Clean and green?
Environmental quality on the New Zealand dairy farm

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by

Diane Menzies

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Abstract
This study explores issues arising from the adoption of the term ‘clean and green’ for marketing New Zealand dairy products. Three dimensions of environmental quality were investigated: that of sustainable dairying and best practice for the benefit of farmers and the industry; resource management legislation and being a ‘good neighbour;’ and export marketing opportunities and issues.

The study was undertaken during a time of major structural upheaval in the dairy industry, including yearly company amalgamations in the study area, rapid conversion of farmland to dairying, as well as factory expansion to process the increasing supply of product.

The focus of the study was on the individual farmer, how perceptions and preferences are formed, and how in turn, these influence farm practice. World views drawn from Cultural Theory were adopted as the basis for analysis. Farmers were classified according to particular world views and the symbolic and reflexive use of concepts such as ‘clean and green’ was analysed. A model of overlapping ecological, agricultural and social systems was used to develop a wider understanding of preference formation. Through a mixed methodology, focusing on a case study approach, farmer and stakeholder world views were compared on key themes, including the ‘clean green’ pastoral myth, ‘cues for care’ and environmental issues. Media discourse as well as consumer views were used to expand understanding of the context.
The study found that both farmers (within their groups) and stakeholders held different objectives and opinions on environmental issues and options for change, based on their various world views and preferences. There was general agreement both among farmers and stakeholders on the New Zealand 'clean green' image and 'cues for care,' or signs that indicate good farm management. The reason for this was demonstrated to be the way in which these two aspects are communicated; through symbolic images that each individual perceived in terms of their respective world view.

A symbolic form of action, an environmental management system, was trialled with farmers. Analysis indicated that national aspirations created by the 'clean green' pastoral myth required farmers to respond to environmental expectations, but that an image that symbolized environment as care and quality, rather than as place was needed to provide a less ambiguous goal. The findings of the trial were integrated with theory to interpret context and develop policy, strategy and action proposals for a system for environmental quality for the industry.

The study has implications for non-regulatory mechanisms relevant to sustainable dairy farming, communication within the rural community, and branding.

**Key words**
'Clean and green,' 'cues for care,' Cultural Theory, dairy farm, environmental quality, symbols, sustainable agriculture, environmental management systems, world views.
At 5.00 am. an alarm clock shrills to wake Jeff Henderson. By 6.00 am. he has pulled on blue overalls, leapt on his farm bike, driven in the shadowy dawn light along the road to the dairy shed, switched on lights to prepare for morning milking, then circled the paddock containing the waiting herd of cows. By 6.15 am. the cows have ambled down the central farm lane to the yard, steam puffing from their nostrils, and the first two rows of cows are standing waiting in the shed for milking cups to be put on. The sun is rising, milking machines are humming and a radio blares for the cows contentment. By 7.30 am. the 220 cows have been milked and have plodded back to their paddock. The yard, shed and machinery have been hosed down, effluent pumped on to selected pasture, and the milk is chilling in the silo ready for collection by the factory tanker. Jeff jumps onto his farm bike again and there is just the paddock gate to be shut before he drives home for breakfast with the family and makes phone calls to contractors. Later in the day there is pasture and feed management to be tackled, weed and other maintenance, animal health issues to be dealt with, heifers to be moved and accounts to be paid. Jeff's wife Beth may help with the afternoon milking and Jeff and his son may be cutting silage until late in the long dusky summer evenings.

This is a typical day for one of the 14700 dairy farmers in New Zealand who supply the eight dairy export companies for nine months of the year. In the remaining three winter months Jeff may be feeding out silage for the cows, moving them onto winter crops, planting shelter trees, preparing for calving and carrying out maintenance such as lane grading. Neighbours sometimes ask for
help and contractors need to be supervised. Farm business is active, demanding, and requires full health and attention. Jeff will be watching his budget carefully and monitoring his production and profitability against last year's performance. He will also be trying to keep pace with agricultural innovations and new occupational health and safety regulations. His attention though will be focused on what New Zealand dairy farmers do well, efficiently growing pasture.

Over the last three years the dairy export scene that Jeff supplies has been subject to major change and pressure. No sooner did it seem that the long running Uruguay Round of the General Agreement on Tariffs and Trade had been signed, bringing hope that his industry would face less competition from subsidized dairying, than competitors with political support attacked through customs charges and other barriers to stop spreadable butter sales in Europe. Then in the USA there was legal action with the aim of blocking New Zealand imports. The New Zealand Government introduced pressure for change too by demanding a withdrawal of legal support for the single seller status of the New Zealand Dairy Board, the marketing arm of the industry. In addition, in a move to give clearer market signals to dairy companies the New Zealand Dairy Board started implementing the Business Development Project.

The processing companies responded to the anticipated changes in their operating environments by strategic alliances and mergers. In 1996 Jeff Henderson was supplying Southland Dairy Co-operative. By 1998 his company had merged with Alpine Dairy Products Ltd. to become South Island Dairy Co-operative Ltd. and in 1999 Jeff voted on a proposed company merger with New Zealand Dairy Group. Jeff now supplies Anchor Products South Island, a subsidiary of that group and is waiting for new supplier numbers to be fixed to his farm gate. The new company is responsible for 58% of the country's dairy export supply. Immediately following the latest merger, the news broke that the two largest companies, Kiwi and New Zealand Dairy Group, were looking to a merger the following season, to form a 'mega co-op.' Northland Co-op has since joined that group. Jeff woke in

\[\text{sharemilker in partnership with researcher.}\]
mid-July 1999\(^2\) to hear the radio news announcement that legislation to enable the New Zealand Dairy Board to merge with the three companies had been presented to Parliament the night before, forewarning him of another and urgent round of farmer consultations: urgent because there was only six weeks before the Bill returned to Parliament and less time before Jeff and other farmers started calving and were then unable to attend meetings.

In addition to this, Jeff's local factory has made some major changes to respond to an increasing number of farmers converting to dairying in the district, in the face of a sustained downward trend of farm gate prices for other products. Factory changes have also been undertaken to increase product flexibility, quality and environmental standards. The average payouts for Jeff have remained relatively constant despite the 2% per annum downward trend in commodity prices since the 1980s.\(^3\) This has been achieved through economies of scale, increased efficiency and innovations in the consumer market.

Other changes Jeff and dairy companies have faced recently have been the result of the Resource Management Act 1991. This legislation has required a closer examination of natural resource use in order to minimize the effects of change on the environment and to achieve sustainable resource management. The new resource management policies and plans of regional and district councils have been debated and led to local acrimony over competing expectations and demands. In addition there have been social pressures in the district as the result of new dairy farmers moving in with different values from local farmers.

Pressures in the international commodity market encouraged New Zealand marketers to try to anticipate trade barriers by using New Zealand's 'clean green' image to market advantage. Tradenz, the Government export organization, sought support and funding from a range of industry groups to launch an environmental quality label. The dairy industry, through the New Zealand Dairy Research Institute and the New Zealand Dairy Board, was approached as a possible key

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funder and participant. However, the dairy industry was not convinced of the wisdom of such a scheme and ‘Project 98,’ as the scheme had been termed, did not proceed. While marketers in the industry wished to be perceived as ‘clean and green,’ they first wanted to examine the implications of making such a claim more carefully. How would they substantiate such a claim; were there agreed indicators of ‘clean and green’ and could all product make such a claim (and if not what was that saying of unlabelled product)? This in turn has led the industry to not only question whether and how they could substantiate a claim of ‘clean and green,’ but also whether a means to deal with neighbours concerns over changes and resource management issues might be addressed at the same time.

Jeff values his environment and takes an immense pride his farm work: that is one of the reasons he is farming. Families of pukeko are breeding in the stream flowing through the farm and he bans duck shooters from the farm ponds. He would like to leave the farm in a healthier state than when he arrived on the property but environmental issues are not the driving force in his day and additional monitoring requirements would be just one in a long list of priority tasks.

So how can farmers such as Jeff, and the industry he supplies, practically address the need to be able to defend claims to be ‘clean and green’? This is the question from which this study has developed.

3 New Zealand Dairy & South Island Dairy (1999 : 5).
Contents

Abstract ii
Preface iv
Contents viii
List of figures xii
List of tables xiii
In appreciation xiv
Executive summary xv

1 Introduction
1.1 Research question and objectives 1
1.2 Scope of study 2
1.3 The researcher 3
1.4 Terms 5
1.5 Thesis structure and chapter outlines 6

2 Perspectives
2.1 Theoretical context 11
2.2 Theoretical framework 11
2.3 Cultural Theory 17
2.4 Support for Cultural Theory 24
2.5 Implications of Cultural Theory 31
2.6 World views, signs and reflexivity: the looking glass 32
2.7 Special signs: 'cues for care' 41
2.8 From world views and symbols to systems 42
2.9 From signs and symbols to myth and myth making 44
2.10 The pastoral myth and New Zealand as 'clean and green' 47
2.11 Summary

3 Methodology
3.1 Introduction
3.2 Analysis
3.3 The case study focus
3.4 Farmer selection
3.5 Farmer case study process
3.6 Stakeholder interviews
3.7 Market views
3.8 Media analysis
3.9 Other data collection
3.10 Environmental Management System (EMS) trial
3.11 Integration and interpretation
3.12 Summary and conclusion

4 Context for change
4.1 Introduction
4.2 Agricultural change
4.3 Ecological change
4.4 Institutional change
4.5 Conclusions

5 Case study: dairy farming in Canterbury / Otago
5.1 Introduction
5.2 An example of change: world views in collision
5.3 Context: growth and change
5.4 The dairy farmer’s story
## 6 Perceptions of others

6.1 Stakeholders 173  
6.2 Market 190  
6.3 Media 200  
6.5 Summary 209  

## 7 Discussion

7.1 Introduction 211  
7.2 World views: dairy farmers, stakeholders, consumers, media 211  
7.3 Discussion 223  
7.4 Evaluation of the EMS trial 240  
7.5 Interpretation: a strategy for stakeholder respect? 249  
7.6 Summary 251  

## 8 Signs for the times: implications and conclusions

8.1 Introduction 252  
8.2 The question and construct 252  
8.3 Key findings 257  
8.4 Implications for theory 264  
8.5 Implications for New Zealand dairying 273  
8.6 Implications for methodological process 275  
8.7 Implications for future research 276  
8.8 Recommendations and conclusions 278  

## 9 Bibliography

## 10 Appendices

A Research questions 319  
B Terms used 319
| C  | Field trial and evaluation of the Ag-vantage EMS system | 322 |
| D  | Email questionnaire for Asian consumers               | 337 |
| E  | Consent form                                          | 338 |
| F  | Constructs for initial case study interviews          | 338 |
| G  | Stakeholder identified environmental issues           | 339 |
| H  | Draft environmental policy and strategy               | 341 |
List of figures

Figure | Description | Page
--- | --- | ---
1 | Eco-labels as powerful cultural devices: doves from Canada and the Blue Angel from Germany. | 15
3 | A diagram to convey the reflexivity of world views combined with symbols: the 'looking glass.' | 36
4 | Diagram of the three overlapping systems. | 44
5 | Diagram of the theory adopted. | 57
6 | Diagram of the research strategy adopted. | 59
7 | The four representations of the 'myths of nature.' | 65
8 | Diagram of the structure of the New Zealand Dairy industry in 1999. | 112
9 | Waikakahi Stream 1996 showing turbidity but still healthy trout. | 127
10 | An example of management concerns in Waimate, 1997. | 128
11 | Waikakahi Stream showing riparian damage by cows. | 130
12 | Growth of flax planted on same site to re-establish riparian cover. | 130
13 | Location map of case study area. | 131
14 | Bevan and Nancy Burrows' contribution to the 'clean green' image. | 160
15 | The scenic image of 'clean and green.' | 192
16 | The pastoral image of 'clean and green.' | 193
17 | A hierarchy of environmental quality symbols. | 270
# List of Tables

