I started thinking more about why he thought it was so valuable. He's a 'greeny' [environmentalist] and said it would be a way to reduce my carbon offset or somethin' like that. Said it was good for the planet, good for the air we breathe, the kids' future...[discusses how by being farmers he thought they were already looking after the planet], and a lot of that mumbo-jumbo. Yeah, with the block, he said just to leave it be, it would be the best all-around. Too late now, but now I think he had a point and I would look to him if I was ever in that position again." INTF10

"When I was working our first contract with [Apparel Company], I was pretty new to um, the whole idea of them [contracts], being in auctions all my life. I had this idea of how it was going to work and I really took it too lightly, umm...[pauses], just what I could give them over five years because I wanted to keep in it [auctions] too. Should've set my goals for myself a little higher, and I knew it deep down too. But, after the first two years, I thought about how [names friend] used to go on about how first-rate it was and how much easier it was to have 'em look after everything for you, it was paying off for us. I didn't pay enough attention to him at the time but he was on to something." INTF13

The difference between the evaluative approaches of information provided or sought out by the decision makers is evident in the elicitation and temporal components of what the friends contributed to the decision making. In the rational-analytical examples, information from friends was sought specifically for a certain problem, and prior to a decision point. There

was also the expectation that a friend would tell the farmer at that moment if they thought he/she was making a mistake at the time. In the intuitive farmers, post-decision (sometimes quite a while after) reflection on friends' advice was the main method of considering alternatives for decisions that were offered by friends. This difference adds support to the rational-analytical farmers' active pursuit of solutions, and immediate trusting of information from others, which are not prioritized decision making strategies used by the intuitive farmers. Rational-analytical farmers seek simultaneous comparative evaluation of options presented, and have expectation for concurrent information gathering from friends. Intuitive decision makers had separate and more reflective considerations of decisions to come, and described purposeful information gathering from friends. Furthermore, past decisions where information given by friends was re-evaluated seemed to be more important in the descriptions of decision making by intuitive farmers.

There is evidence, then, of the influence of friends on farmers' decision making (an interpersonal influence), but one's position in a group of friends and colleagues also was cited by farmers as something they consider when choosing options for their farms. As previously mentioned, rational-analytical farmers in my sample preferred not to be the first among a group to try a new strategy or option. This was not the case for intuitive farmers; that is, experimenting with new ideas or approaches was a strategy engaged by farmers for two reasons given by them; one to avoid tedium, and two, to create new profit and resources for their farm.

“When we looked into [tennis ball manufacturer] we thought we'd hit a goldmine! We were doing contracts for [apparel manufacturer], but we're considering other options since so many people were getting into the contracting and we were losing our exclusivity. Then we fell into the right place, and on a hunch, we had what they [tennis ball manufacturer] were looking for, at the right price, in the right amounts. Now we provide the wool for balls for the four major 'Opens' (tennis tournaments) each year. We didn't tell anyone at first, we thought they'd think we were nuts to get out of what we had, but we thought, 'Hell, no one else here is doing felt for tennis balls.' Perfect opportunity for us to think outside the box.” INTF13

Several farmers described the behaviour of how they compared their difficulties to others, perhaps to seek information and solutions, but perhaps for other reasons. Farmers suggested that they do not always take all the advice provided from group situations, though they did spend time considering the quality, and source of advice and choosing the ‘titbits’ of information that had meaning for them. Groups of friends included schoolmates, local farmers who also socialized together, parents of their children’s friends, and members of representative organizations from their local communities. The group influence is differentiated from friends’ influences because the interaction takes place among more than one other person, in a social context.

“I think it is more a lot of moaning and groaning. There is a lot of sharing of knowledge, I think. And you just take out, if you feel there is something good come out of it, you might try it. I think it is more a sharing of just knowledge and how things are going and what are you doing? So perhaps if there is a problem, they ask what you are doing. There is always a lot of fishing going on. Sharing, yes.” INTF1

“When we [group of farmers from a specific province] get together and talk about the auctions and when to sell, I find it easier to decide on what I’m gonna do; what price to set, when to hold off, and when to look for something else or wait on a buyer. I think it’s because if I ever wanted to do something a little different, I’d have to defend it to the others, so I’d have to be sure, otherwise I just go along with what they think. Someone else might feel really strongly about their clip and so the rest of us, we work around them, or just go along.” INTF18

“It [auction systems] changes so much from year to year and I reckon’ they’ve [representative organization] been doing it longer, so I just follow suit. They’ve got to have some idea of where things are at this year compared to last, so I trust them to put our needs first, that’s what we pay ‘em to do. They send us the reports and they seem pretty standard, nothing too surprising or out there so I show my support by doing what the reports suggest and what the other farmers are doin’.” INTF5

These three farmers quoted above were relatively new to the industry although they already demonstrate conformity and feel pressures to construct their preferences based on the information and guidance provided by groups that either represent them, or they feel compelled to be members of (provincial and national representative groups, federations, and local community members with similar interests). The use of the term ‘fishing’ in the first

quotation alludes to information gathering in a covert way; whereby the farmers might not want to appear to be in need of information but, would use serendipitous findings to their advantage.

Asking about how other farmers are doing, or confirming what they did in similar circumstances is evidence of informational conformity among this new farmer; conformity because others might be better informed in given situations, and conformity in order to achieve social approval or a feeling of belonging (see Chapter Three: Review of the Literature, Section 3.20). This conformity would be valuable to an inexperienced decision maker; though it sounds at first as if this farmer is explaining that he expertly chooses what he really needs from the others' information.

When is group pressure deemed inappropriate or bothersome to farmer decision making? When did information gathering and seeking begin to hinder the decision making of farmers through group and inter-group pressures? Here is an example of when an experienced intuitive farmer was troubled by the pressures of groups and conformity:

“The longer you stay in an industry like this one where eventually you get to know everyone or everyone’s son or nephew, the more you see patterns and see people make the same mistakes again and again. It gets frustrating when you smell the same problems creeping up and want to say something, but feel like some farmers are gung-ho, easily won over by something new to them, or some researcher with a big finding that promises to solve a problem, they lose sight of the importance of looking back. It’s us, the old guys, who try to act to keep everyone on a level, but we get told we’re tired, or we’re always pointing out why something won’t work like we’re bloody pessimists all the time. But we do deserve some credit. We just don’t really belong in that world anymore.” INTF7

Interviewer: “Which world?”

Respondent: “The corporate world, the world where farmers pretend to be running big businesses and solving the world’s problems. Watching too much TV. They just need to focus on the farms, but I think they like to feel like they are the suits sometimes.” INTF7

These comments were re-iterated by many of the more experienced farmers. The need to remain focussed on matters pertinent to each individual’s farming success was stressed during the interviews with long-term farmers. The idea of pretending to be corporate “suits”

was repeated among the experienced farmers, indicating a discomfort in an environment that they did not feel they belonged in or should conform to.

Congruence with others' behaviour seems to be a trait common among new farmers who tend to view circles of friends, and other group memberships, as sources of information, advice, and direction as well as giving them opportunities to feel included in a social assemblage. Experienced, often older, farmers did not appear to contemplate advice offered by others on a regular basis, but usually only in evaluating past decisions or similar decisions they had been facing. They also describe the ability to be accepting of non-conforming behaviour either on their behalf, or that of others, relegating themselves to the position of outsiders among groups (either assigned to that role by their own choice, or by being patronized by other members of their groups). The main reason for most of these farmers' avoidance of conforming pressures was given as their perceived need to concentrate on matters of the farm, not repeat historical errors, and not try to be more than what they are by removing themselves from their farming environments. Though I cannot express whether this humility is created through experience or through conditioning by family lines, culture, or other unknown factors, it is a point of difference between the two types of farmers I interviewed. Perhaps their attachment to their farms after lengthy connections with their land or stock lines helps them to navigate competing social and personal preferences? An attuned knowledge of the match between their comfort, environment, and cognitive style might also be in play. The attunedness of farmers was a key insight uncovered through the interviews and relayed the importance of one's geographic and experiential 'locale' in development a suite of decision making strategies. The following theme explores place attachment among the farmers I interviewed.

5.9 Theme Five: Placed-Based Decision Making in Farmers

In asking farmers why they continue on their farms, (an example of the ultimate long-term decision), farmers often mentioned that they feel attached to the place; that is, they could not imagine living or working anywhere else. Places often give their inhabitants or visitors a sense of belonging and meaning. Sense of place is a social phenomenon that exists independently of any one individual's perceptions or experiences, yet is dependent on human engagement for its existence (Tuan, 1977; Williams, Patterson & Roggenbuck, 1992; see also Chapter Three, Section-3.20). Such a feeling may be derived from the natural environment, but is more often made up of a mix of natural and cultural features in the landscape, and generally includes the people who occupy the place currently as well as in the past. Here are four examples of how the farmers interviewed in this study described their attachment to their farm places:

“And I don’t think you can have all the knowledge and it’s handy to have knowledge at the start, but I think experience will generally be the one that will, yeah, keep you on your farm. It’s just the longevity of being on a place and knowing and feeling how to handle it.” INTF14

“There is no place I would rather be. Simple as that.” INTF3

“We feel like we belong here. The kids, they have their friends, [spouse’s name], she’s got her friends here, and I know every part of our lot, every fence and tree. I could almost draw it for you from memory, ‘course you wouldn’t be able to hear the river or smell the tussock if I did that. We should go out for a walk, you’ll see then.” INTF4

“It’s a million dollar view, for one. Lots of history was made here. Started the whole [breed of sheep] line here seventy years ago. We feel like we’re a part of keeping that history alive. We feel like we’re a part of the landscape too – like it wouldn’t be the same without us. Couldn’t see it subdivided or built up.” INTF16

Notions of place are often structured by oppositions; this is true of the above quotations given by farmers; there are aspects of belonging at their particular farm, and not feeling as if they could belong anywhere else, the idea of knowing the land as if from memory, but not being able to know it without spending vast amounts of time there touring its

features, and the feeling that they are privileged to be at the farm (“million dollar view”) but at the same time being stewards of the land, there to protect and maintain its heritage.

The intuitive farmers’ commitment to the land influenced their decision making in several scenarios; primarily in the decision to remain on the farm when considering retirement, transfer to different farming types, or emigration entirely to a different industry. The attachment to place was also discussed when farmers described the system designs they had for their farms (using multiple flock systems, feeding rotations, shearing schedules, and breed selection). Place attachment appeared to have stronger value in the consideration of choice options than advice gathered from others for this particular group of farmers.

“When you find a place that you love, it becomes a compatibility thing. Your desires match those of the land, and the land tells you what you should do, and you’ll know there isn’t anywhere else that you could be married to. As much as your friends advice is useful, or your wife’s, no other relationship can make or break you than the one you have with the land you’re working.” INTF4

“Once you try a few different ways of running the sheep on a hold, the land gives you signs about what you should be doing. The best farmers pick up on her [the land; alternatively, Mother Nature] signals, and follow her advice, even if those who came before did something else. You want the farm to last, not be stripped by poor decisions or practices or just running too many sheep. Ultimately, you’ll regret following a person’s advice or takin’ a short-cut if the land is telling you otherwise. That’s why we culled our flock over the last six years, a little at a time, until we got it right, instead of all at once.” INTF13

It is interesting to note as well that along with personal attachment to the actual place, the cultural history, and the reciprocal relationship between farmer and farm act as influences on decision making. It was the personification of the land as a teacher and fine-tuner of a farmer’s decision making that was the most evident among the experienced farmers’ discourses. In that way, farms as ‘special places’ were considered important for their indirect ‘mode’ or symbolism; that of teacher, spouse, and in the first quotation, dependant requiring nurturing and stewardship. Hence decisions made on the farm with respect to land treatments, selling land, or even leaving the farm are highly emotional in nature because of the implication of the dividing of a relationship established between the farmers and the land (albeit one-sided in nature), should a decision not be successful.

The inter-temporal component of farmer decision making was another point of difference between new and more experienced farmers and is also associated with attachment to place. Recently, two theories have stressed the temporal nature of place attachment: Low and Altman (1992) have noted that the “bonding” in place attachment needs to be studied across time, and Milligan (1998), has suggested that place attachment may consist of the interactional past and interactional potential (Steel, 2000). Decisions that extend over long periods of time, or involve multiple steps over time periods, are common and important in farming. Being comfortable making choices or sequencing outcomes so that they improve over time, rather than provide a quick fix now (but deteriorate later), was a skill that experienced farmers claimed to have, especially for decisions about treatments to use on their lands. This would differentiate the experienced farmers’ approaches from that of someone seeking a ‘satisficing’ solution. Experienced farmers were attuned to the benefits of working harder now, to ensure that they would see greater success later.

“When I have something to do, I think about where I want it to be ten years from now. I *can* break my back now. Um, I mean I would do what it takes now, to make sure that a decade from now; I didn’t have to break my back again. I don’t do quick fixes. I strongly believe if you’re going to do something, you do it right, the first time.” INTF16 [emphasis interviewee].

Using the strategy of ‘buckling down’ to solve a problem with the goal of not having to face the same problem again is an example of a cognitive style reflecting perseverance, long-term interest, and commitment to a mature and thorough resolution.

Along with groups, significant persons, time, and the land as sources of information, farmers expressed different styles of gathering and judging information and the sources of that information prior to settling on decisions. The following theme explores how farmers explained how they used the information that they had gathered.

5.10 Theme Six: Advice and Information Gathering

The gathering process for collecting opinions, recommendations, guides to action, and conduct itself was often described in more detail than was the moment in which a decision was made. As in the way a farmer viewed their farming (i.e., as a business or lifestyle), two diverse methods of collecting information for decisions were given. Active and passive information collection and contemplation methods were described by the farmers. I will begin by illustrating and contrasting the methods of data gathering specific to each strategy. When asked how farmers settle on a solution the following statements were given by some of the less experienced farmers;

“Um, I try to get as much information together as I can before I decide on something big. I ask around, I read the papers and the reports; write out my choices in the diary and then consider what the advantages are going to be. It’s a routine for me. Most of the time I think I end up asking around and one of the options will come up most often, like a racehorse you know? Only one of them can be the winner.” INTF8

“The first good option that comes my way; that’s the one I choose. No sense beatin’ ‘round the bush if somethin’ will work. Just gotta’ get on with things right?” INTF5

These two farmers’ sentiments were echoed by others in the rational-analytical group as earlier classified. It is interesting to note that these results lack two aspects of how expertise in judgment and decision making is typically characterised; first, experts demonstrate a trend away from variable, awkward performances to consistent, accurate ones, and second, individual acts or a focus on isolated variables shift to overall strategies and perceptions of complex patterns (see Chapter Three: Review of the Literature, Section 3.6 and 3.10). The opposite can be said of the strategies of following the majority rule, or choosing the first option without a deeper contemplation of mental models, scenario planning, or discriminating among information sources.

In contrast, when questioned on their use of information, the intuitive farmers described several expert judgment making skills; running mental models, perceiving meaningful patterns of information, judging information sources as well as the information

itself, and increasing their use of self-reliance, and their own perceptual skills at forming new strategies when those offered do not satisfy their needs.

“I guess I’ll be thinking about everything that could happen; playin’ it out in my mind and wondering what would happen if I did this or that instead, or I just waited it out and did nothing until the answer came to me, but I don’t often just sit on my heels. I know you can’t always tell what’s going to happen, especially with the weather, but we’ve had so many different scenes play out over our twenty years here that we have a good idea of what could happen. But, sometimes I start to sense a pattern, something familiar, but just to be sure I play them all out. Then I think about what the worst case would be and the best case too, then work my way back to the steps I have to take to get away from the worst, and get closer to the best.” INTF16

“You have to know what you can depend on. The farmer’s almanac is just plain fluff, but a dry December, means a dry January, means a dry February in these parts. It takes a long time to figure that out, but if you were startin’ out and asked a fella like me, I’d be able to tell you. You just have to trust me. Can’t trust a book to tell you the weather, that’s common sense. Just like you can’t trust the broker to tell you the prices’ll go up. Only going through it all yourself again and again, then you’ll know.” INTF15

Tuning into one’s own intuition is a skill the farmers expressed that took time and plenty of experience to master. As their careers unfolded, several farmers described how they changed their decision making strategies once their confidence in their abilities was tested and solidified. Here is one explanation:

“It’s like a sport, when you’re younger you have these flukes where you succeed and that feeds your drive to keep at it; the competition...[discusses his days on the boys’ school rugby team]. But then, you start making mistakes, then, and you lose your confidence. So you get help; you turn to others, you hire a golf pro to help with your swing, you read whatever you can find on your problems and try out new equipment, coaches, or even sign up for lessons. Our equivalent would be field days, local clubs, finding a mentor, whatever. Then you start to find yourself and stop doing it [whatever it was you were working at] to win, but for other reasons instead, you know, like golf, because it’s something my son in law does and I wanted to get to know him better. That’s when it becomes satisfying, farming because of farming, not to win but in the long run you do win, because you learn more about yourself, and to trust yourself.” INTF2

Thus, the main differences between experienced and new farmers in gathering and analyzing information sources and advice as explained by them, is the ability to trust one’s own judgment, quickly and accurately make decisions without the need to spend vast amounts of time gathering information, while evolving strategies in decision making over time that suit

the individual farmer's needs, instead of meeting utilitarian goals. Experienced farmers tend to use intuitive, introspective methods of coming to decisions, avoiding rational-analytical or calculation methods, use systems thinking, rely on familiarity and pattern recognition, and are conscious of how their decision making skills have evolved over time. Inexperienced or financially burdened farmers often rely on gathering information and advice from other people, groups, and written sources, avoid risk and ambiguity, are swayed by echoes of historical experiences and collective memories of farming crises, yet have difficulty recognizing patterns in current farming environments, are mechanistic in their decision making strategies, have a need for cognition and puzzle solving but not in a deeply contemplative and reflective way, blame external inputs as causing their situations, concentrate on utility of decisions, and are averse to being the first to try an innovative solution.

5.11 Theme Seven: Gut Feelings and an Appetite for Cognition

Decision making involves a dual problem, first, the desire to make a correct decision and, second, the desire to not expend more energy than needed in order to achieve that correct decision. How do farmers approach those concerns? Do they recognize the dual aspect of decision making?

“I was scared of missing out on something by trying to solve a problem too quickly, too soon or realizing something better after the fact. It was hard to stop looking for more solutions, but you get better and you learn to use your own judgment a little more.” INTF3

“In the first few years he was a ‘busy-body’, all day outside working, all night thinking about what was coming up next. He just got better at doing two things at once, thinking and working.” INT12S

“Sometimes you think, it can't be that easy. But sometimes the easiest answer is the right one. Well, not easiest, but simplest? I don't know what the right word is, but you learn not to make more trouble for yourself by thinking too much if you don't have to.” INTF10

Researchers suggest that when a decision maker wants to achieve both a reasonably high level of accuracy and low effort in coming to decisions, they should use a toolbox (or repertoire) of heuristic strategies (see Literature review, Section 3.8), where the selection of which strategy would be best is based on the situational demand. More experienced farmers described their use of rules of thumb depending on the situations they were in; newer farmers, however, were not entirely removed from using some of their own strategies depending on the situations in order to minimize effort but still aim for correct decisions. I believe that the farmers I interviewed had a need for cognition which drove the dual aspects of decision making to begin with, slowing the development of heuristics, where over time, the need for accuracy in decision making becomes less driven, primarily because the evolved (either unconscious or not) recognition of when a similar problem environment has been faced before, and in which circumstances heuristics will work.

“I admit that I like to play games. I do the quizzes in the airplane magazines [laughs] and I’m addicted to Sudoku. I figure out how many *trips?* [indistinct] of the paddock I’m going to have to do for seeding and try to do it in less, but making sure to get it all covered. Reckon’ the challenge keeps my brain sharp. ‘Keeps me from getting stuck in my own ways too soon and I reckon’ it helps me be better at checkin’ all the angles in a problem, like measuring twice, cut once [laughs].”INTF11

“You gotta’ go with your gut when it’s naggin’ you. I got in the habit of ignoring it and lettin’ all the facts and choices get in the way thinking things were more complicated than they were, like when we bought the second farm. We could do it, I knew we could from the start, just like when we bought this place, but I still looked for reasons not to do it, until the naggin’ took over.” INTF17

“When we were selling [subdividing some land from the farm property] I had a price in mind, a little more than what it was years back by hectare, but I thought that was a good starting point because we had put some work into it and the market was going up. ‘Had a few offers, nothing near what I wanted, but I was adamant. ‘Had to be worth more than what we had paid for it. The offers came up a little, but not enough. Stuck to my guns though, that’s what I always do when we’re looking at selling property, stock, or other assets. I get this feeling for what it’s worth and stick to that, maybe adjusting a little if someone can convince me.” INTF16

Spouse: “Hmm... [laughs], that never happens. You’re too stubborn and most people know better than to waste their time. You don’t bargain very often.” INTF16S

The first example given illustrates the farmer's need for cognition – the need for mental stimulation through challenge and testing out hypotheses and thought processes. Some farmers' need for cognition is reflected in the way they approach problem solving and decision making on their farm; for example sitting at the kitchen table writing out potential problems, pros and cons of solutions, making lists, and calculating options, in the same way they describe sitting with a newspaper doing the puzzles therein. Having a mechanized problem solving method has been illustrated in research to mediate more naturalistic decision making techniques and a person's tuning to their own gut feelings (See Chapter Three: Literature Review, Section 3.10). The automation demonstrated is hypothesized to be a comfort to decision makers but, in some situations the energy put in could be directed towards other cognitive needs.

The second example describes a farmer's effort to ignore his gut feeling while exploring other solutions, even though he settled on his 'intuitions' to begin with. It may be the case that the gut feeling is not wrong, but the farmer has not had the experience in enough situations where he/she unconsciously or consciously recognizes that the gut feeling is what he/she should be following when faced with similar circumstances. The literature on gut feelings currently hypothesizes that gut feelings may be derived from innate cognitive capacities but only become dominant when enough repetition of the right context occurs (see Chapter Three: Literature Review, Section 3.10).

The third example describes an evolved heuristic; anchoring and adjustment. The farmer had a price in mind, and without evaluating other factors that might affect that price in the current environment, he was anchored on that price in his negotiations. This is also evidence of another heuristic being followed by this farmer; *conservatism*: that is, only old information is taken into account, and new information (i.e., new valuations or changes in the market) are ignored. In my sample, many of the experienced farmers described situations where they were making decisions using gut feelings, for the most part, being highly

successful with their choices, but in some instances these heuristics were wrongly applied or inflexible. This could be a result of the different goals of the intuitive farmers (who tend to be long-term focussed) being more willing to pass up short term advantages to remain loyal to longer term goals, however, it still gives evidence of heuristics misapplied. Here first, are some examples of the gut feelings and heuristics being used;

“I was lookin’ into using a computer program for helping with the crop scheduling online. The [representative farmer organization] had heaps listed in the back of a report. There was one I remember they were workin’ on at [an agricultural university] when I was there and I found it online. We decided to give it a go because it was the only one we’d heard of, and it came from New Zealand so we thought it would work better with our climate.” INTF18

“It [converting to dairy] was what everyone else was doing around here. Didn’t make sense to be left behind.” INTF17

“I inherited the farm from my father, so I felt it necessary to pay respect to him by following the practices he had established over the years. He farmed here successfully for thirty years, raising three kids and building this place up. ‘Imitation is the highest form of flattery,’ right? He’d roll over in his grave if he knew about some of the things I almost did here.” INTF2

These three comments give evidence of at least three different heuristics at play; the first, recognition heuristic (it was the only program name that they had recognized amongst many options), and in a way also supports the social instinct heuristics of identifying with a symbolic group, cooperating with them, and defending their members (i.e., choosing the program that came from familiar sources). The second quotation is an example of following the majority rule (or doing what your peers are doing). The third quotation supports the use of the imitation heuristic in the form of ‘doing what a successful person does’. However, there are limits to the successful use of these heuristics in decision making. First, the recognition heuristic should only be used when one of two objects is recognized and the other is not, inferring then that the recognized object has a higher value with respect to the compared criterion (Gigerenzer, 2004). However, the situation as described by the farmer was a search among several options and he did have access to online information about all of them, thus he did have access to more information about the programs in order to help him choose the one

that would suit his needs, and he did have time to look into the programs, rather than follow a 'fast and frugal' approach.

The same quotation gives evidence for social instinct heuristics (related to kin selection heuristics) where one identifies and promotes a group they belong to over another. This community 'instinct' enables a person to identify with a larger, symbolically marked group of people, emotionally becoming attached to that group and its members.

The second quotation describes an example where the majority rule heuristic is in play; that is, 'everyone' in the region was converting to dairy and the farmer did not want to be left behind. The majority rule has two hypothesized causes; one, fulfilling positive expectations of others or compliance to social pressures, and two, conforming behaviour exists because conforming leads to better decisions (contrary to social pressure, it is the statistical or informational influence that leads to success in the second case).

Whatever the cause, there are a few assumptions involved for the majority rule heuristic to be used in the right environment; first, there must be independence between the decision makers (i.e., neighbours choosing to convert must conclude independently on their choice) and, second, the majority rule ignores facts about how people incorporate information from other sources and other group members (for example, from media reports, representative groups, family). In this farmer's case, social pressure, media pressure, and statistical pressure might have all played a role; the farmer, however, only indicated that conformity with farmers in the region was his reason.

The final quotation included comments on the imitation of the farmer's father in the farming practices. He was 'imitating a successful person' which is a recognized heuristic (Gigerenzer, 2004). Imitation acts as reinforcement of the majority rule heuristic in that by imitating another member of a group to which one belongs, one can satisfy the community 'instinct' and reinforce the conformity involved in majority rule. Similarly, imitating a successful group member can enhance future status in a group, and when others do the same,

can strengthen conformity in that group. The success of imitation as a decision strategy depends again on the environment and several related assumptions. Imitation as a strategy is considered adaptive when there is a relatively stable environment, lack of feedback, and there are dangerous consequences for mistakes. In this case, when the economic, social and ecological environment are changing rapidly in comparison to the decades over which his father was running the farm (globalization, climate change, social pressures, increased media presence in daily lives, etc.), where farmers do gain feedback on their decisions in terms of better record keeping, faster release of business reporting, more research available, and better monitoring systems, perhaps the first of the two assumptions are false in this case. The assumption that may hold is that of dangerous consequences for mistakes; the farmer may lose his/her farm or go bankrupt. But, is that consequence enough for the use of the decision heuristic? The use of heuristics and rules of thumbs amongst farmers will be further explored in Chapter Eight: Discussion.

5.12 Theme Eight: The Local and the Global

The final theme uncovered during the farmer interviews involved the effects of local and global forces on farmer decision making. Here, various aspects including technology and innovation, markets, weather, animal welfare, systems' thinking, maintaining an identity and the concept of 'terroir' were described as having an effect on individual farmers' decisions. I have grouped these influences together because of the recognition that they all similarly affect a local decision maker, but express forces coming from a globalized context. Globalization refers to the fact that we all increasingly live in one world, so that individuals (like farmers), groups, and nations become more interdependent. Such interdependence is increasingly at a global scale; that is, what happens in a far-removed nation is more likely than ever before to have consequences on an individual's, groups', or other nation's daily lives. The world-system's approach (recognizing that all the countries in the world are increasingly being seen

as a single, though often conflict-ridden, economic system), emphasizes that economic, social and environmental systems once fractionated into markets, countries, and climates no longer have distinct boundaries. Global commodity chains are worldwide networks of labour and production yielding a finished product often far removed from its source of raw material. These networks consist of pivotal production activities that form an interlocked 'chain' (economically, socially, and environmentally) extending from the raw materials to its final consumer (Appelbaum & Christerson, 1997, see Chapter Two: The Context of the Problem, Section 2.3).

How does the interlocking of the chain affect the originator of the product, the grower? Farmers described both explicitly and also indicated implicitly how being confident in their belonging in these chains has influenced their individuality and their subsequent inputs to decision making. It should be noted that the less experienced farmers described being influenced to a higher degree by global economic events in terms of the immediacy of their effects on the farmers' decision making. For example, three farmers took action immediately after the 2007 Chinese market correction, withholding their wool from auction until later in the season.

The use of the internet was indicated by farmers as the main source of learning about events around the world.

“With the internet being so widespread now, just about in every home I'd guess, we can follow what's happening in European and Asian markets where before we could only wait for reports, sometimes months or a year away. We can tell what kind of prices to expect sooner or trends that are coming our way. We see some pictures and footage from trade shows and look up companies faster too, and read the conference brochures without even being there. The information is there, it's up to us to decide to do something or just sit back.” INTF16

“One of the buzzwords now is 'innovation,' I mean in the business world. You hear it everywhere, like it's got a mind of its own, you know? It's a fancy word for 'fifteen minutes of fame'; you make something new, market it in America, sell it to China, and then get out quick. Before the internet you couldn't do that. You were stuck doing the same old thing, no way to get in and out quick and to see what was happening around the world.” INTF11

These two farmers indicate how through the internet they have gained a connection to the world outside of their local environment, gained information about economic and social markets they would have not had access to earlier, and are able to capture opportunities at a much faster rate than before the advent of home computing and widespread internet access.

There are also downfalls indicated by their statements; first that given the new information and speed of access to that information, farmers must decide whether to use it when coming to decisions, how to judge the information sources, how quickly they should get involved in new trends, and the power that having the global knowledge has over them (i.e., are they compelled to act when other markets present opportunities?). There is also evidence of assumptions about other cultures (i.e., market it to America, sell it to China), which indicate that regionalization in the world economy (such as the emergence of major financial and trading blocks, and stereotypes about one individual/group/nations role in the global economy is determined region-by-region) is actually acting against the world global system by re-assigning roles and reinforcing these roles to global citizens through the internet and other media. These roles, whether new or old, reinforced by global media or not, affect the farmers, their personal identities, and the marketing of the identity concepts of their products (in viticulture terms, known as “terroir”).

“We’re known for the ‘clean, green’ image. Green paddocks with flocks of woolly sheep everywhere. It’s what you see on the news or in the flyers about New Zealand and [company name]. When the execs made their way up the valley we hoped they’d get a taste of that, but the truth is, that only happens for a couple months a year. Rest of the time we’re fighting the weather demons, fires, drought, gorse, whatever. It sells tho’ and we’ve been livin’ on the profit from that. A little amoral I think.” INTF7S

“Wine labels, have you ever read them? They talk about the old man walking down the vines and the smell of the dirt, and the flavours they are supposed to taste like. People buy into that story. Like the new [company name] campaigns. They work, but only the kiwis know the truth. They’re [contract companies] doing the same thing as the wineries, trace your thermals back to the ewes they came from, but people don’t realize they’re mostly made in China. We’re proud of what we can grow and make here. Pulling that fast one over consumers well, um, makes us out like, um... like some kind of simpletons who could tell our ewes apart by how they smell. [Laughs]. We’re not really like that. We’re good at what we do, but because we’re good

businessmen and we worked together, we found out what people wanted and delivered, not because we're plain farming folk. I don't think there are too many customers out there who realize that. We want to be known for that, but the world wouldn't buy that." INTF3

"I think that the marketing really fell behind after the nineties. We've [New Zealand wool growers] gotta' keep up with what the world wants, not what we think we should be known for. It's a bit of a game to figure out how to make our name known, but if you have something that you think others would want or need, then it's worth it to put in the time making some build up around it. You know, with hybrid cars, I always kind of wondered whether people would want to know that the seats are made from oil based synthetics. 'Seems hypocritical when they could ask for wool.'" INTF12S

The first two remarks indicate the idea of "terroir" being applied to wool and wool products. Several farmers mentioned that they believed it was a good marketing technique to address a 'green' or environmentally-aware audience. However, like the farmer in the second comment above, they also mentioned that it was being embellished due to the overseas processing that happens in the wool chain, and because they perceived that it did give a false identity to the farmers and the New Zealand growing environment. Conversely, they also recognized that the marketing through putting a story behind a product, whether fictitious or not, worked. Herein lies another dilemma; one of identity versus successful marketing. In a global market, is it morally justified to use a false identity or misrepresent a nation's products in order to sell more products? The second farmer seemed to think that he would rather be known for being a good businessperson than an identity-manipulated farmer. On the other hand, the idea of assigning terroir to their products also *does* give them an identity in what might be perceived as a globalized, identity-less industry (the wool chain).

The third comment indicated a different approach in that the interviewee indicated that being involved in the global market is a type of 'game' you enter at various points with varied marketing campaigns in order to capture a segment, then adapt to the next one they perceive. This idea is known in sociology as the 'new regionalism.' Both of the last two farmers indicate that there is pressure on their industry to keep up in a fast moving globalized world. There is also the recognition that for successful marketing to occur, there needs to be research

into what customers want, what the trends are currently and are expected to be, then strategic positioning in order to capture the market and be ready to adjust again. A minor example of capturing a very specific market was given by a farmer who mentioned that he does not participate in mulesing – a treatment of sheep that reduces their wrinkles and thereby reduces fly-strike (a situation in which maggots can burrow in to the skin of sheep). Mulesing has been described as making the sheep easier to handle, at the expense of what is perceived as a cruel and unnecessary act on young lambs. The main reason for not mulesing was given as capturing a market, rather than on the reduction of cruelty.

“We make it known that we are anti-mulesing on our farm. We figure we can get a premium on our wool if they [marketers] include that in the advertising and aim the message at the right type of people. People get attached to animals, and they hate cruelty – like PETA, the organization? It’s especially true for cute baby animals like lambs, so we believe that if customers knew what other farmers did, regardless of whether they also know about tailing or dip treatments or otherwise, if they believe their wool came from lambs that weren’t mulesed, they’ll buy ours over somebody else’s.” INTF4

In a nation as small as New Zealand, where the domestic market cannot adequately absorb all the products of the wool growing industry, working together to capture a piece of the global market is a necessary strategy. Anti-mulesing is another way of differentiating New Zealand wools from other sources. Like terroir, anti-mulesing can be used in strategic marketing of New Zealand wools.

Due to globalization, the ability to group products together based not only on geographical choices (i.e., clean and green, or anti-mulesed) would be advantageous to capture a proportion of a larger market and maintain that relationship with the potentially overseas and careful buyers. In essence, groups of like-minded or practiced growers, or farmers with similar ‘stories’ attached to their product are formed outside of traditional geographic boundaries. In this way, globalization acts positively towards the cohesiveness of individuals working to sell their products as a group.

Nations themselves are examples of such competing groups in a global system.

Within the New Zealand fine merino chain, the ability to capture a piece of the global market

(where European, South American, and Australian groups also compete) is a challenge that must be overcome. Part of this challenge had been achieved through the use of terroir for their products. Some of the farmers recognized that they were members of the New Zealand growers group, but also indicated that partnering with other nations would see them more successfully integrated into the global system by choosing then to compete with other fibres, rather than inter-compete among merino growers.

“I think we have the wisdom to know that we don’t need to make enemies with South America, ...[pauses] Yeah, they are a growing force in our industry, but instead of being vexed by them, if we just keep on working together and growing as a cooperative, and inviting them in, we’ll keep pushing the synthetics away from our slice of the pie. We have so much more to promote about our wool than they do about cheap prices, especially when they [synthetics] are not that cheap or valued anymore.” INTF7

“When you join in [a merino company] you aren’t giving up your identity. You are reinforcing it among others who believe in the same things that you do; doing the best for your farm, your stock, and your country. It’s an iconic company to be involved in. I can’t think of too many other examples of them around the world, and that’s what makes ours so special. We can use our identity to sell our products to very astute buyers, and these buyers will come back again and again because they know we are consistent with our quality when other companies or fibres are only in it to make money. So we don’t feel forced to keep trying for better wool, we are dedicated to it for our company’s best interests.” INTF13S

Globalization has been indicated as a force that removes identity and boundaries around the world. It is not, however, a *fait accompli* as shown by some of the farmers reflecting on how they perceive globalization to affect their decision making. Globalization can push individuals together into groups.

5.13 A Summary of the Results from Farmer Interviews

In the classification of the farmers in this study, I have selected two terms; ‘intuitive’ to refer to those farmers who concentrate on a more or less individualised process of mental perception and internal thought processes as the way or sequence of coming to a decision; and, ‘rational-analytical’, who employ a range of social psychological and economic

mechanisms in solving decision problems. This latter group, the less experienced group, established a set of rules designed to bring about a certain outcome through the interaction of a number of agents (human interactions at various levels) each of which works to maximize the farmer's own utility and satisfy their need for cognition. Although the intuitive farmers still are affected by the interpersonal relationships and social reflections of information sources, they are *not driven by normative forces* in their decision making, or by the need for cognitive energy to be used for every decision if a heuristic has been established. Instead, *the role of personal experience, affect and intuition are more important* in their decision processes. The intuitive farmers are *attuned to the flow of the external world; they are alert to signals that activate their 'gut feelings'*. They are more responsive to their environment, and in that way may be *more sensitive to perceptual boundary changes* when faced in a decision dilemma.

The rational-analytical farmers, however, more commonly subscribe to social cognitive approaches in their decision making; they consider the social desirability of inputs and outcomes, are anchored on the media as a source of information, and *do not question the framing of information* in the same way that the intuitive farmers do. The rational-analytical farmers *give more salience to the advice of others*, and may be *tied up with their internal state of how to make a decision* (i.e., debating where to get information, how to 'optimize', and how to meet the need for 'calculation'), rather than finding synchrony with their environment (the greater context) in their decision processes. Though they are alert to information from external sources, they are not always aware of the cues in the environment that may indicate a direction since they are occupied with the task of 'perceiving' in the physical sense. Thus, in a constantly changing environment, a rational-analytical decision maker might be overly distracted by decision methodology and the desire to make a correct decision, to allow an adaptive approach to emerge, or to let their 'perception' guide them in an intuitive way.

Kihlstrom (2001) defines mentalism as the belief that mental states are to action as cause is to effect; that mental states cause action or reflection. I believe this term applies to the intuitive farmers. The inexperienced farmers on the other hand, are not yet cognitively aware of their mental states, or why they should become aware of their mental states, when facing a decision, but instead rely on extrinsic factors (social pressures, media influences, and vast amounts of information without reliable judgments) for information, and their own internal 'calculators' to come to decisions. I hypothesize that over time and with increased experience and pattern recognition skills, the rational-analytical farmers learn to rely more on their intrinsic abilities including gut feelings, information arbitration, and reflection in order to, one, satisfy the ability to make correct decisions and, two, make them in a timely and resource-wise manner.

Much like there are two broad approaches to social psychology (those are, again, psychological and sociological), farmers approach farming in two broad ways; as a lifestyle, or as a business (with several gradations of the terms). There are families that farm, where farming defines what they 'do,' (their daily business) and farming families, where farming is a group quality, encompassed in their identities (past, present, and future). These individuals and groups are swayed by aspects such as place attachment, the (other) groups they belong to (sometimes explicit, sometimes implied), their abilities to discern skewed information sources, and by their desire to balance the weight of existing both locally and globally as a part of their crops' pathway to market.

Three key decision pathways will be explored in chapter seven (that includes analysis and partial discussion) in terms of the approaches of farmers and the relationships they have with other supply chain members. The evidence presented will help to provide clarity on how and why farmers need to be attentive to their decision making strategies, when at the same time they are in the process of building, and maintaining relationships.

Chapter 6: The People that Propel the Products and Processes

Advice is the only commodity on the market where the supply always exceeds the demand.
Author Unknown

6.1 Introduction

This chapter attempts to clarify the results of the interviews with supply chain members located around the world, and reconcile their knowledge and awareness of how the relationships within the wool supply chain and the power of globalization influence decision making directly and indirectly through their behavioural strategies. The chapter begins with giving a brief overview of the themes that emerged from the interviews with supply chain members. This discussion is followed by an examination of the interview results thematically in the same format as the farmer results from the previous chapter. The results build to describe the decision making environment in the supply chain as a comparison to the situation that farmers describe themselves to be in when making long-term and strategic decisions on the farm. The complexity of positive and negative behaviours occurring within the chain as described by the respondents is also considered. Some respondents indicated how the relationships in the chain affect the sustainability of the chain. Finally, the results discussed in this chapter are here to illustrate supply chain members' perspectives before I delve into three decision making scenarios in the Analysis chapter (which follows).

6.2 Overview of Thematic Findings

Five major themes were elicited from the interviews with supply chain members. These concerned firstly, aspects of changing relationships. This section includes descriptions of how the social and economic environments within the chain, and normative concerns regarding chain members are altered through interactions and global events (whether

perceived to be controllable or not). Second, identity and social roles (the lack of, finding of, and maintaining of understandings people and businesses hold about whom and what they are) were debated by supply chain members. Third, strategy and power struggles were dominant themes among the decision making anecdotes given by supply chain members. Fourth, strategies and economic approaches to decision making were also widely discussed. Interestingly, the fifth theme that emerged was based around aspects of unification in the chain. There was a dichotomous description of the role of wool growers given by supply chain members that indicated a difficulty in the integration and unification of cooperation and information sharing among the chain. In addition to the current chain context, history and tradition again functioned in the perceived viewpoints about the future survivability of the individual, companies, and chains in the wool industry.

6.3 Theme One: Aspects of Change

Supply chain members were asked to describe their relationships with other members of the chain. This line of questioning proved fruitful in uncovering the complexity of the relationships in the supply chain. The interviewees had various ways of describing the multiple contexts in which they believed they operated and how that influences their roles and identities as parts of the chain, and their relationships with other members of the chain. One interviewer summed up the dilemma most had in describing relationships in general terms;

“It’s hard to describe our relationships [with other members of the chain] because they are always changing. Companies roll-over, people change jobs, and the industry has to change to keep up too. The way we approach relationships even changes depending what we’re in the market for; quick answers to immediate demands, or just scouting. Sometimes I’m on the phone for hours talking with suppliers, sometimes only a minute when there’s a real pressing issue.” INTSC12

Negotiating change (whether perceived controllable or uncontrollable) became a central issue in how many of these respondents related the way in which they performed their business roles. Change was described as the most difficult part of their job to deal with, and at

times, the most exciting. Others mentioned that their position in the chain was highly dependent on the other entities and companies that they associated with, and when those relationships or business dealings changed, so did their identities since those identities were based on a mutuality. Identity is an issue that will be explored in more depth in the second theme of this chapter, however, here I give one example that is illustrative of the effects of relationship change on the respondents. One respondent describes their identity as based on a relationship with the retailers that they supplied:

“We piggyback on the retailers since they do most of the advertising for us anyway, so a lot of what we’re known for comes from how well the stores market themselves, and whether they are in the moment, um, at this moment. So, that being said, we’re... [pauses] We’re basically just going along with the ideas that the shops’ sell to the public, for as long as we supply to those shops. And I guess that depends on their [the retailer’s] advertising firms’ ideas too. They change about every three or four months or so? [Nods]. I guess we’re always changing then, but not because we ask to, only because the market does [changes] and the retailers we supply do too, and we go along with it because it’s easier, and cheaper than us trying to advertise to the public ourselves.”
INTSC6

The quotation reveals that this respondent perceives their relationships with a buyer (the retailer that sells their product), and the subsequent relationship with a market, as contributing to their identity and role through the retailer’s changing advertising campaigns. In this way, a portion of the supplier’s identity is out of their control, and in this way a socially-determined [external] influence on their decision making. This respondent seemed accepting of this lack of authority over advertising, because they have some (indirect) control in that they can decide whether they supply a particular store. This was also quite a passive approach to ensuring their products reach the market, but an approach that was also less costly for the company. The respondent also noted that they were not in control of market tastes, and because of that, the passive approach was actually a bonus; they did not have to do market research, only respond with supply when their products were deemed functional, or innovative products were deemed ‘popular’. The changing social environment, for example,

whether the product this company produced became socially appealing, influenced (to some degree) the success of this particular company.

Supply chain members perceived that there were four factors they were in control of; the price at which they sell their goods, the location where the products are sold, the quality of the product itself, and the promotion of the product (either in direct, or indirect ways as described above). Those four factors were most commonly described by the interviewees closely linked to the retail end of the supply chain. There were numerous examples of uncontrollable aspects of the chain which constrained relationships. Two of the main uncontrollable aspects mentioned were changing global environments (including the strength of the dollar and export regulations), and market tastes. The export regulations were a large concern for the interviewees. This may be due to the raw (animal-based) materials they are dealing with, which are stringently regulated in international trade. I will begin to describe these below.

Supply chain relationships, by definition, operate within wider, occasionally global, commercial and environmental contexts. These contexts consist of numerous time-dependent environmental, political and socio-economic influences and interventions which change rapidly and sometimes unpredictably. Due to those compounding pressures, the choice and operation of supply chain relationships were described at times as taxing. For example, three respondents noted that when import policies in a country change, the relationships and interactions with offshore suppliers can be altered depending on the policy changes. The policies have to be acted on by firms, individuals, and external sources, with potentially different interpretations complicating the context for each relationship. One exporter described such an incident:

“We deliver a lot of our textiles to Australia, mainly, but we also export to India, and Italy, Spain, and France. The trouble is, each of those countries have different classification categories for *sheep and lamb’s wool*, or *sheepskins, skins with wool on or off*, and for other fibre types and the processing we’ve done to them. And they all had different importing regulations, until the EU started harmonizing the regulations. Most of the European countries used to

have subsidy programs for their own products too... [describes the subsidies for locally grown and manufactured products within European countries]... So, when we are processing orders, we have to make sure we meet those [classification] standards. We have to product test and certify, and the standards could change while we're in that process too. When the policies in one [European] country change, it means others will likely follow, or all of them will change at once, so then we have to decide whether we want to continue to supply them, when it would be easier, in paperwork anyway, to focus on our Australian dealings. Two years ago the Agreement on Textile and Clothing was phased out and quotas from some cheaper producing countries were phased out too so then we had more competitors to deal with. Then the classification of *skins with wool off* changed for skins going from India to Europe, so then we had to check our standards against them... Um I guess I'm trying to say that it's difficult to stay on top of the import regulations and you can get frustrated with the details when you find out another one's coming. And it's hard not to blame the buyers but it's not their fault. I mean we [New Zealand] have some strict regulations that we impose on our imports too." INTSC8 (*italics*, interviewer)

This statement reflects at least three different contexts for relationships for the exporter. First, there is the need for product testing and certification according to different standard systems in the different countries that they export to. This presents an additional cost in time and money for the supplier. Next, the respondent noted there may be changes in importing and exporting regulations further along the pipeline from their step, that may press additional indirect requirements on their processing and standards. Third, there was the concept that keeping up with the changes in regulations may put pressure on the relationship between entities in the chain. But, neither entity was directly in control of those regulatory changes.

In addition, there is the decision of whether to keep accessing the global market, or whether to concentrate on one specific market. This is a controllable factor for a supply chain entity in that they can decide where they want to sell their products. Nevertheless, since the domestic market in New Zealand cannot absorb all that is produced, producers must look to export into the international marketplace. Respondents indicated frequently that changes in the global economy affect the exporter's financial success most significantly because of the relationship between exports and the (low) kiwi dollar.

The type of products being exported is also important. For innovative products, regulatory changes would be one more obstacle potentially interfering with the timely capturing of a market before other similar products are introduced. For functional products, changes in the processing that would reduce the efficiency of the chain could decrease the overall profit of chain members, and influence chain members to behave in atypical ways. For example,

“Whether it is because their customer demand has changed, they hear of a change in import regulations, or even both, sometimes buyers will stock up their inventory, then back off suddenly. Whatever the reason, it is out of our hands, but it leaves us low in stock, or even stocked-out sometimes and that hurts us too.” INTSC9

Some other aspects of change the respondents described were additionally deemed out of the respondents’ control. These included the economic climate, the number and strategies of competitors, political factors (for example, the changing export regulations, or subsidies as discussed above), the behaviours of neighbouring supply chain suppliers and buyers, and social or cultural factors (for example, the anti-mulesing campaign). The behaviour of suppliers and buyers was an interesting example where the complexities of relationships in the chain was demonstrated. Although some perceived that they had no control over their buyers and suppliers, they did have choice of whether to continue a relationship with them and their products’ final markets.

“One of the pressures we feel is having to either continue on, status quo, or to re-invent our company entirely. I believe that we do get caught up in believing that we have to continue with the companies and markets that we have historically relied on. It can feel threatening when we consider that eventually, the market for wool carpets will change and it will either benefit us greatly, or we will have to dissolve our company. But then again, we could begin to look for new avenues. Companies dissolve and are re-created every day.” INTSC9

The perceived control of situations the interviewees have also affects their decision strategies and the way they evaluate their options. Interviewees mentioned that they sometimes choose one particular aspect of a problem to solve, in the hopes that solving part of the problem will help the rest fall into place. By choosing the first solution they come across

when the issue is pressing, they are illustrating a 'satisficing' strategy. Satisficing was deemed a way to deal with quickly changing circumstances, without expending a lot of effort in decision making, such as in the above quotation on 'going along' with the retailer's advertising. Here another respondent describes his satisficing strategy:

"We think it is better to make a start when there might be a problem, rather than sit back and let it get worse. Our board wants to know that we're taking steps to solve problems before they get too big and we have to sink a lot of time and resources into them. When [textile producer] could not provide us with everything we ordered because they were short on *Super 150s* [a particular thread spin creating very lightweight material], we took what they could give us and continued on with our orders, then finished the rest of the order later, rather than lose a client in the long-term." INTSC6

Alternatively, the respondents indicated that they can approach time-independent problems by looking at various options and weighing the value of options depending on the contexts they find themselves in. One manufacturer revealed that when their company was planning to introduce a new property to their product (i.e., a stain-resistance not previously introduced), they explored the potential suppliers, and the target market in great detail, along with conducting cost-benefit analyses, and scouting for competition at trade shows.

Respondents noted that because of the multiple contexts members of the wool supply chain deal with on a day-to-day or seasonal basis, having perceived control over a decision by exploring as many options as possible before coming to a decision was another way of dealing with an uncontrollable circumstance. For example, if a farmer did not carry-through with a contractual agreement, when in the past they had been completely reliable, the option for that buyer to return to that farmer with a new contract can be explored against the options of going to other suppliers, or changing the contract in order to include stricter penalties and compliance issues.

Some brokers and buyers pointed out that in their pursuit of learning which relationships to maintain, one way of controlling some of the change that they have to deal with was to keep a list (mentally or otherwise) of previous business dealings with individuals and companies, ranking the members in order of consistent performances, quality of supply,

and trustworthiness (these would be called attributes in a normative/multi-attribute utility-based decision system). When a supplier/grower fails to complete a transaction they are either moved down the list, or removed entirely from the list depending on the severity of the situation and the broken word/agreement. Broken agreements with someone known for consistent delivery, or for pleasant interactions were found to be punished more strongly than a reduction in product quality.

“It [a business interaction] hurts us more when a farmer just doesn’t deliver, instead of delivering less than promised or if their wool is not up to spec. I reckon’ it’s like a lolly-machine, when you put your money in and nothing comes out, you get irritated, but if you get something that you didn’t punch in, but there’s still something chocolate, it’s not as bad.” INTSC1

One reason for this is that contracts (whether formal, or informal) between two parties in agribusiness will have two key features aside from price; the quantity and delivery date, as well as the quality (meeting specifications or not). Because of (uncontrollable) biological factors it is often difficult to get the exact specifications right. Thus, supply chain parties will have a certain level of tolerance for quality. In the case of wool, there is the additional option of blending to achieve the required order. However, getting the right quantity is a more crucial issue.

Here again, another broker reports on a recent incident that altered a relationship with a grower in an unanticipated way;

“It was out of character for him, I think, based on the years before. He usually delivered a few bales of lower quality but those were often caught ‘nd sold and mixed to fill other orders. But last year he just didn’t follow through at all with his forecasts. We expected to get his truck every month but it didn’t come in. I think he got offered a contract and was trying to get out of commitments while saving his hide. But that kind of deed isn’t held in high regard with us so now we won’t be bending over backwards for him anymore.” INTSC3

The participants in this study seem to indicate that successful interactions with other members are very important. This may indicate a feeling of being able to manage uncontrollable factors by managing the relationships with other members in the chain. When faced with another uncontrolled factor such as an incomplete order (quantity or quality-wise),

and in times of urgent need for supply, poor interactions from the past may be ignored if supply is readily available:

“Later on in the auction season, when there’s a lot of pressure to fill orders, and the farmers are under pressure to pay their bills, there’s a lot of slippin’ and slidin’ with prices and reserves. It’s hard to say who is more powerful though, the farmers or the buyers because both sometimes have to deal with encounters that they’d rather not.” INTSC1 Interviewer: “Tell me more about those encounters.” Interviewee: “The growers are supposed to set a reserve price and then any buyer can meet it, regardless of where they’re from geographically, or whether they are from a company with known contracts or preferences for buying from farmers directly, so the growers see them as cheats when they sneak into auctions and get lower prices when they’re known for making contracts too, and the contracts are usually more fair to the growers. But sometimes you get farmers doing the same thing, taking contracts here and there or at the last minute when they indicated they were going to deliver to a certain scheduled auction. Like playin’ both sides.” INTSC1

“There are some farmers who really want to know where their wool is going and they sometimes are insulted when it’s not to Europe, or to the States, but at the end of the season, they really need to just bite-the-bullet and take what they can get.” INTSC2

In an uncertain and constantly changing commercial climate, some research has found that people construct their preferences in the *contexts* of decisions (Mellers & Cooke, 1994; Tversky & Kahneman, 1981; Tversky & Simonson, 1993; Shafir & LeBoeuf, 2004). When contexts change in unpredictable ways, the attractiveness of options (such as that ascribed to continuing a relationship with a reliable farmer, versus seeking new, untested relationships), depend, among other things, on other options available, the nature of the task or needs, and the context itself (in a recession, having a farmer not carry through with an agreement may be perceived as more dire than the same lack of follow-through during a time of growth for an industry when many other options are available). Evaluation of choices is often comparative in nature, for example, working through a list of potential suppliers to buy from, and as a result, the perceived change in a relationship (such as predictability of supply, number of completed transactions in the past, or quality of supply), can fluctuate as a function of the decision context (Tversky & Simonson, 1993). A buyer noted;

“Two years ago, I went out to the [Grower’s Name] farm, and had a real ‘yarn’ [conversation], a heart-to-heart you know. Asked’em exactly how he was

doing, the stock, the land, the weather... Whether he thought he'd be able to give us what we asked for. He said yeah, that there might be a few bales short, but yeah, he'd be able to deliver. It'd been a tough season, but yeah, he would. You trust'em especially because we were with him from the start. His pop [father] had helped get us started, they wanted the best for the fine wools in New Zealand back in the 90's when things were just starting again. But he [the son] didn't have it [the promised shipment] in the end...it was the drought. I wish he'd said that earlier, we would've been fine, called around... and we were okay, but you know? Now I am checkin' up on him more tho' I wish I wasn't. Wondering..." INTSC6

In this instance, the buyer admitted his changed opinion of the farmer was based on the lack of forewarning for the non-delivery of a promised amount, after having this farmer and his family ranked highly (a relationship that was perceived as reliable) among his list of consistent providers and trust (giving him the illusion of control over a social factor). The history involving the previous relationship with the farmer's father also added to the relative value of interacting with this farmer, noticing again that the implied presence of a person influences the behaviours of others in different times and contexts. A disappointment such as this one to a buyer where history, no forewarning (though there were hints given), the visit in person the buyer made to the farm itself, and the drought context (presumably meaning many farmers' wool clips were less than normal and so a supply short-fall across the board might have been prevalent), made for a much stronger negative evaluation of the behaviour and relationship the company had with this farmer. It also set up a situation of suspicion now where the buyer is always "wonderin'" whether this farmer will behave in the same way again.

However, even when these factors are held constant, the perception of being in control can change as decision makers' experience shifts in the way the business world is evolving (the uncontrollable global economy was mentioned repeatedly by respondents). For example, one manufacturer mentioned that they had changed their approach to selecting suppliers so that they can better manage product quantity and quality, and any unforeseen factors in the international market:

“Five years ago [approximately 2002], we had three suppliers lined up to give us finished yardage of woollens that we were putting together to send onward with a particular order. One batch was coming from stores in India, and the other two from Australia. We got the Australian orders on time, but the third batch was held up in India, and then we found out it was not going to be the amount or grade we expected, and then that we were not going to get it at all because the company had not kept proper stock of what they had. I realize that it was an isolated incident, but we just could not afford that have it happen again with a combined order to deliver, so we try and leave a long buffer now when we place our orders, and we only work with companies who have a track record of delivering on time, every time, regardless of the price, or our history with them.” INTSC5

Thus, given this global logistics situation, relationship characteristics such as having a historical basis, mutual trust, and having regular face-to-face interactions, were deemed less contextually valid than previously. In a globalized business environment when fewer face-to-face interactions (and less control over social relationships) becomes more prevalent, performance may become the only major attribute necessary for continued interaction with a seller. Where having a relationship on a social level used to help to build the trust and dependability that resulted in perceived control in the supply chain, entities are working instead at managing the perceived uncontrollable factors in other ways. In fact, along the opportunistic (competitive) chain, three interviewees described the removal of in-person transactions and how that affected the way they operate:

“When I first started with the company, they had offices in New Zealand and once a year we would go to New Zealand, tour a few farms and the scourers to see what was happening at that end and to be aware of what we were buying. Now because we can just contact regional representatives to do the checking for us, or hire consultants to give us up-to-date reporting, we don’t have to spend time and resources visiting. Our representatives only do a few visits a year too, right before the auctions so we can keep our costs down. All the information we need about the wool is online now so visiting farmers and even all the auctions themselves is a waste of resources.” INTSC7

“You don’t have to invest in face time anymore. Everything is done online and the sample results are posted ahead of time. The reports tell us what we need to know, and you get a taste for the reserves from year-to-year.” INTSC5

“I reckon’ we like to get to know the sellers a little more than other firms. Then they can let us know what’s coming up in terms of quantity and quality. Sometimes we have some really specific orders to fill, and when you have the kind of relationship we have with the growers, they give you a one-up.” INTSC2

The final quotation here gives an indication that perhaps removing the in-person interactions is a direction that might have unintended consequences for the industry.

These results describe a variety of preferences for making wool brokering, production and buying decisions; these preferences were often described as having to do with being able to control aspects of the chain. Some buyers prefer to manage only one criterion; price, while passively letting others among the chain manage other controllable factors in changing contexts. Other firms and buyers look for quality, consistency, interactions with other entities, trust, and/or price in determining their choices. Either way, it is evident that the context in which these decision makers act is one determining factor for their choices; when under time pressure, or when there is no longer a need to maintain relationships (such as due to the globalized, automated system of wool buying now in action) the attributes they look for change and the decision becomes based on meeting immediate needs over using more resources to gain more information or build relationships. The contextual factors tend to alter the values ascribed to, and the relationships between the members of the wool chain and their suppliers. As a result, relationships in the opportunistic chain often vary from standard or normative expectations (such as having one-time, or prolonged or repetitive interactions with single suppliers and buyers), or past relationships being maintained.

Uncontrollable aspects of wool production, such as weather and biological factors, or complicated regulatory changes can frustrate relationships in the chain. A reduced level of trust between entities can be the result. In the globalized context of the wool industry, having some perceived control over relationships and other entities in the chain may provide security among many uncontrollable factors. How these relationships play out may also influence what companies are known for. This will be explored in the next section on identities and social roles.

6.4 Theme Two: Identity and Social Roles

6.4.1 Interactions and Identity

The interactions in the supply chain often contribute to the identities of those businesses, and people involved. The concept of identity is a complex one and can be approached in several ways. Social identity (which is what I am concerned with in the context of supply chains), stems from a variety of sources, including nationality, gender, occupation, family status, and so on (Deaux, 1993; Shafir & LeBoeuf, 2004). Identities and social roles can be extensive, context-dependent, and can also impart very different values and ideals (e.g., compare ‘farmer’ to ‘CEO’). Identities can be evoked by decision contexts, and other cues; each identity carrying its own set of values and priorities that, in turn, yield fluctuations in attribute ranks, weights, and salience for given decisions. For example, a buyer may want to give the appearance of being scrupulous in a transaction or contract negotiation in order to impress on the seller their relative power as a business person, and to cue the seller as to appropriate behaviours in their dealings. The same business representative, however, may want to impart a completely different identity in a different context; for example, the image that they are a caring and reasonable employer when seeking new staff. The plurality of social identities was established among my interviewees;

“In our business you have to be more than one person at a time; when you’re selling, you have to really put yourself and the company out there, showing you personally, and your business can be counted on and get that reputation established. But when you’re doing the buying, you have to be picky, pay attention to details, use your power and position to the company’s advantage, and achieve the company’s objectives. It’s a challenge to balance those roles and when you’re flip-floppin’ between them, you have to keep track of where you are and what half of the business you are acting for. It can be a little schizophrenic, but at the end of the day you can go home and just be yourself.”
INTSC12

The confusion between a personal identity and a social identity as described in the last sentence is one that many of the interviewees demonstrated. At times, especially when interacting members were known to each other for longer time periods or through family connections, the interviewees found it difficult to take on a particular business or socially-

convened identity when a personal interest was present. In this way, the social identities often portrayed because of membership in the supply chain context, and for competitive advantage when in positions of constant negotiation, are manipulated by the forces of globalization.

“When the Asian markets fell for a couple of days last year, we thought we’d recoil from our aggressive strategies and buy-outs, and instead take stock of what we had and how long we could last with our stores. But since we did not know if the drop was just an exceptional incident, we thought we should not lose our edge by appearing vulnerable to the market forces. Our stock [i.e. stock market index rating] remained steady over the two days when others faltered.” INTSC7

The identities and social roles of individuals and businesses in the wool chain are thus forced to become more malleable, less patterned by tradition, but more patterned on the current global environment. This differentiates the players in the supply chains from the farmers, where the latter are often conflicted in terms of personal identities (psychological and social factors working to set oneself apart as a distinct individual) instead of social identities and roles (defined by characteristics attributed to a person or business entity by others), and where a personal identity is often protected because of being able to leave a business role at the end of the day.

6.4.2 An Example of Identity in Action: Being an Environmentally-Forward Firm

One area that was well discussed in the supply chain interviews was the identity of being environmentally-focused in their business-dealings, and products. Environmental recognition in the current climate is widely recognized as attractive to the retail market (especially in terms of children’s apparel, or carpets, purchasers have a great sense of pride in knowing that the products are “clean and green” see for example Wenzel, Hauschild, & Alting, 1997; Shrivastava, 1995; Teisl, Rubin & Noblet, 2008). Firms, (in chains) often follow particular strategies, such as marketing an identity in order to capture a specific group’s backing. This use of an image in marketing is the key plank of a “differentiated strategy” (Porter, 1980) (see Chapter Two: The Context of the Problem, Section 2.3).

In terms of being identified as environmentally-forward, respondents gave descriptions of what they believe their identities are (each very contextually-dependent). The ‘clean and green’ image also centres on the idea of traceability; that is, knowing who is doing what in the chain, and with the product, at every stage. Traceability impacts on relationships and identity because of this requirement for full revelation of the treatment of products through the chain. For example, one locally originated apparel company describes their environmental culture as follows;

“By being New Zealand grown and made, we have been able to develop a very personal relationship with everyone we do business with. We know the farmers by name, we know the retailers by name. We know what the farmer has used on his land; we know the dyes the fabric manufacturer has used. I think by being personally involved in everything we have created a company that people feel proud of buying from. We’re not selling out to be who we’re not, and we keep to our share of the market. Even if our share of the market is very small globally, they are committed to being as environmentally sensitive as possible and we provide that.” INTSC6

Two other supportive companies in the fine wool supply chain describe the nuances of having a more environmentally educated market who value “wholesomeness;”

“The nature of the business that we run is very different to what you’ll see out there with the way, particularly, merino has gone because it is a very dominant wool. One big company in particular has gone global, processing overseas and cut their costs big time, but by doing that they lost their market. People who buy wool products because of their personal values won’t buy from them [the big global companies] anymore, even if they keep marketing to them. There’s an undercurrent that feeds the conscientious market now – any hints of business ethics gone awry means that part of the market, the part that are also dedicated buyers, will have lost their trust.” INTSC10 (*sic*)

“It makes business sense to use a *terroir*; to give a story to your product that we can market, retailers can sell, and people can buy into. As a company we know that even hinting at “green choices” to consumers will benefit us. Just saying “natural merino” on a label is enough to start a new relationship with someone. Being identified as “green” means people want to do business with you ... even other businesses. There is power in being recognized as clean and green, or naturally New Zealand.” INTSC8

However, a dichotomy is present in the chain stretching between the desires to capture that wholesome market, but at the same time, being able to adapt to the changing needs of their buyers to keep their company alive while under economic pressures. This adaptability is

described by a marketing group within the chain, and also by a coarse wool exporter (coarse wool is not usually marketed as ‘clean and green’ due to its end uses, however, the statement below supports the need to adapt to the buyers’ needs);

“I see us as being the main advertisers for a whole system of companies that are just trying to survive the next quarter. If the people that are flush right now want something New Zealand made because they’ve seen government advertising on the television, then that’s what we’ll do to keep the chains moving. You can market New Zealand made even if only part of the raw wool stock came from New Zealand but all the processing goes on overseas. If New Zealand made is what people want, we’ll do what we can to capture them. If tomorrow it’s “cheap-as” that people want, because inflation has gone up, we’ll do that too. We’re always under pressure to be ready to change to what the market wants. You have to adapt to survive when you really have little power over people. How many greenies do you know that can sustain their businesses without running something else too? Few.” INTSC11

“With textiles, the environment doesn’t come into play. Our buyers want cheap, consistent supplies. They’ll buy’up a heap’o’ wool, even if they can’t use it all, just to have now, or to fill their orders from China. For the automobile industry it’s about cheap – the environmental part is all about fuels, not the fabric in the seats or rugs. Quick, cheap, quantities is what they want and what we’ll giv’em to keep’em buying from us.” INTSC4

In the first statement there is evidence for the pressure to change identities quickly in order to survive and capture markets. It is interesting to note that in the second comment, not having the environmental identity is an advantage since buyers know that this particular company is not burdened by the responsibility to carry through with an identity other than being quick, cheap, and having the required quantities. There is no implication for environmentalism, and traceability when a ‘trendy’ identity is not being actively maintained or marketed by that particular firm.

Hence, both having, and not having a socially-constructed (valued), but arguably momentary identity is important. It may be that having the choice of taking on an identity when opportunity arises is the best ‘focused’ strategy for supply chain entities. Being “green” or “home-grown New Zealand” in these examples, can be both important to a business in the supply chain in terms of helping to capture a market (however far removed from that particular level in the chain), and important in building relationships with other supply chain

members. Conversely, the identity can be unimportant given the different contexts and needs of companies within supply chains. What is evident is that being flexible enough to take on different identities, or build relationships with suppliers or buyers that have established an identity is what is considered powerful positioning and strategic behaviour in a chain. Using an identity for strategy is a way in which companies can frame their products through global trends to capture a market, even though that frame may not be accurate (e.g., being labelled “New Zealand made”, but processed largely overseas). Using an identity in this way also helps to build relationships with other members of the chain who also subscribe (however temporarily) to the same attributes of the trend. Using trends to one’s advantage is additionally how a company in the supply chain can strategize to overcome opponents (be they similar firms, or competing chains or textiles). Strategy will be explored in the next section of supply chain member results.

6.5 Theme Three: Strategic Positioning and Power Struggles

Beginning with looking at the procurement of supplies by the suppliers, there were several indications that strategies were highly developed and adaptable in and within the chain, but also exposed to uncertainty, complexity, and risk (see Chapter Two: The Context of the Problem, Section 2.3).

Within the supply chain context, a common way of categorizing strategic approaches are basic (or cost leadership), intermediate (or differentiated), and advanced (or focused) approaches (Porter, 1980). These approaches describe the strategy of the chain as an entity itself. Individual units within a chain can strategize in different ways. They can use their influence or power over the nature and form of the relationships between entities within the chain to their advantage. For example, if a buyer has little choice or options, because a supplier monopolizes a field, then it could be said that the supplier holds the balance of power (Hunt and Nevin, 1974).

“We get all our supplies from [a designer textile company]. We can only buy what they have, and that completely depends on what they get from the farmers, and that completely depends on the weather from year to year. When [a particular company] went offshore, and gained huge buying powers, we were left at their mercy too. When they went overseas, they took a lot of the raw materials with them. It’s up to the farmers now who they sell to; the weak auction system, or contracts. That limits what the textiles agents can buy, and what they can then turn around to us. We’re at the mercy of the farmers.”
INTSC5

It could be that the supplier, in this example, is perceived as having control over the chain.

However, the supplier might in turn perceive that they are controlled by someone else, perhaps the farmers as the interviewee indicated, and as indicated below. Here an agency with a business mission of developing more fairness and cooperation in the earlier stages of the fine wool chain describes who they perceive as having strategic power in the chain;

“This is a question that most farmers – interestingly, if you actually say to them how much do you need then – you’re complaining that you don’t get enough for your wool, right? How much do you [the farmers] need? What do you consider is a sustainable – net, gross, whatever – how much to make it sustainable for you? They couldn’t answer you. I would suggest that 99% of them couldn’t answer you. There are some, a few, would get it bang on their sleeves. You know, if they get good rain and good grass growth and they don’t have to put fertilizers down and they don’t have to buy in feed and that’s quite true. But all that stuff is material. They have the power, but they think they’re victimized.” INTSC14

This might be true given that all the firms after the growers in the wool supply chains fundamentally depend on the growers for the raw material. However, these comments might also have some bias considering the representation of this particular firm. Other chain entities indicated that they believed the power was held by manufacturers and exporters, some feeling as if they are ‘captive’ since early in the chain, there are fewer firms dedicated to providing the specific materials required for their innovative products.

There were opposing statements from the other chain entities. For example:

“We depend on the materials yes, but we also wouldn’t be here if no one bought textiles down the line. We have to know that the advertisers are still workin’ the market and the market is still buyin’.” INTSC12

“Well, the risks are shared all the way along, so the decisions must also be shared. That [one firm holding all the power] just wouldn’t be right.”
INTSC10

The first quotation reveals that there is a perception that advertisers and the market itself controls the movement in the supply chain because their purchase feeds backwards into the chain. In that way, the general public holds the power over the supply chain. The second quotation from an integrated chain describes that each entity within the chain should contribute and govern equally; this is reflective of an advanced, integrated chain with a high degree of coordination, where power is held equally among chain members. But that requires highly coordinated decision making amongst chain members, smooth information flows, and trust throughout the chain relationships.

Conversely, if the buyer has the greater decision flexibility with respect to the choice of relationships, then it could be said that the buyer holds the power, especially over low volume producers such as farmers, and processors early in the chain. The different levels of power impact on the types of relationships formed and the behaviour enacted within the relationship. Buyers who have high degrees of power tend to use this position to extract concessions from their suppliers (Cox, 2001). Usually, this means that the buyer could play one or more suppliers off against each other for concessions. In doing so, they must be prepared to switch from one supplier to the next, manipulate identities, and both form and threaten relationships (strategically) to gain what it is they seek.