<table>
<thead>
<tr>
<th>Table</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Comparison of a range of theories dealing with world views (author).</td>
<td>13</td>
</tr>
<tr>
<td>2</td>
<td>Indicators for four of the world views distinguished in Cultural Theory (author).</td>
<td>62</td>
</tr>
<tr>
<td>3</td>
<td>The world views of the case study farmers (author).</td>
<td>136</td>
</tr>
<tr>
<td>4</td>
<td>A comparison of farmers’ preferences concerning farm management (author).</td>
<td>172</td>
</tr>
<tr>
<td>5</td>
<td>Views of stakeholders on dairying and the ‘clean green’ image (author).</td>
<td>210</td>
</tr>
<tr>
<td>6</td>
<td>Comparison and relative proportions of world views identified among dairy farming stakeholder representatives from the case study (author).</td>
<td>212</td>
</tr>
<tr>
<td>7</td>
<td>A comparison of farmer &amp; stakeholders views on environmental issues for dairying (author).</td>
<td>214</td>
</tr>
<tr>
<td>8</td>
<td>A comparison of farmers &amp; stakeholders views on viable options for change for dairying (author).</td>
<td>215</td>
</tr>
<tr>
<td>9</td>
<td>A comparison of farmers and stakeholders interpretation of ‘clean and green’ and ‘cues for care’ relevant to dairying (author).</td>
<td>216</td>
</tr>
<tr>
<td>10</td>
<td>A comparison of farmer &amp; stakeholder views on whether dairy farmers currently reflect the New Zealand ‘clean green’ image (author).</td>
<td>220</td>
</tr>
<tr>
<td>11</td>
<td>Summary of views on the question, ‘can the New Zealand dairy farmer make a claim of being ‘clean and green’ with confidence’ (author).</td>
<td>222</td>
</tr>
</tbody>
</table>
In appreciation

This thesis could not have been produced without the willing contributions of a number of busy people. My thanks to all who gave time, advice, and forthright comment:

- many dairy farmers who, despite considerable demands on their time, were willing to share their knowledge
- helpful industry, local government, iwi and other stakeholder representatives
- supervisors Professor Simon Swaffield and Neil Gow
- Dr. Jim Barnett
- my husband Will, and sons Oliver and Nick.

To all, sincere thanks for patience and support.

*Diane Menzies, 1999.*
Executive summary

This study explores issues arising from the adoption of the term ‘clean and green’ for marketing New Zealand dairy products. Three dimensions of environmental quality were investigated: sustainable and profitable dairy farming, community and legal requirements, and export marketing opportunities and issues.

Farmers and dairy industry stakeholders views on the ‘clean green’ image, as well as environmental issues, farm management, and options for change were investigated. Interviews in the Canterbury - Otago area were undertaken, documents collected and farm inspections made. In addition, print media, market information and the changing circumstances of the industry were analyzed. The study found that although both farmers and stakeholders have a number of different views on the rural environment and appropriate farm management, there was general agreement on the image of ‘clean and green.’ However, farmers tended to see ‘clean and green’ as a goal or symbol of excellence, whereas other New Zealand stakeholders tended to regard ‘clean and green’ as a claim of fact. The general view was that the dairy industry is not yet at a stage where a claim of ‘clean and green’ can be made with confidence, because a means to substantiate the claim first needs to be in place and some farm practices need to be changed. Although the image has been widely promoted and is recognized in some markets, risk was also identified in the current use of the term. A focus instead on environmental quality and care was indicated.

Conventional understanding suggested that there is a close link between attitude and action, and therefore if farmers attitudes changed then so would their actions.
However, the study found that the situation is not so straightforward. Four different groups of views were found. The different views linked to corresponding perceptions on the attributes of the environment, and options for change. However, instead of needing to use four different and conflicting approaches for change, the study found that there was agreement on indicators of good farm management. These same signs of care have been found in the United States and so appear to be useful for marketing as well as to establish goals for farmers, and indicate change to regulators.

From this understanding, it was established that an environmental management system (EMS) could also be used to achieve change, and could gain wide support, irrespective of farmers or stakeholders particular views and values. The Advantage farmer developed EMS was trialled and found useful in raising awareness of environmental issues on farm, although it requires alteration to increase its effectiveness. Modification is recommended based on the following rationale: 'clean and green,' the recognized signs of good farming, and the idea of an EMS all met with agreement, despite conflicting farmer and stakeholder views on goals and environment, because they are conveyed as symbolic actions, or simple concepts. When those basic ideas are scrutinized more carefully, conflicts in views become evident. Therefore, to be effective as a tool for more efficient farming, and to assure regulators, neighbours and markets that the system is leading to sustainable management, additional symbolic indicators, along with stakeholder input, clear and consistent promotion and industry support is required. When this has been accomplished and an EMS widely adopted for the dairy industry, the claim of environmental quality on the dairy farm can be made with confidence.
Introduction

'There can be no doubt that all our knowledge begins with experience.' Kant

1.1 Research question and objectives

The idea of New Zealand as 'clean and green' has been a major theme for the last decade. It has been a focus of attention from a tourism point of view, has been to the fore in the daily media, the subject of environmental debate and advocacy and a matter that Tradenz, the Government export marketing agency has promoted. Dairy industry marketers have used scenic images of New Zealand for consumer product marketing over a number of years. The New Zealand Dairy Research Institute now seek to establish what would be required to support explicit adoption of the 'clean green' image by the industry: the producers, manufacturers and marketers.

There are three dimensions to being 'clean and green': that of sustainable dairying and encouraging the best practices of on-farm environmental management for the benefit of the farmer and the industry; the legislative requirements of the Resource Management Act 1991 together with the notion of being a 'good neighbour'; and the export marketing opportunities and issues. 'Clean and green' is a potential benefit for the farmer and industry, for neighbours and regulators, and for the consumer.

1 Kant (1787).
Implicit in a study of environmental quality is the need to consider each step in the value chain, commencing and focusing on the producer. Conventional wisdom suggested that environmental education was the key to a change in environmental attitudes, and hence to a change in producer actions. However, a literature search indicated that not only were there gaps in knowledge in this area, but that the link between attitude and action had not been clearly established.\(^4\) Previously unidentified aspects appeared to be influencing preferences. Further research in topics associated with myth and culture, the basis of the 'clean green' image, indicated that Cultural Theory may provide helpful ideas on the development of preferences and perceptions about the rural environment. Adopting an iterative approach, a field study set out to understand farmer perceptions and to identify the differences and similarities between farmer and stakeholder preferences, as the basis for guiding farmer action.

The research objectives for the study are to:
- understand farmer perceptions and actions relating to environmental quality, their motivation for adopting particular farm management practices, and the factors that influence farmers to adopt environmental management systems
- establish a framework of environmental quality goals and strategies to encourage the adoption of environmental management systems on the farm by farmers, companies, community groups (such as Landcare), regulatory agencies and the industry.

### 1.2 The scope of the study
This study starts by placing the focus of the problem, the term 'clean and green,' in a cultural context; it being a matter of image and perception rather than objective fact

\(^{3}\) Haywood (1990).
and singular reality. After developing a theoretical approach based on Cultural Theory the study compares farmers and stakeholder views of their actions in relation to their view of 'clean and green' in order to address the problem and advance towards a course for future policy, strategy and action. Market information was also collected and supplemented with allied and complementary research. The study was carried out within New Zealand over a period of three years of rapid change within the dairy industry.

In the course of the study 143 people were interviewed, some farmers had up to five repeat visits, and 37 email distributed questionnaires to Asian consumers were returned and analysed. Those interviewed comprised 57 farmers, 56 stakeholders, 16 additional respondents including retired industry contacts and focus group respondents, and 14 market stakeholders including competitors in Argentina, and Asian consumers. Longitudinal studies of four publications for at least a one year period (1997) and one annual publication; policy and planning documents, guidelines, codes of practice and relevant literature completed the range of information analysed.

1.3 The researcher
Social science cautions researchers to be aware of bias introduced by their own, possibly unrecognised values. Current social research practice also suggests that by explicitly accounting for researcher bias, influence can be minimized. In addition, an explicit identification of personal factors which could influence data collection, such as interaction with informants, is recommended. Here then is a brief account of the researcher’s background and influences.

The researcher is the owner of a dairy farm that was within the supply area of Southland Co-operative Dairy Company at the start of the study. That company amalgamated with Alpine Dairy Products (the study area for the researcher) to become South Island Dairy Co-operative. The researcher therefore became a minor
shareholder of the company supporting the study. The researcher's farm was purchased as a sheep farm in 1991 and converted to dairying. The farm is an investment property with a 50:50 sharemilker, which the researcher visits quarterly and for which an occasional milking is done. As owner of a farm milking 220 cows, the researcher has a pragmatic interest in the viability of the dairy industry and in the profitability of dairying to the farmer. Thus the researcher has a personal working contact with dairy farm management but not to the extent that familiar habits are overlooked. This has enabled the researcher to be partly seen by farmers as 'one of us', rather than solely as an academic - and as such the possible object of suspicion. The researcher though has a city rather than farming background and has academic training and experience in horticulture, landscape architecture, environmental and business management. Most working experience has been in environmental planning with local and national government, and this has allowed an understanding of the political process in action. The resource management legislation review was an area of work responsibility while with the Ministry for the Environment so the researcher has a more 'owned' view of the Resource Management Act 1991 than a farmer. An active association with environmental and community groups has given the researcher experience in developing trust with people from different backgrounds as well as access to such groups. The researcher is mature, of a similar age to many farmers, and so able to relate on roughly equal terms. However, the researcher is female. While this has allowed an intuitive insight into farmer responses, it has also given rise to certain reservations, as most dairy farmers are male (albeit assisted by their partner).

The dairy company sends information regularly to the researcher as a supplier, thus providing both an insider and outsider perspective. Previous personal contact with staff of the New Zealand Dairy Board has also facilitated some data gathering and assisted in 'opening doors' for interviews with staff members.
The researcher has genealogical links to Maori (iwi) through Ngati Kahungunu. She regards consideration of iwi views as being important as an expression of 'good neighbourliness.' Tribal links suggest that she is more likely to be sensitive to iwi concerns than the average dairy farmer in the study area. However, Kahungunu are not the tribe of local standing in the thesis study area so no privileged information or access has been accorded the researcher.

1.4 Terms
Some words have technical applications that are at odds with common usage and this tends to make the choice of those words confusing or exclusive. The approach adopted is however to use the technical application of those words, as this generally has an expanded and richer meaning, albeit different. Potential misunderstanding has been addressed by including an executive summary at the start of the thesis, which describes the study in the 'lay' language of commerce and common dialogue.

In addition, where there are options for technical expressions or words, the most value neutral have been chosen.

The following words, together with the way they have been applied, are described in Appendix B: biodiversity, Cultural Theory, ecological integrity, entrepreneur/individualist, environment, environmental quality, farmer, image, industry, myth, pugged, reflexivity, semiosis, sign, slinkies, stakeholder, strategy, symbol, and world view.