“So, okay, I exert pressure, then they [the brokers] do. I can go to this company and get part of my order, then to an auction and get another piece filled, then back to a different company and pressure them for a better price or guaranteed amount the next year. It’s squeezing and bartering to get what my buyers want. Ultimately, the top end buyers; the retailers, they are the ones with the most power here. They have the cost of the retail store, the stock they have to buy, the staff they employ, the price-cutting and sales by their competitors; and if they can’t sell what they have, they’ll go under. Simple as that. They have the most to lose, and the most influence over the price in the end.” INTSC8

“It’s all become very confrontational. Everybody in the chain is trying to screw every cent out of everybody else and in the long run nobody is winning. In fact everybody is losing. No one is taking the lead even though everyone is convinced someone else is. They all complain that they’re puppets. So it’s becoming a self-fulfilling prophecy. And so – the whole rationale behind our company [company name] was to grow this wool and to make it sustainable so some client [farmer group] can make a living out of it. To put the farmers in

power, but even they are convinced that the other end controls the pipeline.”
INTSC12

The first quotation seems to imply modularity in the middle of the supply chain. This particular entity can shift to other sources when required. The second quotation indicates a perceived lack of leadership among the chain, which results in uncoordinated dealings, and feelings of captivity throughout the chain, further resulting in the twitchy pressuring of other levels. This respondent also indicated that reversing the power struggle by putting the growers in the powerful position was one solution they believed would reduce the agitation in the supply chain. Perhaps it is just the determining of a lead firm that would ease the struggles but this firm seems to believe that the growers should play the lead role.

Creating partnerships (dyads) in the chain was another strategy suggested by members as a way of curtailing power struggles. Here a manufacturer describes a partnership that has worked to their advantage:

“We have a long-standing partnership with [a dyeing company] for treatments we can’t do in house. It [the partnership] works in two ways. First, we don’t have to worry about tendering, bargaining and writing up new contracts every time we need something a little different. Second, they don’t have to worry about constantly finding themselves more customers. When we need them, it’s usually for a sizeable order.” INTSC12

Selecting appropriate suppliers in the chain appears to be important, since building trusted relationships takes time and effort, but results in rewards later on. Since the buyers, in exercising their power, prefer having the freedom of action, they would tend to invest in relationships that are more easily exchanged at will. In these types of relationships, less effort has to go into creating and maintaining a relationship among the members of a short-lived chain since the opportunistic nature does not rely on being a consistent and trustworthy individual/company. This would reflect a market governance type of supply chain, and would apply in the coarse wool sector. However, in the above example, this dyad works to reduce the power struggles in opportunistic chains.

In describing their ability to manoeuvre between suppliers, one business indicated quite obviously how their freedom of action in selecting suppliers gave them reassurance in times of urgency amongst wool suppliers;

“We can flip-flop. We deal with enough subsidiaries that it’s easy to get the price we’re looking for or the spec’s we want. That way, we’re never short. We do our processing overseas, so whether it [the wool] leaves from Auckland, or somewhere else, it doesn’t really matter to us once it gets to the plant.” INTSC11

However, in the cooperative chains, the exercise of strategic power for short-term material gain was secondary to the needs of the chain members to coordinate the exchange process over the longer term (Axelrod, 1997).

“It’s more important for all of us to stay coordinated and communicate freely with each other than to do a one-off trade, even though we could. It’s not in our ethos.” INTSC6

Thus, there is confusion over where the power lies and what strategies work best (relational or market) amongst the wool chain entities I examined, but the *importance* of being perceived as powerful was not as concealed. On the one hand, having power can result in a feeling of stability of one’s position in the chain. This was indicated by the confidence in the discourse of chain members who felt ‘powerful.’ For example:

“We have a huge share of the hotel market and our research indicates that our buyers are very satisfied with what we provide. We know that we will grow tomorrow, the next day, and the day after where some carpet manufacturers worry about surviving until the next quarter.” INTSC4

However, sharing power amongst the entire chain in a cooperative way was reflected in the responses of those chain members too. Here one respondent in fine wools explains;

“There was no fear of expressing faults or concerns in [company name]. No issue was too small... Um, that way, we work out any kinks before they get to the point of breaking down a relationship. When we started with the collaborative approach, it set the stage for the way things are now; very smooth and efficient. I like to think about it in terms of a wheel. If there were differences left unresolved between the growers, buyers, manufacturers, and retailers, we’d have a square wheel wouldn’t we? It wouldn’t roll along very nicely would it?” INTSC10

The increased stability the relationship provides increases the sustainability of both the supplier and the buyer. Thus, it is in both companies' best interests to invest strategic time and resources in the relationship, and to control power struggles in this situation to ensure reciprocated behaviours, in order to capture the market they are after. Here, the same fine wool product manufacturer describes how their cooperation along the chain (between several firms) allows sustainability, decreases power struggles, and makes strategic sense:

“The risk in this business, and the business model of collaboration that we use, is a social one. We all have to put a lot of trust in each other, follow-through on agreements, clarify all the details, and basically, stay in touch with each other. When we work together, everyone wins the trappings and we know we'll survive the next quarter, the next year, the next decade. No one is more important than anyone else here, no one more powerful, or more forgivable.”INTSC10

Ensuring these long-term relationships continue in an uncertain market seemed more important in the cooperative (fine wool) chain respondents. Strategic behaviour or power was an important consideration in the formation and maintenance of supply chain relationships in the competitive chain. The interviewees were also able to indicate how these differences arose in the industry;

“It's been a kind of process of osmosis up until the 60's or 70's; life was pretty comfortable for everyone involved, especially the farmers. But then the world suddenly seemed to go mad and no-one could put their finger on why. I think you could say that more trading on growth and development and more trading of wool as a commodity instead of selling to an end user happened. Wool got traded as stock before it even left the shores of New Zealand, and our competitors would buy stock from us to fill their own orders. That shouldn't have happened. And then everything went offshore, more agents spring up in places like Nepal and India, wool got bought in containers, then broken up and sold off in pieces. A lot more people were wheeling and dealing in wool as a commodity. You kind of lose sight of it, you know, you lose sight – the average wool buyer in the middle that should have known didn't know where the wool was going anymore – and frankly didn't care as long as they kept surviving. The farmers would ask the buyers; “What do you want and we can provide it, as long as we still get the price.” And the buyers would ask the same thing up the chain, and so on... But the connections weren't there anymore. I'm just supplying someone else in the chain. And so we went from a vertically integrated mill where raw wool went in the bottom and all the processing was pretty much done and the finished product came out the other end and you knew all the details, and so you'd have a real empathy with that. You worked that meal. But now, you have to have a plan A, a plan B, and plan

Z in case anything goes wrong or anyone doesn't hold up their end of the chain." INTSC14

Respondents clarified that modern opportunistic chain behaviours arose due to an increase in demand in the global market, an increase in the number and location of international players in that market, and a decreased ability to track the wool through people from farm gate to end product. In addition, one respondent perceived that the loss of the 'personal' part of the industry, which was due to increased technology allowing for wool to be traded as a commodity, led inadvertently to information withholding (a theme further explored later in this chapter) in the chain. The resulting powerlessness of the middle levels of the chain, and poor information flow to the growers, might also indicate how the modern chains evolved, with buying members ensuring they had several back-up plans in place 'just in case.' In this way, trust and power became commodities themselves.

Respondents also indicated how power changes within the chain when uncertainty and risk are involved:

"Auctions are fickle things. We never can really know where the trends are going to go when the season starts, but we usually try and get an indication from buyers of what they are looking for. But, when the season starts and we do not see the prices meeting reserves, we feel under pressure from both sides. The farmers, um, they have the option of relaxing their reserve, but they are keen to press us for, ah, the reserve. The buyers, they can mix and match to build their orders, but some prefer now to look for leads for direct marketing. When those two ends communicate, they can work to each others' advantage. Yeah, direct marketing can work out, but it's risky for the farmer too. But in the later part of the season, the auctions become more demanding as buyers try and fill orders expecting a certain quality and quantity to be there, and that's better for um, the growers, but for the buyers there just isn't the stock. At the same time, growers get anxious because buyers may have looked elsewhere in any season. It's a risk to sell early because the prices are lower, but it's a risk to sell later because the buyers have an eye to other sources too. Over one season a grower could feel in control, then have the carpet pulled out from under them if the buyers jump ship." INTSC2

When asked how they navigate pressures to survive in the long-term, one competitive supply chain member replied:

"It's survival of the most cunning; re-inventing, finding solutions, using different directions to get the supply you need. We can't constrict ourselves to

sourcing from one area alone. That means we have to be opportunistic even if personally we want to build relationships and trust each other.” INTSC12

This was in contrast to what members of cooperative chains indicated. They generally replied that by working together, power struggles are diminished and more energy can be put towards ensuring good decision making, cooperation, and goal attainment.

The strategies of firms joining dyads and cooperative chains thus have shifted from using power and market factors to obtain required supplies, to strategizing together in order to achieve chain goals (as opposed to an individual firm’s goals). An entity who is constrained by strategic forces, for example, relying on one or few suppliers without having built a relationship with one, leaves themselves vulnerable. As the competitive chain members have indicated, they do not concentrate on building relationships, since they instead value the ability to manoeuvre to obtain their needs.

That reinforces powerlessness and increases the belief that another aspect of the chain has control. Here a respondent explains the struggle with perceived helplessness:

“People struggle in the wool industry, not with the products and supply and demand, there are up and down years, like any businesses, but they struggle with the feeling that they can’t do anything about their position when they can. But it means trusting others and building relationships with their competitors to work on the next level up the chain, otherwise they just become another cog in the wheel.” INTS3

Enacting the various collaborative behaviours within a supply chain takes considerable effort in the form of managerial time, and resources to achieve integration, and if these efforts are not to be wasted, then maintaining the relationship is a further important goal for the buyer. Says one buyer;

“Above and beyond all the innovations for wool products, the colourfastness, the micron sizing, all the little details and value-added steps, the most important innovation has been the introduction of cooperation in the pipeline. If you really work at the relationship, then your survival in the industry will be guaranteed because you’ll look out for each other, instead of undercut each other. We know that there’ll never be 100% trust, farmers, and you have to understand their predicaments over the years, they’ll always have tricks up their sleeves, sell a little bit here and there, you know? But in the end, if they deliver what you ask, and we deliver what they ask, it’s good overall because year to year, and they don’t just think about today, they’ll see the value in

staying on. We put effort into it; we visit them, tell'em everything we know so they don't go trying to find out market prices or thinking we have fudged numbers and holding it over us. Without them, we wouldn't be here." INTS6

Building a chain that has each entity valuing that cooperative strategy above all else should result in fewer power struggles, and better strategic decision making. Relational and integrated supply chains have the benefit of improved coordination, and reduced power asymmetry.

One other strategic option that was mentioned by the interviewees was the acquiring of, or merging with, competing entities in order to reduce uncertainty and reduce the feeling of powerlessness.

"We could merge with [company name]. A few years back I think there was mention of some due diligence, um... [pauses], but that, um, would be a powerful move. We would hold quite a proportion of the woven's market here. Well, it happens in tele-communications all the time, and rightly so. They know how competitors can creep into a market." INTSC7

"Smaller businesses don't tend to last very long in this industry. They get bought out, or are eaten up by the bigger firms, like us all the time. It's really tough to get established when you're starting out. They [new companies] have to have something really special to make it longer than a few years. We keep an eye on 'em too." INTSC10

Thus, the strategic action of eliminating competitors was perceived as a way of ensuring one entity's positioning in a chain. Buying out another business may also be a way of taking on complementary skills (the 'something really special') that would contribute to a firm's success. That gives a company flexibility to seek out other markets and re-invent themselves.

Having long-term persistence in a market was discussed as beneficial for a company. It was interesting that one reason for this was because of the relationships that ensued. Having developed long-term relationships through having a long existence in the industry meant increased confidence and increased dominance of a specific market. Transactional relationships had developed into trusted partnerships which decreased feelings of vulnerability among those firms. It also affected the strategies used by those firms when managing chain dilemmas.

The power struggles experienced by members of supply chains are very similar to games and economic approaches to decision making that have been widely studied. The following section will explore the parallels between the varied economic approaches and dilemmas and the behaviours identified in the wool supply chain as described by the participants.

6.6 Theme Four: Chain Members' Strategy and Economic Approaches

“Our success often depends on how our competitors are doing. Sometimes we can adjust our prices to reclaim some lost business, but there is a pendulum from season to season depending on what their prices are set at, and what value-added steps you promote.” INTSC5

In the interviews with supply chain members, there were indications of oscillations with competitive strategies where the supply chain entities react according to what other entities do, and their success is also reliant on the choices of other ‘players’. When supply chain members were asked about strategies to ensure long term survival in the industry, and what they would like to see done differently in the industry, there were mixed replies:

“Well, the company could ‘divide and conquer;’ break up into individual parts, but I’d find it hard to believe if the individual units were able to last. I don’t think they would be around as separate companies for very long. They would fall prey to the savvy out there who know that game better.” INTSC10

“It would be nice to know the cards before they get played. I’d like to know what the buyers are looking for so I can get the right specs at auction and the batches lined up for after. We’d give a little more information to the farmers then too, so they can set their reserves. I think they’d be fair about it. They’re not the kind that bites the hand.” INTSC1

The first quotation reveals a situation in which the respondent perceives that through cooperation, the entity is provided with protection from ‘savvy’ predators from the business world. By cooperating, it appears that these units do not have to navigate the ‘game.’

These quotations also reveal strategies where the success of an entity in the chain hinges on the actions of another entity, in repeated cycles (as demonstrated by the second quotation on buyers at auctions, and by the commitment to remain unified in the first

example). The second quotation also reveals that given the opportunity this respondent would share more information with farmers, in order to give them more power in setting reserves. This is interesting because it uncovers a situation where the respondent is aware of unfairness in the chain, and where information withholding is used as a strategy, in more than one interacting level in the chain, even though the sharing of the information could help solve a social dilemma. It also indicates that information is perceived as ‘purposely’ being withheld from farmers – something the farmers perceived was occurring.

This dilemma parallels a prisoner’s dilemma; a conflict game between personal and collective interests where defection is personally rewarding, yet, if everyone in a group makes the same choices or commitments, cooperation would be more collectively rewarding (Rapoport, 1965; Kerr & Park, 2003). It would appear that this dilemma is happening on several levels in the opportunistic chain; the level of the farmers, and at auctions and exporting. The profit maximization goal of the buyers and retailers down the line favour maintaining the information imbalance. However, in unifying, the entities may be afforded some protection. Research also indicates that the larger a group of individuals, who find themselves in a potential social dilemma situation, the more difficult it is to avoid defections and the subsequent collapse of the group’s best interest (Dugatkin, 1997). Thus, the longer and more competitive the supply chain grows, the more players there are to contend with, and more pressure to survive against many competitors.

“I’ve noticed that we continue to set ourselves up against each other. I mean, we end up making the same products down the line, but right here, right now, we want to outdo each other, undercut prices, bring them back up, and even push each other out altogether. Worrisome, isn’t it?” INTSC8

Business competition often involves what is known as the “tit for tat” strategy (Rapoport, 1967). Businesses begin by "playing" cooperatively and setting their prices with reasonable profit margins. An example is evident from the last quotation; “...undercut prices, bring them back up...” INTSC6. This creates a game situation where each competitor must respond to actions and reactions of the competition. Should the group work together, and

cooperate, a much better collective result would ensue (either for the total supply chain, or if the members at each level who worked at the moment compete with each other, would work together, then the result would be better for that level). However, since the risk of one member defecting seems so real given past behaviours in this industry, members of the group instead respond to each other instead of organizing cooperative behaviours. After each response, they continue by matching their competitors' last move. For example, a company might offer discounts if their competitors offer discounts and added value if their competitors offer added value. Unlike the example, however, businesses hope that their competitors will realize they cannot "win" unless they "cooperate" before they begin to suffer (hence, raising prices back up again after a "gauging exercise").

What is created is not a truly cooperative situation that would solve the prisoner's dilemma, but instead, a pseudo-cooperative situation where forced responses to temporally-dependent leading companies create movements by other companies left almost powerless after a play of varied business strategies. This also backs up the notion of withholding information or selectively releasing some information in the hopes of coercing opponents to do the same, in order to increase competitive positioning. The falsely cooperative atmosphere is described by a manufacturer as follows;

“When [an exporting company] changes their orders, we have a couple of options; we can do nothing, just keep making our carpets and hoping the wool will keep coming. We can stop processing and wait till we hear our next order, which costs us time and money that we cannot afford. Or we can look elsewhere, at our risk and expense. But really we can't do anything but wait to hear what they do next, then figure out what to do.” INTSC7

Even though the company does have options, their perception is that they cannot 'defect' and seek out the other options because of the apparent power held in the producing company. This translates to a feeling of dependence on a dictating company instead of actual cooperation with their supplier. The other result is that the manufacturer is also forced to discover what its competitors are doing to ensure that they remain competitive at their level in the chain. This is a small illustration of the overall dilemma; should the other manufacturers

cooperate, then their overall profits could improve and their powerlessness could be alleviated against their providers, or buyers. Otherwise, the entire chain should cooperate and share information to gain an advantage against other 'real' competitors such as synthetic fibres. But, the ever-present risk of one defector ruining the benefits for all perpetuates the competitive atmosphere. This is not only true for the entire supply chain, but also each level when there are attempts to create a cooperative group. One interviewee shed some historic light on the situation;

“It’s a risky proposition, you know? They don’t want to have to work together because they’ve been screwed in the past... ‘rather work alone. A lot of the different exporters and buyers used to be one, you know? One company...but because something happened, someone didn’t agree with how things were goin’ or thought they could’ve done it better, they broke off.” INTSC3

Given the chronically declining profits in most of the wool section (see Chapter Two: The Context of the Problem, Section 2.2) it would seem logical for members of each level in the chain to at least consider different strategies in order to rebuild. One solution could be to move away from the competitive game model that is in play now, to more of a cooperative one (such as with the fine wools).

The prisoner's dilemma suggests that businesses may profit more from being less competitive (in terms of price among competing firms at least) and less from being more competitive (which leaves them vulnerable and powerless). This is contrary to what the interviewees have described is their current strategy, but agrees with the actual trends in the wool market.

“We have a lot of debt adding up as an industry, well. For a matter of fact, as a country too, and it would seem wrong for us to drop our prices, but in the long-term it’s probably the right answer. We have to work together, and I think a lot of the farmers realize that too, but it’s hard to let go of the fact that the debt is piling up and the cash is not flowing in right now and no one can predict when or if it will, but I think that’s the answer. We can be competitive again, by being cooperative, if everyone lets their guard down.” INTSC8

The question though remains, who makes the first strategic move? Is it up to the farmers to press up the chain and make suggestions, or should it involve a combined effort

along the entire chain? Game theory would suggest that in coordination games, there can be a variety of equilibria reached; payoff-dominant equilibrium can be reached when two or more players cooperate to achieve a fair end state where all are rewarded. Alternatively, a risk-dominant equilibrium can be reached when one or more entities involve defect and achieve a reward, but no others are rewarded. Game theory research has shown that unless players in these games can communicate freely, they almost invariably end up playing the risk-dominant instead of the payoff-dominant strategies ending unfairly (Cooper et al, 1990; Van Huyck, Battalia, & Beil, 1990; Gachter, 2004). Communication and strategizing together seems to be key to coordinating multiple levels of a chain.

6.7 Theme Five: Integration and Unification Within the Chain; is the Answer as Simple as Cooperating and Sharing Information?

Various members of the supply chain indicated that the power seems to lie with farmers or retailers, but rarely with themselves. I have already discussed how with the forces of globalization, the business boundaries are being broken down by the capacity of new information technology and communication methods to transcend countries and trading opportunities. Business boundaries, and their associated social roles, and behaviours, are more open and fluid than they once were. Yet, these businesses still reflect on themselves as individuals operating as independent units among a group of competitors. When asked about how they communicate with farmers and other entities in the chain, there was a uniformity in the responses from members of uncoordinated chains.

“Hmm... communicate? We just place our orders, and ship our products. The times we need to talk to someone it is because there has been a mistake or an oversight. It is all done electronically now. There is no need for communication beyond that, beyond sending the order numbers. We never need to communicate with the growers, they are so far down the line from us.”
INTSC4

“Trade shows are one way of keeping up with new developments, but for what we do, there is not the need to talk to anyone else. I think it would confuse

things if we were talking to sources other than those we directly order from.”
INTSC9

“We talk to the farmers to let them know how their clip is doing relative to the rest at auction. We arrange testing, and do some of the classing internally. We compile the statistics from auctions. We also compile the weekly and monthly market reports. All of this information is made available to our clients [farmers]. The problem isn’t us communicating with farmers, it’s other members of the chain communicating with us. But they can’t right? Or the farmers will know too much and set the reserves high, and that means profit loss down the line, or exporters and operators looking elsewhere.” INTSC1

As for the farmers, their contact with global networks is also limited by their need to be on the farm conducting their business in order to provide the raw supply for the network of other businesses that rely on them. Hence, they may be perceived as being in positions of power through that provision of supply. However, it does not necessarily place them in the best position to initiate and maintain relationships further along the chain that would help ensure the raw supply made it to market in an effective and efficient way; cooperatively and with open communication.

It has been suggested that the “network enterprise” (Castells, 1996) is the organizational form best suited to a global, information economy, where survival depends on being a part of a network, decentralizing the control of the network, and maintaining these relationships, across diverse cultural, economic, and institutional contexts. The members of the cooperative supply chains and the representatives that I interviewed described these characteristics precisely:

“We are organized in how we go about making our products because it means that the materials, the orders, the research and development, and the trends we’re following are all predictable and manageable. Everyone’s involved in the decision making and takes responsibility for their part of the process, and because of that problems get solved quickly and creatively, instead of being burdened by bureaucracy and paperwork, lost memos and emails. There’s no blame here because there’s no one in particular to blame, no CEO or CFO for that matter, just everyone carrying their own load and letting each other know precisely where we’re at. We think of ourselves as a safety net for ourselves.”
INTSC11

“The farmers we talk to that are involved with [fine wool company name] and [cooperative company name] have a leg-up on the others when it comes to knowing where they will be a few years from now. Maybe it’s because they

know exactly where their wool goes and they are more involved in the whole process? Or because of that pride, they are interested in becoming more knowledgeable about the business world and they have a better understanding of how things work? For any reason, they are less threatened when there's a downturn like we're havin' now. We don't have to make calls on their behalf. They make them themselves." INTSC13

The encouragement of cooperation and coordination among the wool industry, as described by the members of the supply chain themselves, is certainly a starting block towards increasing the sustainability of the industry, and the re-establishment of a community instinct among wool growers and the wool market around the world. The problem can be cast as a social psychological one; where decision making strategies need to be described, and improved along the entire chain, with a combined effort towards not making fundamental judgment errors when faced with uncertain and complex situations.

6.8 Summary of the Results from Supply Chain Member Interviews

This chapter has presented the finding of the interviews with various members of the supply chains delivering New Zealand wool to the markets. Respondents have described five major influences on their decision making. These included considerations of the ways of negotiating the changes in their decision environments, wanting to maintain personal identities while also being cognizant of social identities, using strategic positioning to feel powerful, navigating economic games with the other 'players' in the chains, and making decisions in the direction of chain unification.

In a way similar to the farmers, the environment in which supply chain decision makers find themselves had a lot to do with how they approached supply chain decisions and relationships. Members of the opportunistic chains were greatly influenced by the actions of other entities, and had the perception that games were a typical part of the chains they belonged to. In the cooperative chains, however, members concentrated their efforts on making unified decisions, and appeared to have no regard for influencing the actions of other

entities or chains, except to create alignment and build relationships. They were not as focused on their competitors as the competitive chain members were. The cooperative chain members instead focused their energy on performing in synchrony. This required a long term focus and commitment from members which removed the short term gains that game playing might bring. All the members of the cooperative chain, including farmers, marketing directors, and retailers influence each other through their commitment to the product they are creating and selling. By working to build their cohesiveness through open and regular communication, these entities ensure all the members of the chain are united.

This revealed only one of several ways that the members of the supply chain influenced the way farmers made decisions on their farms. The following Analysis chapter will look at three other such situations, and attempt to describe and provide alternatives to how to solve the social psychological problem of working as a group across many boundaries, using parallels between economic game approaches, and evolutionary group selection theories.

Chapter 7: Three Decisions that Bind or Unwind

It is better to debate a question without settling it than to settle it without debate.
-- Joseph Joubert

7.1 Introduction to Three Key Decision Journeys

While analyzing the transcripts of my study participants, three key decision making situations emerged that illustrated the multi-level and complex nature of the interactions occurring for each decision process. These decision situations were partly chosen because they speak to two subsets of the first objective of this project; namely, how groups (the entities within the wool supply chain) influence the decision making of individuals (the farmers), and how the contexts (including intangible components such as the forces of globalization) influence relationships among decision makers. These real-life scenarios also reveal the complexity of decision making processes for individuals and groups involved in the global economic arena. The first decision I will discuss concerns the farmers who were contemplating leaving the industry. The second and third decisions include choices of coordinating wool conduits to markets, and wool manufacturers' sourcing of products and selling their value-added products to new entities. The latter two examples involve complex interactions and players from several stages in the supply chain, and hence will be described after I analyze the influences and pressures on farmers deciding whether or not to remain in the industry.

7.2 Revisiting the Review of Farmer Decision Making

As discussed in the results (see Chapter Five), the farmers I interviewed described two broad methods of coming to decisions; one, intuitively, appearing to rely on 'gut feelings' and internally-motivated factors to arrive at the perceived 'right' decision or, two, rational-

analytically, presenting themselves as examining the decision systematically by using methods that he/she has found to minimize confusion, and further describing themselves as logically or systematically selecting one option from a group of perceived options, often discovered through external sources. In addition to cognitively leaning in the direction of ‘intuitive’ or ‘rational-analytical’ (See Chapter Five: Results of Farmer Interviews, Section 5.4 and 5.5), farmers also navigated perceived emotional pressures from many sources. Thus the actual decision making that occurs comes across as a process, a continuous contemplation of inputs, options, and judgment of information sources, as well as reflection post-decision on the part of the individual. The process also occurs within the context of groups (e.g., families, cooperatives, businesses, and supply chain entities) – sometimes referred to as ‘decision making units’ (DMUs see Chapter Three, Literature Review, Section 3.2) in the literature - who make their unique contributions to the social decision making process, but usually come to a decision together. The intuitive farmers will now be indicated with an “I” at the end of their coding, while rational-analytical farmers will be indicated with an ‘R.’”

7.3 Should I Stay or Should I Go?

In the case of deciding to remain in the industry, pressures (inputs) were identified as coming from at least four - though often more - sources prior to the farmers’ own cognitive and affective psychological processing. These sources included: the media (television, newspapers, agricultural websites, periodicals, business reports, or technical reports released by agricultural or environmental research and development companies); the farmers immediate circle of friends, sometimes including other farmers; the farmer’s family (present day and past members in an inter-generational sense); any farming group or cooperative they belonged to and, explicitly in three cases, other entities within the chain they belonged to. The following excerpts illustrate the demands that other people and groups, and media can make on a farmer navigating the decision of remaining in the sheep/wool growing industry (or

converting to dairy, other stock, service farming, crop farming, selling land, changing their career, or retiring).

7.3.1 Media Influences

Farmers and their families indicated several ways in which the media affected their decisions to remain in the industry (please refer to Chapter Five: Results of Farmer Interviews Section 5.4 for an account of the situation in the varied agribusiness sectors in New Zealand during the study period in order to help position the decision making pressures); these have included the accounts of successful trends in other agribusinesses, the misrepresentation of information on the state of the wool industry over longer periods of time and over a global market, the selection of sources of information for media articles in relation to agribusiness, and the framing of articles. First, I will examine how trends in other agricultural fields and the media presentation of those trends influenced the decision making of the study participants.

“Every day I read the forecasted payout numbers in the paper. There’s good news in it for a lot of farmers, tucked in there in the business section with all the doom and gloom and stocks down and the like. ‘Dairy’s going to pay well this year.’ ‘Predicted record year for payouts and volume’, you know? How can you say no to that? I just keep thinkin’ that there’s a reason it’s reported in the business section not lifestyles or other parts. Like the other stocks, there’s going to be the downs soon too. Can’t just keep going up, can it? But, it is tempting, the way it’s put, all rosy.” INTF3-I

“I read the reports from [National Representative Body] regularly. They send them by email. They’re just a lot of numbers for the most part, and notes on who got promotions and who left the company. I feel like sometimes they don’t tell us everything. I mean, they talk about having meetings and give attendance records and reports about what their goals are for the next year or so, but I still feel like so much goes on behind the scenes that they don’t tell us about. Makes me want to be there in person, but I can’t because I’m here on the farm. And then I only hear parts about what happened from others.” INTF13-I

“We read about the conversion numbers in the [local paper] and talked about it, I guess we mulled it over for a couple of months, him more than me I think. He just kept seeing the articles, the success stories, the numbers reported in the news. Everyone just talked about how it was the next step for us, that sheep-

meat was over now. The papers even talked about how Asia was importing more and more dairy as their middle class grew and that was convincing, you know, being middle class ourselves. All you ever read about for wool was ‘when would the bottom hit?’ and ‘No future’” INTFIS-R

Within the first account, external pressures are found in the form of numbered payouts reported in the media, the implication that industries other than dairy are full of “doom and gloom,” and the reference to the descriptions of dairy successes as “tempting” and “all rosy.” Of note is the farmer’s indication that although the descriptions seem positive, the reports are found in the business section, not the ‘lifestyle’ section as expected, and like other stocks and markets, the farmer is wary or almost hopeful that the dairy industry will have its ‘down time’. The cynical voice perhaps reflects two internal processes that were mentioned by other participants; one an envy of the success of a farming system doing well when his was not, and two, a high degree of experience in the farming sector indicating a knowledge that there are both positive and negative times over a long career, hence a questioning of the newspaper reports’ accuracy in representation of the state of the industry. This ‘intuitive’ and highly experienced farmer illustrates his lack of belief in the accuracy of the newspaper through his cynicism and mistrust. This farmer is cautious in using the media reports to help his decision making.

One question arising from this instance and others with experienced farmers is whether the lack of trust in the media created the caution and cynicism, or conversely, whether the cautious stoicism of intuitive farmers generates a discourse of a lack of trust of the laudations of the media? In this instance, the media acts as a further compounding variable in the farmer’s decision processes; first alerting attention to a successful trend that the farmer is not involved in, then continually promoting that trend. Second, the farmer believes that the newspaper gives a skewed account of the actual success thereby influencing his decision to (dis) trust the newspaper as an information source. Third, the framing of the information (section of newspaper, tempting and promising wording) may have an influence on the farmer’s perceived success of his/her own farm in comparison, causing reflection, regret, or

other internally located affective states. Farmers indicated that the 'Business' and 'National' sections of the newspapers seemed more serious in nature and were written in more sombre tones than those articles written for the 'Lifestyle' section, where articles are written as human interest pieces rather than empirical reports of the economy.

The national representative body was the information source for the reporting mentioned in the second account. An interesting feature of this statement is that the farmer perceives that the reports are incomplete. The perception reflects uncertainty on three levels: first, there may be uncertainty or an inaccurate representation given from the representative body itself as to how the industry is faring (though speculative this might be what the farmer perceives about the representative body); second, uncertainty as to how much information to share with farmers; and, third, uncertainty from the farmers about the honesty and thoroughness of their own representative body.

Additional external sources of information identified by this farmer were 'others,' meaning other farmers or people who attended the meetings. The farmer reflected on not gaining complete information, only 'parts' from them as well. This source of multiple uncertainties complicates the decision making of farmers in the industry. Already faced with situations of complex and variable economic reporting, unpredictable weather and resultant stock development, and skewed media reports of competing industries (as perceived and revealed by the farmers), questions arise as to how the farmer catalogues and uses the information he/she has in order to uncover a preferred choice in the given circumstances.

The similarity between the first two quotations is that there seems to be either a suspicion on the part of the farmers (both intuitively-based decision makers) of the accuracy in the reporting of the information from the sources, or a miscalculation of the probability of an event (i.e., upturn in the industry). The suspicion was found amongst most intuitive farmers' discussion of information sources. This brings us to a key social psychological influence that moves through the chain.

7.3.2 Uncertainty, complexity, suspicion and probabilities moving through the chain

There is a key difference between uncertainty and suspicion in decision making.

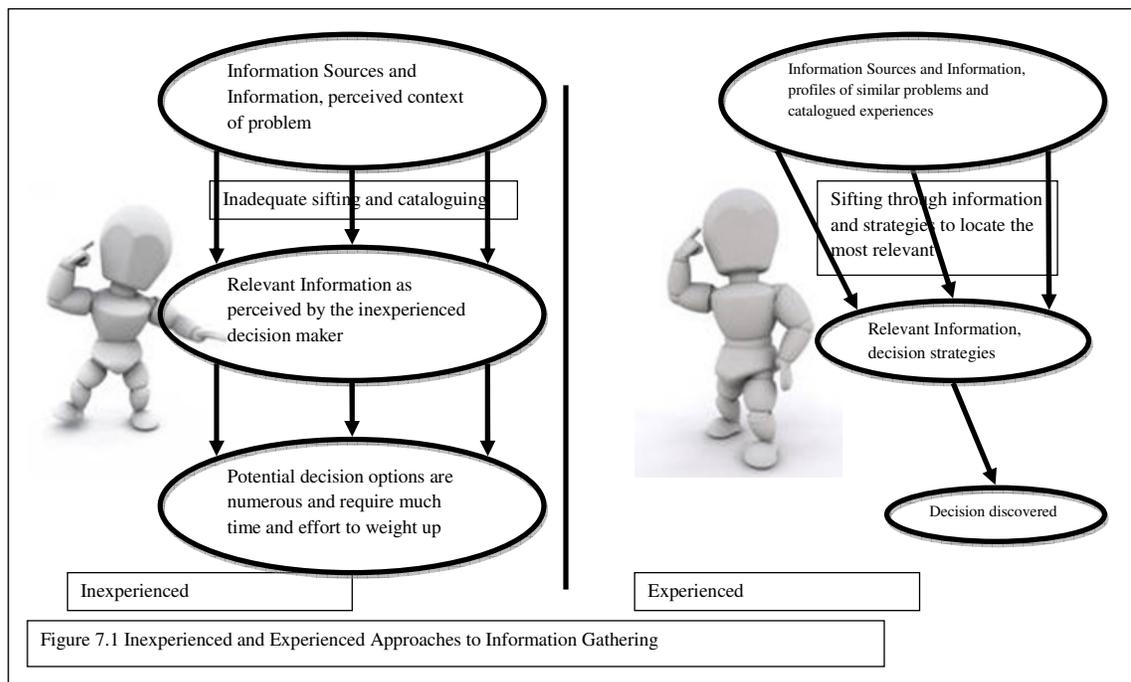
Uncertainty (a lack of certainty, a state of having limited knowledge where it is impossible to exactly describe an existing state or future outcome, or when there are more than one potential outcome to a problem) has no implied emotive component. Instead, uncertain situations beg for increased information seeking, and judging probabilities from decision makers.

Uncertainty can be differentiated from unrecognized *complexity*, in that the latter refers to a number of elements in a problem, and the extent to which they are interrelated. Complex decisions can be overcome using information gathering and other techniques in order to minimize the unknown variables, but uncertainty cannot be overcome in that way. I will turn to the examination of how complexity and uncertainty affected the decision makers in Section 7.3.3 below, but for now, I will concentrate on the emotive components of uncertainty and ‘suspicion’.

Feelings of uncertainty among the respondents seemed to be described in a tone reflecting suspicion, or as an uneasiness that participants had to deal with in order to come to a decision. That suspicion was sometimes targeted towards an information source, a particular person, or a level of the supply chain removed from the participants. I believe the community ‘instinct’ worked to move feelings of suspicion or uncertainty away from people in the context in which the respondent was most familiar, and to a context where respondents did not have much experience (i.e., farmers were suspicious of retailers, and *vice versa*). In decision theory there is also the notion of higher-order probabilities (i.e., the probability that a probability is a particular value). Though suspicion could be affected systematically by the nature of interactions with others (for example, experiencing a cooperative act from another person can reduce one’s suspicion toward them, or their ‘group’), other perceived sources of unreliability for a given probability cannot.

I have detailed the two different approaches to information gathering and decision strategies below in Figure 7.1. In short, experienced farmers are able to ‘sift’ (Martin, personal communication, 2009) through the information, sources, and their own experiences in order to uncover what is relevant for a particular decision (in terms of relevant information, and relevant style of making a decision). Inexperienced farmers had difficulty narrowing information, sources, and decision processes down to an acceptable one for a particular decision. This could have been due to both their inexperience with the situations, and their inexperience with dealing with ‘suspicions’ (see below) or probabilities.

Figure 7.1 Inexperienced and Experienced Approaches to Information Gathering



Another potential analysis of this situation is that although the decision seems to be located within an uncertain situation, the farmer may be thinking about the decision as a process, one that is ‘unwindable.’ In that way, instead of using resources to find more information, the farmer may be able to ‘live with’ a decision that appears uncertain if it is low risk and can absorb downturns, or if it is fairly easy to unwind that decision if it proves to be a mistake. Thus, a decision that may appear to be highly risky and poorly informed, may

actually serve as an exploration of the uncertainty and complexity prior to coming to an impasse that does not have withdrawal as an option.

A concept related to uncertainty is suspicion. Suspicion differs from uncertainty in that it is an *emotional feeling* involving notions of (unfulfilled) duties or obligations to be honest. When suspicious, a person focuses their cognitive energy on the occurrence of an event that confirms whether another person has been forthright in giving information. A disconfirmation leads to behaviour from the victim which is intended to reduce negative consequences of being duped, and can result in future behavioural changes in order to avoid a repeat of the situation. In other words, having a suspicion means that one has an impression that something is being withheld from one purposefully which will result in a non-ideal circumstance. There is an implied fear component to suspicion; that is, the fear that the suspicion and resulting behaviour/choice will not, or did not avoid the consequence of a poor decision. Suspicion concerns the concealment of information, whereas uncertainty does not imply concealment, but only a lack of information about a future event.

The tone of the comments from the first two farmers gives the impression of suspicion, of the farmers knowing that something is being withheld. The tone of the comments from the third farmer (one whose decision making was typically rational-analytical) reflects an uncertainty; that the information about globally successful trends is there to be discovered, not concealed. The question arises as to whether it is advantageous to be suspicious, or be attentive to one's intuition regarding suspicion, or whether simply to seek to fill information gaps. The question also arises on which farmers have accurate intuitions and suspicions, and when they have misread or been poor cataloguers of available information. In this way, suspicious farmers' catalogue information related to how trustable the source of information is, rather than simply cataloguing information as an input to a decision.

7.3.3 How do Farmers Cope with Uncertainty, Complexity and Risk?

People often have a difficult time assessing and estimating risk and uncertainty appropriately, since there are variables that just cannot be known (e.g., exactly when an earthquake is going to happen along a particular fault). Rational-analytical decision makers have difficulty recognizing when problems involve risk and uncertainty, rather than complexity and tend to treat the problems in the same way (using information gathering as a main strategy). Intuitive farmers are aware of when a problem involves uncertainty (though they did not specifically use the word to label given situations), and they tend to rely on gut feelings, but are also adept at recognizing complexity and seeking information, from sources they might become suspicious of if they believe the sources have the information that would help them solve a complex problem. Intuitive farmers also appear better equipped to manage suspicions, or avoid situations where suspicion could arise. It could be that their experience with decision making amidst varied social memberships and structures has helped them develop a specialized 'lens' through which to examine interactions and their own internal judgments about those interactions with an eye to revealing whether the suspicion is warranted.

Through their cataloguing of information needs for decisions, trustworthiness of sources, and their ability to remain attuned to cues in their environment, intuitive farmers often are better able to decipher whether they have adequate information to solve a dilemma, or when they have an information deficit either through their own oversight, or through incomplete sharing from another agent. They seem to be better at sifting through information to get at the required details. Again, they did not list complex situations using the specific terminology, but instead tended to explain key parts of decision where they knew (intuitively) that there was information they needed to find, or that the decision was beyond their current abilities (subsequently taking actions to solve the gaps).

Uncertainty and suspicion are related, but differ in tone (emotion). Farmers who are intuitively guided should be more likely to recognize a motivated response of suspicion (in themselves and others) when they are faced with incomplete information and recognize it, whereas a mechanistic rational-analytical farmer might simply treat a problem as uncertain without questioning an affective motivation. This was the case with the intuitive farmers I interviewed. It could also be the case that inexperienced farmers have difficulty resolving probabilities and higher-order probabilities.

“All you really know is your own farm, your stock, your weather, your feelings. You can’t depend on much information from anywhere else. It changes from week-to-week or month-to-month anyway. You get led astray by too much junk mail, you know?(tonal inflection, not a question to the interviewer)” INTF3-I

The suspicion was also followed in most instances with a concern for four things. First is the issue of where to seek accurate information if the main media sources and representative reporting mechanisms do not select and present neutral material. Second, there is uncertainty as to who to believe (i.e., their own representative bodies, circles of friends who attended meetings themselves or farmer’s own beliefs about information and sources). This belies a suspicion of one’s own feelings that the intuitive farmers did not portray. Third, these farmers were concerned with how much information to share with others should suspicion and trust play into his/her decision making? Fourth, there is the question of at what period in the decision making cycle does a farmer stop looking for exogenous information and begin to focus on their own accumulated resources, feelings, and experience?

“At some point you have to say ‘enough is enough’. Trust what you know and what you can see.” INTF15-I

“I get confused sometimes...read into it too much. I guess I thought I knew where to turn to, and who to call for some help, but then I felt like I was asking too much from others and depending on the littlest details like they really were vital to the farm surviving. It makes deciding on whether to stay or get out too chaotic. When I just stop thinking about it, things fall into place.” INTF16-R

These statements support the process found by Eysenck and Keane (1990) where farmers conduct at least four stages of decision research prior to choosing their final direction;

observing, learning, recording, and responding. The intuitive farmers also gave indications of their desire to avoid anxiety in decision making, which is a criterion of non-rational behaviour. Finally, these statements also indicate that the decision making process does not stop once a decision to remain in, or leave, the industry is made. Aspects of regret and reflection can be found in the already cited statement (see above) when the farmer says, "...How can you say no to that..." In that statement, the farmer reflects on his own decision to remain, amongst skewed media reports for a farming trend, and negative media judgment of his choice of stock. Whether this reflection is a question of commitment to their trade, or the impact of exogenous pressures (from the media, representative bodies, and other farmers), is not clear, but lends support to the decision making occurring as a long-term process, rather than at a single discrete point in time for each farmer. The thinking and re-thinking involved in this decision process might also indicate a desire to learn and become more adaptable in the decision making itself, and in judging sources of information.

One final detail on the themes garnered about uncertainty, risk, complexity, and suspicion should be noted. Though farmers did describe their situations and decision scenarios in very clear ways, they did not use the terms in the meticulous ways that are expected and strictly adhered to in academic fields. Instead, they described the situations and their feelings about them, but did not categorize one that would be fastidiously complex as dissimilar to an 'uncertain' one; rather, the decisions were 'tough life lessons' (or other vivid descriptors).

7.3.4 Trust and Cohesion in Making Decisions as a Group

The third media influence statement came from the wife of a farmer who was also involved in the daily activities and accounting aspects of the farm business. She indicated the role that the local newspaper played in their contemplation of converting to a dairy farm. She lists how the paper described all the success stories in dairy in their area, and the lack of

future for the sheep-meat (and wool) industry. Interestingly, influences of membership and growth in the middle class of Asia are reflected in her consideration of conversion. This normative input to the process of decision making was not unique to this particular couple, but reflective of a perceived camaraderie or sense of belonging established in the dairy industry in New Zealand, lacking in the sheep-meat and wool industry.

“It’s hard to keep at it now, you know? The solid family we once had, the family of sheep farmers, it’s gone, even though we paved the way for everything else down here. No more band of brothers. Just look at [national farmer organization], they’re all dairy now. There’s no way we could get that back in sheep-beef farming.” INTF10-I

Issues of trust also arise due to the perceived uncertainties and belonging issues. In cohesive groups faced with a common threat, trust among members would mean that there is information sharing between them and combined suspicion of outside pressures (due to the majority heuristic).

“In the end you have to take what you know yourself, and use whatever other information you get with caution. It’d be nice to know that everything you hear or read is true, but that never happens. I guess you’ll only find out everything once you get out of the industry, but while you’re in it, you never know everything you need to know.” INTF6-R

“I sort of think, well I’ll squeeze a few more dollars out this year and end on a high note, or maybe if I wait longer, because that’s been the pattern in the reports, but then sometimes it works and sometimes it doesn’t. But you look at things, you review things when the time comes and you just yeah you do go with a bit of a gut feeling, knowing. Every year I think if the signs are good, I’ll sell right out and retire, but I don’t know what signs to trust anymore, so I go with my gut and we stay put.” INTF18-R

“Yeah, we stay put, five years now of trying to decide...um-hmmm. [I]wish it was as easy as flipping a coin you know? But, he’s true to himself, and I go along because I’d rather him trust himself, than learn to not trust anyone, anymore.” INTF18S-R ([] researcher).

These comments reflect the farmers’ unease at trusting not only others’ advice and sources of information indicating when they should leave the industry, but also the process of learning to trust their own judgments, knowledge and decision making abilities. There is also evidence that the farmers perceive that they do not know everything they need to know. Nevertheless, they still make decisions while accepting that they are processing only partial

information about the issues they are facing. Perhaps this is why some farmers give hints of reflection and regret at decisions (whether inspired by the media or not).

One family had a detailed discussion when asked why they chose to stay in the sheep/wool industry. It is interesting to note that not only the media, but environmental wastes, local farmers and friends, involvement in a farmer cooperative, and lifestyle factors are also mentioned. There is additional overlaid pressure from the family interests themselves and the member's perceptions gleaned from the media that the farmer must consider in deciding whether to remain on the farm. A farmer is a member of a family group, which comes with its level of cohesiveness, separate from other groups that he/she is a part of. The family group can also include deceased or non-present members (children at university or boarding school were often mentioned in the farmers' statements about consideration for leaving the farm or the industry). The following reflections were given by the farmer, his wife, and their two children.

"I read on the internet that it takes twenty litres of water to make one litre of milk. And that if one farms' milk is bad, they [milk collection and processing firms] have to get rid of all their days' take. I mean, it's not like that with wool or lamb. No wastes. I think Dad's right to hang in there." INTF9D2-I

"But that's not the only reason [child's name] that we are staying here. [Farmer's name] is involved in the 'co-op' and has represented [province] to the national board for the last five years. Other farmers come to him for information or reports or to help them solve problems. Where would they go if we weren't here? And I don't think you [directed at child] would really like living in the city, now would you?" INTF9S-I

"No, no quad-biking there." INTF9D2-I

"I like working with my dad. I never hear about other kids working with their parents on dairy farms. Even the others in my class. They don't get up at four to help with the milking and by the time they get home from school or footie everything's done for the day anyway, except maybe fences and cleaning. I like getting to take time off during mustering and lambing. Mum and I do the daggin' and tailing..." INTF9D1-I

"I guess we do everything as a family. It was a family decision to stay here and keep with the [breed of sheep]. The forecasts are good for this year too. I think if we were expecting or warned about another year of big losses, the missus' and I would really think about what we could do; maybe subdivide? [Looks to spouse who nods]. Seems to be what everyone's doing now

anyway. But, we'd keep at it [sheep farming]. My father would roll over in his grave if we even seriously thought about dairying [laughs]. He hated it from the start. Guess that rubbed off on us too. Personally, I don't want to see New Zealand turned into filthy paddock blocks and streams full of shit the way they say it would if we keep converting the way we have." INTF9-I

"Could you tell me from whom you've heard that?" INTERVIEWER

"The newspapers, Environment [Province], my mates at the A & P Shows...hmmm, even just driving around you can see it." INTF9-I

Thus, the inputs into the decision to remain on the farm consist of factors from many different levels; intra-personally (reflections of national pride, environmental beliefs, lifestyle preferences, past family history and evolution of moral beliefs) mingle with extra-personal influences including family pressures (perhaps the spouses' nod reflects an agreement that they make decision as a family), normative pressures (subdividing, mates' influences), and media pressures in this family's set of potential scenarios in terms of staying on the farm.

Superimposed upon these pressures are family pressures on the individual farmer who described that he ultimately made the decision to stay on the farm when approached by a real estate agent later. Reconciling these pressures seemed based on a balance of inputs from kin, and other personally close sources (e.g., 'mates', and cooperative members), and judgments on the validity and sources of information coming from other domains when put in the position by an external agent to make a decision (or at least he perceived that when the real estate agent approached him, it was a moment when he had to make a decision). Hence, this farmer navigates both psychological and social pressures in coming to this decision, taking the context of the problem from one that could be initially perceived as individually, and internally-based to one that additionally encompasses groups on several levels, and social pressures.

Another interesting theme raised here is the implied presence of other influencing factors in decision making (Allport, 1954). The idea that this farmer's father would "roll over in his grave" should he make a poor decision presents an influence in this family's decision making not previously mentioned in the literature. Additional forces not commonly a part of

everyday farming situations are also present; the pressures of his mates, the newspapers, and the media are part of the farmer's reflections during his decision making. Aspects of the strong social bonds (i.e., "band of brothers"), impressions of others (including the deceased who have an implied presence), and family considerations give strength to the idea of a duty to the 'collective' of sheep farmers, and question whether the individual farmer, or farming family are central to the decisions made in the industry. One farmer even commented on historic flocks that influenced his decisions, some that were prize-worthy at agricultural shows, and others with record lambing percentages or wool volume produced. When facing a decision to remain in the industry, these implied flocks were positive influences, motivating the farmer to continue and try to achieve that 'eminence' again.

Most people would like to live in a society founded on moral principles that would help guide their interactions with their friends, neighbours, and acquaintances, and even with their enemies or competitors. That would mean that suspicion and risk might not remain as primary influences on their decision making and concepts that feed forward to future decision making. However, most individuals also resist constraints on their behaviour that frustrate their attempts to achieve their personal goals and aspirations. In these three examples, none of the farmers decided to convert to dairy, or leave the industry, but their decision seemed driven by intra-individual beliefs, collective pressures, and aversion to the alternatives (suspicions, uncertainty, and emotive stress). In the following two cases, the farmers did leave the industry; one converted to dairying, the other sold his farm altogether and moved on to operate a vineyard.

"Didn't really have much of a choice anymore. Everywhere I looked dairy was making 'golden' milk, they called it, and we were being left behind. No one making or suggesting any bold moves. Just more and more coming out in [local newsletter on rural issues] about losses, levies goin' up, and no organization or structure left in the industry, even if once in a while something good was shown, it was usually just one person doin' it alone. Every man' for themselves, you know? I was tired of readin' about it and trying to put my foot down at our local meetings, but even then they said I was 'old school' or somethin' like that [laughs]. I was getting ready to retire, knew someone who

wanted the land, wanted to start up with a small herd. So I thought about it and suggested we go' it' together until I was ready to leave." INTF17

"Being able to read the signs, yeah, that's something I learned. It was time. We hadn't had good news in years and we saw that wine was starting to boom around the world. Our overheads were goin' up, prices weren't moving, stock numbers down, reports were full of doom and gloom. Wines were being promoted overseas, not just that, but in a much better coordinated way than wool ever was, and we could really see the effort going into it. I mean we emailed friends in [North American Country] and they said yeah, wines from New Zealand are selling and are doing great. Why not? The wine boom was all over the papers and on [TV show of rural issues]. Wool and wine, both make people warm right? But in different ways... There's less squabbling in wine anyway." INTF7

Though the two participants described external pressures as their main reasons for leaving the industry, (i.e. reported downturns in the industry, financial stress, and the 'pull' of a successful competing industry), there are also hints of these farmers having some intra-individual inputs to the decision. The first, says "... I was tired of readin'..." reflecting the internal state of frustration with either his perception of disorganization among the industry, and success to be found elsewhere, suggesting he reached his affective 'tipping point'. Alternatively, he could have been tired of reading skewed media and having to defend his own decision to himself to remain as long as he did (i.e., his *sunk-cost*). The second farmer mentioned "...[he] could really see the effort going into [wine marketing]." The statement suggests cognitive evaluation and processing of what was happening in the industries, beyond just at the farm, or price index levels, not just persuasion by the media and the friends he had consulted. It is interesting to track the variety of influences on the farmer's decisions; their own internal affective states, familial influences, normative influences, media influences, global influences, and comparisons with other industries. The context of the decision to remain on the farm extends beyond the boundaries of the farm.

7.4 Summary of the First Decision Journey

There can be no question that decision making amongst this complement of inter and intra-individual and group processes does not always reflect a purely rational set of decision mechanisms, or a purely naturalistic one, but sometimes instead combines aspects of decision making techniques over temporal and spatial dimensions. Alternatively, the farmer is just doing a post hoc rationalisation of a decision he was not completely comfortable with and so mentioned as large a range of factors as possible in order to satisfy his hope that he made the right choice. In this way, they might be using reflection as a learning tool for improving their decision making, and that reflection feeds into future decisions. It is common to use backwards inductive reasoning to explain a decision because all of the information required is present and can be framed in a way to support one's choice. However, I believe that in uncertain situations, there may be cognitive competition between following one's gut feelings (which tend to be more accurate in purely uncertain situations), and in information seeking in order to try and establish a rational way of solving the dilemma. As described in Chapter Three (Section 3.17), one theory of gut feelings is that they arise due to intuitions born out of experience and through evolved capacities to deal with uncertain environments (Gigerenzer, 2007). I believe that backwards induction arose to satisfy social questions and situations where a farmer feels that they must prove their choices to an audience in order to be accepted into a cohesive group.

But how does one group interact with another that has closely linked elements? In the next section, I will explore the choices made by supply chain members concerning the wool conduit to market, and the relationships between farmers and supply chain members, where both intergroup and interpersonal influences are engaged simultaneously among at least two levels of the supply chain.

7.5 Coordinating the Wool Conduit to Market

Farmers are not the only decision players in the global system of wool growing, manufacturing, retail, and use. Various members of the supply chain also navigate decisions that influence the success of the farmers, and the industry itself. The direction that wool takes to market is one of the complex issues through which farmers, buyers, exporters, and manufacturers have to manoeuvre. For the farmers, the decisions as to whether or not to become involved in long or short-term contracts, join cooperatives (for particular types of wool), sell their wool at auctions, sell to private or opportunistic buyers, use a combination of practices, or even store their wool all have multiple influences. Other entities in the chain must also decipher the decision of how, where, with whom, and when to buy and sell wool while considering their roles in terms of business entities, members of chains (cooperative or competitive), relationship builders, global players, and individuals embedded in groups. A further influence that non-farmers in the industry have is the ability and choice of sharing information with farmers. The following section will explore these options and the choices made by farmers and supply chain members as to which path their wool will take. The setting in which decision making occurs will be extended once again.

7.5.1 Pathways for Wool to Market

Several pathways to market exist in the New Zealand wool industry as discussed in Chapter Two (Section 2.3). Farmers who grow mid-micron wool have several options; they can sell through the auction system, sell privately by contract (short- and long-term) and opportunistically, sell through a few relatively new cooperative ventures (most cooperative ventures in NZ are for fine wool), or store their wool until they think (or feel) a good price can be achieved. Some farmers choose to use a variety of methods in any given season – establishing proportions of their wool to direct through different means. The options present

an ongoing challenge to farmers' decision making processes as described by four mid-micron farmers below:

“I have a three year contract right now, my second one, but I keep some bales around. You never know when someone will come knocking. Before I got into the contracts, I used to just wait, but I'd get nervous. I think I've solved that now, but sometimes I have a hunch and I wish I could have something ready, but it's mostly tied into the contract. Guess that has its good points too. I don't know if I'd sign up again [to a contract], depends [pauses] I'd have to think about it more.” INTF5-R

“We have a contract. We know what we're expected to grow, and what we'll get back. It's worked so far, not always as good as the auctions, but sometimes its better and its less hassle, less worry [spouse nods]. You can only really know that the price is going to go down over a season, but you never know where it's going to start from with the auctions. At least we know what we're getting, and over a few years too.” INTF13-I

“Pops' [his father] used to use the auctions, no real choice otherwise, but then that was what everyone did and everyone was on the same footing. I like options. Hmmm. You know, like a business, you have to have options. Mmmm, diversification I think it's called. I try to put some through each – keep some for early auctions, some in contracts, some I just sit on which this year worked well because of the drought [in Australia]. Knowing how much to put in each, now that's the million dollar question, but I figure over the years it works out.” INTF10-I

“Bugger the auctions. I just wait till someone's interested. It's not worth my time to watch the reports and figure out when to sell. You never know the price from one to the next, or what to set your reserve at. Don't like dealing with the brokers anyway.” INTF15-I

There are a few interesting things to point out in these quotations; in the first quotation, the respondent indicates some of the 'pros' and 'cons' of their experience with contracts. Then, the farmer describes that he would have to think about going into a contract again. This illustrates his outward projection of an analytical nature (even to the point of wanting to solve the problem with his 'hunch'). In the second quotation, the spouse nodding could signify agreement, indicating a collective approach to the decision to go with contracts.

In the third quotation, the 'intuitive' farmer says, "...like a business..." indicating that he really does not see the farm in its current state like a business. Throughout the quotations, there is also the temporal component again – the short-term and longer term views of farming whether concentrating on short-term gains, or being 'in it for the long-haul.' The intuitive

farmers tended to look to longer term aspects of success, rather than short-term gains that had more risks. The final quotation also gives more support for the ‘suspicious’ behaviour of other chain members according to the intuitive farmer, ‘Don’t like dealing with the brokers ...’”

The four statements illustrated a variety of approaches (both psychological and social in nature) for engaging with the chain, and through it, the market. The contract options seem to indicate that the certainty the farmers receive from obtaining contracts meant for some that they questioned whether they could be missing out potential gains by engaging with the market opportunistically. At the same time, there was wonder among some farmers using the auctions about the potential for greater losses from doing so, instead of prioritizing the certainty of a contract. The last quotation revealed an extreme position where a farmer does not want to bother at all engaging with the market and instead will just take what they are offered.

These statements confirm some of the main influences and options for the farmer’s decision on which method to use to sell their wool. These include negotiating uncertain prices, positioning themselves to have flexibility and being able to engage with opportunistic buyers, negotiating a global market (the ongoing Australian drought meant that there was a higher demand for New Zealand wool), and, when diversifying, deciding what proportions to send in which directions. However, there is also evidence in these comments to indicate deeper cognitive processing.

The first statement gives evidence of energy spent reflecting on the farmer’s choices and perhaps ‘second-guessing’ his decision. His “nervousness” and “hunch” could indicate a suspicion that in being locked into a contract, he is at risk or fearful of missing another ‘opportunity’ that could benefit them in the short-term. The consideration of short- and longer-term opportunities for new farmers is an area that respondents indicated having difficult times reconciling. He continues this theme of emotive uncertainty in saying that he would have to think further about signing up to another contract. This belies more of a

rational (weighing options) approach to decision making, and also supports the ongoing processing of past decisions. In this example he seems to be using his rational-analytical skills to criticize what his experience, affective state, and own personal judgments may be telling him. It makes sense to him that over many seasons, a decision that avoids emotional strife should be chosen (i.e., a contract where the uncertainty is reduced). This risk avoidance categorizes him as leaning in the rational-analytical direction, and leaning towards the short-term interests of the farm.

The second comment reveals aspects of mechanistic decision making in terms of reducing the uncertainty that may be present by using the auction and opportunistic pathways of selling wool. The statement seems to be another affirmation of the practice of minimizing risk or uncertainty in farming decisions. This team do admit that sometimes it is not as lucrative as the auction system, but they qualify this by saying that sometimes the auction system does worse, and that by using a contract they have less worry, and less hassle. Indicating more utility in the use of the contract for selling their wool is evidence for the consideration of many social agents and external influences rather than concentrating on internal affective states in their decision making. Finally, the use of “we” throughout the quote (the farmer’s spouse as well as himself) and the indications of agreement from his wife during the questioning, indicate that this decision is not one that he made completely on his own. The contemplation in this case, occurred as partners along with the presence of potential others in terms of contract associates.

The third statement gives some historical context to this decision; that this particular farmers’ father did not have the option that he does currently, but that was the social norm. In using all available options for selling his wool, this farmer perceives that he is successfully negotiating uncertainty and risk (though this decision often also includes considerations of short-term and longer-term goals of the farm and is not purely based on reducing risk in the ‘here and now’). His reference to the business practice of ‘diversification’ indicates his

perceived expertise and research into what he believes are best practices - but also indicates a reliance on external information sources and normative pressures to be a part of each potential group in wool selling. However, he does indicate an area of uncertainty; that is, how to know just what proportion of his wool should be placed in each category in a given season. The focus on that question belies a transference from concentrating on the need to make a decision on which pathway to use, to focusing on what seems to be a less uncertain problem for him; how much to put in each pathway instead. He might also downplay the importance of the answer to that question by saying that he figures the profits work out over time regardless of his decision (which is an indication of a default heuristic). It could also mean that by concentrating on how much wool to send along each pathway, he is cognitively aware of the mistakes he has made by subscribing to the default heuristic, and instead is now looking to justify his use of an intuitive decision style. He could also have the confidence of knowing that he does not have to chase every dollar and that his business has been set up well enough now to sustain him. Thus, in this quotation there is evidence again for the presence of others in decision making (his father and that father's generation of farmers), pressures to seize opportunities through diversification, and a consideration of a different problem instead of concentrating on deciding on one route for his wool. Though this quotation does give specific evidence for the intuitions this farmer is acting on, it does demonstrate that this farmer has a better understanding of his context (both in terms of industry cycles and development, and geographical factors like the drought in Australia).

The final quotation came from a highly experienced farmer (50 years in the industry) and seems starkly different from the others. However, the statement does confirm some of the inputs that the other farmers are negotiating in their decisions. First, that the auction system is perceived as highly uncertain and suspicious (indicated through his frustration with them and revelation that he does not believe that contemplating using them is worth his time, which reflects past experience with them where they perhaps did waste his time). Second, since he

just waits for someone to come to him, he has established a level of comfort with uncertainty, or is not affected by the uncertainty of others in the decision of which path to choose/how much product to send through each pathway, thus illustrating his reluctance to succumb to pressures from outside to diversify his practices. It might also indicate his earlier negotiation and experience with each pathway, finally settling on what he perceives as the most successful route. Third, his suspicion of others within the industry gives evidence for a mentalist approach to deciding to sell. This is indicated by his disdain for brokers given in the last sentence, and his comfortableness in uncertainty (i.e. while not knowing when or whether someone will approach him, though his vast experience in the industry indicates a connectedness with other players). This farmer's "no nonsense" approach indicates a confidence in trusting his own decisions, no longer relying on rules, guidelines, calculations or other deliberate decision methods.

7.5.2 Some 'Finer' Details

Exploring this question from the statements of fine wool farmers reveals further evidence on the decision making process for wool conduits to market.

"We are members of [cooperative business]. Have been from the start. [Other farmer living nearby] mentioned it and I knew it was what we were after. We've had options over the years to go elsewhere, other contract offers, watched the auctions, but we never budged. We knew it was going to work from the start." INTF19-I

"I sell through the [location] auctions. My broker visits early in the season and we decide on a reserve. It's seldom that I don't get what I'm after because I grow superfine wool that there's a demand for. Been working with the same broker for twenty years." INTF2-I

"I tried a little of everything over the years. When we moved into goats too, I thought a lot more about the auctions because we had a very specialized product, and because the auctions were the only option for mohair. I thought we might as well just do everything by the auctions and make it easy on us. But, with wool, I still have kept up some small contracts and I still sell some by auctions, and then sometimes I just hold onto it for a while when it looks like a bad year. My wife thinks I'm nuts and should just take what I can get instead of playing around, but with the mohair it tends to make up any

mistakes I make. [His son – present during interview] keeps telling me that in school they said it's good to use a variety in case there's a bad year, diversify, or something like that? [Son nods] But I just think you shouldn't keep all your eggs in one basket. That's why we added mohairs, and stud in the first place, and kept up the sheep even though they're failing." INTF4-I

"Yeah Dad. You'd be a fool to." INTF4D-I

In these three quotations, three different techniques are apparent; use of the cooperative chains and contracts, use of the auction system, and a mix – each described as successful for the finer wool growers involved. A re-iteration of the importance of trust and relationship building (in the description of the relationship with a broker), reducing uncertainty by becoming involved in long-term agreements where information is shared and the farmers have a stake in the corporation (cooperative chain, and heuristic of not "keeping all eggs in one basket"), diversification through available multiple methods (and risk avoidance), and finally, the importance of external opinion in making the decision (family, friends, knowledge gained through the farmer's connections).

Another interesting point arose from this last set of quotations between father and son. It appears that the family is making a decision as a 'unit', but on closer examination, there is also the father seeking the son's knowledge. In this way, he could be tacitly drawing his son into the business, and passing on his decision making strategies through cultural mediation and the process of internalization (Wertsch, 1985).

The next section of this decision journey will start to explore how decision influences (processes) move through the levels of the supply chain and affect decision making units along the way. The first level explored beyond the farmers were the brokers.

7.5.3 Brokering a Decision

Three wool brokers were also interviewed during this study. A wool broker's roles include sampling farm lots for testing and display purposes, organizing the auctions, and

storing the wool bales until transportation instructions are received from the wool exporter.

The broker does not own the wool, but acts as an agent for (and adviser to) the wool growers.

The brokers' responses to questions on their role within the chain, and their perception of farmers indicated the importance the brokers felt towards building relationships with farmers, their primary clients, while still satisfying the needs of the current retail market, their businesses, and meeting exporter demands. In these roles, the brokers are privy to more information than most farmers seek in their decision making processes. However, the brokers also are under pressure not only to satisfy just the farmers, but also the buyers and wool markets several levels up the pipeline. When asked about their relationships with farmers, two brokers stated:

“You try to do the best for them, but sometimes they just are unrealistic and want more than what we can get. Um-hmm. There's a lot that the auctions depend on from year to year, not just the farmer's coffers, or what they read in an Aussie paper. I work with 'em to set reserves for the season and to figure out the best options for them. I think some farmers are too stuck on the past, or on what their fathers used to do or on what other farmers are telling 'em. Then there's these 'newbies' who think they know more than you do because they studied at [Agricultural College]. Think they can just plug a few numbers in and figure out what they're worth, and then they change their minds we tell them to get real. It's a bit of shock to 'em sometimes. For the most part, they're not bad to work with, but some of 'em seem like they've got a chip you know? Like they don't trust us to work for 'em.” INTSC3

“The farmers, yeah, some of them have tricks up their sleeve you know? They do their research. They can smell a raw deal...something's not right. I like working with them because they are real salt of the earth people. They know what they need and we try to deliver as often as possible because we're not in the business of ending friendships. My clients don't let me down, and I do the same. It takes some work to keep the trust up, but it's worth it.” INTSC1

These two brokers' statements reflect themes that emerged in the farmers' decision making on where to sell their wool; the importance of gaining information from others to reduce uncertainty, the suspicion in some farmers that there are details not being shared, the desire to diversify and thereby reduce the perception of risk, the need to build and maintain relationships and trust, and also the connectedness with their intuition and 'gut feelings' about the people they are dealing with (the “salt of the earth”).

The first statement does indicate a positive affect towards them (“for the most part, they’re not bad to work with...”) but overall had more negative tones. The second statement also includes interpersonal characteristics between this broker and the farmer group; he likes them, and he admits to trying to deliver what they need suggesting a considerate attitude towards them, and pressure felt on the interpersonal level to continue relationships with them. The statements also support the mentalist approach of the experience-rich farmers and uncertainty avoidance, and mechanistic approach to decision making through the explanation of the ‘newbies’ given in the first statement. Controversially though, they also support the notion that information sharing among the auction-brokering and subsequent competitive supply chain is not equal, and the farmers’ suspicions may be warranted. The suspicion of non-equal relationships between some farmers and brokers is confirmed by the conversation collected from the third broker I interviewed. Suspicion may be one form through which the influences of decision making from members other than farmers move through the levels of the supply chain.

“The farmers, they’ve got secrets, you know? I been visiting them often, especially now that the auctions are going on, and I just know they aren’t telling us everything. ”INTSC2

Interviewer: “Tell me more about their secrets.”

“They used to ask us for our predictions, over the season, the next few years... Now they don’t – they talk to each other, I’m sure, and then figure they can haggle with us. They don’t tell us everything. I know they have more bales than they let on, some stashed and just sitting waiting, more stock, or some other trick, you know, something they learned or heard that they don’t let on. Or they just don’t cooperate you know? Send underweight bales, or poorer quality...hmmm. I mean, for the most part, they do deliver, but when we’re trying to plan for the next auction or the next year, they go elsewhere if we don’t bend over backwards to give them what they want. We can’t stop them from looking at contracts or comparing prices, but you’d think they would know that it’s not just about getting the best price anymore. They’ve got to think about how we can keep this system going internationally instead of seeing it as the last resort. ”INTSC2

This broker also works in other parts of the supply chain. His comments, especially near the end of the quotation about survival in the industry, give strength to the argument that

trust, cooperation, consistency and relationship building are important to the long-term success of the auction system. However, he also re-iterates the theme of farmer suspicion towards other entities in the chain. His perception that farmers see the auction system as a last resort reflects a suspicion on his part too; that the auction system has fallen out of favour with farmers and, consequently, the auction chain has lost the ability to steer the industry in a globally-demanded direction. Interestingly, this implies that farmers influence brokers' decision making in much the same way as farmers said the brokers influence their contemplation of wool routes; that is, through the concept of information sharing.

The idea that this broker is also in touch with the at-risk state of the system internationally, and claims that the farmers do not think about that in their decision making, also indicates the information gaps, and parallel pressures on each level in the chain. The statement thus brings forth the theme of brokers' fear of losing their power and the subsequent potential consequences; lost jobs, lost industry, lost history and, perhaps most importantly in a global market, the loss of a branded, marketable identity, should the suspicions of the farmers lead to actions removing farmers from the auction system.

Thus, not only does the poor relationship between farmers and the broker have effects on the interpersonal components of this chain, this broker perceives that the variable level of 'trust' could result in the deterioration of the entire system internationally.

He also points to a behaviour whereby farmers lose the trust of brokers themselves; not filling their bales with adequate weight or listed quality prior to sending them beyond the farm gate. The implication is that the farmers have translated a suspicion into an action against the brokers and auction systems, which strengthens the assertion that the interpersonal relationships in the auction system are faltering between levels. The extent to which this behaviour occurs, however, remains unknown. Further to this, less wool proportionally is going through the auction system. There is the perception among brokers and auctioneers that farmers are just selling their lower quality wools through auctions, and using other vectors for

their higher quality clip. Contracts are usually seen as a more advanced form of chain interaction since contracts have a guaranteed certainty for both buyer and supplier. At issue with the brokers, though, is the increased use of contracts that 'shorten' chains, which threatens to remove brokers. Due to the advent of sale by specification and growing concentration at the buying end of the chain (more contract creation directly with farmers), other forms of selling wool have decreased because of their inefficiencies. It could also indicate that the cohesiveness of the groups between each level is changing (perhaps the auction system and brokers are being seen as losing their relevance to farmers and buyers). In contrast to the previous two brokers, this participant makes no mention of an affective consideration for others or dependence on the farmers or farming groups, setting up a 'warring tribes' situation.