Application of the term *myth* is repeated in full below because the lay and technical use of this word is very different.
Myths. In social science parlance myths are ‘stories that embody fundamental truths underlying our assumptions about everyday or scientific reality.’ Myths are selective and generally take a narrative form. They simplify, and through the exclusion of elements, exercise power. Social science does not regard myths as falsehoods, fictions or fanciful tales. By contrast, common usage of the term myth is:

‘a fictitious or unproven person or thing...a story about super human beings of an earlier age, usually of how natural phenomena or social customs came into existence.’ It may embody some popular idea.

As the ‘lay’ and social science terminology are completely opposite (truth in contrast to fiction), use of the term myth as an explanation may leave key ideas open to ridicule or misunderstanding. Instead, the two terms image (a representation or likeness of a person or thing) and symbol (something that represents or stands for something else, especially an abstract idea or quality) are used in summaries. Where possible these two terms are also preferred in the text.

1.5 Thesis structure & Chapter outlines

The thesis is divided into eight chapters. The structure is firstly an explication of the theoretical construct and then a description of the mixed methodology and iterative research strategy adopted. Before describing the findings of the case study, a history of dairy farming and environmental management in New Zealand, provides the context of the study. The case study findings from farmers, and then from other stakeholders of the dairy industry are presented, and the market and media analysis and trial of an environmental management system, are described. Finally the findings are interpreted, implications derived, strategic action for the dairy industry proposed, and conclusions drawn.

7 Coulson (1962 : 542).
8 Coulson (1962 : 837).
Chapter Two. The theoretical construct is explained in this chapter. Cultural Theory forms the basis of the framework. The world views of Cultural Theory together with 'myths of nature' associated with each pattern of preferences from Cultural Theory, are considered as they apply to dairy farmers and stakeholders of the dairy industry. The world views are in turn related to a reflexive understanding of symbols.

Reflexivity with symbols, the construct postulates, can be used to communicate across differing world views. The symbols allow ideas to be perceived, and meaning constructed, in terms of an individual’s world view, whether emanating from that cultural bias or not, because the message is communicated by images in an abstract form. The adoption of a message in terms of a recipient’s world view, is dubbed 'the looking glass' idea.

Special and relevant symbols such as 'cues for care,' a theory developed by Nassauer, are then considered for their assistance to the research problem. These 'cues' are images that indicate beneficial environmental management. A further aspect of the framework is the agricultural, ecological and institutional context that is understood as a series of overlapping and interrelating systems.

Myths, ideas that embody profoundly held values, are considered as they apply to the view that New Zealand as 'clean and green' is a cultural myth. The 'clean green' image is a re-framing of the pastoral myth and the relationship of this myth to Cultural Theory is the final aspect in the theoretical framework.

Chapter Three. In this chapter the methodology is described. It features a case study within a mixed methodology, and also includes a trial and a focus group. The method used for analysis of the findings is described in eight steps, commencing with four

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key indicators of particular world views. The world views of farmers are categorized using the indicators. The eight step process is repeated for stakeholders who, like farmers, are interviewed and their discourse analysed, presented in themes and compared.

Consumer views relevant to the ‘clean green’ image are considered with the assistance of a recent market study and information collected in Asia. The changing influences of media on views about the countryside and farm management are also analysed, by longitudinal studies of four different types of publications: a local newspaper, the company newsletter, the national dairy industry magazine and technical journals. The final stages in analysis start with a review of the trial of a symbolic form of action which was suggested by farmers as a means to substantiate the ‘clean green’ image, that of an environmental management system (EMS).

Following the analysis of feedback on the review of the trial by stakeholders, and the use of a focus group to assess the results of the trial, the evaluated findings are integrated with the theoretical construct, to develop policy and strategy and draw implications.

Chapter Four. Context is a significant aspect of the theoretical framework and so an historical perspective is taken to review the changes in the dairy industry in New Zealand. While the chapter is divided into agricultural production, ecological and then institutional changes, the review shows the interrelationships between these overlapping factors. Agricultural change is considered from the foundation of the industry in New Zealand. The factors which led to changes in location, expansion and intensification of dairying, and trends, are described briefly. Technological changes and innovations such as refrigeration and tankers; animal health and welfare issues reflecting changing perceptions and advances in science, and food safety changes are reviewed. Ecological changes, from forest clearance for pastoral development, water quality impacts from point and non-point sources, and trends such as riparian
protection are considered. The institutional changes described include policy and social modification, national restructuring, networks, the introduction of lobby groups and legislative and regulatory changes. Industry structural changes, global issues and market expectations, as well as trade protection are reviewed, and the contextual changes are related to the world views of Cultural Theory, as a means of assessing the influence of context.

**Chapter Five.** The case study of farmers is described and analysed in this chapter. The chapter begins with a vignette of a district within the study area where dairying has been a matter of recent contention. The broader contextual influences of the study area are then reviewed. Interviews with twenty nine farmers from throughout the study area together with their partners, staff, team and network colleagues, and supplementary information, are then analysed using the theoretical construct. This analysis identifies farmer perceptions and preferences on farming practice and the environment, on the basis of world views.

**Chapter Six.** This chapter takes a similar approach to the case study analysis in Chapter Five, but deals instead with dairy industry stakeholders: industry staff and leaders, regulators, iwi and environmentalists. Recent market information from two consumer surveys, together with supplementary information from Asian consumers is assessed with respect to views on environmental quality. Finally the influence of the print media on values, perceptions and actions concerning the 'clean green' image of New Zealand is analysed. Longitudinal studies of relevant media include scientific journals, a local newspaper over a one year period in 1997, the industry magazine for annual periods in 1977, 1987 and 1997, and the company newsletter published during 1997.

**Chapter Seven.** The world views of farmers are then compared with those of stakeholders. This shows that the range of relevant world views are held and that
these in turn affect preferences. Different opinions on what is appropriate
environmental management are identified. The influence of context is evaluated with
respect to three aspects of the study question. They are sustainable dairying and best
practice; the Resource Management Act 1991 and being a ‘good neighbour’; and
export marketing. Similar views though are found among farmers and stakeholders on
the ‘clean green image.’ In addition, when views on indicators for ‘good’ farming, or
‘cues for care’ are compared, again, similar opinions are found. This was regarded as
confirmation that symbolism is a means to communicate across differing world
views. A trial of a symbolic action, an environmental management system, which was
undertaken to test this idea, is then evaluated and the interpretation of this data forms
the basis of the recommendations.

**Chapter Eight.** The industry question, objectives and findings are all reviewed in this
final chapter. The implications of findings for ‘clean green’ as a myth, Cultural
Theory, ‘cues for care,’ and the use of symbols to communicate across world views
are considered. A strategy for the implementation of an environmental management
system throughout the dairy industry is put forward. Finally the implications of the
findings for methodological process and for future research are discussed before
conclusions are drawn.
Perspectives

'Science consists not in the accumulation of knowledge, but in the creation of fresh modes of perception.' Bohm

2.1 Theoretical context

The purpose of this chapter is to establish the theoretical foundation for the thesis. Theory is forged to establish the ground rules for analysis. Taking this further, Collins expands the role of theory by stating that 'any choice of strategies for change, any decision as to what might represent sensible or feasible courses of action, is a choice based on the consideration of theory.' This chapter then is the basis for analysis and the development of strategy for action. It provides the context within which the study question is addressed: can the New Zealand dairy industry make a claim of being 'clean and green' with confidence; and how do we ensure that dairy farmers contribute to that image?

2.2 Theoretical framework

A theory, Douglas explains, is a device that gives support to an idea. The idea of 'clean and green,' which under-pins this thesis, can be characterized as a powerful cultural myth - meaning that it embodies a fundamental truth. It stands for something else. The theoretical basis for its examination has therefore been sought in that area of socio-anthropological theory that addresses culture and society and

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1 Bohm (1993 : 390).
their influence on preferences and actions. A stimulus for the overall approach adopted was the work of Harrison and Burgess on ‘social constructions of nature’ and on the consumption of environmental meanings. This work suggested that a useful approach to the subject of the study might be through the development of a better understanding of how farmers and other dairy industry stakeholders perceive agricultural production (in its broadest sense). This body of knowledge appeared most congruent to the problem posed relating to ‘clean and green.’ Cultural Theory was in turn selected from a range of possible approaches because it alone appeared to address how preferences, which lead to action, are formed in a social setting. While cognitive and behavioural explanations may support an interpretation based on Cultural Theory, on their own they seemed to lack congruence with the symbolic cultural aspect of the term ‘clean and green.’ In addition, Thompson, Ellis and Wildavsky’s theory of world views (based on a typology formulated by Douglas), explains the differing and conflicting perspectives held about nature and the rural environment, the focus of the study problem.

Theories and typologies based on world views or attitudes and beliefs have been used by a number of researchers and sociologists. Table 1 (below) summarizes these views, which include Cultural Theory, Environmental Ideology and Management Paradigms. The matrix demonstrates that while some typologies analyse world views, including environmental attitudes, others focus solely on environmental beliefs. Cultural Theory appears to offer a particularly broader interpretive foundation as it adapts a framework which encompasses both individual attitudes and their location within broader patterns of social action and cultural norms.

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6 Thompson, Ellis and Wildavsky, (1990).
7 Douglas (1982).
Table 1. Comparison of a range of theories dealing with world views (author).

Cultural Theory therefore provides the basis for analysis of the dynamic interaction between different world views in society, but in turn presents a challenge to overcome: that is how to stimulate coordinated action by farmers and stakeholder groups when rational action is based on differing world views. The differing world views in Cultural Theory are all held to be necessary but to be in constant tension and competition. This serves to explain why mistrust and suspicion seem prevalent between different stakeholder groups and sometimes between different farmers' groups. In searching for the means to by-pass or overcome the barriers raised by the holders of differing world views I have linked the notion of world views with three further ideas.
The first is the idea of signs and symbols as a means of communication that is intended to avoid the hostility that can be associated with contesting world views. By sign I mean a mark, such as a road sign. A symbol is a sign that has an iconic nature and indicates another or higher meaning. The idea for such use of signs and symbols is derived from Lash and Urry, who have argued that economic trends such as globalisation encourage an increasing use of signs and symbols for communication. However, I have taken this idea further than the use of symbols as a communication tool *per se* by taking into account the concept of reflexivity. The term reflexivity is mainly used in two ways in sociology. It can be used to mean general features of modern social life, in particular the questioning of established patterns and social mores. I am not using the term in this way, but in the alternate meaning, which uses the term both to mean that the idea is reflecting back on itself, and more particularly to refer to:

‘the intimate interdependence between surface appearance and the associated underlying reality.’

Therefore the relationship of a symbol and its underlying meaning becomes important to each world view. From this basis I put forward the notion that symbols are used reflexively to align with a person or group’s view of the world. For this I will introduce the metaphor of the ‘looking glass.’ To explain further: symbols have been held to be a mode of cultural production and consumption and thus are part of the cultural system. They are used every day for affirming our identity, because we understand and ‘read into’ the symbol our own world view and values. However, the symbol is also abstract, conceptual and so can become a device for linking the differing perspectives. Symbols can be used by different cultural groups, or people who have different views, and can be understood by all of the groups without a person necessarily regarding the symbol as emanating from those with a different world view, or the representation being in conflict with their own world view. This becomes more relevant when the implications of the symbol having an intimate link with the underlying ‘reality’ are considered for the

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9 Lash and Urry (1994).
key symbol, the ‘clean green’ image. It becomes necessary to understand in more detail what that ‘reality’ is meaning to each world view.