As a brief summary, these results have so far demonstrated that decision influences between farmers and brokers work in two directions in the chain. Risk aversion, manifest through suspicion of other chain entities works to set up an atmosphere where each level feels pressured to make decisions in their own best interest. Changing circumstances in the chain, which could involve the disestablishment of certain levels with a goal of creating certainty through contracts or alternate chain relationships, threatens the brokers, who in turn, pass their feelings of threat on to farmers through the unequal sharing of information. Farmers were described as not performing to the expectations of brokers.

When asked to reflect on their interactions with wool growers, two statements from exporters also supported this claim:

"The farmers are out of their minds. Becoming too demanding. They've really lost touch with the business climate of today. They just refuse to believe that we're working with them, we're giving and taking, that we all have to give and take too. They think we're just taking from them, cutting their value out, and not telling them the whole story. But they don't see the work we do to balance our books, just like we don't ask to see their books. We've got orders to fill and if they refuse to cooperate, we'll go elsewhere. Doesn't help if they band together either, one of them is bound to be desperate and will eventually need to break ranks, reclaim his costs or pay his mortgage. Been noticing that lately;

I think they are working together a little more. We'll see how long that lasts.”
INTSC5

“Aaah, the farmers... Hmm...well without them we wouldn't be here, [laughs], but without us, they wouldn't be here either. But, they are getting more and more difficult to work with. They used to come in and see us, how we worked, what happens [in the scours]. Interested...um-hmmm. But that stopped, we're just another step that they have to contend with. It's like they think the world's against them.” INTSC8

Since the price of wool has been declining over a long period, and due to out-competition by synthetics, the perception from the interviewees is that there is likely to be a financial crunch all the way along the opportunistic chain, thereby putting pressure at all levels to squeeze more out of each other.

Several themes emerge now; it is not only the brokers who are perceiving a behavioural change among the farmers, but the exporters also report this observation. These perceptions may be indicative of a changing social process between farmers and interacting groups. There is also financial pressure introduced at several levels of the chain but coming from within the chain. This pressure is a further motivator for each level to start to focus on their own success and positioning in a competitive system. It may also bring forth reflections on historical events, including the elimination of farming subsidies in New Zealand during the mid-1980's. At that significant point in the modern history of farming in New Zealand farmers had to alter their practices, in order to recuperate from a potential large loss to their personal businesses/lifestyles under the strain of adjusting to a national-level restructure of primary production, and the introduction of open access to global free market competition not previously explored in the New Zealand system (Dalziel & Lattimore, 2004; Boston, Dalziel and St John, 1999; Kelsey, 1995).

The first statement also is suggestive of possible heuristics being used by farmers in their attempts to achieve their goals through the auctions system; that is, the “don't break ranks” heuristic and, closely associated, “the majority rule” heuristic (Gigerenzer, 2007). These heuristics are invoked in situations where moral and decision making dilemmas are

present; the first arises when a person finds him or herself in a situation where by breaking ranks, they are able to maintain a personal moral standard at the expense of the other members of a group. The other members of a group endure more of a negative result should an unwanted event occur but a second, more personally relevant, selfish imperative is maintained (i.e., one's own moral imperative is deemed more important than the competing needs of the group). Thus there are social, personal, moral and affective components to this heuristic. The second heuristic arises when a certain, 'correct' decision cannot be determined in a group, but when the majority of group members agrees on one course of action whether supported by evidence or not. This heuristic relies on everyone agreeing with the successful intuition of a member of a group who cannot prove the right answer (which as a group behaviour seems irrational), but supports the assertion that in uncertain situations, the less-is-more effect (recognition heuristic) and reliance on intuition over information, leads to more accurate decisions. This heuristic is based mainly on the cohesive forces (solidarity, interpersonal acceptance, cooperative acts) in group membership, rather than on avoiding the personal consequence of guilt for not carrying through with the goal/needs of the group or one's own moral stance.

The exporter comments illustrate several issues; the exporters are aware of the changes in behaviours of farmers due to social and economic pressures; that is, rapidly changing global markets have influenced farmers to become focused (uncooperative in the mind of the first exporter) strategists themselves, adjusting behaviours similar to those they perceive in the chain in order to allow them to compete with the other global players. The exporters have also indicated that they do not share all the information they have with the farmers (i.e., "they don't see the work we do to balance our books, just like we don't ask to see their books"). Although this exporter implies that the information barrier is one maintained by both groups, his comments suggest that the information would be helpful to either group. Whether the information is helpful might not, however, be the right question; a

sharing of information in a tit-for-tat way could be a step in building trust and relationships between these groups, rather than creating suspicion of unjust treatment, and perpetuating the competition between levels of what is essentially one group – the supply chain entity itself. There are other parts to this chain, though, that offer some clarity in explaining why the environment within the chain produces competition in some instances, and cooperation in others. Below, the analysis will turn to exploring how the downstream end of the chain plays a role in propelling decision influences through to the farmers.

7.5.4 Manufactured Dissent

The concept that the farmers are increasing their efforts at working together in order to achieve their personal and combined goals as a group functioning amongst other competing groups was found among the other entities in the chain. Three manufacturers had the following to say about their perception of wool growers and relationships among the opportunistic supply chain;

“I guess they’re just like us. They have bottom lines and projections and agreements to meet. We don’t have much to do with them, but if they weren’t there working, we’d definitely notice. We feel the most pressure from our buyers, but I guess if you’re at the bottom of the ladder, you’d be feeling the weight of everyone.” INTSC12

“Personally, I don’t know why anyone would choose to be a farmer these days. It has to be a difficult living, not knowing what is coming your way, or what you’ll be doing tomorrow or the next day.”

Interviewer: “Can you tell me more about that?”

Respondent: “Well, with wool, it’s all about the weather and the markets, and the farmers have no control over either. They can try to control their profits to a certain extent, by making their costs lower, but they really have no choice but to take what they are offered. Even trying to work together as a supplier or country, all the growers in New Zealand working together, they just are not big or organized enough to really matter. Companies like ours, or like [the name of another manufacturing company], we can just buy our supplies from someone else, or keep our stock up if we foresee a supply issue, work leaner, shift around internally... [pauses] I don’t think they can do that.” INTSC4

“We don’t have any interaction with the farmers.”

Interviewer: “Can you tell me what you know about growing wool?”

Respondent: “I know our suppliers can get it from different places around the world, but by the time it gets to us, it does not matter where it was from, the cost does not change very much. We sell a consistent product ... [indicates textile brand name]. That is what our buyers want. Large volumes, consistent quality, no surprises. That is what we expect from our suppliers too. It’s business, not farming at this stage.” INTSC7

These three comments illustrate the differing levels of understanding and interpersonal interaction within the opportunistic chain. On the one hand, there seems to be little perceived interaction between the manufacturer and the farmers, and very little knowledge and understanding of the nuances of the growers’ struggles and, as reflected in the final statement, little interest in knowing. But on the other hand, there is recognition that the farmers are a necessary component of the chain, the perception that farmers have little control over the events governing the chain, and that the farmers also must feel the pressure to survive as a business. The pressures are perceived by one manufacturer to be magnified along the chain closer to the grower’s end. This may be due to the perception that the exporters and brokers have less and less important a role as more contracts develop between growers and manufacturers. Thus, some of the manufacturers are aware of the struggles of farmers (and also the struggles of other levels in the chain) and are able to relate that the stress of surviving as a business is present at all levels of the chain. Other manufacturers, though, are less aware of the presence of complicated contexts and demands at levels other than their own. Regardless of whether firms are attuned to the pressures in other levels of the chain, they still described behaving in the same way; for the ultimate success of their own entity. They perceived the need to put their business goals first in their decisions.

How do these perceptions differ amongst the manufacturing segment members of a cooperative chain? Three interviewees involved in several levels of the chain through cooperatives or through business partnerships gave insight into how they perceive wool growing and the connection between the farmers and the industry.

“Since we started as a small New Zealand-based business, and grew from there, we all know the importance of agriculture to our economy. When the farmers are suffering, so is the whole country. We feel almost a custodial

responsibility towards them – we know they've been taken advantage of before. But they are smarter now too. Good at reading people, and reading the signs of rough times ahead. It takes time to build a good relationship, and in an instant it can be ruined. That's why we have an open book policy. We don't hide any details, nor do we ask why the farmers want to know something. Just open book, anytime. The farmers do keep to themselves for the most part, they are busy too. But when we need their input, we ask and they deliver. Sometimes they bring ideas to the table too. Everyone involved in [company name] contributes." INTSC6

"We work with our growers to make the best decisions for the entire organization. Um... When we moved some of our processing overseas there was a lot of grumbling, we still hear about it, but a lot of people didn't know that we decided together that it was in the best interest of everyone in our cooperative, not just the managers. It wasn't a top-down order [pauses]. Farmers could see some benefits too, and they saw where we were heading if we didn't make that decision. We're all honest with each other. Some of us were farmers and some still are now but also have a hand in the direction of the business. We're all involved in all of our operations and we pride ourselves on keeping the relationships open and fair. There's a mutual respect which leads to mutual understanding and shared responsibility. Farmers don't tend to walk away from us until it's time to retire, and even then, they like to stay on board and contribute." INTSC10

These specific chains use aspects of New Zealand's identity in their marketing, giving one reason for the managers to be engaged with farmers. If they were not, the integrity of the product could be threatened. That is in contrast with the manufacturers explored earlier who could source their raw materials from a number of countries and suppliers, and did not declare the need to have interactions with farmers.

Furthermore, these particular respondents are connected with farmers through the cooperative nature of the business and chain structures they use. When reflecting on farmers, their tone reveals positive collaborations and interactions, as opposed to the indifference in the earlier quotations. A member of a national farmer representative organization had the following to say about wool grower decision strategies, relationships and information sharing with other entities in the industry;

"Some farmers want to know everything that is happening; they are eager to be involved, informed, gain everything they can to help them get to where they want to be. For them, it's tough to be a part of a chain or business that changes almost daily... umm... it can be cut-throat sometimes. That's where we come in to try and make sure there are no unexpected policy or regulation changes. For those guys, getting into contracts and [company name] or [company name]

would be the best strategy for them since they have this 'need to know' and they want to be in control. But we heard about problems all the time in other areas, like broken contracts and prices not being agreed on. Farmer playing 'hardball' or auction prices plummeting. Farmers get suspicious when deals keep getting broken... umm... even when they hear about someone else who made a mistake or didn't get what they were hoping for. It affects the way they approach the next big umm... hurdle or they even opt to change things as soon as they can, if they feel that strongly." Interviewer: "Tell me an example of when you've heard a farmer act on a feeling like that." Respondent: "Well for one, the conversion to dairy has been taken up so quickly that it has shocked us. Especially in New Zealand where sheep... well... [respondent alluded to history where sheep farms used to dominate the agricultural sector in New Zealand]. A lot of sheep/beef farmers just took to it [dairying] right away. They'd had enough umm... mismanagement of the sheep/beef industry that as soon as they caught a whiff... umm... of something new, they dove in head first, and others followed. Or when short-term contracts for wool started to get bigger in the nineties the word got around. Farmers wanted out of the auction system, not just for the money, but for the choice." INTSC11

This rich statement adds support to several of the concepts previously introduced.

First, that some farmers have a need to seek out information to help them make choices, while others, or at other times in their careers, trust their feelings to guide them. Second, farmers pay attention to what they hear from other farmers, industry organizations, and what they see happening around them as input into their decisions. The role that other farmers, industry organizations, and the media played in the framing of sheep/beef as a declining industry is important. While dairying was booming, there was a shift in the membership of agricultural sectors. This lends further support to farmers working as a group and reinforcing the majority rule heuristic when encountering other groups within the industry. Third, the conversion to dairy has driven implicit comparisons with sheep/beef farming, and attracted farmers away from the sheep/beef industry that they perceive to be floundering when compared to the successful trend of dairying, dominated by cooperative organizations in New Zealand, at the time of interviewing. Fourth, other levels in the supply chain do influence the decision making behaviour of farmers by offering alternatives not formerly there and by providing information and certainty. Farmers additionally affect decision makers in other levels through their own behaviours. In this way, processes affecting individual decision making flow through supply chains, adding more complicated contextual factors to that decision making.

7.6 Summary of Early Entities in the Chain

Thus, the decisions by farmers to remain in the industry and get their products to the market, are influenced by many variables; intrapersonal forces including the psychological make-up of individual farmers, their attention to intuition, or past events and people, their need for cognition or factors of their own personalities. The influences also include the characteristics of the farm itself (realizing here that the farm is often both a lifestyle and business venture with other people and family members to consider in deciding how the farm operates), the socio-demographic history of the farmers (education, family tradition, and personal experience affect the ways farmers strategize), and the wider social milieu (the economy, sociology of the area, within-group pressures, and pressures from other connected groups, and media provide inputs to decision making). Farmers also influence others through their decision making; examples given here included the implied presence of farmers' parents and traditional ways of making decisions, and the way a generation guides new members (i.e., a farmer's son) into the decision making. The suspicions of some farmers feeds forward in the supply chain to the brokers and exporters, while other pressures feed through the chain to the farmers.

The examination of the early stages of the chain indicate that there are both contextual (social, and economical) reasons for the decisions individuals and firms make on how the wool is moved from farm gate into the chain. These complicated and related influences set the stage for comparison with what happens as the wool approaches the end of its journey through the chain. Another question arises; to what extent do these forces move through the entire chain? Is there a point at which the chain is fragmented and decision influences no longer migrate in the same way? The next section reveals the perception of influences on decision making at the retail end of the chain.

7.7 The Retail End of the Market

The following subsections look at the influences on decision making as they move through the retail end of the supply chain for wool products. Though the influences described by participants had closer ties to globalized movements and market concerns, the notion of processes moving from person(s) to person(s) through the chain as a conduit remained central in accounts of decision making and perceptions of how the chain affected farmers.

7.7.1 Globalization and Locally-Based Decision Making

In this section I explore the influences on decision making as described by chain members located closer to the retail end of the market. I will examine the role that the retailers play in shaping the way farmers make decisions. It is in this section that I will explore how globalization as a force works itself through the supply chain to influence very locally-based players seemingly removed from the global business arena.

Globalization (see Chapter Tree: Review of the Literature, Section 3.15) has been defined as the development of social and economic relationships stretching worldwide. In current times, people in general are influenced by organizations and social networks located thousands of kilometres away in very different environments to our own. A key part of the study of the effects of globalization is the emergence of a world system where for some purposes (such as illustrating the role that globalization plays on individual decision makers), we often envisage the world as forming a single social order.

Members of the supply chain at the retail end have been perceived by farmers and brokers to hold much power over controlling prices, profits, and information sharing along the chain. But what do the retailers know and describe about the growers, and how they as retailers influence the other players in the chain? The participants were asked to describe how other members of the chain are influenced by them, and likewise influence their decision making. Below, two retailers describe their perceptions of how they influence farmers.

“I don’t think we have any effect on the way farmers do their work, or the other way around for that matter. They don’t know everything we have to do to stay competitive. We have to keep up stock and stay relevant, have consistent quality, research the market, plan ahead, solve problems when our suppliers are late or don’t get delivered, take risks, keep shop, pay employees, and constantly deal with not knowing what tomorrow will bring in terms of recession, business growth, or new retail policies. I mean what could they do to help us market to a new segment? Or decide when to discontinue a line? They don’t know anything about what we do because they don’t have to. There’s no pressure on them to compete the way we have to.” INTSC7

“Hmm... we all deal with some uncertainty. Them; the weather, us; the changing retail climate. I don’t know how much about our end gets back to them, but I bet they’re pretty savvy on the big companies and stocks. If our costs go up there’s will too – it just feeds back along the chain and they’re the end of the line right? They’ll feel the pinch too. If the market changes, they’ll eventually know when their profits go down or when a contract gets broken, but they won’t know right away like we will. Things happen a lot faster at this end. One dose of negative customer feedback can send us reeling, but they won’t know until we’ve already reacted.” INTSC12

These comments indicate that in the opportunistic chain, the retail end does not actively share information with farmers, but for some, it could be because of the belief that the farmers could not help the retailers in the first place, not because of the need to develop relationships along the chain to ensure successful survival of the entire chain. There also appears to be some confusion as to whether there can be mutual assistance between different levels of the chain so far removed, and interestingly, nearby, because of the perception of who is ‘competition.’ The first retailer believed that his company was subject to more competition and survival pressure in the global market than are the farmers. He also believed that retailers carry more risk and responsibilities in terms of providing business services (shop, employees, stock). There was no acknowledgement that farmers themselves carry similar pressures (the farmland and assets, employees, consultants and veterinary services, livestock numbers), or acceptance that farmers and retailers could potentially work together. In this way, farmers and retailers seemed ‘worlds apart’.

The second retailer in this chain had different views. He recognized that both farmers and retailers have to manage uncertainty (though from different sources) and that farmers ultimately are affected by retail decisions although the farmers experience a temporal lag

before they are exposed to the potential effects. Fascinatingly, in the same way, retailers could be exposed to a temporal lag in supply, if unpredicted weather factors affected a farmers' harvest through several seasons. This retailer indicated that he believed farmers did have an interest and point in seeking information sharing with the retail end. However, the last quotation, with its implication that when a change occurs the temporal lag prevents farmers from knowing or responding to situations right away, gives some credence to the beliefs of farmers and brokers that the retail end does have control over influences on the supply chain's success.

For some retailers and manufacturers, wool can be treated as simply a raw material, that is relatively homogenous, and easily suppliable. These manufacturers can acquire their needs (both quantity and to a set of specifications) from a number of different suppliers. They might not need to form relationships to ensure their supply. Sometimes they have 'preferred suppliers' for much of their raw materials, and 'second tier' suppliers for opportunistic needs. They might also go out on the open-market (auctions) from time to time. One of the main differences between these retailers and manufacturers, and those in a cooperative chain is the certainty and commitment to a long term relationship to which information sharing can contribute. Retailers in the opportunistic chains did not perceive the need for interactions, building relationships, or information sharing with farmers. The context of the chain is such that there is no need for the retailers to be able to trace the origins of their wool supply.

But what of information sharing along the cooperative supply chain as found for some merino wools? The retailers had a different understanding of the influence each entity has in the entire organization:

“Oh... About a decade ago one of our farmers thought we could do more to get younger people interested in woollens. He said his daughter thought wool smelled old and was for only old people. He thought maybe we could try and figure out a better way to market to the younger 'sporty' types. 'Those who spend a lot of time out there hiking, or snowboarding or something like that. It was an idea already in the works, but for him to come up with it separately and come forward was great – we knew we could get the farmers' support on that.

The farmers know who buys [the garment brand name]. They're in touch with their kids too and know that they are our future market."INTSC6

"I think it's better if everyone knows where we stand. No one wants to be blind-sided or kept in the dark about how the business is doing. We know that we're up against a lot right now – with synthetics being so easy and cheap for people, but we really believe in being ethical about all our practices including sharing our problems, debts and profits honestly. We don't picture ourselves in it for the next few years, or ten years, or twenty years, then getting out, we see ourselves in it forever. All of us believe in wool, believe in working together, and believe in being sustainable. It's what we're all about and it's what keeps our customers coming back." INTSC10

Thus, the retailers in the cooperative supply chain agree that farmers and each entity within the chain has a contribution to make, and a role in supporting the organization even when threatened with debt, or competition. Within this chain there is the common belief in the cohesiveness along the chain, and the ethical behavioural practices they emphasize that will keep sustaining the chain through troubled times. *The chain itself acts as one single decision making unit.* The chain members recognize that the pressures each level face feed to the other levels as well.

There seems to be a fundamental difference in the final uses of the wool that contributes to the way the supply chain entities interact. When the raw wool is created into an innovative product that is marketed for the qualities of the wool and the experience that the wool provides (i.e., wearing a high performance wool thermal layer, or a luxurious men's wool suit), the chain entities described more cohesive strategies and open information sharing. There is also the need to maintain the quality in order to keep brand loyalty among the retail market. This creates an environment that is consistent throughout the levels of the chain, and that requires all levels to be alert to changes in the industry that affect decision makers. This is because the influences on decision making in the cooperative environment affect other decision makers whether one or many levels removed from the origin of that pressure. In that sense, a climatic event affecting a farmer's output could affect the success of the retail end, and a marketing change at the retail end can affect the future success of a farmer who decides to join a cooperative entity.

Conversely, if the wool is an ingredient in a product for which the marketing has nothing to do with the wool as an ingredient (i.e., staying at a luxury hotel that happens to have carpeting made from wool), there does not appear to be the need for information sharing along the chain. The wool in that case is simply not required to be traceable, and the chain is not presently required to be transparent or cooperative. The function of the chain is as a conduit, active in its current form for only a brief period. Though it may not be required, perhaps moving to more advanced forms of chain relationships could benefit the entities currently situated among the opportunistic chains by extending the brief interactions into longer lasting ones. This might be especially true given the global context of supply chain decision making, and the global trend towards moving to more sustainable products (of which wool is known to be as compared to synthetics).

In terms of answering the research objectives, this section of the analysis has shown that supply chains and their entities not only act as conduits for wool from farm to market, but are also channels through which the pressure on decision making moves. Influences that have been described as moving through various levels of the chain include suspicion (which moves most clearly through the farmer and earlier levels in the chain), competitiveness and cooperation (which are perpetuated by the perception of needing to commit to a long term plan), and the desire to ease risk and uncertainty.

The interviews with members of the chain have also revealed how the context of the chain does not simply include the geographic location of members, or the economic climate in which they act, but also contains aspects that are less tangible in nature. Social psychological forces are present in several forms. Below I will begin to explore how these less obvious influences on individual decision making were described through these decision journeys.

7.7.2 Globalization and Sharing Information through the Chain

Contrary to the opportunistic supply chain, where multiple groups at each level compete with each other and do not actively share information and strategies with other levels, members of the cooperative chain attribute its success to the entire chain acting as one group, one entity with shared responsibility, ethical practices including the open sharing of information, risk, and profits and, thus, focused interaction among all members that contributes to a sustainable operation in the global wool market.

Hence, through the opinions, perceptions, and relationships revealed between different supply chain entities, it can be concluded that among the opportunistic chain, entities do influence each others' decisions through intra-individual processes (suspicion and trust issues), inter-individual processes (unequal information sharing, competition, and poor understanding of each other's role and potential contribution to the chain success), and group processes (lack of cohesiveness, within-group competition, majority rule forces, between-group competition), and through the lack of attempts to build cooperation in the chain. There is a perception that global forces only act at the retail end, but through the actions or inactions of the retailers, farmers are also left vulnerable to global influences. These influences, which may only strike after the other entities have initiated actions, can travel through the chain without the prior knowledge of the farmers on which actions should be taken.

In the cooperative chain, the members of the chain influence each other's decisions, but in a distinctly non-competitive manner. The cooperative members share the responsibility for the success of the entire group, which also means having a clear understanding of what happens at each stage and what pressures exist for each member. This trust can create more active sharing of information between members and spread the global influences along the chain so all members are made aware of how the chain is coping with a globally competitive system. In this way, inherent risks of trusting can be spread among all members, which can improve the chain's resilience to global pressures.

Recall that earlier brokers in the chain described decreased farmer loyalty, and the use of different vectors for selling their wool to markets. Additionally, some manufacturers indicated that they could obtain supplies of wool from several sources and were thus not captive to New Zealand growers. These two strategies (farmers using several selling routes, and manufacturers lining up multiple suppliers) are methods for reducing risk. Risk is spread along both competitive and cooperative chains, but in different ways. In cooperative chains, the main risk is with trusting other members, and trusting overall that the brand image and marketing will capture a market. In the opportunistic chain the risks include maintaining supply and demand at each immediate stage. Risk is then carried by individual firms.

7.8 Summary of the influences as described by the retail end

From the accounts of the retailers I interview, it is apparent that social psychological processes move through the chain regardless of the point of origin (i.e., marketplace, retailers' perceptions, or media portrayals). Thus, there are interrelations between risk, information sharing, and the intricacy of contexts (economically, geographically, and social psychologically) that makes individual DMU decisions more complex. Globalization contributes to these decisions in an even larger way, driving influences from far removed locations and people, down the chain.

From this analysis other questions arise; how do the levels of the chain between farmers and retailers interact? What keeps the seemingly different entities within a chain working together? When questioned about how the members within a chain choose where to source and sell products there were again mixed responses on strategies. How and why do cooperative chains evolve in the first place when faced with competition? These questions will be explored in the third example of decision making in the wool chain.

7.9 Interactions between suppliers and buyers

Between the auction and the final sale of the finished product, be it carpet, apparel, bedding, yarns, upholstery, insulation, or other products, wool is channelled through several different companies including exporters (and transport logistics), private wool buyers, scourers, spinning mills, dyers, and knitters/weavers before a final manufacturer or producer prepares the wool into its market-sellable products. In the opportunistic chain, many companies compete for business at each stage of wool preparation. For the most part companies can choose who to buy from and sell to, and whether they choose to be involved in the chain for short-term or long-term gains. Because of the nature of the products, it is possible to hold stock at various points along the chain.

The members of the chain whom I interviewed indicated that since most of the wool clip from New Zealand is processed overseas (as of 2008 only 7% of the annual harvest remains in domestic use), the supply chain is truly globally-based with the main markets including China/Hong Kong, USA, UK, and India, with secondary markets including Australia, European countries, Japan and Nepal. They reflected that there is often not any consistent method being used to track the wool during its entire journey from source to final sale, a process that would allow more information to flow between the levels about the value added, cost, and handling of the wool at each level. Instead, each player along the chain at best knows only what a few of their competitors are doing at any time, and also are not fully knowledgeable about the state of their suppliers and buyers. However, because of the opportunistic type of global chain, it was more important for the company to be prepared for quick responses to a changing market, than to establish a long-term relationship with buyers and suppliers.

The characteristics of such a globalized industry include companies that are adaptive in nature, can position themselves to take advantage of an opportunistic business opening and then dissolve, or move to a new prospect, and do not invest extra resources into creating long-

term relationships or agreements. The difference here between the entities within the chain, and the farmers at the growing end, is that they are in a better position to know, and hear earlier, about changes in the marketplace. Farmers are fully aware of the importance of positioning and capitalizing on changes in the marketplace but, their removal by a few more steps from the marketplace means a lag in their ability to discover, and act upon, the market signals.

Furthermore, buyers and suppliers who do not have robust relationships can jeopardize each other through supply chain interactions. They can choose not to share market information, they can break relationships or not fulfil contract obligations, they can give misleading information, not reciprocate on cooperative acts, contribute to supply chain effects (i.e., bullwhip) and dissipate without notice (for more on supply chain behaviour tolerance, see Wilson, 2007). When buyers and suppliers do not interact cooperatively, the entities within the chain can find themselves in the same position as farmers perceive themselves to be in. This is recognized by some of the entities;

“We’re just as vulnerable to the changes in the market as they [farmers] are. Maybe we do have a little more sense of changes coming up because we’re closer to the end point, but we still have to keep our wits about us and look for warning signs. Some people are not forthcoming about what’s happening within their ranks, or with their own supply and demand issues or merger issues. It is a tough industry because the buying and selling are punctuated, more so at the raw end because you might just have to wait to get a full container, um, order filled.” INTSC12

“You can think of it like a food chain with the predators at the top. The predators are the ones closest to the market information, not just the market itself, and ready to change. They have the money and the manpower and they don’t need to worry about who they’re stepping on or throwing off below them. But, below them, there are these smaller predators, then all the medium and little fishes in the sea and the plankton, and these guys fall off the face of the planet little by little because they either get gobbled up, compete with something else at their level, or they die out because they can’t catch and take from that layer below anymore; those little fishes have wizened up. But the other part is that the lower layers can be replaced and reproduce themselves so quickly that the ones at the top are not really vulnerable in any way. So no sweat, they can just keep doing their thing, not help out or work with anyone below them. It’s in their interest not to waste that energy. Hmm... [pauses] yeah, it’s just like that.” INTSC1

With this awareness of their vulnerability, in a highly competitive context, and suspicion of other entities and layers, how do the entities actually make decisions? They describe several strategies for positioning, policy and preparation for uncertain times:

“When we’re flush with orders, we tend to buy up a lot of what we need in large quantities. It might sit for some time in a warehouse, but then we know it’s there and ready if something comes our way. It’s also an investment on opportunities from other companies who have orders to fill and need quick supply; we can sell to them if there’s no risk to us. I think when buyers and exporters used to be smaller enterprises, that [buying supply for others among the same level] used to happen a lot. Now it’s considered borderline manipulative or capitalistic behaviour in supply chains because you can monopolize the supply if you’re making a very specific product. Interviewer: “How do you know when you should be buying up more supply?” Interviewee: “Well, we watch the stocks of companies down the way from us, or of trend reports. We also go to a lot of trade shows and do research. I guess we do spy a little, but not on our competition, on the competition a few levels away so we know when they are going to be in need of more textiles. When our suppliers have lots of stock, that’s a signal to us to hold back and not buy up because it means others in the chain are not buying. The thing is, you never know if they are not buying because their business is folding, or because down the chain there’s a lag or something we don’t know about yet. It is uncertain, but we think it’s better to be strategic instead of foolhardy. Sometimes when there’s a lag our suppliers will get overstocked and we’ll end up getting a better price anyway. When there’s a lag it’s also an opportunity to check out what is out there; new companies, new materials, new markets even.” INTSC12

This explanation, from a member in the opportunistic supply chain sheds light on many strategies employed for decision making among that chain. First, there is the tactic of buying and storing up a lot of supply when a company is doing well; this strategy, can create a bullwhip effect, and can have far-reaching consequences in a supply chain sending messages to suppliers that there is increased demand (when perhaps there is not) (see for example, Lee, Padmanubhan, & Whang, 1997). The addition of their company being able to sell to others at the same level also gives evidence for opportunistically taking advantage and competing with members of the chain at the same level as themselves. The respondent is aware of how that practice can evolve into what might be perceived as an unethical monopolistic one. When asked how they decide when to buy more, the respondent indicated that they do some information seeking but that they are also suspicious of other levels in the chain (thus exhibiting gut feelings) and do their own reconnaissance of sorts. In uncertain situations, the

effectiveness of following 'gut feelings' has been highlighted by researchers (see Chapter Three: Review of the Literature, Section 3.9). It seems clear from this manufacturer that though they exist in an uncertain and vulnerable environment, there are strategies that can be taken, including both intuitive and rational-analytical ones, which will help them through as an entity. This respondent indicated that his firm took a rational approach (rather than a relational or behavioural approach) to reinforce its place among the chain (Stern & Reve, 1980). Care for others among the chain, however, seems to take second place, reinforcing the survival pressures on groups, and their member individuals among the opportunistic chain.

Pressures of globalization can also be found amongst his statements. The concept of exploring new markets, new suppliers, and new materials was one expressed at the end of the commentary. He explained earlier on that to keep aware of the happenings in their industry, they attended trade shows, kept close watch on stocks, and read trend reports. His comments illustrate a lack of control over the chain that they were in, and the global industry itself, leaving them powerless against the forces of globalization. The company, in an uncertain situation, appears to be seeking more information from others in the same situation. However, as it is an uncertain situation for all involved, information seeking is a futile exercise. The members of the opportunistic chain are victims of the need for an illusion of control, and even more susceptible to overweighting the most readily available information instead of recognizing or weighing probabilities, a decision making shortcoming known as information distortion (Murnighan et al., 1999).

Other companies also described decision making influences among the opportunistic chain. One suggested that they felt trapped in their situation:

“We can only deliver what we have, and only sell when people want what we make. It’s an unpredictable business and we have a lot of turnover because of it.” Interviewer: “What do you mean by turnover?” Interviewee: “Well, our staff come and go, and we have to send them out sometimes when we cannot afford to keep them. We have to adjust our business to the climate we are in, currently, and even though we want to be ready for whatever is coming next, we do not really have that choice because we are only a small business

amongst a number of businesses who do the same thing around the world.”
INTSC9

How does their perceived situation affect the way they make decisions? In this case, the manager felt that they only reacted to what was offered to them, rather than planned ahead and positioned themselves to achieve any pre-determined goals. It is again evident that globalization pressures affect the entities among the chain as uncovered in his last sentence on his company’s position among many, globally, who perform the same action.

7.10 Successful Navigators

There were some interviewees who believed their companies successfully navigated globalization pressures, and were proactive in their preparation for uncertain times. They perceived themselves to be relationship builders and in the business for longer term contributions, not short-term gains.

“Each time we are faced with a decision, we attempt to look at it in terms of an exchange of trust or mutual benefits. We know our chain will work together, er, better if everyone has an equal right of sharing information, and gaining from interactions. That’s why we collaborate with other businesses around the world and work towards consensus building in our decisions.” Interviewer: “Can you describe an example for me?” Interviewee: “Err, well, when we decide on introducing a new line of textile, we come to the table with our research and let everyone know that we are looking into a few new ideas. Then, we ask if anyone else wants to be involved, and at what level of involvement. Some members only want to know what it is we are researching while others want to help with the work and seek out new partners with us. We continue to look for new pathways so that our business has longevity and does not dissolve like a, um, a fad.” INTSC14

“Being well known, we are approached with new concepts on a regular basis. We are inviting, it wouldn’t make sense to close doors, not our ethic. We work to create collaboration and smooth transfer of ideas into products we are proud of, that way our business evolves and others have to keep up with us.”
INTSC10

Both these respondents describe their entities as leaders in the cooperative wool chains. They believed they were setting the pace and the concepts that other organizations and companies, as well as other supply chains, would have to keep up with or adapt to. They believed that by

being cooperative, they were overcoming globalization pressures and drivers, and instead they were driving innovation and new opportunities in their environments. By envisioning themselves as one group, not a mix of chance associations with unknown levels of commitment or timelines, they believed they were opening doors, instead of trying to defeat competition, or simply survive in a competitive environment.

But, with increased collaboration on a global scale, are companies at risk of losing their identities? In the process of becoming trans-national, are cooperative chains or opportunistic chains more susceptible to being transformed into component elements that have lost their historical forms and functions?

“Depending on the marketing you do, and a lot of companies don’t put the effort in the way they should, you can use your history and business style to even more advantage. We market based on what New Zealanders value; the ‘clean and green image’, our DIY attitude and get-go, and our farming heritage. I don’t think we’ll ever be at risk at losing that culture.”INTSC6

“We have very high demand for our products. There are thirty firms that we supply on a regular basis so we do not try to do anything unusual or that would change our structure. Marketing is not the most important part of our business since we have a solid client base. We consistently deliver to our clients, and we keep our operation centered on that consistency. We do not have to reinvent ourselves or use any devices to achieve our goals. Since we do not spend on marketing campaigns or corporate cultural development, we can maximize our efforts on delivery. That is the way we maintain ourselves at our level.” INTSC4

These two vastly different styles of corporate behaviour exemplify the fundamental differences in marketing approaches. The first, a cooperative entity delivering high quality merino textiles, uses the historical identity and values of New Zealanders to their advantage, and as a business advantage to attract markets along the entire chain rather than clients only closely associated with them. The second corporation, an opportunistic company manufacturing carpeting, believes in remaining stable in their identity and instead invests efforts in consistent delivery to maintain their business connections directly above them. The second company falls into the category of an indistinct component element in a globalized chain, although their buyers know that this particular company will deliver what is required,

and otherwise the buyer can go elsewhere for their 'ingredient'. They may be trapped by a potentially footloose buyer, thus the attribute of reliability is important.