The significance of reflexivity with symbols for communication across different world views of nature and the environment, is that symbols which reflect the perspective of the originator can be used to promote particular concepts. Eco-labels, for instance, can convey a powerful message. Examples are the blue angel symbol, which is used in Germany to promote both quality assurance and the view that environmentally friendly products are good for society, and the Canadian ‘Environmental Choice’ eco-label which uses doves, their tails styled as maple leaves to link environmental choice with an underlying meaning of peace and nationalism. This is so, I suggest, because there is an intimate relationship between the logo and underlying message and because the symbolic message is conveyed across the contesting world views.

Figure 1. Eco-labels as powerful cultural devices: doves from Canada and the Blue Angel from Germany (source: Ministry for the Environment, Wellington).

The symbols may not be perceived as promoting a cultural view - the view of a particular group - and so would not be disputed by those holding different perspectives. They may be seen instead as signs for communication. The underlying concepts of caring, peace and unity which have been used, would at the same time though, act as devices of influence and power.
Symbols that are part of an action process\textsuperscript{11} may therefore provide the means to address the dairy industry’s question. The sign not only acts as a communication device across different cultural groups of stakeholders but can be an agent for action by becoming the symbolic means of encouraging and coordinating farmer action. A farmer adopting a sign or action becomes part of that culture and perceives that this aligns with the view that he or she holds. The sign is seen to reflect their views and becomes increasingly part of their preferences. It becomes symbolic for them. Thus symbols can provide the vehicle for the necessary ‘intercultural communication.’\textsuperscript{12}

Secondly, in analysing symbols used or advantageous in the field of environmental management, I found Nassauer’s\textsuperscript{13} idea of ‘cues for care’ has prospect as a possible symbolic system that will stimulate coordinated action at the farmer end of the production process as well as at the consumer end. The ‘cues’ identified by Nassauer consist of commonly understood signs of management and a work ethic. People use them to assess whether husbandry is being actively undertaken on a property and whether the manager is aware of appearance. Symbols are linked both to tidiness and control such as mowing strips to indicate that grass verges are being maintained. Nassauer had found that the ‘cues’ or symbols are widely recognized, both in rural and urban areas. She adapted this information to put forward management recommendations to deal with the creation or protection of biological diversity, where native and wilding plant growth may be perceived as indicating a lack of caring. Where the reverse was the case and there were sound environmental reasons for encouraging what may be perceived to be untidy, she recommended strategies such as mowing strips to indicate that such areas were being cared for. An understanding of local ‘cues for care’ may therefore contribute to adoption of the ‘clean green’ image.

\textsuperscript{11} Hodge and Kress (1994 : 45).
\textsuperscript{12} Thompson, Genstad and Selle (1999 : 34).
\textsuperscript{13} Nassauer (1995a), Nassauer (1988).
Thirdly, I found it useful to analyse the contextual factors affecting farmers’ actions in terms of systems. In investigating useful symbols for sustainable dairying, I have considered agriculture as a symbolic production/consumption system, by refining the framework of Clark and Lowe.\textsuperscript{14} This I have seen as overlapping and interacting with ecological systems, as explained by Holling\textsuperscript{15} and with socio-cultural or institutional systems. Again, I have seen symbols as a possible tool to move from analysis to prognosis by bridging perceptions and enabling a closer integration of the three dynamic systems. The merged framework - world views, symbols and systems - serves as a means of both analysis and prognosis by application to image making, to marketing and to quality management.

In the next section I examine Cultural Theory in some detail and explain how Cultural Theory is to be adopted for the study; its application to dairy farming and dairy farmers. I investigate the broad idea of world views, examine the implications of world views to dairy farmers preferences and actions, and then consider reflexivity in relation to world views, systems and relevant symbols.

Having established the relationship of symbols to world views and dairy farming, and to the problem, I then consider the national ‘clean green’ image: its basis and implications. The theory established, the methodology is then described.

\section*{2.3 Cultural Theory}
Cultural Theory regards the world view as the unit of analysis,\textsuperscript{16} rather than the person, who may, depending on the context, adopt different world views in the course of different functions or at different times. The theory identifies five world views which are described as fatalist, hierarchist, entrepreneur, egalitarian and hermit. For each world view there is a holder of that view so, again taking context

\begin{footnotesize}
\begin{enumerate}
\item Clark and Lowe (1992).
\item Holling (1986).
\item Thompson (1996 : 8).
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into account, a dairy farmer has a particular world view. In order to have an entrepreneurial world view, for instance, there must be an entrepreneur.

Cultural Theory is a relational theory: each world view, each of the five identified perspectives, is dependent on the other perspectives for reinforcement to remain in existence. However, it is also a rational theory: it is grounded on the premise that individuals make rational decisions based on how they perceive the world to be. Therefore, understanding the context within which a farmer will make rational decisions as an entrepreneur, or a fatalist, egalitarian or hierarchist, and the consequences of this becomes a key aspect of the problem. To grasp this, a better understanding of the current profile or associations of world views and preferences identified by Cultural Theory needs to be achieved.

Cultural Theory was put forward, and is still evolving, as an explanation about how associations of people form preferences, how these preferences develop into patterns and the consequences of these patterns and cultural biases for influencing actions. Preferences are formed, when humans\(^\text{17}\) choose a course of action as a reaction to a particular transactional context, assess the consequences, and then develop patterns of preferences based on the results of their perception of results. It is therefore a helpful idea for analysing farmers' actions. Further, the idea of cultural bias within Cultural Theory applies directly to social constructions or world views of nature, so is helpful for the environmental context of the study. 'Cultural bias' refers to the different cultural or institutional patterns of preferences that include distinctly different views of nature. Patterns of preferences result in the acceptance or rejection of different types of information and therefore a particular conception of 'reality' and the environment. This in turn influences action.

\(^{17}\) Thompson (1996: 85-87).
Before describing Cultural Theory in detail, however, the broad context of this theory, that of culture, must be considered. In considering culture, we are really looking at:

'patterns of understanding that provide a basis for making one's own behaviour sensible and meaningful.' \(^{18}\)

Shein defines culture as:

' the deeper level of basic assumptions and beliefs that are shared... taken for granted... and are learned responses to a group's problems of survival.' \(^{19}\)

Trompenaars added two further layers: norms - what is right and wrong, or shared values; and behaviour. \(^{20}\) More specifically, culture is the essence of a society that is made up of shared meanings, values, language, and morals as well as the artifacts and services that are valued and used by a group of people. \(^{21}\)

Culture has also been defined as the 'package of values that are cited in the regular normative discussions that shape an institution' \(^{22}\) and those values can only be understood, Satterfield and Gregory argue, in the specific context of which they are a part. \(^{23}\) Reiterating this, Schafer introduces another element, that of holism, arguing:

'Culture's capacity for holism and holistic perception, makes culture a highly contextual discipline.' \(^{24}\)

This leads on to the particular formulation of Cultural Theory. Cultural Theory is about how people choose to live, \(^{25}\) and about constrained relativism. \(^{26}\) It argues

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\(^{19}\) Collins (1998 : 108).
\(^{20}\) Trompenaars (1993).
\(^{23}\) Satterfield and Gregory (1998).
\(^{24}\) Schafer (1998 : 51).
\(^{25}\) Thompson, Ellis and Wildavsky (1990 : 270).
\(^{26}\) Thompson, Ellis and Wildavsky (1990).
that people act on the basis of how they believe the world to be and in doing so they radically change it.27

'Whenever anyone makes a claim against anyone else, any kind of demand on their time or resources, the response is defended in terms of values and beliefs.' 28

Thompson, Ellis and Wildavsky, after earlier work by Douglas, developed a grid/group typology, to distinguish five world views (also termed 'ways of life' or 'solidarities' by various writers). Four are located on the grid and the fifth takes all world views into account. The typology is distinguished by the relative strength of control by society (grid), the rules that regulate and prescribe social behaviour; and more or less influence by, or allegiance to, the group.29 Each of these types is a preferred pattern of social relations with particular values, which justify and sustain their preferences.30

Each type of world view held has a related view of nature, or cultural bias. This the theorists describe graphically and by descriptors: fatalist (nature is capricious); cornucopian, individualist or entrepreneur (nature is benign); egalitarian or environmentalist (nature is fragile); and the hierarchist (nature is perverse yet tolerant). The hermit cultural bias, which holds that nature is resilient, is not indicated on the matrix (below) but is understood as an amalgam of the four other views. The five 'myths of nature' depict each cultural pattern as holding a singular view on use of the environment and resources, which is generally incompatible with, and in conflict with, the needs and values of the other cultural types. Douglas 31 describes this 'grand cultural debate' as comparable to an ecological struggle between species, each seeking dominance.

27 Thompson, Ellis and Wildavsky (1990: 81).
Thompson terms the identification of five and only five world views as 'the impossibility theorem': it being impossible to construe other world views. The theory holds that there must be the 'requisite variety' in order to maintain a viable society: in other words the range of five social patterns of interaction or ways of organising must all be present for a society to be sustainable.

![Figure 2 The grid/group typology of Cultural Theory (after Douglas 1982, and Thompson 1990).](image)

Cultural Theory holds that patterns of social organization and associated actions are consistent with world views, or the typology of rationalities. Thus an egalitarian social grouping will espouse the view that nature is fragile and needs absolute protection. They will also affirm the strength and solidarity of their particular association by minimizing social differentiation within the group, by excluding those who do not share their view. The grouping adopts a non-compromising rejection of information or other threats to the power or influence of the egalitarians' group. This pattern is likely to seek strong commitment in order to reinforce the strength of the group and defend it from competing world views. An example of the effect of this can be seen in environmental activist groups' difficulties in establishing organizational structures and effective leadership, as a hierarchy conflicts with their underlying world views. For instance, the Maruia Society (a now defunct New Zealand environmental
organization) is an example of this. Egalitarians expect everybody to pull their weight to address environmental crises, and to have equal status in so doing.

The pattern of the hierarchical world view, by contrast, is to retain social cohesion by change-resistant organizational forms, and by collective and depersonalised manipulation of the grouping. Examples of this are the commitment to the use of laws, and experts to solve problems. Universities are an extremely change resistant form of hierarchy, an organization of experts in a hierarchy, and institutions as for example Canterbury University have resisted the introduction of new business strategies such as quality management. Hierarchists believe the environment is tolerant, but needs management.

The entrepreneur pattern has minimal influence from the group or society and maintains power and influence through individual networks. Examples of this are the new information technology business leaders who adapt quickly to opportunities and use contacts maintained through electronic networking to learn of opportunities. The entrepreneur is more likely to be persuaded by 'bottom lines' and 'free market' mechanisms.

The fatalist pattern is to see themselves manipulated by circumstances around them. Their stance is simply to absorb and survive. Examples are some groups of tangata whenua (Maori) who see no way of extricating themselves from a cycle of poverty, with generation after generation surviving on public welfare. They may not respond to events such as, for instance, Cyclone Bola, which eroded large areas of countryside, because they would think it would not make any difference.

33 Christian, Past Committee member, Maruia Society, Christchurch; explaining how the resignation of the Christchurch Branch of the Maruia Society came about, pers comm. (1996).
35 Venkateswarlu, Senior Lecturer in Management; lecture to MBA class on Total Quality Management, Canterbury University, Christchurch, pers comm. (1995).
36 Douglas, Executive Director Marketing and Product Support, Specialized Manufacturing Solutions Ltd., Christchurch; describing the new firm’s mode of work, pers comm. (1999).
Each world view may be modified by events and each myth of nature is only a partial representation of reality. For instance an entrepreneurial farmer who previously viewed the environment as benign may become a fatalist, seeing nature as capricious, after environmental, economic and political surprises. 38

If nature performed solely according to any one of the types, the other myths would never ‘capture any essence of experience and wisdom.’ 39 Rational people would discern that one clear pattern was persisting and the other world views and values associated would then disappear. The fact that there is not only one view and that the other models continue to exist is taken as evidence by Thompson to indicate that each of the world views coincides with some aspect of nature, and with economic and political ‘reality’ at some time.

The ‘myths of nature’ are sustained by each having a separate definition of needs and resources, which are socially constructed. 40 When the holder of a world view is forced, through a sudden change in the environment, to adopt a different world view, the mechanism for change is termed ‘surprise.’ An example of this is when previously entrepreneurial dairy farmers are suddenly and strictly controlled by regulation that they are unable to influence, as in the European Union (EU). 41 Their incomes shrink but the farmers cannot change circumstances. This change has led farmers to become fatalists. The theory of surprise is the explanation for the ‘discrepancy between the expected and the actual’ form of nature or institution, and the shock and re-evaluation of world views when the difference is noticed. 42 The theory of surprise is the mode by which dynamic change takes place as each world view is contested.

37 Jones, Director, Maruwhenua, Ministry for the Environment, Wellington; referring to residents in Te Araroa, during a consultation visit, pers comm. (1988).
38 McMillan (1998)
39 Thompson, Ellis and Wildavsky (1990 : 70).
Thus five competing views of nature are held, and each: capricious, benign, fragile, robust within limits, and beneficent, give rise to consequent behaviour. This can be used to explain the continuing conflict taking place on rural issues.43

2.4 Support for Cultural Theory

Are there social patterns in the groups who hold these various values and how does this in turn inform the ‘clean green’ question? The ‘clean green’ image is an expression of what has been termed the pastoral or Arcadian myth44 - that is, a myth of the rural environment as ‘natural’ yet perceived as a managed pastoral landscape in classic imagery. In assessing whether literature held any examples of patterns of world views, the search was initially focused on writing about the pastoral myth. A review of Marx’s detailed exposition of the pastoral myth, in his account of the impact of technology upon the ideal of an American ‘paradise,’ was helpful. Marx’s analysis indicates that there are indeed different value groups in American society. Contrasting traditional views, each the basis of a system of values,45 can be identified as coming from the fatalist46 and the entrepreneur. The fatalist, controlled by society, accepts both nature as it is and the advance of technology as being unstoppable. The view is that of the ‘masses’, those with little power to bring about any change. The entrepreneur, as developer, sees the countryside and technology as resources to be exploited. The imagery that Marx uses derives from the classical writing of Thoreau,47 who described the peace of the countryside being shattered by a train as being a metaphor for the advance of technology and change. The theme of withdrawal from society into an idealized pastoral landscape is explored by Thoreau. He describes it as a vision of unity: simple and timeless. The machine against nature conflict taken up by Marx could

47 Thoreau. In Marx (1996 : 242-265). Thoreau wrote about Walden, a rural pastoral landscape. Marx concluded that the pastoral cannot provide a refuge from the forces of change.
also be seen as expressing the egalitarian world view against the hierarchical impersonal control of the bureaucrat; the egalitarian social pattern holds that the environment is fragile and easily destroyed by technology, as represented by countryside peace rent by the onslaught of the train; the hierarchist regards nature is robust but within limits, co-existing with and applying advancing technology.

Frouws, a European researcher who has studied rural conflicts, also notes a diversity of world views and in trying to 'impose some order on the diversity of claims about the countryside' delineates three discourses in Dutch policy: the agri-ruralist, the utilitarian and that of the hedonist discourse. The agri-ruralist view he distinguished by its strength in the social dimension (the hierarchist world view). The utilitarian discourse he describes as focused entirely on the economic dimension, a particular market brand of economics, (the entrepreneurial model that holds nature to be benign). The third category, the hedonist discourse holds egalitarian values, with the environment being seen as fragile.

Frouws finds that after his analysis there is no clear coincidence between discourse and interest groups, although he notes that the public debate appears to follow the hedonist (egalitarian) discourse while trends in the rural area (regrettably he notes) correspond to the utilitarian or entrepreneurial discourse. The fatalist view of capricious nature is not identified in this discourse, although the fatalist would be unlikely to have a profile in Dutch policy debate. However, Cultural Theory holds that it is the world view, the perspective, or 'solidarity' as Thompson terms it, that is the constant. People and groups may change their world views and this may be why Frouws found difficulty in analysing discourse at a time of dynamic change.

49 Verweij (1998). In Thompson, Genstad and Selle (1999: 62). Verweij identifies a body of farmers who hold this view. He describes dairy farmers near the Rhine who continue to pollute, believing they do not have the means to contribute to clean-up, and that to do so is a threat to their viability. He interprets this as fatalism induced by the EU's Common Agricultural Policy and the sharp increase in environmental regulation which has 'eroded their individualistic solidarity.'
50 Thompson (1996: 9).
Harrison and Burgess give examples from the work of Cotgrove and Duff, and Evernden\textsuperscript{51} that illustrate that groups of people with different objectives, for instance industrialists and environmentalists, hold very different sets of beliefs about issues and consequences as they relate to an environmental topic. These different beliefs are in turn associated with differing rationalities. Harrison and Burgess found that application of the cultural typologies to the discourse used by different groups disputing views of nature and the value of a modified wetland in England, was helpful for the understanding of the interrelationships of environmental meanings, social structure and political actions. They also found that although groups borrowed the rhetoric of opposing institutions in media debates, failure to recognize the significance of different views of nature, such as the utilitarian views held by lay people, was likely to result in the defeat of the conservationist argument.\textsuperscript{52}

An analysis of cultural views of nature by Norton,\textsuperscript{53} described four classes: two termed utilitarian and two termed Arcadian. The Arcadian classes are close matches with the hierarchist and egalitarian types, from Cultural Theory, and the utilitarian classes are similar to the entrepreneur and fatalists types. As with Cultural Theory's analysis of 'myths of nature', the four classes are not 'held immutably,' and 'at different times and in different circumstances, .. contrary principles' are held. This classification supports the Cultural Theory typology, indicates development based on education and different backgrounds, but the Arcadian/utilitarian typology provides a limited explanation for preference formation.

\textsuperscript{51}Harrison and Burgess (1994 : 297).
\textsuperscript{52} Hanison and Burgess (1994 : 307).
Four different kinds of environmental planning and decision making situations are described by Trist, when dealing with complexity and uncertainty. The situations vary in amount of competition, method of decision making, complexity, and ability to forecast outcomes, and are also very similar to the four world views of Cultural Theory which are identified in the typology grid/group analysis.

Gray, in considering perspectives on change in farming, particularly in Australia, and addressing dichotomies of traditional and entrepreneurial, global and local, and referring to an increasing reflexivity, argues that 'techniques of comparative cultural analysis' are needed at the level of 'individual action and belief,' which supports the world view approach now taken.

The representation of good farming practice in New South Wales also adds some support for a theory of world views, while addressing the issue of the interaction of global and local forces. Good farming is characterized as a contested area and differing characterizations of 'good farmers' could be identified as the entrepreneur (focus on business, competitive, not constrained by the community, has own networks for advice, innovates), the hierarchist (the traditional or scientific and economic approach, strong links with community and social level), and the egalitarian (local, way of life interests). Phillips argues the importance of context and change for this social construct.

A New Zealand study to examine the different goals and management styles of farmers found that none of the farmers in the study saw profitability as an end in itself. Three management style groups were identified: one aiming to be the best, one aiming to find a balance and one aiming to live close to nature. Detailed responses from the data given within the groups identified, bear remarkable resemblance to the profiles which might be expected according to the world views

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described in Cultural Theory. They range from the entrepreneurial world view - keen to compete and obtain the respect of networks, to the hierarchist - seeking balance and opposed to equality, and to the egalitarian world view - seeing nature as fragile. Each of the patterns of views was typical of that described by Thompson and others. Thus although profit was not expressed as a sole end in itself (a particular interest of an entrepreneur - or utilitarian, the name used by Harrison and Burgess), the entrepreneur pattern was none the less evident. The inference Fairweather and Keating seem to adopt is that a prevalent assumption that profitability is a key goal of farmers is refuted by looking more closely at management styles. They argued that it was not profitability itself that was the goal, but a number of goals could be identified and these could be categorized by identifying the management style of a farmer. However, their work could also support the view that the entrepreneurial farmer is one pattern of world views present in the New Zealand farming community. The other world views were also represented and again could support the contention, as taken up by Fairweather and Keating, that there are a range of goals in the farming community. While respondents from the study noted that they had heard the views of the fatalist expressed (farmers being at the mercy of outside forces), this social pattern or world view was not represented in the study. The fatalist view was most disputed by those holding an hierarchists world view and this might be explained by the context: hierarchists may have felt most able to deal with the state instigated changes of the 1980s.

Some of the values and goals expressed in that study, however, were at odds with findings which might have been expected from Cultural Theory - particularly the strongly defined attention to marketing by the group identified as flexible strategists (hierarchists as in Cultural Theory). However, the researchers suggest an explanation for this: that the emphasis on production relates to values stressed by earlier governments in New Zealand, and the hierarchist pattern is strongly influenced by information which flows from the power base at the top of the hierarchy. More recent Government attention to profitability and the free market
philosophy may have modified the views of the flexible strategist. Thus the survey could be understood as highlighting the Cultural Theory argument that people’s world views may change, depending on the context. This then indicates caution in analysis of case studies and the need to refer to context.

A follow up study undertaken in Britain to identify farmers’ objectives found that when farmers were considered as an undifferentiated group, no clear dominant objectives could be distinguished, and that farmer objectives are multi-dimensional. The study endorsed the findings of Fairweather and Keating, was quantitative and there are indications that the three groups that Perkin and Rehman derived, correspond to the entrepreneur (wants to develop a bigger business), the hierarchist (thinks long term) and the egalitarian (a life-style choice) world views of Cultural Theory.

Similar findings were described by Parminter and Perkins in a study of farmers values and goals. Goals were categorized and entrepreneurial goals, which valued individual success, were the most important to the 1100 farmers surveyed. However, environmental goals were a priority for 7% of the farmers in the study and the conclusion the researchers came to was that farmers held a range of goals which all needed to be addressed. The consequences of this, they argued, was that policy agencies should develop a range of management options that can be used to satisfy a range of goals. The study did not relate values to farmer context, nor suggest how different preferences are formed, but the findings do not conflict with farmer preferences analysed using Cultural Theory.

Perry, in an analysis of a different sort, that of changing national icons being an expression of changing world views, explains how the egalitarianism of the rugby field which was the predominant world view of New Zealand up till the 1970’s
was eroded from 1970’s. An agent of change, Perry argues, was the Springbok tour debate which emphasized cultural diversity.

‘Changes in cultural imagery are at once fictional and linked to realignments in social relations.’