How does trust come into play in the decision to buy or sell with different entities among chains? In primitive societies, and smaller communities, researchers have shown that less trust is necessary since it is possible to watch each other at all times (Gigerenzer, 2007). Another caveat of this is that the more you are able to control and predict the behaviour or fate of others, the less need you have for trust (Moore, personal communication, 2009). What is created by this control is an illusory certainty among the suppliers in the opportunistic chain. They may believe that they have a consistent relationship with their buyers, when in reality, they do not have certainty. Hence, as in the above example, the buying company does not always need to trust the suppliers because they have the choice to go elsewhere for the products they need. It is sometimes in the best interest of the buyers in an opportunistic chain not to invest in building long-term relationships because of the cost in time, energy, and resources to maintain those relationships. This does depend though on the cost and effort of changing suppliers. There may be degrees of opportunism depending on those costs.

In contrast, cooperation has been shown to be necessary in an uncertain and technologically-based environment where longer term survival is a goal, (such as a global supply chain) and where the face-to-face consequences of questionable acts are rare. Cooperation and trust contribute to the community instinct (looking after others in a group you subscribe to). Social uncertainty, embodied in the supply chain circumstance as the consistency of relationships between companies and levels, in large societies (groups of interacting people, regulatory bodies, companies, and commodity chains) is a problem that trust and transparency can help to resolve. Support is given by the members of the cooperative supply chains and farmer representative groups:

“We continue to work with farmers and the industry, and the government using the same open communication for all of them because we know that it is the only way to rebuild the relationships that were broken down in the eighties. When policy or regulations change without real interactions between the

people involved, sitting at the table together, the years of effort we put into building and maintaining the trust of the farmers and companies who are the ones that made New Zealand what it is today, gets destroyed. We have to make decisions about the future of the industry together so no one feels powerless. There are enough enemies to deal with today with the weather, the economic issues, environmental regulations, and whose borders are going to close next, you know, like the EU getting edgy about food miles and our exports... [she continues describing some challenges of changing export regulations affecting meat farmers].” INTSC13

“The strength of our business was the way we made sure everyone was involved in creating and maintaining our company policies. It’s like when you need to run out and get some milk or eggs, or visit a sick relative, and you need the neighbour to watch the kids for an hour or two. You need to know they’ll [the kids] be looked after, and thirty, forty years ago, it wasn’t even questioned. You could trust your neighbour, and you’d do the same. That kind of reciprocal agreement isn’t easy to find these days, but we really believe in it so we encourage our farmers to look after each other, and we all play a role in looking after the business too, not like, what is it called, um, ‘big brother’? [looks up and interviewer nods], but so we’re all on the same page.” INTSC10

“It’s [transparency] our way of life. Everyone should know or feel free to ask about any aspects of [business name], and I mean anything, even the financial reports, probably most importantly the financial reports. It’s a better way to do business.” INTSC6

It could be that with this added notion of trust these cooperative companies and chains have been able to survive amidst uncertain and changing global environments. They have also been able to maintain and evolve their own identities as portrayed through their marketing campaigns, directed at final consumers, not just the levels above and below in the supply chain itself. They recognize that they need to cooperate internally as well, instead of compete with what are essentially members of the same community, thereby enacting the community instinct and surviving more successfully as a group among a global network of groups vying for the same market. In this way, the decision making unit (DMU) is aligned along the whole chain, rather than as one individual within a firm, one firm within a level of the chain, or one chain among many. I also believe the cohesiveness and transparency among the single DMU allows for better decision making where competition is not pressuring illusory certainty, unrecognized complexity, or overconfidence in uncertain environments due to information distortion or other heuristics being used in an unwarranted way.

7.11 Summary of the Decision Journeys

How do these three key decision scenarios link together? Each involves a decision making unit faced with uncertain situations, and each scenario has environmental conditions that may mislead, or invoke the use of poor decision strategies in non-experts or between competitive entities. Globalization is a player in the uncertain environments that these units must act in by providing the channelling of information through the various levels.

Similarities can also be found in the social instincts and group dynamics found among farmers and their families, groups, and representative bodies, the same way cooperative chains operate to maintain and continue their legacies. In contrast, competitiveness and opportunism drives non-aligned chains, and individuals (people, companies, and chains) to act in non-emotive or intuitive ways, but to instead rely on information gathering in order to put their interests and survival first. In this way, the competitiveness is maintained throughout the opportunistic chain, and that environment (in which all the entities within the chain exist) gives the impetus for repetitive, short, brief interactions that do not require the ‘alignment’ that is vital to the cooperative chains’ success.

What is the DMU within the chain itself? A DMU could include individuals within companies, groups within companies, or companies themselves. Each decision explored in this study had different decision making units. In a ‘fully-functioning’ cooperative entity (e.g., a chain, a community, a family, a person’s own consciousness) certain decisions might never arise (e.g., how do I maximize my self-interest?). Hence, the individual components can be treated as part of a larger entity in terms of ‘decision making’. In contrast, purely competitive situations might reduce decision making units to their individual parts maximizing their ability to continue regardless of whether their ‘host entity’ does. How did this behaviour evolve? That will be explored in the following discussion chapter.

Besides working as conduits for wool, supply chains work in two other important ways with regards to individual decision making. In terms of generating the environments in

which decision makers act, supply chains are pathways along which social psychological forces move between people and groups. Evidence for this pathway was generated through the descriptions of similar forces acting on individual DMU's existing at several (and in some cases, all) levels in the chain.

The discussion that follows will explore how the results and analysis contribute directly to the objectives of this research. This chapter had a goal of describing complex interactions amid the members of supply chains, and how those interactions affected the decision making of individuals. This chapter has accomplished that end through the detailed telling of three key journeys.

Chapter 8: Viewing the Everyday in an Exceptional Way

Two images of human psychology compete for our attention. Academic psychologists, particularly those who work in the 'experimental' tradition, make the implicit assumption that men, women, and children are high-grade automata, the patterns of whose behaviour are thought to obey something very like natural laws... Lay folk, clinical psychologists, lawyers, historians and all of those who have to deal in a practical way with human beings tend to think of people as agents struggling to maintain some sort of reasoned order in their lives against a background flux of emotions, inadequate information and the ever-present tides of social pressures.

—R. Harré

8.1 Introduction

This chapter brings together the results and analyses presented earlier, and ties the outcomes of the research to the literature review and two research objectives. It begins by giving a brief, updated account of the state of naturalistic decision making research. Then, the chapter continues with two contextual definitions, a detailed discussion of the decision making processes amongst wool growers and in the wool supply chain, and works towards a more general discussion on the nature of decision making in uncertain and complicated circumstances as described by the three decision 'journeys' presented in the Analysis chapter. The discussion of farmer decision making re-iterates the differences found in the approaches to strategic decisions described by the cohort of farmers interviewed in this study, then relates how the descriptions given by the participants reflect and add to the literature reviewed. The description of the supply chain member decision making serves to illustrate how the decision environments of these participants are related to those of the farmers, and describes how the processes of decision making between the two groups are tied to one theme; that is, processes acting, contextually, at other levels than the immediate and local. This serves to contribute new information to and substantiate some of the literature presented. The discussion then works to communicate how the three main decisions explored in the Analysis are inter-related and shed light on the main influences on decision makers navigating those decisions.

The discussion then progresses to an examination of how the results of this study relate to what has been found in the literature. The discourse moves through the literature to build a more general debate on the nature of decision making, and on taking both social and psychological approaches to that study. Important findings are given throughout the discussion, but are also re-iterated in the final three sections of this chapter. The discussion then reflects on the objectives of this research and suggests future research directions.

8.2 Taking Stock of Naturalistic Decision Making as a Process

In their review, Lipshitz et al., (2001) pointed out that Naturalistic Decision Making (NDM) researchers and traditional decision making researchers look at very different phenomena. While traditional researchers focus on building and testing theories (often in laboratory settings) “[n]aturalistic decision making researchers seek to understand ‘cognition in the wild’” (Hutchins, 1995 as cited by Lipshitz et al., 2001, p.346). To help differentiate between decision research streams, the authors called for more empirical research on complex and dynamic decision making processes in naturalistic settings, conducted using appropriate rigorous methodologies. They asserted that more and better naturalistic decision results would help to explain what is and is not naturalistic decision making (Lipshitz et al., 2001). They concluded by suggesting that the ultimate theoretical challenge for NDM is to specify, as Cannon-Bowers et al. (1996) state, “the link between the nature of the task, person, and environment on the one hand and the various psychological processes and strategies involved in naturalistic decision[s] on the other.” (Cannon-Bowers et al., 1996, p. 202 as cited by Lipshitz et al., 2001, p. 347).

Since their review emerged, several of the progressive directions they indicated have been followed. There have been advances in NDM models. These have included studies of rule-based and exemplar-based learning and training models (see for example Neal et al., 2006), models of judgments during information seeking (Berryman, 2007), and cognitive

modelling of sports decisions (Flin, Youngson, & Yule, 2007; Raab, & Johnson, 2007). The field of ‘macro-cognition’ has expanded greatly (see for example, Schraagen, Militello, Ormerod, & Lipshitz, 2008). There still, however, exists a need for more results from field studies to balance those found in laboratory settings. There also still exists a need to examine the notion of naturalistic decision making to clarify what is entailed in a naturalistic decision process and a naturalistic ‘setting’. It is in these two domains that this study contributes.

8.3 Boundary Conditions

Though it is widely agreed that NDM occurs in everyday settings, the clear definition of these settings has not been a focus for researchers. It has, however, been noted, that experts pay heed to the conditions under which they are making decisions with at least as much detail as they contribute to uncovering options (Ashby, 1988; Jones, 2000; Neal et al., 2006). It is for that purpose that I define two specific contexts below in which participants in this study described their decisions occurring. A broader context will then be described after the first two are made clear.

There were both *competitive* and *cooperative environments* described in this research. These two terms will be used extensively over this chapter and it is important to understand their meanings as they have emerged. A competitive environment is one where there is some form of contest between individuals, or decision making units (i.e., firms in a particular level of a supply chain), for some resource (in this case, raw materials) and associated risks. There is an implied struggle to achieve a goal (survive, thrive, capture increased market share) in which only one decision making unit among many is perceived able to maximally benefit. Competition occurs naturally between living organisms which co-exist in the same environment (for example, animals compete over water supplies, food, and mates, etc.). Businesses are often associated with competitive environments as most companies are in competition with at least one other firm over the same group of customers or buyers.

Cooperative environments are ones in which the members work in harmony creating a highly complex system where the system acts in a way that rewards all members to a greater degree than the individuals would achieve on their own. Decisions made in a cooperative environment share the risks amongst members (of the cooperative group), but at the same time the benefits are also shared in a fair way. It is accepted that cooperation exists widely in the biological world; commonly described examples include symbiosis and altruistic acts such as the services of the cleaner fish (Crawford & Salmon, 2004) or regurgitation of a meal in vampire bats (Wilkinson, 1988). There is debate as to whether some of the acts of cooperation in the natural world can be explained by ultimately 'selfish' motives (see for example, Wheeler, 2008), and how these acts arise in the first place. Businesses and supply chains that exist in cooperative environments are those where what would be the individual competitive priorities of the members of the chains are aligned into one central priority that all members are committed to (Vachon, Halley, & Beaulieu, 2009).

What are becoming more difficult to define in the globalized business environment are the boundaries within which competitive, and cooperative entities exist. It is also increasingly difficult to delineate precisely which firms are part of the chains and, therefore, who one's competitors are. Just as a cell knows its boundary by means of its membrane, and thus where to allow information to flow, when a DMU's boundary is well established, members know explicitly who to share information with, and the extent of their decision context. This knowledge of context influences the way in which decision makers make decisions. It also serves to provide some explanation for why cooperative chains, as they currently exist in the wool industry, were established and continue. In much the way a cell membrane works to create stability for a cell's internal workings, well defined boundaries (cognitively-based or real) in a supply chain help to maintain the commitment and trust between entities.

The third contextual element I would like to discuss is that of the holistic 'wild' in which the decision makers in this study made decisions. The intuitive farmers in this study

indicated that they considered more than just the present setting (i.e., their farm, place, cooperative organization, ‘lifestyle’ values) in their decisions. They also considered the group environments in which they existed in their decision making, even if only momentarily. *In this way, the definition of the context in which NDM acts, in the real-world setting, should be expanded to include processes acting contextually at distant and global levels in addition to the immediate and the local.* Below the farmer decision making evidence is revisited in order to clarify the broadening of decision making to these multiple levels in the complex modern ‘natural’ world that potentially includes globally-placed decision environments, and individuals acting alone, within groups, and as a part of a ‘group of groups’.

To re-visit the research objectives, this study aimed at first understanding how decision makers make decisions in their everyday environments (including how uncertain and risky surroundings and groups influence that end). The second objective was to uncover how decision making may be learned and improved through experience and contextual factors. The next section will start to explore those objectives as they have been answered in this study.

8.4 Decision Making by Farmers

The first objective of this research was to understand, in greater detail, how farmers make decisions in their everyday contexts. Individual farmers (people) approached strategic decisions in different ways. This research was able to differentiate two approaches to decision making in the cohort of farmers interviewed. The farmers in this study had customary ways of approaching difficult decisions. About half of the farmers I interviewed used a rationally-based routine of information gathering, listing alternatives and choosing what they perceived as the best option. These farmers were categorized as having a ‘rational-analytical’ tendency in their decision making. In general, these farmers had less experience in wool growing than the other group of farmers interviewed. They were relatively new to the ‘business’ of wool growing, were sensitive to their debt-load, and perceived improvements to decision making as

being based on learning how to better use optimizing calculations (i.e., becoming better decision makers by using more detailed and complicated models). They described themselves as risk-averse. They had difficulty uncovering the relevant information for most of their decisions under uncertainty. This indicated a lack of experience with the 'sift' of information as detailed in Chapter Seven (Figure 7.1). This might also be due to their lower levels of experience in the industry, and be evidence for a methodical search for a solution since they have not yet built up their intuition.

These farmers were mainly influenced by data discerned from perceived 'experts', friends, and other sources of information external to themselves, though they enjoyed expending a great deal of cognitive energy assembling this information and calculating solutions. They were enthusiastic about using the tools for farm management that they learned during their tertiary education. They characteristically disregarded affective components of decisions in favour of empirical facts. They saw their identities (farmers and business people/managers) as being shaped by extrinsic factors such as markets, political events, and social representations. It could be that these farmers have not approached enough longer-term decisions yet to really attune their decision strategies, and learn from mistakes, and thus relying on rational-analytical approaches for all decisions seems logical.

These characteristics were different from farmers I categorized as tending to adopt an 'intuitive' approach to strategic decision making. These farmers admitted to more often than not following their 'gut feelings' for major farming decisions. They believed the land and stock provided them with the guidance, or cues, to help them solve their problems. These farmers generally had more experience in the wool growing industry, and were aware of the cyclical nature of farming. They were cognizant of various information sources, alert to framing effects in those sources, but they chiefly followed affective inspirations for decisions. They described reflecting on the decisions over long periods of time, and in that way learning when information gathered from sources other than themselves was helpful to them. They

identified with farming as a 'lifestyle', describing remarkable attachment to their land, seeing themselves as both a steward and a pupil in the relationship with the land they farmed.

Perhaps one further point to consider is that with experience, these farmers learned that the rational-analytical approaches prove unreliable in the uncertain long-term decision view.

These results support the notion that there are (at least) two very different approaches to decision making, rational-analytical approaches (Simon, 1957, 1983; Evans & Over, 1996), and unconscious (i.e., less explicit and articulable) intuitive approaches (Keren & Tiegens, 2004; Klein, 2001; Robbins, 2001; Sadler-Smith, 2008; Claxton, 1999; Gigerenzer, 2007). In doing so, the research justifies the assertion that there are two modes of thinking which are characterized by different properties, but as these farmers described, these are not discrete categories attached to individuals, but lie on a temporal dimension where the stage of experience (and thus the awareness of, and one's entrenchment in, a system) in a context influences one's preference for a particular strategy (Hammond, 1996; Sloman, 1996). Experienced farmers described using rational approaches when they were starting out in the industry and, then, moving towards a less conscious mode of decision making as they progressed through their career. This could be due to the farmers gradually becoming more aware of the intricacies of their environments thereby becoming more aware of and responsive to cues that lead them in a particular decision direction.

The results also support the research demonstrating that experienced decision makers concentrate on understanding the context, whereas the inexperienced decision maker tends to focus on the selection of the correct response (Cohen, 1993; Klein, 1998). While rational-analytical farmers were influenced by external events when they occurred or were highlighted in current media sources, some of the intuitive farmers described being able to place external influences in the broader context of the stage in a cycle of their industry. In that way, these farmers revealed a more detailed understanding of their situations.

The intuitive farmers in this study could be understood as being well-attuned to the dynamics of their day to day environments (whether competitive or cooperative). When their environments change, they are adaptive in their decision processes. The intuitive farmers learned to balance the trade-offs of making decisions that considered multiple levels of the system (which included mainly, the loss of short-term profit, but also the speed of decision, and having to trust many other people), in order to be a part of a longer term entity. In keying into the dynamics of those trade-offs that change with each strategic decision and within the changing global environment, intuitive farmers demonstrate their adaptability in decision making. Such dynamic changes may not be immediately – or obviously – calculable, but can still be detected by an ‘attuned’ decision making ‘sense’. Thus, they are not only able to adapt to their changing environments, but they are also able to adapt their decision making strategies as influences emerge from other parts of the system.

Furthermore, when intuitive farmers join with other intuitive decision makers (including other farmers, or supply chain entities) the adaptive decision making moves from solely being the function of the individual, to now being the function of a group. *In that way, the adaptive analogy of decision making works through higher and higher levels of a system in much the way survival forces work through biological systems that demonstrate cooperative behaviours.* Having a sense of, and responding to the trade-offs between levels of a system is a way that intuitive decision makers group together to achieve effective (and adaptive) outcomes for themselves, and for the groupings (supply chain) that they need for their own individual efforts to succeed. This feedback might take the experiential form of ‘trust’ or ‘suspicion’ or other reactions to the influences acting in the chains, but that question requires further study. Thus, the notion of naturalistic decision making occurring at the level of an individual has been expanded in this study as occurring on multiple levels of a system between multiple decision making units. *The ‘natural’ context within which decision making*

occurs – within a naturalistic approach – has been expanded via the structural linkages and groupings within which the individual (intuitive) farmer decision makers are embedded.

A final interesting concept that emerged from the data is that as the complexity of the inter-level dynamics grows, it is likely more and more difficult for a multi-level decision making unit to use a rational-analytically based determination for decisions. As a farmer's experience grows in the industry, their involvement in different social systems (i.e., dyads, cooperatives, local organizations, supply chains) changes, which could increase the number of pressures shaping their decisions. Any cost-benefit trade-offs would have to be judged over the different levels, each with different objectives, relationships, and processes defining their boundaries. Put another way, 'institutional' rational decision making is increasingly difficult as layers are added, and one's embeddedness in an industry solidifies. This has some practical implications, for example, if an agent acting on behalf of an institution (i.e., in NDM contexts operational or military settings are often examined), made a choice using an NDM approach, it could be quite difficult to objectively judge the merit of a decision that emerged from a 'gut feeling' should it prove to be an error.

Some caution, however, must be taken with the assertions given above. The findings may not be so clear when contextual issues from this case are explored. Many of the experienced farmers were working in the industry during the agricultural restructuring of the 1980's. One would expect that with the experience of going through the restructuring period, and subsequent uncertain times, these farmers would have more comfort with uncertainty in general, and may be more attuned to financial 'trade-offs'. Through being in farming, or closely tied with it during the restructuring period, the atmosphere and implied pressures could have been a 'lesson' that the newer farmers have thus far missed.

It is also unclear as to whether the experienced farmers used rational approaches in the beginning of their careers because of educational experience, or due to the economic restructuring climate. It could also be that farmers who were not comfortable with increased

uncertainty left the industry during this period and, hence, are not represented by this study. Given that the 'intuitive' farmers who went through the restructure are still farming, they might now have greater experience in navigating uncertainty, hence, rely on their intuition instead of relying on modern approaches to financial management. They could also have learned about the pitfalls of rational-analytical approaches from their earlier experiences. Alternatively, their rational-analytical skills during difficult times could have afforded them greater success allowing them now to focus on the other aspects of farming that the new farmers could not. Finally, the educational response to the restructure might mean that newer farmers are more exposed to financial and risk management methods, and newer technologies not previously studied in depth or emphasized prior to the historical events of the 1980's.

This trend has been noticed in other countries (see for example, No Author, 2009; Riley, 2002). What we may be seeing now are a cohort of business-minded 'lay-experts' and entrepreneurs replacing those often mistakenly perceived as continuing a family tradition, in traditional ways (Wynne, 1992). This could point to a changing social representation of farming and a change in how farmers view their vocation. The changing representation of farming could also be one more 'trade-off' that intuitive farmers are monitoring in their decision making.

Questions arise as to whether the findings about decision making preferences in this study are due to a cohort effect. One could expect, given the literature on the naturalistic approach to decision making, that in twenty years time many of the newer, less experienced farmers in this study might then describe how they have changed to a more intuitive approach to farming as they gain experience and situational awareness (Klein, 1989, 1998). It could also be that these farmers truly believe the rational-analytical approach to be superior and would show escalating commitment to that approach. The past experiences of the farmers in this study might have skewed the farmers' experience so that the newer farmers will continue to pursue 'rational' approaches, maximizing the short-term gains, while the intuitive farmers

will continue with their 'instincts' and longer term view. Further research would be needed to confirm or refute these possibilities.

In revisiting the objectives of this research, this discussion has thus far demonstrated that decision makers (farmers) make decisions using various strategies that are closely related to the contextual level of a system of which individuals are cognitively aware of and respond to (even fleetingly). With more experience and awareness of one's contextual 'location', decision making moves to a more intuitively based processing of cues from more levels.

Supply chain members also described how their business contexts play a large role in influencing how they come to decisions. Below I will explore their decision making influences and how the participants described how those influences affected the actions of the decision making units.

8.5 Decision Making by Supply Chain Entities

Revisiting the objectives of this research brings to the fore one of the subsets of the first research objectives; that is, how do the influences of groups and contexts (in this case, a social one) affect decision makers? This section will explore how the members of the supply chain described their decision making, and their role in shaping farmers' decision making. First, I will review the findings of their interviews, then work to describe how the dynamics of the supply chain influence individual decision makers.

The supply chain members interviewed during this study described several constrained contexts in which they must make decisions. They distinguished controllable and uncontrollable factors that sway their decision making, navigating changes in social and economic environments, dealing with complicated strategic positioning and power struggles among the chain entities, using identities to capture markets, and grappling with the upward and downward swings in the market. Some participants often described being at odds personally with decisions they had to make in their business roles. This once again indicates

the need to balance trade-offs (personal wishes) while making decisions as members of multiple levels systems. In the case of supply chain entities, however, it was found that often the personal goals in decision making gave way to the need to primarily work towards fulfilling the firms' intentions.

The participants also described in detail the virtual nature of the economic arena they now take part in. Two of the emerging problems with the virtual business world are the speed of interaction and the (non-) sharing of information between supply chain entities. In cooperative chains, information flowed smoothly and decisions were made as a 'chain entity' rather than as independent, individual chain stages. The boundary of the cooperative chain structure was clearly defined to the members. In opportunistic chains, respondents described that information itself had value in a strategic way and was shared when it promised a return. Many of the supply chain respondents in opportunistic chains did not perceive any reasons for communicating with farmers, or that information should actually flow through the chain to them, though they themselves expressed frustration at the lack of information they received from other entities, including farmers, in their chains. These entities also perceived that retailers, since they are most closely associated with the markets they are trying to capture and receive signals from, and farmers, since they provide the raw materials for the supply chain to add value to, hold the power in the chain.

In terms of 'decision making units', opportunistic chains operated like separate parties with their own boundaries at each stage and, much like the individual, rational-analytical farmer decision makers, weighed options for maximum payout and pursued short-term gains over long-term stability. They perceived their competition to be other firms at their stage in the development process of a product. The cooperative chains made decisions as an entire 'entity' and often for long-term survivability rather than short-term gains. This required great cohesiveness and commitment to an aligned system where individuals give up their short-term gains.

How does this help to uncover the ways in which groups and contexts influence individual decision makers? To explain, within the modern business environment, it is important to know who to cooperate with so that one is not taken advantage of and thus loses the benefits (monetary and otherwise) of being in a supply chain. The trade-off of belonging to such a group, as revealed by the members interviewed in this study, was the need for trust and open communication. The highly aligned priorities of the entities in a cooperative environment led to well-developed communication systems where information is shared consistently and rapidly between all levels. Additionally, the chain ‘captain’ works to ensure the alignment is maintained. In that way, the boundaries encompassing the members of the cooperative chain are made clear to all members and there is no question about who to trust. That boundary encompasses all the firms in the chain. In the opportunistic chain, the boundaries seem to be placed around individual firms, (and in some cases around individuals working in those firms, i.e., in the case of commission-based sales). Thus, there is no motive for the open sharing of information with other firms or other levels because of the competitive environment of the opportunistic chain. Again the boundary is made clear to those inside it; only this time the boundary is around individual firms in the chain, not the whole chain.

Given that opportunistic wool chains are the conduits responsible for most of coarse and mid-micron product export and manufacturing, and these products are ‘functional’ in nature, there is an established market where individual firms are fighting for a share of that market. The wool is just an ingredient in the final product, not the final product itself. This finding is congruent with the low degree of coordination in market and modular governance systems as defined by Gerrefi et al. (2005).

The competitive environment promoted the use of decision making strategies that put individual decision making units’ survival as the highest priority. Thus, it makes sense that in these chains farmers were suspicious of other levels, and made their decisions based on strategies and processes that would put themselves ahead of groups’ interests. They remained

focused on their boundary. Additionally, they sought to gain in the short-term, perhaps due to the ever-present fear of being taken advantage of. Entrenchment in a competitive environment promotes the use of individual maximizing decision making strategies (i.e., the non-sharing of information beyond the individual). The competitive environment perpetuates competition across multiple levels. Since the interactions in the competitive chain are brief, there is no drive to learn more contextualized factors and become more attuned to contextual cues outside of the immediate firm. Similarly, there is no encouragement of group ideals because there is no need for longer term interests to be promoted.

How does entrenchment in a cooperative environment differ in terms of perpetuating strategies of decision making? I will now revisit the results from respondents in cooperative chains in order to build support for how group membership in cooperative environments affects individual decision makers.

The cooperative chains tend to carry innovative fine micron products to market, which have value-added components, and are sold using value-linked marketing aimed at a specific group of buyers. These chains are based on relational governance systems (Gerrefi et al., 2005) and have highly differentiated strategies (Porter, 1980). These products are the final item that a consumer buys, not simply an ingredient into the final product (e.g., merino polo top versus a textile, or a piece of furniture covered with a wool textile).

The success of the entire chain then hinges on the marketing used (in this case, local branding) created by the marketing firms selling the products, to which all members of the chain need to be committed and cooperate with for the strategy to be successful. This will be discussed further in the section on place attachment and traceability (see Section 8.7). The important point for now is that, with such detailed and, for the most part, traceable marketing, all members of the chain must be committed to the strategy, thereby embedding themselves in the 'products' system'. In that way, cooperative chains make decisions across a system, much as an experienced farmer, who, over time, makes decisions based on their understanding of

their system of farming. Both the farmer and the supply chain members have a vested interest in the longer term survival of their industry (or the land). That interest requires decision making strategies that promote the interests of the entire membership of the chain, not just individuals (at any particular level). When information relevant to all levels of a system is shared, the context for decision making is made clearer to the members. They become more familiar with their 'environments' and can be more attuned to cues in much the way farmers become more attuned to the farming locale. Hence, the cooperative environment promotes cooperative decision making across multiple levels, and in consideration of multiple levels.

To summarize, this study has found that groups and contexts influence individual decision makers in two ways. First, the contexts work to promote parallel decision strategies across a system; those strategies used on one level drive the strategies used on others. This is because of the varied types of embeddedness of decision makers in their systems, and the way the influences on decision making flow through the chains. The more embedded, the more attuned decision makers are to cues indicating what to do. But, when there is no need for embeddedness (such as during the relatively brief interactions in the opportunistic chain), decision makers can base their decisions on their own individual needs. Secondly, and on a higher theoretical level, decision styles on one layer of a system promote the use of the same decision styles in other layers because of the flow-through of influences in a system; these influences may be affective components (i.e., mistrust breeds more mistrust), or other trade-offs (such as information, risk, or financial gains). *There is an apparent paradox here with the locally 'planted' farmer (decision maker). One may expect a farmer to be an expert in a local context, however, the intuitive farmers in this study have also demonstrated that a planted decision maker can be an expert in a global context if they are able to respond to that environment in an adaptive way (see Section 8.7 below).*

As with the farmers, there are contextual issues to discuss. More and more business is occurring 'virtually' in the global economic arena. The communication therein (i.e., the

internet) no longer needs to involve face-to-face interaction, but, as the competitive members indicated, orders sent virtually are the main means of relating between firms in a boundary-less way (over the virtual communication world). Hence, there is great variability on offer for brief, singular interactions in opportunistic chains to satisfy immediate needs without having to invest time and effort in building a relationship. In fact, boundaries might seem invisible to these participants unless they put them up themselves (structurally and personally). There is yet another way to look at this situation. The technology (the internet) allows brief, but far-reaching interactions in an immediate and anonymous nature, but is not a neutral system. The technology was developed for and within particular sets of interests. In that way, the technology is itself a context in which users must adapt. The technology then may not drive trust or mistrust, but these characteristics might be effects of internet use.

During data collection for this research, several global events involving mistrust among firms were noted by the respondents (i.e., the trials for the Enron scandal, Tyco, and the Bayou Hedge Fund Group as well as some New Zealand-based investment firms). There was also the Chinese Correction of 2007, mentioned by both supply chain members and several farmers, and most recently the Global Financial Crisis of 2008. It might be that these events influenced the responses around information sharing and trust in the industry. It could also be the case that the respondents I interviewed had different perceptions of communicating among agribusiness-based chains than would arise in other industries, for example, the automotive industries.

Below I begin to detail how the three 'key' decisions described in Chapter Seven are illustrative of the interconnectedness of the entities along the chain. The next section will clarify how 'intangible' social psychological processes can travel through the chain and affect individual decision making – a key contribution of this research.

8.6 Three Detailed Decision Scenarios

The three decisions explored in depth during the last chapter illustrate three findings of this study. First, that there are both ‘push’ and ‘pull’ factors as to why farmers decide to remain in the industry when presented with other options, and these relate to the general decision making style that farmers use. Social (interpersonal and intergroup) pressures dominated the reasons why farmers would consider leaving the industry, but internal psychological (intrapersonal) reasons were given as to why they remained involved. Personal approaches to dealing with uncertainty and risk are also related to the decision of wool growers to continue. Those with more experience in the industry were comfortable following their gut feelings for making decisions, and used these gut feelings as signals for when to leave the industry. The use of gut feelings in uncertain situations confirms research presented by Gigerenzer (2007) and Robbins (2001), and supports the important role that context has in influencing the style of decision making used (Zsombok & Klein, 1997).

Second, entering into agreements (i.e., contracts or cooperative entities) was perceived as a way to reduce risk and prevent information dilemmas (and the associated suspicion) along the wool pipeline. Relationship building and maintenance was noted as being important to brokers (historically, and now given the perception of more uncertainty among brokers), and important for farming groups as illustrated by their use of some group-pressure related heuristics during individual and group decision situations (Gigerenzer, 2007). Conversely, entities in a competitive environment (opportunistic chains) did not perceive it to be important to invest time in building a relationship with farmers at their ‘business’ end of the chain. Members of cooperative chains indicated commitment and positive affect toward farmers in general, and noted recognition for their innovation, mutual respect, and mutual responsibility.

The third major finding emerging from the decision scenarios was that social uncertainty is a result of the globalized business world, but it is manageable when trust and transparency are encouraged, and the decision making unit is clearly defined to the member(s)

(Cottam, 2004). Trust, thematically, seems to be at the centre of the supply chain dilemmas described in this study. In competitive situations, the boundaries for sharing information are placed around individual firms, and that result in mistrust, which further promotes a drive for strategic positioning in order to gain a competitive advantage over other entities. That concept is completely reversed in the cooperative situation; the context of the cooperative chain promotes trust. Boundaries are placed around the entire assembly of the chain. In that way, decision making by individuals is affected by the actions of agents in other levels of the chain, manifest through the 'trust' created by the context.

These three journeys help to uncover the complexity of context for each decision maker. The boundaries described are not just information though, they are also perceptual. In the cooperative chain, there is a sense of belonging that is manifest in all of the members within the boundary. Whether that belonging promotes a greater group cohesion, or more trust is an area for future research. Nonetheless, that belonging is transmitted from level to level in a system and affects individual decision makers. That social context (belonging to a group, family, chain, social representation) also to some extent affects whether farmers remain in the industry when they are contemplating leaving. The context also affects how members within the chain make decisions as well (for example, making a decision based on a longer term view, and shared benefits and trade-offs in the chain). Finally, through the marketing and related traceability of a product in the cooperative chain, even consumers and retailers have a sense of belonging to that group. This cooperative arrangement works for the products in their particular context.

In the competitive chain, the perceptual boundary contributes to individual behaviour in a protectionist way. Decisions by individual DMU's are prioritized by their potential for achieving their goals. The environment in which individuals, firms, and their embedded decision makers act structures the kind of decisions they make. In this context, decision makers balance the long term survival trade-offs by seeking short-term individual gains.

Consequently, the competitive environment creates a range of individuals, groups, and firms that come together, interact and break apart over time.

Fundamentally, both of the types of chain environments present benefits and trade-offs that decision making units are responding to. Since the chains also have emergent properties, structural changes occur, and there is the propensity for many types of behaviours in the chains. In supply chain literature, there is often the call for chains to be organized and governed in particular ways (see Chapter Two: The Context of the Problem, Section 2.3), however, some environments do not necessarily require organization when opportunism works. By analogy, the natural environment contains all sorts of arrangements of organisms, each functioning within their specific 'niche' and adapting (over time) when niches change. It is precisely that 'niche' or role to fill in a given environment, which encourages particular behaviours. Likewise, the environment in which decision makers are embedded should support particular decision making styles. Natural selection has done the thinking for organisms in their niches, and the organisms respond to their environments in appropriate ways. Perhaps through successive generations of social and economic pressures, the same could be true for human behaviour within supply chains; however, further research would be required in order to begin to give that an answer.

8.7 A Sense of Belonging and Decision Making

The perception of shared threats was found throughout the supply chain groups. Many farmers in this study felt threatened. There was the perception of 'hidden' information in the chain and biased information sources, implied comparisons with currently successful trends (i.e., dairying), the notion of having to trust others, and the fear of losing their special places. Supply chain members also felt threatened in this study. They described alarm over uncontrollable events, power struggles, 'game playing' amongst competitors, dealing with changing environments, and worry over the future survivability of the industry. As opposed to

the farmers, though, they described having the choice as to which 'external' costs they fund, and a perception of more control over their profits through strategic positioning. If this sequence were traced backwards, it would appear that the narrowing boundaries as a strategy, could emerge out of fear (or the perception of threat), which, in turn, emerges out of uncertainty (Moore, personal communication, 2009).

There is an information dilemma in the industry, and industry members try to maintain their individual advantage by concealing information that, if pooled, could contribute to a more aligned system overall (Toma & Butera, 2009), and perhaps greater success against the competitors of wool in general (i.e., synthetic fibres). But there are uncontrollable factors as well, such as changing market tastes, which place supply chains in a reactive situation. This is not to say that either chain in this study is misaligned, only to indicate that the chains as they operate right now, (for which some of my participants indicated frustration) emerged out of the contexts in which they are embedded.