Cultural Theory would explain the impact of the Springbok tour on world views as the effect of surprise. Perry characterizes Telethons in New Zealand (popular from 1975 to 1983) and advertising for a national America’s Cup challenge, as expressing and encouraging the change of predominant world views to that of the entrepreneur - espousing individualism and competition. Perry reiterates Harrison and Burgess’ view of the interrelationship of world views with the complex political and economic context.

This brief review indicates that Cultural Theory holds prospect for identifying distinct views of nature that in turn can be associated with distinct preferences and likely actions within an agricultural context. However, it hints at caution in analysis as some others have found no clear link between a particular interest group and a world view. Thus a much more careful examination of the context (context being a key cultural factor) of farmers and stakeholders is warranted.

The prevailing assumption of many studying the dairy industry to date has been that dairy farmers are almost all entrepreneurs, and therefore, from a Cultural Theory perspective, believe nature to be benign. An analysis of Fairweather and Keating, however, suggests that a range of world views are held, matching what could be expected in views of Cultural Theory. This needs to be tested further.

How might Cultural Theory help to understand other stakeholders? Environmentalists as a social group for example might be assumed to believe that nature is fragile, while policy planners and law makers might be assumed to be predominantly hierarchical. If this proves to be the case, then it could explain the

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difference of views that each group holds on the best means of managing, using or protecting the countryside. The theory may explain the lack of agreement as 'talking past each other,' each group rejecting or not even comprehending the views of another social pattern. However, the initial evidence suggests that while a group may hold a dominant world view, unanimity within an organization cannot be assumed. It is therefore essential to undertake analysis at an individual as well as at a group level.

2.5 Implications of Cultural Theory
Thompson suggests that the means of achieving a consensus on policy outcomes is through 'overlap, complementarity and integration.' Cultural Theory then may offer prospect of indicating where common ground might be found and suggest action which might best position the farmer, dairy industry and policy administrator; and offer market opportunities.

This study is interested in organizations and institutions - the company, the industry and market as well as the farm as a business, so while the focus is on the farmer as the agent who carries out agricultural production, the study gives particular attention to the three world views which take an active role in institutions: hierarchy, entrepreneurialism and egalitarianism. Fatalism is evident in dairy farming and will be taken into account for its significance in what those with the cultural bias do not engage. The hermit world view, while acknowledged, is likely to be less relevant to this study.

Cultural Theory has been challenged by some theorists who have raised issues concerning the classification system. However, the classification system is useful for the particular purpose of this study. However, the debate surrounding Cultural Theory suggests that caution should be applied in trying to stretch the idea as an explanatory tool too far. Cultural Theory, while offering prospect for

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understanding people's preferences and actions concerning the environment, does not indicate a sure means of achieving overall consensus, nor clearly suggest a strategy which farmers might adopt.

2.6 World views, signs and reflexivity: the looking glass
Democratic political institutions at a national level and community groups working together with local government at a local level demonstrate that agreement on strategy can be achieved in a broad way in a number of areas, even though Cultural Theory suggests that consensus on values might be difficult to accomplish.

Lash and Urry's exposition concerning changing economic trends which they describe as disorganized capitalism, notes an increasing use of signs, symbols or images. Symbols have the advantage of being able to be applied at an international level and can be sufficiently abstract to capture the range of world views. The symbols can be understood by each and any world view. Thompson argued that one of the means to achieve consensus when dealing with groups and individuals with different world views could be to 'overlap' the message across those different views. A symbol is a mechanism that can create the 'overlap,' as referred to by Thompson: the means to convey messages that extend over the range of world views because they can be grasped in abstract terms and are not understood as reaffirming or espousing a particular world view. The symbol may avoid being perceived as information emanating from one world view and therefore being rejected by other world views.

A symbol can serve as a bridge to another level of ideas which as a rule, are valued by a culture. Symbols are held to be a most stable form of a culture, important for cultural memory, and simple symbols are more enduring and are at the nucleus of the culture. Symbolic systems are models for both constructing and

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65 Lash and Urry (1994).
explaining the world, with language as a primary modelling system and myth, cultural rules and the language of art and science as secondary modelling systems. 67 Symbols are profusely used: by religions, copyright and futures trading, popular culture and branding.

The following linked ideas establish the use of nature as a symbol. Lash and Urry also note that signs or images of nature and those attached to the countryside are significant, particularly in specifying place. Cosgrove’s definition of landscape takes us further:

‘the landscape represents an historically specific way of experiencing the world, developed by, and meaningful to, certain social groups - an ideological concept’, 68 and a ‘cultural image’. 69

Cosgrove describes all landscapes as symbolic, 70 thus linking rurality as a symbol, to world views of nature and the countryside.

In linking nature to the global economy Lash and Urry note international tourism’s propensity to consume environments consistent with images of ‘natural, unspoilt and Green.’ 71 This echoes Mitchell’s view of the growth in ‘commodification of the countryside ideal.’ 72 As Lash and Urry argue, the information flow and reception of images and symbols, enables a greater ability to locate one’s own society and its culture in terms of wide-ranging historical and geographical knowledge. Thus reflexivity and symbols, while emphasizing the importance of the place image, the local; are also influencing the global society, a cosmopolitan society.

Taking the topic of cultural symbols and the global/local dichotomy further, Bauman notes that the world wide availability of such symbols and the

69 Cosgrove and Daniels (1988 : 1).
70 Cosgrove (1984 : 35).
increasingly diversified uses made of them is a key topic of discourse. He sees that the interplay between global and local trends is providing 'new symbolic markers for new, resurrected or future identities. 73

The countryside can also be understood as an icon. Daniels and Cosgrove define an icon as a 'symbolic image.' 74 While discussing the landscape as an icon and symbolic image, they argue that every culture 'weaves its world out of image and symbol' and that consideration of the deeper and underlying meanings behind symbols and images is central to consideration of culture. 75 Bishop also links iconography 76 with landscape: the rural outback of Australia. He extends the idea by linking the outback, the rural icon with nationalism. The appropriate image, he suggests, is not merely bush or the pastoral landscape for Australians, but the deep outback. Perry 77 takes a similar view of icons, nationality and the rural landscape.

' Culturally, if not statistically, it is the rural that is the 'real' New Zealand... The rural can be made to mean freedom or order; flight or stability; a place to escape the impersonal controls and modes of regulation characteristic of an urban setting, or a place where the regulation of social life occurs largely through spontaneous patterns of community control ... the ideal of a common culture.' 78

Appleton postulates the importance of symbolic images, and particularly the pastoral. 79 He argues that rural landscape is embedded in our brains as a factor of pleasure and attraction, linked to ancient instincts. Environmental perception links the objects that we perceive in the landscape with natural symbols and messages that were once a key to human survival. These natural symbols, he argues, are different to but also part of the iconography of nature, which includes cultural symbols. 80 However, while many psychiatrists are also of the view that some

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74 Daniels and Cosgrove. In Cosgrove and Daniels (1988 : 1).
75 Daniels and Cosgrove (1988 : 8).
77 Perry (1994).
79 Appleton (1990 :59).
80 Appleton (1990 : 22).
knowledge affecting environmental behaviour is ‘hotwired’ in our subconscious brain rather than learnt, the natural symbols must be considered in conjunction with the contesting world views, otherwise it might be held that all humans held the same perceptions about rurality or about the same wetland, and Harrison and Burgess and others have already indicated that this is not so.

Rural New Zealand can therefore be held to be a national icon, a symbolic image, and a formative aspect of our culture. Other icons, symbolic images, and their relevance to world views and cultural production and consumption will also be considered.

In examining the mechanism and efficacy of signs and symbols, it seems an explanation is required to show how such symbols are derived. Cultural Theory would hold that a symbol developed by a group or culture would reflect their particular world view and in so doing might instigate change towards the view. However, while dominant cultures (such as the United States) are indeed powerfully influencing world views, differing perspectives are still prolific, so other factors appear to be limiting a wholesale conversion of the world view to the dominant perspective.

If this symbol development is reflexive, (meaning that there is a close interdependence between the surface appearance and the underlying reality) then the sign or symbol would reflect the view of the group. The mechanism, this idea argues, is that the concept being promulgated is abstracted into a symbol and if successful might be taken up, accepted, agreed or used by other cultural groups without recognition that the symbol may have been framed in line with the values of a competing world view. The symbol, although a powerful tool, will not necessarily be rejected or contested, as would more explicit information from

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81 Joyce, Professor of Psychiatry, Otago Medical School, responding to a direct request for an expert view on the topic, pers comm. (1999).

competing world views. The other social patterns instead interpret their own world view from the symbol, or understand the symbol in terms of their own world view.

Expanding the looking glass idea, if the symbol is sufficiently poignant, or practical, it will be adopted by other cultures and take on their perspective. In other words it will become a widely recognized symbol, a powerful device, rather than a divisive cultural element, even though the idea, expressed through the symbol, might be differently understood. Lash and Urry state that heightened reflexivity is one element of global consumerism\(^3\) and increasing globalism therefore seems to indicate increasing reflexivity and application symbols.

![Diagram](image)

**Figure 3** *A diagram to convey the reflexivity of world views combined with symbols: the 'looking glass.' (sketch drawn by Turk/Ross, to concept developed by author).*

The symbol in turn is reflexive at another level, as in Cosgrove and Jackson’s definition of culture which they conceptualize as:

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'the medium through which people transform the mundane phenomenon of the material world into a world of significant symbols to which they give meaning and attach value.' \(^8\)

Reiterating this view Dupré argues:

'\textit{A primary function of cultural symbols is to introduce some meaning into the intolerable arbitrariness of life's contingency.}' \(^8\)

The process is itself a form of cultural construction. In other words signs and symbols not only are part of building a culture but can be deliberately used to modify patterns of preference. We see this occurring in commerce through branding and in religion with the adoption of symbols, but it could also be adopted to create myths which support world views and encourage certain actions.

This idea is supported by consumer theory.\(^8\) Signs and symbols -messages- support and reinforce cultural ideas in many subtle but consistent ways.\(^7\) Another theoretic approach, based on individual personality theories rather than cultural ideas, holds that there is self-image congruity of product choice. Consumers are theorized to buy products that are compatible with their actual or ideal self-concept.\(^8\) If this self-image is related to Cultural Theory, it may be understood as a reflexive expression of a culture's world view. In other words the individual, as part of a social pattern, selects a product according to the world view that they hold. They interpret, accept or reject the information relevant to the product according to the context and their world view. Examples of the coherence of product choice and the alignment of social patterns, world views and behavioural strategy are described by Thompson, Grenstadt and Selle.\(^9\)

Featherstone views symbolism and marketing images as being aspects of cultural production and consumption in which we all participate. Globalization, he argues

\(^8\) Dupré. In Bal and Gonzales (1999 : 256).
\(^8\) Craig-Lees, Joy and Browne (1995).
\(^7\) Craig-Lees, Joy and Browne (1995 : 320).
\(^8\) Craig-Lees, Joy and Browne (1995 : 149).
\(^9\) Thompson, Grenstadt and Selle (1999).
is extending and compressing cultures in conquest and contest. He observes\(^\text{90}\) that symbolism is being consciously used in the production and marketing process in the design and imagery associated with goods. Symbolic associations are also being used by consumers, in using goods 'to construct different lifestyle models.'