Product identification also seems to be involved in complicating the group circumstances of the decision makers in this study. There are two types of product in this industry; functional products (i.e., coarse wools used for carpets, insulation and other bulk textiles) and more specialized innovative or 'up market' items (e.g., fine wools used for apparel). It has been argued that supply chains need to reflect the products they are conveying (Fisher, 1997), and entities should use the most appropriate governance system for their chains (Porter, 1980; Gereffi, Humphrey, & Sturgeon, 2005). What this study has uncovered is that decision making units in chains respond to influences moving through chains, by balancing trade-offs that are not always based on economics or governance. One of the processes identified was where one's boundaries for information sharing and trust lies. This study has demonstrated that these social and personal factors are present in both types of chains, and complicate the contexts in which decision makers act. The decision makers in this

study, who act across a global array of logistics and businesses, are thus also influenced by social psychological processes.

In addition to social psychological processes complicating the decision environment for members of supply chains, there was further evidence of certain contexts affecting decision makers at other levels in the chain. The context in which decision makers acted (as described in this study) promoted others in the same context to act in similar ways. For example, in the opportunistic chain, a decision making unit may be forced to pursue their self-interest more aggressively by simply being immersed in a competitive group, or groups. A farmer directing wool through the auction system over several years could internalize the feedback from that system, and transfer the experience into more of a tacit approach as recognition of when and how to use particular approaches becomes more internalized and automatic (Larrick, 2007). A rational decision maker then reinforces for themselves the use of rational-analytical approaches when presented with repeated competitive group situations. Hence, the context of decision making feeds into individual behaviours because of repetitive interactions.

What is the relationship between group contexts and the intuitive decision makers? This research has uncovered a difference in the awareness of decision making units between intuitive or experienced farmers, and new, or rationally-based ones. The intuitive farmers who were members of cooperative chains in this study recognized that they must work together as a 'chain entity' and make decisions that advance the products against competing chains, rather than individual firms along the production path. They were aware that the boundaries for interactions with other people in the cooperative chains were around the entire chain, not firms, or individuals. These decision makers did not concern themselves actively with maximizing their own short term gains, but instead accept short term hardships if it means that the long term interest of the products they create are supported. This finding supports Hogg's (1992) assertions that having a broad understanding of social cohesion and

interpersonal interdependence in social groups results in heightened feelings of unification, and improved conformity to group standards.

What this means is that farmers who (through more experience with the cyclical nature of the industry, and through experiencing difficulty in the short term that led to success in the long term - e.g., during the 1980's reforms) value the long term sustainability of their chain, can more easily balance the trade-offs of making difficult group-based decisions that put the group's interest first. The social context of their decision making has moved from the local and individual, to a more global and group-oriented system. Decisions for the long term sustainability of the chains are located among social contexts where individuals balance the trade-off (such as having to trust others), but gain the benefit of sharing their risks, and avoiding suspicion in individual-based competitive contexts.

Once a person becomes an expert in navigating the social psychological processes moving through multi-level human systems, it could be that the physical context of decisions plays a less important role in the emergence of a decision strategy and decision itself. The adaptability that emerges with experience and learning of one's intuitive abilities allows a decision entity to call on that experience when facing new circumstances, and ensure a safeguard is in place. In that way, a locally-planted decision maker can act 'expertly' in a global context since they learned to pilot their own decisions through understanding their attunedness to all aspects of a context (the temporal components, the implied presences, the ability to backtrack, as well as the ecological, economic, social, and psychological aspects). This development of an expert system might be similar to other recently explored intelligent behaviours described as embodied cognitive processes.

The connection between the intuitive farmers' deep sense of place and the intuitiveness they described deserves an in-depth study beyond what was performed here. There are, however, a few interesting points to consider. The parallel development between experienced farmers' strong association with place with the use of place-based marketing for

their products is an interesting emergent feature of this study. Perhaps this was the most explicit example of a process moving between levels of DMUs (i.e., the attachment of an individual translating to a strategy used across a ‘chain-level’ decision making unit). In contrast, the opportunistic chain DMUs could be considered “placeless’ in this regard, which might contribute to a better understanding of their behaviours. For instance, without a ‘local’ knowledge to guide their decisions, or give them experience with their own internal states and emotions, they may not develop the attunedness they need to navigate global circumstances. Perhaps another of the trade-off of the short-term gain in an opportunistic chain (and a rational-analytical decision approach) is the sense of security that place attachment and it’s closely linked ‘attunedness’ offers.

How far though, can the trade-offs be felt when a group is based across a global playing field where groups may coalesce and dissolve depending on a changing market (and thereby the economic context)? The next section will explore another element of the first objective; how the globalization of the wool supply chain affects individual and group decision making.

8.8 Globalization and Decision Making

In what ways does globalization affect decision making by individuals in the wool supply chain context? With increasing pressures to compete internationally comes the increasing need to either (i) differentiate or brand innovative products in order to capture success from the fickle, ever-changing, consumer culture, or (ii) mass market a functional, consistent product. That means there are many pressures to develop unique, identity-rich products that people will change their consumer habits to buy, or to maintain high standards expected from functional products. Thus, personal factors such as values, attitudes and norms are important to consider when deciding how to present products to markets. Maintaining or creating ‘identities’ or ‘terroirs’ for products can be used as a marketing tool differentiating

products from competitors, and differentiating producers or companies, from others. Thus, globalization can drive the marketing of individuality, local values, places, attitudes and situated norms (e.g., environmentalism).

Globalization can also drive chain alignment in order to quickly move products to market while sharing the larger risks associated with time-dependent merchandise. This requires the integration of economies and the breaking down of borders (real and virtual) so that international trade, the flow of capital, ideas and people, the transfer of culture and technology, and the development of transnational regulations can occur smoothly (Scholte, 2000). In this study, it was found that globalization, through allowing the capture of wool markets around the world, has brought success to creators of innovative wool products, and in doing so, has influenced the decisions made by New Zealand farmers (Frew, 2009; Turk, 2009, Krut, 1997). Some farmers indicated that they have decided to remain in the industry and remain committed to cooperative chains because of the shared benefits that the aligned chain can provide. These farmers believe that through cooperating and ensuring a long term vision is maintained, New Zealand fine wool producers are better positioned to capture fine wool markets. They also described having the support and confidence to turn their innovative products into longer term successes.

The findings from this research also indicate that globalization drives the opposite of the cooperative behaviours and long term vision in decision making. Coarse wool exists in a saturated market with many companies and countries providing the same services at the same levels in the supply chain. These entities inter-compete in order to keep their share of the market at their stage in product manufacturing. In saturated markets, tried and trusted staple (functional) products end up being the consumers' fall-back choice when presented with too many options (Gigerenzer, 2007). There are staple products (and familiar brands) made from wool that people continue to need over long periods of time. In this way, globalization drives stability and familiarity in the market, while driving competitive behaviours in the

manufacturing sector. Competition in general tends to favour rational analytical individuals and businesses since optimal decision making increases the chance of success (survival) in a competitive environment (Tversky & Kahneman, 1986). In that case, the competitive environment reinforces decision making strategies for individual firms along the chain that maximize the benefits, out-compete the competition, and keep the production costs low.

The encouragement of buying locally-made products has also made it 'trendy' to market place values in order to capture a 'wholesome' market. But, by giving a geographical location and terroir-like characteristics to a product, a 'traceability' is required, and everyone in the chain must cooperate because their success hinges on the sales pitch. Thus the introduction of traceability to a product introduces two adjustments to the way in which the supply chain members interact; first, a structural adjustment where boundaries are defined geographically and socially through the product branding, and second, through a strategic adjustment where all members must be committed to the product identity as marketed to the target audience.

Perhaps this gives some insight into how some supply chains (i.e., the fine wool cooperatives in New Zealand), become cooperative environments to begin with. Giving meaning to the local products creates an end product that is more than just a commodity item. Harnessing the innovation of the finer wools, and the farmers and supply chains that work with them, may be a way of increasing the advantage of the cooperative chain over their perceived competitors (other fibres and synthetics). Using local branding might be another way to make boundaries clear among supply chain members. Only those that truly reflect, and are committed to the branding are trustable, while others not involved are more easily identified as competitors. The comfort of knowing those who are aligned and within the boundary of the chain presumably helps to build cohesion in the chain, much the same way that arriving within the bounds of a special place can bring comfort. That cohesion can, in

turn, make decision makers prioritize decisions that work for the good of the entire chain. The next section explores how a sense of place affected the decision makers in this study.

8.9 Place and Decision Making

The intuitive farmers in this study had a perception of oneness with the special places in their lives (i.e., their farms and those of their families in the past). Their attachment with place was played out in two ways (modes); directly, through perceiving the physical attributes and needs of the farm and making decisions based on those data and, indirectly, through the symbolic processes of learning from their experiences with the land and their flocks (then in a cyclical way, being a better steward of the land). Experienced farmers described their deep relationships with place (one farmer described being ‘married’ to the land). Some even described place attachment to farms in general and, in that way, ‘farms’ as symbols may serve as sources for cohesion among farmers. Farmers who considered farming a ‘lifestyle’ loved the land and the stock, as opposed to the more rational-analytical oriented farmers who perceived the land as something to be worked.

There may be place dependence for experienced farmers as well in that their decision making was often described as being informed by the land itself. When faced with difficult decisions, some indicated they went out onto their properties looking for a cue (in both direct and indirect ways). Would farmers make the same decisions if they were removed from their ‘places?’

Experienced farmers appear to be so attuned to cues in the environment that they have internalized the land as part of their identities. Alternatively, the land may be more accurately described as a teacher, spouse or other important person (in either case, an embodied entity perhaps with a farmer as a part of that entity). The farmers themselves may be more accurately described then as apt students, siblings, or partners, while new farmers are yet to gain the experience that would help them become attuned to the right or missed cues. When

experienced farmers discover solutions to problems through their deep place attachments, they are in a way re-professing their commitments (vows) to the land, and reinforcing their subsequent intuitive decision making abilities.

Using place-linked values to market an item is not a new concept. It has been practiced in the wine industry for centuries (Wilson, 1999). However, in the textile industry using place-linked values offers a ‘traceability’ to products formerly not recognized in that way. The newfound traceability attracts a wholesome or environmentally-minded market, in this way increasing the perceived sustainability of the industry, but it also does two other things. First, it allows the farmers to know where their harvests are going. This can increase their sense of ownership and responsibility for the products in a way that can build pride in craftsmanship, and the desire to be involved in all steps of the manufacture of the products. Second, the traceability introduces accountability in the supply chain. There are human dimensions to terroir. In the wine industry, for example, a winegrower must choose grape varieties that reflect the soil characteristics and climate of the area, and decide when to harvest (that way the grapes will thrive, and be of appropriate ripeness, giving the wine its locatable flavours) (Robinson, 2006). The same can be said for growing wool. Only farmers who know their land and stock in great detail, and are apt managers of the uncertainty of their climate, will be able to produce the quality of wool expected and marketed in a place-linked way, with predictability and accuracy. The properties of a wool clip change with weather, soil characteristics, and health of the sheep. These factors are controlled by the farmer.

8.10 Effects of Experience on Decision Making

The second objective of this research was to explore how decision making is learned and improved with experience and contextual factors. This section describes how the experienced farmers indicated they learned to trust their own judgment and gut feelings in their decision making.

In this study, new farmers, and most of the rational-analytical farmers in general, said they were eager to put what they had learned during tertiary study to use. Sometimes this involved using rational-analytical decision making strategies to make choices that could have been approached in other ways. In ‘managing’ the farm the way businesses are managed, these farmers might indicate that they *value* being financially successful, are easily persuaded by varying social (external) influences, have farm management styles based chiefly on financial returns, and have less tolerance for increased risk (debt). These influences have been uncovered in other studies (Willock et al., 1998; Morgan et al. 1995; Ohlmer, 1998; Nuthall, 2006). New influences uncovered from this group of farmers included the eagerness to put their education into practice, a rejection of naturalistic decision making, using peers as information repositories, and allowing echoes of historic events (especially as described to them by their family members, both current and implied) to influence current decisions. These farmers collected information from many sources including friends, consultants, and advisors. Their ‘sifting’ of information as to importance for the current decision, however, was not as well-developed as the experienced farmers. Their decision making strategies were ‘mechanical’ in nature, cataloguing information, then focusing on using their internal *computational* skills to calculate a solution. By using these mechanisms to solve problems, they may be missing cues both from the external environment, and from internal emotive signals that would point them in a different direction.

The most important point emerging from the exploration of the rational-analytical farmers was that they *trusted others’ information more than they trusted their own judgment*, and had a need for calculating (expending cognitive energy), that supersedes their need for satisfying internal affective components of decision making, something that was deemed valuable to experienced farmers. This reliance on interpersonal and group feedback positioned these farmers among those who considered the fundamentals of decision making to be located separately from an individual’s affective and emotive spheres. Subsequently, making

decisions using rational-analytical models seemed 'logical' and 'natural' to these farmers. Their rejection of 'esoteric' intuitive decision making strengthens this assertion. But how did they arrive at that convention?

New farmers are often in a life-cycle stage that has high debt and less experience. This could blur the lenses through which they look at the world. Having to concentrate on alleviating debt may influence these farmers to frame all potential solutions in terms of their probability in delivering financial relief. Without relief in sight, these farmers continued to concentrate on the debt-load as a main contextual factor on their farm and in their lives. Farmers with low debt tend to be at a different life-cycle stage and have more experience. Level of debt is another aspect of context that affects individual decision making strategies.

There may be a socio-historical component to their approach (and not just a result of their lack of experience in this industry and their debt loads). It could be that with more available information through the widespread use of the internet, these farmers are actually surveying friends and other consultants for where to find the information they are needing in order to cut down on time invested in searching, whereas an experienced farmer would have established their reliable sources. Yet it could also be that a combination of a predisposition in an individual for rational-analytical decision strategies *and* the widespread availability of information on the internet that complicates decision for inexperienced farmers. Once again, the proliferation of information (for individual 'users') on the internet could be indicative of the non-neutral nature of the technology, which serves to complicate the context in which decision makers' act.

The implied presence of others is also important for intuitive farmers. It is often, however, in the reflection post-decision that implied presences of other people make themselves known for these farmers. Though they do gather information from others, they do it in a passive way, *trusting their own judgments first and foremost* over the opinions of others. When reflecting on decisions, these farmers described how they sometimes became

aware of the importance of advice from others after a decision was made, helping to reinforce a positive decision, or learn from a negative one. In the replaying of scenarios they have faced, good advice from others became clearer in their memories. Thus, they rely on social relationships as reinforcements for decisions, rather than sources for advice pre-decision.

The rational analytical farmers described how they actively seek information (the media, representative bodies and their reports, technological support systems, groups they are members of, and expert and farming consultants). Though they are active in searching for information and advice, they are less inclined to notice how the framing of information - and the motivation of information sources – can affect the accuracy of information. Less experienced farmers were not as attuned to trends and social cycles as the more experienced farmers. This unanticipated result (social psychologists usually think of younger people as being more aware of current trends while those who have been in an industry for some time are often seen as overly attached to past ways of doing things) may be reflective of more experienced farmers being able recognize which trends will last, judge the sources of information about trends with more accuracy, and identify which trends are recurrences of past trends. Experience, and age does play a factor in these differences, but having a keen ability to discern repeated patterns (i.e., in the media, market tastes, or decision scenarios) through well-developed perceptive abilities was paramount in demarcating the intuitive farmers from the rational-analytical ones.

Not only did intuitive farmers describe how they can identify trends, and the framing of media towards a particular purpose, they were also responsive to the greater cyclical nature of products and trends (i.e., they become popular, then diminish, then re-emerge in a new frame). Because of their experience in the environment, they were able to grasp temporal components of their context, and shape their decision making in that way. They noticed representations of farmers in media reports, and questioned their accuracy. This knowledge

serves the intuitive farmers well in being able to navigate broad pressures on their decision making.

But what is it about the intuitive farmer's history or upbringing that helps them to develop these abilities? The different explanations for development of intuitive skills in the literature all suggest that experience, in some way or another, contributes to the honing of intuitive skills (Robbins, 2001). Gigerenzer (2007) suggests that it is through experiences that innate abilities and pre-programmed factors allow intuitions to enter people's awareness. The pattern recognition built through repeated experiences described by the farmers in this study provides support for this notion, as does the idea of 'just knowing' or perceiving an answer. Experience also builds values and attitudes, and accessibility of values and attitudes by building cue-recognition skills in decision makers (Davis, 1985; Ajzen & Fishbein, 1970). The intuitive farmers gave evidence of highly developed place attachments, polished abilities to notice cues in environments reminding them of past situations, and an awareness of their own levels of trust and suspicion. These findings support decision making theory that describes such a skill as an *emergent behaviour*, where an individual has a set of mechanisms 'waiting' for exposure to certain situations that then allow decision abilities to emerge (Dosi, Marengo, Bassanini & Valente, 1999).

When the intuitive decision makers described their decision making as a process, involving pattern recognition, a perception (in the sense of an insight) of the right answer, and involving a reflection of past decisions and decision inputs, it suggested a process in which decision making emerges from without and within, from personal psychological capacities and social psychological processes. Intuitive decision making in this study overcame the criticism that human intuitions are sometimes mistaken due to the fallibility of human memories (Offer, Kaiz, Howard & Bennett, 2000). This was discovered through the farmers' abilities to recognize their own feelings of suspicion, and differentiate them from uncertainty. Their ability to be 'keyed' into their setting reflects an ability to sense something amiss, even

if they cannot describe exactly what. Thus, it is adaptive in nature, brought out by contextual factors including economic, social, ecological, and cultural properties. In that way, decision making can be passed from generation to generation, potentially through a prolonged period of mentoring between parent and offspring, or experienced farmers and new farmers, even though there are differences between cohorts.

In exploring the second objective of this project, it is evident that experience in a context heightens one's ability to be aware of cues (of varied types) that alert a decision maker to a path. Intuitive decision making is learned, or 'activated' as a person becomes highly aware of patterns in their customary environments. Rational-analytical decision making is also reinforced by the context through repeated interactions of a competitive nature. In the wool industry, longevity acts on the individual decision maker by influencing them to learn to balance the changes in their environment by being adaptable in using the decision making styles that suit the environment at the time.

8.11 Intuitive and Rational-Analytical Decision Making Continuum

The farmers also shed light on how learning decision making as a skill might go through stages of relying on one type, then another, or mixed usage of both, and thus lie on a continuum of strategies and approaches, rather than act as discrete opposites (Dreyfus & Dreyfus, 1996; Klein, 1998; Simon, 1983). Several intuitive farmers reflected that earlier in their careers they used more rational and systematic methods in coming to decisions. Rational-analytical farmers felt the need to use the decision strategies and farm management techniques they learned through tertiary education, but, as the intuitive farmers demonstrated, may turn to intuition as their experience and comfort level with strategic decisions, and their environments increases.

Thus, the use of rational-analytical methods early in a farming career may be a stepping stone to developing a suite of decision making skills to call on when the environment

demands a particular approach, and when one becomes more attuned to that environment. The more repetitions of an environment or decision scenario one comes across, the more solidified a particular approach becomes. When farmers experience a greater variety of actual circumstances and strategic situations, they may learn when to use which approach and, then, be able to select different approaches as the contexts require them to. There may also be quite particular social historical factors influencing why the use of rational-analytical methods early in the career and under large debt loads has emerged in this study, but, nevertheless, it is a suggestive finding.

This ‘decision tourism’ (i.e., the selective and momentary use of decision strategies without permanent commitment) also demonstrates a strongly adaptive feature of decision making in ‘natural’ settings. When an approach is taken, but does not exactly suit the needs of the situation (for example, a “satisficing” strategy), the ability to backtrack and try another approach is needed. If farmers only knew of one way to approach decision making, they may find themselves successful in some situations, but failing in others. Farmers indicate that they experience something different every day in their ‘jobs’ or ‘lifestyles’ – in that way, their situations and contexts are always changing (though sometimes those changes do not merit strategic decisions), whether on the farm, in their social milieu, or in the global economic arena where their products end up. The constantly changing environment requires an adaptive approach to decision making and an ability to shift to different decision making styles depending on the context. This supports the theories of two decision making modes which lie on a continuum (Hammond 1996; Sloman, 1996).

Most of the farmers indicated a particular leaning or ritual-like approach they took to strategic decision making (this again, does not include routine day-to-day decisions). However, one farmer in particular affirmed, and others gave hints that they sometimes used both rational-analytical and intuitive approaches when facing tough decisions. This particular farmer also indicated that his mood sometimes influenced whether he expended energy in

thinking about possible alternatives (rational approach), or whether he felt *good* enough to just ‘go with his gut’. This supports the notion of moods influencing intuitions (Bolte, Goschke & Kuhl, 2003), where positive moods enhance intuition. Perceiving oneself successful in the farming environment or lifestyle might then promote good feelings which could reinforce the use of intuition in guiding decision making among these farmers.

The continuum of decision making abilities and use might also be reflective of the age and experience of the farmers in this study. Those who were farming during, or have a strong awareness (through intergenerational memories or social representation) of the restructuring of agribusiness in New Zealand, might have more experience with uncertain situations, and solving complex economic dilemmas. They might also feel more confident trusting their intuition if they successfully navigated the ‘watershed’. They might even have relied on rational methods during tough (economic, and negative mood) times, but now in thriving, have turned to intuition. Some of the more rational-analytical farmers may have learned their decision making predispositions from parents who were teaching them to farm in the restructured climate.

The extent that these experienced farmers actually consciously ‘let themselves’ choose a particular decision style is not, as yet, known but could be an interesting further area of study. Results could indicate whether decision making strategies can actually be ‘touristic’.

To summarize, from these farmers it is evident that farmer decision making lies on a continuum, and evolves in an adaptive way that reflects a farmers’ decision contexts and experiences. How they use their decision making abilities in the present is also dependent on context and experiences as the following sections on uncertainty, and perception will explore.

8.12 Intangible Aspects of Context and Decision Making

There is a further aspect of context to explore in terms of how it influences individual decision makers; that is, the internal thoughts of decision makers. Rational-analytical farmers

often described a need for cognition (Cacioppo & Petty, 1982) and an unquenchable need for information when faced with difficult decisions. With the two competing interests in decision making - those are, making the right decision, and making a speedy decision without expending too much effort - what these farmers perceived internally as an ideal process for approaching decisions might not benefit them over the long term. These farmers experienced uneasiness in coming to decisions, but attributed that to the difficulty of decisions, when it is plausible that they needed more experience to learn what was relevant. They tended to approach decision making in ritualized ways; gathering information, sitting at the table, and writing out and weighing options, thereby removing 'emotion' from their decisions. This sphexishness³ (Hofstadter, 1982), perhaps was a way of easing decision making when faced with risky choices, or perhaps a habit learned from parents. It may also serve to activate creativity in these farmers (Stout, 1996), but, more conceivably, and as the farmers reported, they believed that this was the correct way to make risky, complex strategic decisions. Their internal comfort with the decision approach is an interesting finding to consider.

Recognizing uncertainty, complexity, and being comfortable with risk were personal attributes found in the experienced group of farmers. They tended to take intuitive approaches to decisions, relying on 'gut feelings' and were well attuned to cues coming from within themselves. This supported the use of recognition primed decision making and involved building situational awareness with more time spent in the industry (Endsley, 1997; Harwood, Barnett, & Wickens, 1988; Zsombok, 1997).

Recognition of repeated patterns or signals in themselves, including feelings of suspicion involves a developed perceptual ability. But in what sense of perception do the decision makers in this study act? Below I will explore how the results of this study contribute

³ Douglas Hofstadter's word "sphexishness" is used to mean tolerance for repetition. The word comes from an observation that the digger wasp (genus: *Sphex*) does not realize that it is in a behavioural loop, doing the same thing over and over again. Each time it finds that the bug it has retrieved and placed outside a nest for its young has been removed, it treats it as a novel situation.

to the concept of perception, which is central to the approaches the farmers took in their decision making.

8.13 Perception and Decision Making

Perception involves the reception, transformation and categorization of original sensory input (Reber, 1993). The rational-analytical farmers use their perceptive abilities as tools, pulling together data about the world and constructing the world according to what has been gathered from the outside. In that way, the rational farmers could be described as cognitively existing on the outside of the environments in which they were making decision, looking in.

The intuitive farmers on the other hand, use perception in the instinctive sense; that is, they receive and categorize information about the world that surrounds them, but also *interpret* that information and use it to help them adapt to their environment, from within that environment, with a keen eye to what is different or changing in that environment. This may explain why the more experienced farmers followed their intuitions; that is, the intuitions come from a familiar place for them.

In a sense, the intuitive farmers use decision making in a way that is thoroughly 'embedded' in their environment (especially the farm itself but also the 'life' of a farmer and the history of sheep farming that they are part of). They manifest Gibson's view of perception – they have finely attuned sensory and perceptual capacities that have 'evolved' (over their lives) to 'pick up' information about the world in order to direct and organize their activity. The way intuitive farmers' use their perception emphasizes that the answer is 'out there' and one just has to be sensitive to it and to trust that one's experience has meshed one's reactions into the significant features of the environment. The answer, though, might exist 'in there' but because of the ability of intuitive farmers to be attuned with themselves, and pay heed to their internal states rather than spend cognitive energy 'calculating' how to calculate, helps them be

more aware of their entire contexts (including the intangible aspects like a feeling of ‘suspicion’). Another important aspect of direct perception is that it is an interactive view of perception (Gibson, 1987). That is, a perception emerges and is constantly adjusted as the organism interacts with its environment. Along these lines, an intuitive farmer moves through the environment with their sensory apparatus ‘open’ and picking up information as they go so that, in particular, they are able to abstract what Gibson termed transformational invariants (objective aspects of the environment that can be isolated by virtue of the fact that they do not change over time and over transformations). Intuitive farmers are constantly exploring and ‘moving around’ their environment in just this way.

By contrast, the rational-analytic farmers seem to manifest the more ‘standard’ ‘computational’ view of mind, decisions and perception. They are receiving input for their decisions but, generally, they see their decision making as a formal process that is pretty much independent of particular environments (in any complex sense). To use the relevant term in cognitive science, by implication they are acting as if their decision making processes are, ‘encapsulated’ (Cosmides & Tooby, 2002) with strict channels of input and output.

Perception might also be connected to place attachment through a persons’ familiarity with places. The experienced farmers in this study described strong feelings of attachment to place and an in-depth knowledge of their farms (physically, socially, and historically). These farms are very personal places, offering security and familiarity to the owners, but to others not so connected to them, they might not be perceived in that way. The farms might simply be perceived as green paddocks filled with sheep (in the first sense of ‘perception’). Those farms are not substitutable for the farmers the way functional products are substitutable for end-users, and their keen perception of the details of their farms provides them with the cue recognition that outsiders of the farm would miss.

For a new farmer, a farm might be perceived, as this study found, as ‘land to be worked’, or a ‘business venture’. There is a high degree of substitutability in these two labels.

Without the place attachment and cue recognition gained through experience, boundaries of the farm may only be perceived in a physical way, while the awareness of subtleties have yet to be developed. This awareness of their contexts might flow over into the business sense as well. Thus, newer farmers might prefer remaining independent, thereby aware of their boundaries. In fact, they might not even have to be aware of intuitions either if they reduce the farm to a piece of land entirely perceived through physical attributes, and worked according to decision support software recommendations.

The important points arising from this exploration is that for people in general, 'home' is not substitutable. It becomes a place of comfort and security that over time, affords an enhanced perceptual ability to make decisions using intuition in uncertain situations. The knowledge of one's boundaries, could also afford experienced farmers the ability to be alert to possible innovations in their environments, as well as provide an elevated level of comfort with higher degrees of risk than new farmers. Gibson's (1979) concept of "affordances" (and the function of perception as helping adapt the farmers to their environments) is supported by the findings of this study.

8.14 The Approach to this Study

It was necessary to take both a sociological and psychological social psychological approach to this study because of the complicated units of analysis and varied decision making units involved. There were differences between the influences on discrete individual decision makers, and the influences on decision makers when acting in their social roles (for example, as a CEO of a business). Influences on individual decision making units included other individuals, groups, implied presences of people (whether real, remembered, or imagined), the media, special places and even past flocks. With such variety, a single, psychological explanation of the decision making styles used (for example, an attitude-accessibility model), would not explain the decision making sufficiently comprehensively.

Nor could a social psychological explanation (for instance ‘framing’) encompass all the scenarios described.

Influences on group decision making included other groups, the media, the perceived uncontrollable aspects of the market, and the additional complication of balancing both the personal and social identities of businesspeople. The results of this study uncovered details about how individual decision makers approach problems while influenced by inputs both internal and external to themselves. However, the study also contributes to a better understanding of how the groups, and the members of those in the wool growing and manufacturing sectors, behave. These findings were demonstrated by revealing some of the key differences between opportunistic and cooperative supply chains, as they exist in competitive and cooperative environments.

Both approaches to this study were warranted given the need to consider decision making units ranging in membership from just one individual, to multiple members and groups (such as families, firms, or entire chains). Social psychological studies aim to contribute to a better understanding of the human condition, in doing so, there is still the need to examine the environments in which humans interact. The contrast in the perceived environments in this study were reflected in the decision making approaches taken by the participants. Below, I use an analogy to clarify the intricacies of that decision making environment.

8.15 An Analogy

This study asserts that cooperative supply chains are not just a collection of individuals with their own adaptability, functions, and purpose, working in parallel. Cooperative supply chains explored in this study displayed remarkable adaptation as a single entity among the global economic arena. The entity was also remarkably adaptive given a rapidly changing environment, full of strategic practices, events and other entities (e.g.,

changing export and import regulations, mergers, changing market tastes, and competitors).

There is the additional hypothesis that the cooperative chains have a membership that is aware of the boundaries within which they communicate with other members, and feel comfortable enough to not constantly consciously evaluate the trustworthiness of others. In a way, the cooperative supply chain exists in homeostasis. There is a precarious balance between sharing risks, trusting, and sharing information freely among chain members who could in theory defect at any point, while still having a competitive advantage in a marketplace that deems freely-shared information and decreased security as vulnerabilities.

Why do the members of the cooperative chain appear to give up short-term self-interest in favour of long-term stability and shared benefits? Multi-level selection theory would suggest that these apparent altruistic behaviours increased the overall vigour of the chain, and those chains with the highest proportion of altruists (sharing the economic and 'trusting' risks amongst all members so the overall benefits are better) would outperform competitive chains when in the appropriate context. Under these environments, this chain-level selection pressure could outweigh the disadvantage of altruism (and having to trust others) for the individual decision making units (as explained in the biological world by McAndrew, 2002). A major difference noted between cooperative chains and opportunistic chains in this study was their perception of competitors. The cooperative chain members (merino growers and manufacturers for the most part) perceived 'synthetic fibre' chains to be their competitors. Conversely, firms in opportunistic chains thought other firms at their level in the chain were their main competition.

Sober and Wilson (2001) suggested that human groups can be examined as adaptive units in the evolutionary theoretical sense. Human examples of 'warring tribes' and intergroup competitions are demonstrable and compelling. This study demonstrated how individuals exist as individuals, members of families, other social groups, interacting business dyads, and as an integral part of manufacturing chains simultaneously. These represent numerous levels

through which ‘selection pressures’ ramify. Further, they may also be considered as eventual purchasers (consumers) of products fundamentally created from the raw materials they and others produce. They can therefore be considered a unit in a complex human example of a multi-level selection scenario. The difficult part of this analogy is explaining the mechanisms by which their adaptations in terms of their decision making styles have ‘evolved’, become established and have continued (Damuth & Heisler, 1988).

The cooperative supply chains in New Zealand explicitly arose initially so that merino wool growers could “influence their own futures” (Merino, Inc., 1995). The merino farmers thus created their own group/entity with well-defined boundaries. One had to be a merino farmer, introducing one of many ‘boundaries’, and be located in New Zealand (another boundary). The members also must be dedicated to sharing benefits (pooled funding opportunities, research and development, profits, training and technology transfers, and promotion through branding) across all of the New Zealand merino growers. These and other additional boundary demarcations made it feasible to know as a wool grower who one’s ‘kin’ were. In evolutionary theory, knowing kin or group members from ‘others’, aids in defining whom to share resources with. In early human hunter-gatherer societies it might also have been easier to know who to cooperate with since essentially, every “entity” outside of the immediate group could be perceived as an enemy. Highly effective human abilities in face recognition would have supported the erection and maintenance of these boundaries.

There is still the question of how and why the cooperative chains emerged in the world, not just in the wool industry in New Zealand, in the first place. Furthermore, the question still remains whether trust and information sharing arise because of the establishment of cooperative chains, or whether cooperativity in the chain arose due to the trusting and sharing nature of those involved (or a dynamic mix). Though a question for future research, the analogy used here might play a role in explaining the choices of with whom, and how to

pool resources and cooperate. Wise choices in that regard could have something to do with an adaptive ability to judge the social psychological nature of one's connections and interactions.

The cooperative chains are maintained through their transparency among members, increasingly perpetuated by the traceability of products by 'outsiders'. Information flows freely, boundaries are made clear, and allegiances are solidified repeatedly. In this way, the purpose, intentions, functionality, and adaptability of the chain are internalized by all the individual members, and bounded by that internalization. This could provide the stability to the individual 'units' making up the cooperative entity in much the way membranes provide stability to the driving force of a cell, the genetic material.

Regardless of the lens through which one examines the complexity of the opportunistic and cooperative supply chains conveying New Zealand wool, it is an interesting example of how there are many influences both social and psychological in nature that act on individual decision making units. Next, I summarize those central findings and reflect on the objectives of this study.

8.16 Important Findings Reiterated

This research had two objectives; first to better understand how decision makers come to decisions in their customary environments. This study has uncovered that farmers make decisions in two broad ways, but these decision styles are affected by the context in which farmers are embedded. Social psychological processes flow through supply chains. That means that the context in which farmers finds themselves for strategic decisions does not only consist of the local and immediate, and tangible factors. In a way similar to how survival pressures flow to organisms existing in multi-levelled systems, these pressures expand the setting for decision making to include global environments, and intangible influences such as the implied presence of others, or the pressure of high debt. Just as a membrane encompasses the working components of a cell, ones' structural and perceptual boundaries affect the

decision strategies used. When those boundaries are around an individual in a population of similarly functioning individuals, competitive behaviours arise. When the boundaries are around a group of people with aligned goals, the sense that one is part of something bigger contributes to making decisions in a cooperative way.

Using the socio-biological analogy helped to make sense of the data indicating that farmers considered more than just the 'here' and 'now' in their decision making, and that their style of decision making changes with their experience level. In the natural world, all sorts of arrangements of organisms work, but the arrangements are highly linked to the environments in which the organisms are found, and evolve over long periods of time with many iterations or generations. In the wool industry, there is a range of group and individual environments that form and disband. Farmers and supply chain members respond to trade-offs and features of the setting in which they exist. These settings change externally (i.e., through market changes, and other uncontrollable factors), and internally (through changes in one's ability to perceive that environment).

Something about one's experience in an industry changes the way the environment is perceived, and the comfort with which people are able to go with their 'gut feelings.' This is a question for future research. There is also the question of how intuitive farmers learn to control impulses, and on what level of reasoning 'intuitions' happen. Harnessing the ability to balance the trade-offs and costs of using varied decision styles over a lifetime to emerge an expert decision maker is a further area to explore.

8.17 Reflection on Objectives of this Research

The primary goal of this research was to better understand how decision makers make decisions in their everyday settings. We now know that farmers in New Zealand use two broad strategies in coming to decisions on their farms, and these strategies are related to the

farmers perceptions of their farms as businesses or lifestyles, as well as the holistic 'setting' in which they make those decisions.