'We need to focus on the long term process of cultural production within Western societies that has enabled the development of a massive capacity for producing, circulating and consuming symbolic goods.'\(^\text{91}\)

In order to enable wide agreement on an issue or stance; or in order to convey a global message that will be received and adopted locally by differing cultures; or in order for a myth to achieve a purpose, communication must be conveyed in symbols which can be understood and accepted by a range of cultural perspectives. The symbol must address current concerns, in other words be relevant, but must do so in a way which seems to support different, and possibly conflicting cultural perspectives.\(^\text{92}\)

The looking glass approach might be criticized as simply a metaphor for post modern reflexivity, in the same way that the mass media can be thought of as 'the surface reflections of a mirror rather than a portrayal of a wider social reality, outside the surface simulation.'\(^\text{93}\) While its basis is indeed reflexivity, the foundation of the proposition in Cultural Theory gives it a particular and additional meaning. Firstly the looking glass idea relates to the world views of Cultural Theory rather than a more general reflexivity, because the theory holds that there are five (and only five) different social patterns and that each pattern constantly reinforces itself to more keenly align the preferences of a holder,

\(^{90}\) Featherstone (1995: 21).

\(^{91}\) Featherstone (1995: 33).

\(^{92}\) A current example is the launch of a New Zealand global brand Untouched World in Europe, after development advice in Japan and Italy. Peri Drysdale, Managing Director, Untouched World, described development of the ethnic kite logo and brand in this way. 'People don't just buy anymore. They are looking for meaning and something that expresses their lifestyle. This must be consistent and all embracing. It's about spirituality and nature...The brand needs to have universal appeal.' responding to a question from the researcher at her factory, pers comm. (1998).

toward the particular social pattern, cultural bias and behavior. Thus information becomes reflexive, but in terms of a particular world view.

Secondly, following Cultural Theory, in reflecting a sign or symbol each world view modifies the perceived world in its own view, so the reflection is fractionated; modified with each reflection, towards the preferences of the particular world view. This is possible because the information is conveyed in symbolic form and thus may be more malleable. An example of this could be the symbolic use of the term 'bottom line.' This is an accounting term derived from the discourse of free market economic rhetoric but adapted by environmentalists and hierarchists to infer environmental fragility (the egalitarian) and the threshold beyond which exploitation should not extend (the hierarchist). Another example is the use of symbols from sport which have been adapted by various world views to espouse their values.

Thirdly, the idea is based on the application of symbols which can be applied as overlapping mechanisms and so can bridge between world views. In other words, they can extend over the conflicting world views. An example of this is the 'kiwi' image for New Zealanders which, although taken from an environmental/egalitarian image, applies to all. Finally, by merging Cultural Theory with a reflexive application of symbols, myth and myth making, and the problem statement concerning 'clean and green' are also included in this construct.

The proposition is supported by a simple idea from organization theory. Collins states that ‘people see what they believe.’ They interpret events and problems based on their perception of the situations as they must confront them. Collins argues that any sensible model of change must take this into account, and skilled change management is likely to stem from a 'sensitivity to the world views of

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Applying this point in a cultural context and using symbols to overcome barriers, is the basis of the 'looking glass' idea.

Perhaps it is no coincidence that this proposition has many similarities to Johnson's theoretical approach in a study he undertook to consider nature and society relationships for the business sector. He integrated a five paradigm category typology (from Colby) with an ethical construct to which he added ideas from Deming and Leopold, to produce a matrix on dimensions of an organization based on the organization's world view or paradigm. In contrast to Johnson's approach, this study focuses on the farmer, the supplier level of the industry, but also starts with world views, and proceeds to consider stakeholders world views as they apply to global markets and environmental production/consumption systems.

What this merged idea initially does not seem to explain is the political dimension: the process by which a dominant group's symbols take precedence. However, cultural geographers argue that political ideas are embedded in the fragmented signifying systems of culture. This also seems implicit when we link the place of myth, such as the 'clean green' myth, with global marketing and the power of the market. There is both a political and an economic dimension to this. This view has been affirmed by political scientists. From the reverse point of view, cultural policy and development is the business now of politicians.

'C Today virtually every country in the world is involved in many measures to promote culture ... programmes and policies to guide cultural development.'

Cultural Theory, in focusing on the establishment of what is political and what is not; in regarding politics as socially constructed and in defining patterns of preference, is central to political science. Following Yanow, by taking a policy
culture approach, and taking into account the symbolic nature of policies, problems arising from multiple meanings and change resistance, can be conceptualized.

This merging of Cultural Theory with ideas based on reflexivity and symbols will form a central part of the framework for analysis. It will be applied to the question of the ‘clean green’ myth and its national context; to farmer, stakeholder and market action and reaction, and to the assessment of possible strategies for future action.

2.7 **Special signs: ‘cues for care’**

A further factor in this theoretical approach was sourced in the field of landscape ecology. Nassauer’s 101 ‘cues for care’ closely parallels the representations of farmers and stakeholders concerning both ‘clean and green’ and the perception of sound farming practice identified through these case studies. Nassauer holds that people and communities perceive certain symbols of environmental or agricultural management as indicating sound and caring husbandry. These ‘cues for care’ indicate a perceived work ethic and control of the production or growth processes such as straight and tidy fence lines. The idea is supported by Healey and Shaw102 who describe a shift in meaning of environment from a setting, to environmental care which emphasizes marketable assets, a more complex conception of sustainability.

In addition, ‘cues for care’ can be interpreted as a group of action symbols based on the pastoral ideal. In other words, they prescribe how a farmer or land manager can present the image of the pastoral myth. This interpretation in turn links the ‘cues for care’ with the New Zealand re-presentation of the pastoral ideal: the ‘clean green’ image.

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'Cues for care,' as an idea, is adopted as a useful signifier of farming practices for farmers and the market. Such signs, in conjunction with branding, practice codes and systems can contribute to a 'tool bag of symbols' for the industry. The 'cues' can be readily identified by farmers, and empirical information indicates that they bridge cultural groupings, as has been postulated for other symbols. They can be included in the positioning of a brand (the image of the white, straight tidy fence lines and even length grass pastures depicted in TV advertisements) or in other images being promoted for their effectiveness relevant to agriculture and values. They can also be used as symbolic indicators in the adoption of another symbolic system, an environmental management system. The latter provides a means of verifying and maintaining a quality standard and again can be used with eco-labels or similar symbols of quality assurance to provide both the industry and the market with a measure of confidence concerning farm management, animal welfare and food safety. Other symbolic tools may also assist in indicating quality assurance for farmers.

2.8 From world views and symbols to systems

However, while Cultural Theory and the above ideas deal with modes of thinking, and the socio-political environment, the bio-physical context also needs to be taken into account. Farmers are not working with a static entity. Agriculture does not merely deal with the environment, it produces the environment, transforming the earth. In addition:

'Farming is the single most important and consistent way that humans .. have contact with nature.'

Lowe and Clark offered a model for dealing with science and technology and agricultural innovation in a policy context. They depicted agriculture as an environmental production system. Their paper argued that the environment is a

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product of collective action. Fundamental to their approach were the stakeholders, depicted in terms of actor-worlds (not to be confused with world views), the policy community and what they termed the arena of struggle. Their model depicted inputs and outputs rather than causes.

This theoretical approach, then, deals with both the production of cultures through symbols, and the production of the environment, through agri-business. This is not a linear flow process but is a feedback loop whereby the consumer and other stakeholders (or ‘actors’) of both culture and agricultural products respond to the changes in terms their own world views. These production/consumption processes can be viewed as two systems: cultural and ecological.

These systems are intimately linked. The natural environment is not only produced or modified by the agricultural production process, but the changed environment in turn influences how people perceive and in turn use it. As ecological systems are modified so world views may alter and in turn views on how the environment is perceived and used, will change. As ecological systems are dynamic, modified by introduced pests and predators, climate and micro-climate changes, so too is the political and economic context and contesting world views of nature. Further, other physical processes operate in this environment, remaining largely independent of the agricultural production system, and other systems and processes influence or limit the agricultural production system. Three inter-relating systems can therefore be identified: the agricultural production system, which is part ecological and part transactional; the ecological system which is modified by both agricultural production and human perception; and the cultural system of society or institutions which is modified by the environment and modifies the agricultural production system. The issue of

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111 Forsyth (1998); Schwing and Albers (1980).
‘clean and green’ in the New Zealand dairy industry lies at the interface of these three systems.

Figure 4. Diagram of the three overlapping systems: agricultural, ecological and cultural. (source: author)

2.9 From signs and symbols to myth and myth making

The idea which frames the theoretical approach to this thesis is the view that New Zealand as ‘clean and green’ is a socio-cultural myth, although a myth to which New Zealand dairy farmers do and must respond.

Myth in this context does not mean an idea that is simply false. Rather, it is one that embodies profoundly held values. The myth influences the way people see reality and in turn affects their actions or behaviour.\textsuperscript{112} Cultural Theorists affirm this view of myth as collective representations which ‘render rational’ ways of thinking and acting and justify a ‘particular way of organizing.’\textsuperscript{113}

Myth is a concept relating to culture and society, hence further exploration of the idea seemed to be most fruitful in social theory. What was sought, was an

\textsuperscript{112} Hofstadter (1955). In Short (1991).

\textsuperscript{113} Price and Thompson (1997: 78).
explanation which would enable this myth to support one kind of action rather than another.114

Barthes,115 a leading authority on myth, characterized myth as a system of communication defined by its intention: a message, or form, but not a concept or idea. Rather than being defined by the object of its message, a myth is defined by the way the message is conveyed. Barthes noted that a myth may be modes of writing or representations such as photography. Hence myth co-exists with symbolism. The myth though plays on the analogy between meaning and form by transforming

\[ \text{history into nature - it is read as a factual system but it is instead a semiological system.} \] 116

Myth is a means of conveying abstract social ideas. Following this definition, Wright describes myth as a communication from a society to its members. He argues that a myth must be understood 'automatically.'117 An image (which he associates with myth), does not come to represent a concept or culture through any inherent properties of the image but through the difference between it and the image to which it is opposed.118 The myth, in this definition, embraces a dichotomy. The proverb 'cleanliness is next to Godliness' conveys one such image, indicating lack of hygiene as sinful. Another example is the image of tubby children as happy, loved children, which was used frequently by the Karitane Society in New Zealand, encouraging an obese generation.

Providing a perhaps conflicting view, Hajer119 puts forward a 'story line analysis' of environmental discourse, using this to support the view that environmental issues are presented in more complex ways than simple dichotomies. However, rather than take from this that myth and environmental discourse are separate

115 Barthes (1972: 142-146).
entities, the 'story line' can be viewed as a technique for explicating bewilderingly complex environmental problems. The story line in this sense then may also embody a myth.

Lincoln\textsuperscript{120} describes myth as a mode of discourse which can be used politically to engender cultural values and construct social identity while deconstructing other social affiliations.\textsuperscript{121} As a device, the myth codes social information while at the same time actively constructing society. This definition echoes Malinowski's view of myth as a form of social charter, almost a social template.

A myth can be used to evoke pride and the recounting of myths can re-establish national solidarity. Stories from the world wars, currently being re-used, have been employed to achieve this and were frequently used in New Zealand. Stories of London triumphing over bombing raids is a similar example. Lincoln categorized myth as a class of story that has credibility and authority, and refuted the condescending usage of the term which has myth signifying a story which one cultural group regards as true but which the speaker and his or her group regards as false.