The research was also conducted to enable reflection on decision making theory and thereby contribute to the debate over how best to characterize decision making in general. This research supported the concept of there being both rational-analytical and intuitive approaches to decision making. The results suggest that experience in an industry plays a major role in determining the style of decision making used by farmers. The research also contributed more contextual factors that are considered when taking a naturalistic approach to decision making.

It was a further goal of this research to uncover how the entities within the wool supply chain interact with, and influence farmer decision making. The supply chains offer further complication to the context in which individuals make decisions. Influences on decision making (exhibited through the concepts of trust, suspicion, information sharing, shared threats, and risks) fed through the supply chains in various forms and were considered at some level by experienced farmers. Intuitive farmers did not solely consider the 'here and now' in their deliberations, but also described a long term forward focus, as well as detailed reflection on past decisions in their current thoughts on strategic decisions.

Intuitive farmers were also aware of the dynamics of the multi-levelled system they belonged to. The influences from other levels in the system structure the kinds of decision making that goes on and this process is manifest in a continual adaptive adjustment that responds to the feedback between levels. In some instances, farmers recognized the need to group together to achieve adaptive outcomes for themselves, and for their groupings (i.e., supply chains), that they need for their own individual efforts to succeed. They also recognized the flux in their settings, and that groupings perhaps will coalesce and dissolve over time and with evolving goals. This recognition alerted some of the farmers to the

benefits of being able to ‘unwind’ a decision as they become more aware of the emerging contexts.

An additional contribution was advancing what is known about how the forces of globalization affect locally-placed individual decision makers. In this study it was uncovered that globalization both opens new markets, but also blurs and closes boundaries that were once well-established. This is through the widespread use of the internet in business dealings, which removes the need for face to face interactions, and makes information tradeable and concealable. Information can be used for the strategic positioning of individuals and businesses in competitive environments.

Globalization can also be beneficial for creating cohesion amongst geographically removed individuals and firms in a supply chain. This is because the use of marketing techniques like ‘local branding’, introduces a traceability to products. The more specific a local brand is, or more traceable a product is, the more aligned the members of a supply chain must be since their success hinges on the sales pitch. Across a global market, social psychological forces can work to help those embedded understand the holistic environment they are embedded in.

Thus, this research was successful in uncovering new details on farmer decision making, and decision making theory in general. It also offers some clarity on how supply chain members influence the decision making of others within the same chain. It also revealed how globalization may be playing a role in individual, localized decision making. The next chapter presents some additional conclusions drawn from this research, and suggests further research directions.

Chapter 9: Conclusions and Limitations

“We all like to congregate at boundary conditions. Where land meets water. Where earth meets air. Where body meets mind. Where space meets time. We like to be on one side, and look at the other.”

-- Douglas Adams

9.1 General Conclusions

This research asked two different but interconnected groups of individuals to describe their decision making strategies and the main influences on their decision making. Broadly speaking, farmers made decisions using rational-analytical or intuitive-based approaches. They described the main influences on their decision making to include other people, the media, their sense of place, and the supply chains to which they belong. Supply chain members described their major influences to include controllable and uncontrollable factors, information flows, the strategic use of power, economic games, and aspects of unification in the chain. Some of the findings reiterated what had been found previously, but some new insights were given. The most important findings of this study were that individual decision makers can at one and the same time, be considered as acting as individuals and members of groups, and that decision making is more accurately describe as a process (not a discrete moment in time), a continuous evaluation of a changing context in which decisions are being made.

Naturalistic decision making not only needs to include attention to the ‘natural’ environment in which decision makers’ act, but also needs to encompass processes acting at levels other than the immediate and local. The other levels contribute to shaping the kinds of decision making that occurs. They do so through the promotion and propelling of constructs through associated levels, which act as feedback (and potentially, feed-forward) for individual decision making units. A locally based decision maker can be considered an expert in responding to a global context if they are able to respond in adaptive ways.

Naturalistic decision making researchers also need to expand the suite of ‘wilds’ in which they do their research given that people exist not just as solitary (or individual) decision makers in a well-defined (bounded) context, but are more complicated than that. In fact, during this study, participants said that their deliberations often included consideration of others (implied, or otherwise).

Is decision making merely about making choices between alternatives? This study suggests that yes, in one way decision making boils down to *choosing* (whether consciously or not), an alternative among others, however, the important part of decision making for long-term success and survival in uncertain times is not the choice, but *how the decision is made with respect to the context in which it is being made*. Should a person keep other alternatives available, be they alternative options, alternative decision making processes, or alternative memberships in decision entities/units? In order to maintain and improve adaptability, and maintain one’s (and by ‘one’ I mean a decision making units’) function and ‘fitness’ in an environment, the answer again is ‘yes’. There is a further aspect of this ‘adaptive’ decision making that arose in this study; that is, being adaptive in one’s decision making approaches affords a locally planted decision maker expertise in navigating global contexts.

The pressures of surviving as an individual, a member of a group, and as part of a vast global economic arena are often in conflict, and on top of facing difficult decisions, a decision maker must also navigate their role in those environments and act on behalf of what they perceive is their primary role for any given decision. Some decision options described by the participants were at odds with what they said they personally wanted to do; however, they felt they had to choose an objectionable option due to their allegiances to business, themselves, their family, or some other group. Therein lies another decision (sometimes acted on unconsciously or heuristically), when to act as an individual, and when to promote the group? When should one act selfishly (maximize) and when should one cooperate (perhaps giving up something of value in doing so)? The answer to these question merit further research,

however, the short- or longer-term viewpoints and goals of the farmers I interviewed played a role in determining the ‘lens’ through which they viewed their strategic decision points, and the boundaries that enveloped decision making units.

Most social scientists are less concerned with prediction than with identifying how behaviours evolve and influence other processes (Bharwani, et al., 2005). Hence, commenting on prediction models of farmer decision making was not a key part of this study. But, this study did uncover some unique descriptive information; farmer decision making is definitely influenced by financial returns (a local and experiential factor), and psychological and social factors (some personal and some global in nature). However, by being situated among personal, interpersonal, and group pressures, farmer decision making can be thought of as analogous to survival pressures in the biological world as described by multi-level selection theory. This expands the notion of naturalistic decision making to occurring in more than just an individual layer of a system.

With this research, I have broadened the analysis of decision making to multiple levels, where a decision maker considers (even briefly), their role among various groups that form and dissolve over time, with influences that act on, and travel between these groupings as well. In conducting research in naturalistic settings, it is thus paramount to consider the setting as including more than just the local and tangible.

Are farmers accurately described as resource managers, or are they better described as cognitive managers; choosing when to turn on cognitive efforts in order to solve complex problems? Learning first to make decisions rational-analytically, when new to the farming environment, or under financial stress, is a way to sharpen one’s cataloguing ability, and polish information gathering and balancing skills. In that way rational decision making might be a stepping stone in growing an ‘expert’ system within oneself to be called upon when the environment suits. More research in this area would confirm the shift from rational-analytical to intuitive decision making styles as one gains more experience in a context.

9.2 Decision Tourism

Simon (1983) claimed that in any kind of serious decision making, both rational-analytical and intuitive approaches are used in varying proportions and in various ways. I agree with that, but also would like to add that in varying circumstances, some decision makers might 'dip' into the different decision processes when hunches lead them down the path. Much like a curious animal instinctually exploring a potential new food source, inching their way forward, but also wisely ensuring their escape route remains intact, I believe the best decision makers (in this study there were a few), let their intuition guide them, but also keep a guarded eye to alternative paths. There is the decision to make on one cognitive level, but there also may be the decision of how to make the decision occurring on another cognitive level. Being able to keep both forward and backwards paths open, cognitively, is much like keeping information and strategic channels open in a supply chain. When the decisions/risks are shared amongst all users (all potential 'processors'), the unit operates like a well oiled machine (endowed with intuitive powers).

As a decision maker becomes embedded in a locale, they get to know their surrounds (a broad ecological, social, economic, and spiritual sense), and are less likely to psychologically wander down an unfamiliar path. However, when one does find oneself in an unfamiliar location, they can approach it like a tourist, choosing the direction that their 'heart' (their intuition), 'other tourists' (social pressures), or 'tour bus' (global pressures) takes them. It is up to the decision maker to decide whether to wander alone, with friends, or to allow themselves to be swept along 'indecisively'. Whether decision makers actively 'decide' to be intuitive in one context, and rational-analytical in another was not investigated directly in this research, but would be an interesting line of research to explore. Further research could help clarify whether that meta-decision is a conscious one.

9.3 Modelling decision making

Several emerging issues serve to shed light on some of the challenges researchers have had in describing and modelling farmer decision making. At a particular point in time, it may be plausible to model farmer decision making in more detail than currently established; that is, when farmers are entrenched in a very specific problem and have committed to some degree in a process of solving it. This may be true for financially-based problems, tactical decisions, and complex decision when adequate information is available for them to make an educated decision. It may also be plausible to predict a farmer's behaviour from intuition when an experienced farmer in a familiar environment is being studied. The key to that prescription might be to keep in mind the breadth of one's environment.

It may even be possible to describe farmer behaviour when that farmer is acting on behalf of a group spread over a global location in a cooperative environment; they tend to act in ways which promote the success of the group. Conversely, when a supply chain entity is acting on their own, in a competitive environment, amongst units they perceive as enemies, they tend to act in ways that will benefit themselves alone, and often trade off long term visions for short term gains that ease an environmental pressure (i.e., debt).

This research has also shed light on one complicating factor for modelling and studying institutional decision making. As individuals become embedded in multi-level contexts such as those existing in institutions, it becomes increasingly difficult to approach decisions in a rational way since there may be many different viewpoints (hence, criteria, weights, and alternative, see Figure 3.1) to list and judge prior to coming to a decision. In fact, because of that difficulty, operational institutions (such as the US military and the Swedish armed forces) have recently invested in building resources and training in naturalistic decision making (Klein, 2008). The success of those programs is another area for future research.

Modelling decision making in uncertain situations remains difficult, but, more empirical research on real world decision environments will contribute to that goal. As

Lipshitz et al., (2001) indicated complex and dynamic decision processes in naturalistic settings have been neglected in research. This study has contributed new insights to that cause. The definition of a naturalistic setting needs expansion to include processes occurring through multi-level situations. There may be potential to understand naturalistic decision making better through analogies (see Section 9.5 below) coming from other fields, such as socio-biology, as demonstrated in this study.

Naturalistic decision making as a field has had rapid adoption of its findings considering its inception was only in 1989 and the first major publications did not appear until 1993 (Lipshitz, 1993; Klein, 2008). Though a need for new and novel contextually-based studies has been purported, few have actually been introduced in the last decade (Lipshitz et al., 2001). Perhaps it is because NDM studies have repeatedly been conducted in now 'traditional' contexts (operational, outdoor recreation, fire, and air traffic control) that findings, though consistent, have been limited to considering a context as a physical locale, instead of a more perceptually-based one. A further suggestion of this research would be to re-evaluate the NDM characteristics defining the context being studied; perhaps the 'uncertain and changing environment' premise needs to include mention of the tangible and intangible components.

Methodologically, a different line of questioning was used in this research. I explored decisions that farmer's described as being important parts of their lives, only after they brought them up when relating their perceptions of what it is like to be a sheep/wool farmer in the New Zealand context. This differed from past studies that took more of a preference choice approach (priming farmers' memories with a given set of decisions that were assumed to be important and common among farmers). Though there was overlap in the decisions examined between this study and others (i.e., the Edinburgh Study of Farmer Decision Making), one of the goals of this research was to better understand the influences on the decision making of a farmer as a person in an everyday context, instead of classifying a

farmer into managerial category, or other 'roles' based on their decision style. It may be inappropriate to investigate a person's individual decision style without considering the broad context (even one stretching across global boundaries, and over a life time). For that reason, more longitudinal research on how one's decision making strategies emerge is warranted. The study of individual decision making in those broad contexts requires more deliberative and collaborative approaches between psychologists, social psychologists, and experts on the dynamics of particular contexts (for example, farms and/or supply chains).

9.4 The use of Analogy in this Study

The use of the MLS analogy in this study helped to restructure the state of knowledge of farmer decision making by illustrating one model of how the influences on a farmers' decision making is affected by a specific feature not explored prior to now. The analogy showed how a supply chain can be thought of as similar to a multi-level entity in which components at one time (consciously or not) are faced with deciding whether to act individually, or to act as part of a larger unit. Depending on a farmer's experience, and long-term view of the farm, they might alter their decision practices to one that would at first glance, seem to belie self interest, however, on closer examination, their strategy might be more attuned to that entity and the entity's (including their own component's) success or 'fitness' in their respective industry. Knowing one's state of 'nestedness' within the greater chain entity, and considerations, if only briefly, of one's contribution at many layers of the chain's societies (levels, layers, boundaries) played in role in the decision making of farmers, and was an emergent quality demonstrated by expert farmers.

Encapsulated farmers limited their ability to look to the long term in their decision making (either due to their inexperience, or some other factors, such as a high-debt burden), much like a single-celled organism without a stable membrane encasing their unstable

elements, must adapt to the ‘here and now’ which in some instances (such as in opportunistic settings) is a viable and successful strategy.

The use of an analogy initiated in the biological sciences in a social psychological study such as this one proved insightful in this case. The MLS analogy was useful for organizing the many roles and influences the farmers described themselves navigating, and the analogy also clarified why some reasoning that appeared from a individual person’s perspective, seemed flawed, but when considered from a decision making *unit*’s view, made sense.

It is thus possible to enlighten understanding of a dynamic social science phenomenon by using models from other fields, particularly where interactions among dynamic ‘systems’ (i.e., societies) have been a key focus. Future studies of this nature might benefit from looking further afield for other exemplars.

9.5 A Comment on the Approach

This study discovered that the analysis of decision making by individuals needed to be broadened to multiple levels which necessitated taking both psychological and sociological approaches to understanding the social psychology of decision making. Influences on decision making included perceptions, thoughts, feelings, and behaviours of individuals as affected by others (real, implied, or imagined), as well as details on the behaviours of groups, and how groups interacted. I explored how farmers made strategic decisions in local (which could mean internal, individual, or as an individual decision making unit) and broader contexts.

Finally, this research attempted to describe the world through the individual *perceptions* of the people I interviewed. However, two different ideas of perception were demonstrated; those were, perceiving in terms of taking in different (sources of) information using the senses, but also, in just ‘sensing’ something. In that way, the context (environment) both provides meaning for some decisions, and gives meaning to others. Perhaps decision research in the future needs to consider perception in both forms of the word.

9.6 Future research

There is a gap in social psychological studies on supply chains and other examples of human ‘multi-level’ systems. More research could help describe the behaviours within those systems, and help to understand how people learn to navigate multiple roles, choose how to make a decision when debating which ‘interest’ to represent, and whether short- or long-term viewpoints affect decision makers across other industries. More research on uncovering how people understand and define their ‘boundaries’ among multi-level contexts would also be interesting, and could improve the understanding of how ‘trust’ may play a role in supply chain dynamics.

The emergence of an adaptive approach to decision making is an interesting finding that might have parallels among other ‘intelligent behaviours’ recently explored in the embodied cognitive sciences. The finding that sometimes the intuitive farmers indicated that answers did come from ‘within,’ while walking ‘without’ among places they were attached to, certainly suggested that in some ways, the mind and body can act as a single entity, though the question arises whether a multi-level ‘decision making unit’ has similar properties. More research of other human systems analogous to this one would help contribute to that query.

Decision tourism is of great interest for future research, particularly, the question of how ‘consciously’ one decides to decide in a certain way. Additional interest lies in uncovering how, over a lifetime, decision tourism develops. Much like tourists often ease their way into more adventurous, or longer-term travels, with more experience, I wonder whether decision makers build their suite of strategies as their decision passport entries accumulate. Can one be an expert (meta-) decision maker early in one’s life given a set of quality practice, or occurrences to steer through?

An individual’s decision making strategies might also differ depending on their ‘current’ role or demands. For instance, as I neared completion of this study, my partner and I were lucky to bring our first child into the world. With the assumed vigour of a new farmer, I

explored books, web-sites, and brochures on newborn and infant development and milestones. I asked dozens of questions of friends with children, early childhood educators, and to our own parents in the hopes of being able to provide the absolute best ‘environment’ for our son to grow in. I am a new ‘decision maker’ in the parenting context, however, among other contexts, I notice that my approaches are very different. I wonder just to what extent the different contextual parts (the psychological, social, economic, and environmental, among others) play in driving decision strategies.

Recently, as our son played happily with a pot from the kitchen cabinet, I realized that he was learning what he needed (was programmed) to be learning at that point, with the simplest of objects when we surrounded him with intricate toys, played him classical music, and tried to work to a set schedule. I began to think about the parents I knew who had many children and wondered if their approaches changed with each child. Even though each child develops at a different rate and hits milestones at different speeds in different orders, I wondered whether with an expanded family, parents’ familiarity with the environment of ‘babies and growing children’ learned to just follow their gut feelings more often. In fact, many friends have told me in times of frustration and information overload to just go with what ‘feels’ right.

Those stories made me think that experience in any context works to shift decision making strategies from methodical approaches to more intuitive ones. This is definitely a further area of research that I intend to follow.

I also wonder when, in the stages of development, intuitions start to appear in human decision processes. Is experience also relative to the age and development of a human; for example, with enough experience in different playgrounds, do children learn what their abilities are and thus know intuitively which playground equipment and associated challenges they are capable of completing? How is perception played out over time? Do we begin

perceiving with the senses, then let perception become a sense in itself as our experience levels build? What adaptive benefit might this shift serve?

I also wonder about when intuitions go wrong. Do decision makers revise, re-test, and revisit decision processes in order to improve their abilities? When children fall, are they able to judge whether their experience matched the playground context in which they acted? What are the benefits to learning from experience versus from other sources (be they organized education, the media, or other resources)?

There are examples of multi-levelled systems in other human industries, for example, academics are at one time administrators, researchers, teachers, and mentors, working alone and in groups. I wonder if new academics and experienced academics show similar leanings in their decision styles. I wonder what social psychological ‘processes’ travel through the layers in tertiary institutions? Time will tell, however, the social psychological exploration of further examples of human system where individuals make decisions while juggling multiple roles would be intriguing.

This study explored supply chains in terms of their contribution to ‘contexts’ and as channels for processes acting on individuals (decision making units). Further exploration might help illuminate the dynamics of the supply chain environment with particular focus on those processes.

9.7 Limitations

As with most qualitative research, there are three main limitations to this study. First, this research collected data from a relatively small cohort of individuals, which means that findings should not be generalized to the larger population. Secondly, this research is heavily dependent on my individual skills as a researcher, and my knowledge of the context. Though interviewing was the method by which I gathered data, I was the tool used for analysis. I was new to the context, and spent a lot of time in preparation and becoming aware of the nuances

of the New Zealand wool sector. Since this research was highly context-dependent, results of the research, if conducted now, by another person, could differ because of the unique lenses that emerge from individual experience and abilities. Third, the large volume of data makes analysis and interpretation selective, and time-consuming. There were many other themes and threads to explore in the rich interview data, but given the extent of what was found with regards to the research objectives, data analysis narrowed in order to concentrate on the main emergent findings. I explored three key decision journeys in detail because they spoke directly to the objectives of the research, however, other detailed journeys were given by the participants in this study.

With the interviewing, my goal was to hear in sufficient quantity from every segment or potential view point from the levels within the wool supply chain. I additionally sought to ensure that the perspectives given could be confirmed as valid because they were held by a sufficient number of the people in the sample. It is for that reason that at least three people from each level of the chain were interviewed, and interviews were transcribed and verified. Saturation was reached with three interviews at most of the supply chain levels. In the case of those in the manufacturing sector, and the brokers/exporters, it was deemed necessary to do further interviewing, and ask multiple-role interviewees for additional information.

Sampling in this study was complex. Supply chains are constantly changing entities. Some firms can do many of the required steps in processing and manufacturing in-house, while others are very specialized. Firms re-locate, turnover and restructure. Additionally, my interviewees were geographically located in several different countries. It is for that reason that I chose to not use a random sample. Instead, I would say that I chose a purposive "balanced sampling" approach, which used a mix of interviewees who were carefully selected for their roles, representation, and experience in the industry.

It is difficult to uncover intuitions, and intuitive knowledge in interviews, and many of my interviewees were quick to tell me that 'actions' speak louder than words. It is for that

reason that I probed farmers deeply, and specifically for examples of when they had followed their 'gut feelings' as listed in the interview guide. This was time consuming for the farmers, and perhaps could have been even more detailed if I used more of a biographical approach in data collection, however, there were windows of opportunity to collect data from farmers (i.e., they needed to concentrate on farm work during certain times of the year such as lambing season). This introduced one more limitation. Farmers were not interviewed during lambing season because it is one of the busiest times of the year, and the success of lambing directly relates to the success of the farm for the year. Perhaps the pressures during the lambing period would produce different results?

Some farmers wrote in more examples when they verified their interview transcripts, and noted that on reflection they could remember additional 'intuitive' decisions. It is for that reason that a longitudinal study of farmer intuitive decision making might give more examples of intuitive 'journeys'.

This research was also limited to examining supply chains that act as conduits for very specific products, as a context for decision making. As such, conclusions about supply chain behaviours in general cannot be made. Furthermore, comments on other supply chain types, and other industries reliant on supply chains, are not provided.

In conclusion, this study of individual decision making in uncertain and complex environments illustrated one representation of how decision making as a process, the nature of a person as a decision maker, and the role that environments play are linked in a theoretical way.

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Appendix-1.1: Telephone Script for Participant Recruitment

Telephone Script

Name of Project: Cutting to the chase: How farmers' decision making strategies are influenced by supply chain entities.

Hello, my name is: _____

I am a postgraduate student / research assistant in / member [*delete one*] of the
Environment, Society, and Design Division _____

at Lincoln University undertaking study for PhD _____ degree

You are invited to participate in a project that aims to: uncover the decision making strategies of farmers and how other supply chain entities and global forces influence these decisions.

Your telephone number was selected by: Reference from Canesis Network Ltd.

Your participation in this research will involve:

One interview lasting approximately 45 to 120 minutes, plus additional time spent verifying the interview transcripts. Further interviewing may be required at a later point in the research.

Participation in the research is voluntary and you may decline to answer questions or withdraw at any point without questioning.

If you do withdraw at any stage, any information you have already provided will be destroyed.

All information will remain confidential to me as researcher and my supervisor(s). You will also be assigned a subject number so other researchers will not have access to your name upon publication of results.

Are you prepared to participate in this research project?

The interview will occur at a time convenient to you between January 2007 and November 2007.

Thank you for your time. If you have any questions regarding this research, please contact:

Name of researcher Lori Bradford

Telephone number 03-325-7942 or 027-353-5938 or by email at bradforl@lincoln.ac.nz

or my supervisor(s)

Full name(s) of supervisor(s) Kevin Moore

Telephone number(s) of supervisor(s). 03-325-2811 or 03-325-3820

Note: detail to be provided if supervisor(s) are involved in the project.

Appendix-1.2 (2 pages): Farmer Research Information Sheet and Consent Form

Lori Bradford
Environment, Society and Design Division
P O Box 84
Lincoln University, Lincoln 7647
Canterbury New Zealand
Phone: 64 3 325 3820 or 64 3 325 2811
Facsimile: 64 3 325 3854 or 64 3 325 3857

Date to be entered

Dear (my subjects):

Thank you for agreeing to be a subject for my study on wool and sheep farmer decision making. Your involvement is voluntary, and you may withdraw at any point in the study. The study involves one on one interviewing for its main method. This will involve an interview between yourself and me, to be conducted at a convenient time for you, ideally on your farm. The interview will last from 45 to 120 minutes and will be tape recorded. The study may also involve a request for further interviewing for clarification as well as your verification of the information I gathered from you through reading the transcribed interview(s). Further interviews would be at your discretion.

It is essential for you to be as detailed as possible, but the study should not interfere with important or urgent issues that you must deal with in your every day life. If at any time you feel the study is not what you expected or desire you may withdraw from the study and withdraw any information you have given to me up until the time the results are analysed.

Thank you once again for your participation in this important research. I look forward to our interview(s). Should you like, a copy of the research results will be made available to you by contacting me at bradforl@lincoln.ac.nz.

The project has been reviewed and approved by the Lincoln University Human Ethics Committee. If you agree to participate, please sign the consent form on the following page.

If you have any further questions about this study please feel free to contact me or my main supervisor who can be contacted at:

Dr Kevin Moore
Environment, Society and Design Division
Lincoln University, Lincoln, Christchurch, New Zealand
Email: moore@lincoln.ac.nz
Tel: (03) 3252811, ext. 8644

Sincerely,

Lori Bradford, Hons. B.Sc., Master's of Env. Science.
PhD candidate, Lincoln University

Lincoln University: Environmental, Society, and Design Division
PO Box 84
Lincoln 7647
Canterbury New Zealand

Dear (my subjects):

My name is Lori Bradford and I am a PhD student at Lincoln University. I am conducting a study into the decision making strategies of wool farmers in New Zealand, and how supply chain entities and global issues may influence those decisions. The study is being funded by Canesis Network Ltd., the Vernon Willey Trust, and Lincoln University.

The study will require you to complete one interview in person, or over the phone with myself as primary researcher. The interview will last from 45 to 120 minutes and will be recorded, and transcribed. Transcriptions will be sent to you for verification of the accuracy of the data.

Your voluntary response to this request constitutes your informed consent to your participation in this activity. You are not required to participate. If you decide not to participate, your decision will not affect your current or future relations with other farmers, the wool industry, and other supply chain members. Your answers will remain strictly confidential, and at any point during the study you are permitted to withdraw. The results of this study will be made available to you on your request. The information gained during this study will be stored at Lincoln University for a period of seven years, however, names will not be attached to interview transcripts and only approved researchers and professors will have access to the information.

Although I do not foresee any harm or unsettling experiences to occur during the interviewing, if you feel the need for counselling or other services, they will be provided for you through Lincoln University. Once again, at any point during the study you are permitted to withdraw.

This activity has been approved by the Lincoln University Ethics Review Board. This Committee aims to ensure that all research at Lincoln University which involves human participants meets established ethical standards including requirements specified by funding agencies such as the Foundation for Research, Science and Technology, Health Research Council and Lottery Health Research. The Committee may be contacted through the Chairperson by Email: hec@lincoln.ac.nz, phone: 64 3 325 2811 ext 8974, or writing to: The Secretary, Human Ethics Committee, Research & Innovation Office
Lincoln University, P O Box 94, Canterbury, New Zealand.

Thank you for your valuable contribution to this research.

Please note that your signature indicates that you have read all of the information within this consent form and that all of your questions have been adequately answered. Your signature indicates your willingness to participate in this study.

Signature of participant Signature date

Witness Signature date

Appendix-1.3: Farmer Interview Guide

Interview Guide for Farmer Interviews:

Sheep and Wool Farmer Decision Making – Supply Chain Influences

Interviewer: Lori Bradford

Participant:

My name is Lori Bradford. I am conducting a study for my PhD at Lincoln University on how the influences of global issues, and supply chain pressures affect the decision making strategies of farmers. You have signed a consent form for this interview, but at any time, should you feel it necessary, you may withdraw from this study. Are you ready to begin the interview?

Open ended questions:

1. What do you think of wool farming?
2. How has wool growing changed over your lifetime?
3. How would you describe your farm? (Probe: in terms of a business, family 'project', lifestyle?)
4. How long have you been in the farming industry and what have been the most important influences on why you have stayed/left the farm?
5. Tell me about your role in selling wool to the final consumer (probe – what do you know about the wool supply chain and where you fit in?).
6. Tell me about how events around the globe affect the wool supply chain.
7. What are the pressures you feel on your farm from the wool supply chain, and how do they affect the way your farm operates?
8. How do you communicate with other levels in the wool supply chain?
9. In what ways do you try and pass information on to other members of the wool supply chain.
10. How do you usually come to decisions about how to manage your wool?
11. Describe a situation where you've felt you had to make a decision that was either a "gut feeling" or against a "gut feeling."

Thank you very much for your time and effort in replying to my questions. Transcripts from this interview will be sent to you for verification of the details. A further interview may be necessary to clarify some of the themes I garner from your answers. Should a further interview be required, would you be willing to do a further short interview?

The research results will be made available to you should you want them. If yes, to what contact address should I send them?

Thank you once again.

I may be contacted at bradforl@lincoln.ac.nz, or by phone at 03-325-7942.

Alternatively, feel free to contact my main supervisor:

Dr Kevin Moore

Environment, Society and Design Division

Lincoln University, 03-325-2811 ext. 7647

Lincoln, Christchurch, New Zealand

Email: moore@lincoln.ac.nz

Appendix-1.4: Telephone Script for Supply Chain Recruitment

Telephone Script

Name of Project: Cutting to the chase: How farmers' decision making strategies are influenced by supply chain entities.

Hello, my name is: _____

I am a postgraduate student / research assistant in / member [*delete one*] of the
Environment, Society, and Design Division

at Lincoln University undertaking study for PhD _____ degree

You are invited to participate in a project that aims to: uncover the decision making strategies of farmers and how other supply chain entities and global forces influence these decisions.

Your telephone number was selected by: Reference from Canesis Network Ltd.

Your participation in this research will involve:

One interview lasting approximately 45 to 120 minutes, plus additional time spent verifying the interview transcripts. The verification of interview transcripts can occur over email. Further interviewing may be required at a later point in the research.

Participation in the research is voluntary and you may decline to answer questions or withdraw at any point without questioning.

If you do withdraw at any stage, any information you have already provided will be destroyed.

All information will remain confidential to me as researcher and my supervisor(s). You will also be assigned a subject number so other researchers will not have access to your name upon publication of results.

Are you prepared to participate in this research project?

The interview will occur at a time and location convenient to you between January 2008 and November 2008. We can also conduct the interview over the phone should it be difficult to arrange a face to face meeting.

Thank you for your time. If you have any questions regarding this research, please contact:

Name of researcher _____ Lori Bradford _____

Telephone number 03-325-7942 or 027-353-5938 or by email at bradforl@lincoln.ac.nz _____

or my supervisor(s)

Full name(s) of supervisor(s) Kevin Moore _____

Telephone number(s) of supervisor(s). 03-325-2811 or 03-325-3820 _____

Note: detail to be provided if supervisor(s) are involved in the project.

Appendix-1.5 (2 pages): Supply Chain Participants Research Information Sheet and Consent Form

Lori Bradford
Environment, Society and Design Division
P O Box 84
Lincoln University, Lincoln 7647
Canterbury New Zealand
Phone: 64 3 325 3820 or 64 3 325 2811
Facsimile: 64 3 325 3854 or 64 3 325 3857

Date to be entered

Dear (my subjects):

Thank you for agreeing to be a subject for my study on wool and sheep farmer decision making. This study involves one on one interviewing for its main method. This will involve an interview between yourself and me, to be conducted at a convenient time for you, ideally at your place of business, otherwise, over the phone. The interview will last from 45 to 120 minutes. The study may also involve a request for further interviewing for clarification as well as your verification of the information I gathered from you through reading the transcribed interview(s). Further interviews would be at your discretion.

It is essential for you to be as detailed as possible, but the study should not interfere with important or urgent issues that you must deal with in your every day life. If at any time you feel the study is not what you expected or desire you may withdraw from the study and withdraw any information you have given to me.

Thank you once again for your participation in this important research. I look forward to our interview(s). Should you like, a copy of the research results will be made available to you by contacting me at bradforl@lincoln.ac.nz.

If you have any further questions about this study please feel free to contact me or my main supervisor who can be contacted at:

Dr Kevin Moore
Environment, Society and Design Division
Lincoln University,
Lincoln, Christchurch, New Zealand
Email: moore@lincoln.ac.nz
Tel: (03) 3252811, ext. 8644

Sincerely,

Lori Bradford, Hons. B.Sc., Master's of Env. Science.
PhD candidate, Lincoln University

Consent Form

Name of Project: Cutting to the chase? How farmers' decision making strategies are influenced by supply chain entities.

Informed Consent Letter for supply chain Participants:

Lincoln University: Environmental, Society, and Design Division
PO Box 84
Lincoln 7647
Canterbury New Zealand

Dear (my subjects):

My name is Lori Bradford and I am a PhD student at Lincoln University. I am conducting a study into the decision making strategies of wool farmers in New Zealand, and how supply chain entities and global issues may influence those decisions. The study is being funded by Canesis Network Ltd., the Vernon Willey Trust, and Lincoln University.

The study will require you to complete one interview in person, or over the phone with myself as primary researcher. The interview will last from 45 to 120 minutes and will be recorded, and transcribed. Transcriptions will be sent to you for verification of the accuracy of the data.

Your voluntary response to this request constitutes your informed consent to your participation in this activity. You are not required to participate. If you decide not to participate, your decision will not affect your current or future relations with other farmers, the wool industry, and other supply chain members. Your answers will remain strictly confidential, and at any point during the study you are permitted to withdraw. The results of this study will be made available to you on your request. The information gained during this study will be stored at Lincoln University for a period of seven years, however, names will not be attached to interview transcripts and only approved researchers and professors will have access to the information.

Although I do not foresee any harm or unsettling experiences to occur during the interviewing, if you feel the need for counselling or other services, they will be provided for you through Lincoln University. Once again, at any point during the study you are permitted to withdraw.

This activity has been approved by the Lincoln University Ethics Review Board. This Committee aims to ensure that all research at Lincoln University which involves human participants meets established ethical standards including requirements specified by funding agencies such as the Foundation for Research, Science and Technology, Health Research Council and Lottery Health Research. The Committee may be contacted through the Chairperson by Email: hec@lincoln.ac.nz, phone: 64 3 325 2811 ext 8974, or writing to: The Secretary, Human Ethics Committee, Research & Innovation Office
Lincoln University, P O Box 94, Canterbury, New Zealand.

Thank you for your valuable contribution to this research.

Please note that your signature indicates that you have read all of the information within this consent form and that all of your questions have been adequately answered. Your signature indicates your willingness to participate in this study.

Signature of participant Signature date

Witness Signature date

Appendix-1.6: Interview Guide for Supply Chain Member Interviews

Interview Guide for Supply Chain Member Interviews:

Sheep and Wool Farmer Decision Making – Supply Chain Influences

Interviewer: Lori Bradford

Participant:

My name is Lori Bradford. I am conducting a study for my PhD at Lincoln University on how the influences of global issues, and supply chain pressures affect the decision making strategies of farmers. You have signed a consent form for this interview, but at any time, should you feel it necessary, you may withdraw from this study. Are you ready to begin the interview?

Open ended questions:

1. What do you think of wool farming?
2. How has wool growing changed over your lifetime?
3. Tell me about your role in the wool supply chain.
4. Tell me about how events around the globe affect the wool industry (probes i.e., the changing European Union agricultural policies, shifts to organic farming, climate change)
5. What are the pressures you feel on your business and how do you deal with them?
6. Tell me what you would like to see or know about from your suppliers in the wool supply chain?
7. Tell me about what your buyers expect from you?
8. What would you like to see done differently in the wool industry?
9. How do you generally communicate with farmers?

Thank you very much for your time and effort in replying to my questions. Transcripts from this interview will be sent to you for verification of the details. A further interview may be necessary to clarify some of the themes I garner from your answers. Should a further interview be required, would you be willing to do a further short interview?

The research results will be made available to you should you want them. If yes, to what contact address should I send them?

Thank you once again.

I may be contacted at bradforl@lincoln.ac.nz, or by phone at 03-325-7942.

Alternatively, feel free to contact my main supervisor:

Dr Kevin Moore

Environment, Society and Design Division

Lincoln University, 03-325-2811 ext. 7647

Lincoln, Christchurch, New Zealand

Email: moore@lincoln.ac.nz