Myth also has a place in policy, over-simplifying and therefore disguising or losing important policy details in the recounting.\textsuperscript{122} As Barthes explains, myth organizes a world without contradiction, a world without depth.\textsuperscript{123} Sometimes policy discourse based on an underlying myth is not perceived as a myth, rather than being accepted at face value. In such an instance change may be confounded by a misunderstanding over the origins of the policy (myth). Further, the myth may blur problem identification and solution. Reviewing options in this case may be difficult. A myth may effectively put off policy decision making to a lower

\textsuperscript{120} Lincoln (1989).
\textsuperscript{121} Lincoln (1989 : 22).
\textsuperscript{123} Barthes. In Storey (1994).
level in the hierarchy where the policy skills may be leaner and the problem or conflict then faced, more difficult to resolve.

On the other hand policy myths may serve useful social functions and only ‘become problematic if their nature is misrepresented or disguised.’ Policy analysis and problem solving need to be appreciated in relation to myth making and myth maintaining. An important myth for a culture may stand in the way of change; while development of a myth may help a society understand actions and enable change or continuity with past action.

In arguing the importance of myth to create positive change in an organization Kaye terms a myth as words which provide us with alternative ways to look at the world, through a sense of teaching, or support; and a legitimization of cultural values. Myths, Kaye argues, ‘reveal to us the secrets of our environment and show us the possibilities of deeper understandings about life, nature and spirituality.’

2.10 The pastoral myth and New Zealand as ‘clean and green’

The myth at the focus of this study, that of New Zealand as ‘clean and green’, can be interpreted as a re-expression of an earlier Arcadian or pastoral myth, which has been prevalent in Western thinking as an ancient ideal. The pastoral myth is expressed as a yearning for the simple, tranquil countryside; a view of the relationship of ‘men in society.’ It can be seen in the paintings of the romantic or picturesque era, and is pervasive in literature from Virgil to Hemingway and Mansfield. It could even be held that, as in other British colonial settlements, this pastoralism or agrarian myth has been used to define the

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125 De Neufville and Barton (1987: 202).
130 Hunt (1992); Bowring (1997).
meaning\textsuperscript{133} of the nation. The ideal of fresh, green landscape\textsuperscript{134} may even be seen as the psychological\textsuperscript{135} and philosophical driver for both European settlement and rapid and wholesale conversion of native vegetation to exotic pasture in New Zealand:

\begin{quote}
\textquote{the re-creation in entirely unsuitable landscapes of the general European pattern of imposing the familiar on the native, until all is familiar and much is lost.}\textsuperscript{136}
\end{quote}

The pastoral ideal, well understood by the settlers from Britain, supported the economic pastoral opportunity, or perhaps allowed that opportunity to be seen and exploited in New Zealand.

In Britain today the Arcadian ideal, as a symbol of a past more desirable state and of middle class social stability, can be traced to a variety of current urban and peri-urban forms such as the garden city and suburb,\textsuperscript{137} and the country park.\textsuperscript{138} It might also be regarded as a reason for and continued basis of European Union farm subsidies: a wish to maintain the countryside as an Arcadian park. Supporting this contention, the European Commissioner for Agriculture, Franz Fischler, in describing why Europe protects farmers through subsidies said:

\begin{quote}
\textquote{We want to keep the kind of countryside we have created over the centuries in Europe and not allow our rural landscape to revert to wilderness. Many of the payments are subject to environmental conditions and this trend is likely to increase.}\textsuperscript{139}
\end{quote}

Maintaining farmers on the land, however uneconomic the activity, to discourage a drift of unemployed to the cities, is another important reason for the subsidies.

\textsuperscript{133} Marx (1996 : 3).
\textsuperscript{134} Marx (1996 : 3).
\textsuperscript{135} Freud (1920). In Marx (1964 : 8).
\textsuperscript{137} Swaffield and Fairweather (1998).
\textsuperscript{138} for example: Dinton Pastures Country Park, Wokingham District Council, Berkshire.
\textsuperscript{139} The Press (1996 : 21) 6 February 1996.
Marx\textsuperscript{140} identified the sentimental pastoral ideal as a nostalgic yearning for nature and also a counterforce, a symbolic but less powerful contrast to the machine, the image of the over-riding force of industrialization. He saw the idealization of natural landscape in the pastoral myth as encouraging hostility to civilization, a collective neurosis of America and a myth that was past its usefulness. Marx saw the need for new political 'symbols of possibility' to overcome this cultural conflict. Others have echoed this view of the idealized countryside couched in contrast to the rise of the city and the power of the market.\textsuperscript{141} In this dichotomy the countryside is the epitome of fragile nature, a land for shepherds and stewardship, while the city is the symbol of entrepreneurial activity, encroaching and devouring, polluting the air and waters of the countryside, artificial. Technology, emanating from the city, is seen to expand urbanity to a megalopolis of global proportions, at the risk of environmental catastrophe. Marx argued that this myth, suggesting chaos emanating from the city and simplicity in the countryside, was unhelpful for future productivity in the countryside, for integrating the city with nature and agriculture, and technology with wilderness.

Fourteen years on from Marx's plea though the same conflict is alive and growing in Europe.\textsuperscript{142} Urbanization, counter-urbanization, large scale recreation development and agricultural intensification are the stimulus for growing public concern for valued peace, quiet and harmony of the 'green and pleasant' countryside, the pastoral ideal. Other dimensions of this conflict identify farmers as polluters and maltreators of animals, over-producers and a burden, in contrast to the Arcadian view of the farmer as a steward of the rural ideal. This criticism could be stimulated by disappointment over the failure of agriculture to meet the standards of the pastoral myth.\textsuperscript{143}

\textsuperscript{140} Marx (1996 : 353).
\textsuperscript{141} Short (1991 : 34).
\textsuperscript{142} Frouws (1998 : 54-69).
\textsuperscript{143} Short (1991 : 39).
Taking a wider view of nature/society relations, Bell paints a fragile picture of harmony between nature and society in Britain through the integration of the international view of society and the local sense of place. Bell sees this harmony developing in the city as opposed to the countryside through more consistent values and development in urban areas and also the sharper definition of sense of place in urban communities.\(^{144}\) This can be interpreted as the egalitarian view of nature as described in Cultural Theory: a collective sense of a strong and cohesive group in the city resisting 'otherness' in the rural areas.

This current theme of pastoralism and a vision of harmony, can be contrasted with the rural issues raised in the 1980s. Literature then tended to characterize the nature/city conflict in planning policy terms. The peri-urban fringe land was 'a place to be zoned and managed,'\(^{145}\) a problem area, waste land and a dumping ground: as Cultural Theory would identify, the hierarchist view. The conflict is now changing from city versus country (or an hierarchist versus egalitarian debate) to a conflict between different rural interests, and the concern is with agricultural intensification which opposes nature conservation.\(^{146}\) This can be interpreted as a contest now between entrepreneurial and egalitarian world views.

Cloke and Park\(^{147}\) saw the nature/city conflict in a broad time frame. They argued that there was a feeling of hostility towards the countryside prevalent during the 19\(^\text{th}\) century - a powerlessness linked to the view of the fatalist - and this has now evolved to sentiments connected with the rural playground or rural idyll. The farmer, as a businessman, is seen as a destroyer of this national heritage. In other words the entrepreneurial farmer is in contest with the views of the hierarchist and egalitarian.

\(^{144}\) Bell (1998: 151-175).
\(^{145}\) Hart. In Lockhart and Ilbery (1987); Bryant, Russwurm, McLellan (1982).
\(^{146}\) Lowe, Cox, MacEwen, O’Riordan, Winter (1986); Cloke (1987).
\(^{147}\) Cloke and Park (1985: 9).
The rural ideal or myth bestows on the pastoral countryside a purity and harmony that is held to be a precious and natural state, a cherished image, a haven of tranquillity. Agrarian life is more wholesome, more natural\textsuperscript{148} than other life. As national identity\textsuperscript{149} the myth is deeply embedded. Even the term country holds the double meaning of ‘rural land’ and ‘native land’.\textsuperscript{150}

Pastoralism is a potent cultural symbol\textsuperscript{151} throughout New Zealand. The natural ideal can be identified in mass media and advertising in the romantic panoramas of pristine scenery used to sell cars, insurance and banking; and as a caricature in peri-urban ‘life style’ blocks currently being marketed: the Parc Provences and other Mediterranean imitations which promote the Arcadian image of peaceful countryside living, on two hectares of pasture with pre-planted exotic olive trees. No sounds of farmers shouting to barking dogs early on Sunday mornings or the smell of silage emanating from these properties and the pasture patch is expected to remain verdant and carpet-like, the year around!\textsuperscript{152}

Although the rural myth has had less time to develop in New Zealand than in Europe, it has a place as a national symbol as Bell recounts:

\begin{displayquote}
\textit{The public celebration of nature implies a ‘natural order’ in which nature is good, in harmony with the population. When the population identifies with nature, then by association this implies positive things about the population. Nature as a source of national identity serves up a simple story: it simplifies history, it simplifies economics, it simplifies politics.}\textsuperscript{153}
\end{displayquote}

Scenery and nature have become a focus for our national identity. They are held as being at the heart of what it is to be a New Zealander.\textsuperscript{154} Thus criticisms of the

\begin{thebibliography}{15}
\bibitem{Short} Short (1991 : 34).
\bibitem{Lowe and Bodiguel} Lowe and Bodiguel (1990 : 14).
\bibitem{Short} Short (1991 : 34).
\bibitem{Bell} Bell (1996); Marx (1996) Marx defines a cultural symbol as an image that conveys a special meaning (thought and feeling) to a large number of those who share the culture.
\bibitem{Cloke} Cloke, Goodwin, Milbourne and Thomas (1995 : 351). Authors use the term ‘idyll-lize’ of the rural lifestyle and note that poverty in the countryside is rejected or hidden because it does not fit with the pastoral idyll.
\bibitem{Bell} Bell (1996).
\end{thebibliography}
pastoral ideal and of New Zealand’s status as ‘clean and green’ are described as disloyal, unpatriotic or treasonous. In telling and re-telling the ‘clean green’ myth, New Zealanders can be regarded as re-claiming a paradigmatic truth while reaffirming their national identity, and by inference excluding other countries from this description. In this sense the myth has a strongly egalitarian message; in the sense that the nation as a social group is equal by excluding others.

The views of nature held by people seem to ‘determine all their institutions,’ or as Cultural Theory holds, theories of nature are aligned with a particular world view forming a ‘distinctive cultural bias.’ The myth of New Zealand as ‘clean and green’ then has a powerful function by both defining New Zealand and New Zealanders, and determining our attitudes and actions. Sourced in the culture of Europe it has less significance for Maori, but as a national value is now likely to grow in significance. This view is based on evidence of the increasing frequency of use of the words ‘clean and green’ in media and other texts in the last ten years. Although the pastoral myth arrived with European settlers, and has been used for at least 70 years in marketing, only recently has the image become part of the frequently used discourse of New Zealanders.

This increase in use of the ‘clean green’ myth also coincides with a marked decline in sheep farming (incomes are dwindling and the national flock has dropped from 90 million to around 42 million) so greater dependence on maintaining this image is likely to be placed on dairy farming, or dairy farming is likely to have a more significant element in the image. This in turn appears to

158 Thompson, Genstad, and Selle (1999 : 17).
place the dairy industry in a situation of risk in relation to the egalitarian world view. Environmentalists may view the national image as being captured by those with conflicting values and dairy farmers may increasingly be seen as perpetrators of a false image (as other farmers fade from prominence).

The conservation/pastoral conflict identified in Europe and the US must also be considered in this context. An urban/rural conflict is not significant in New Zealand for the peri-urban small holder who has recently moved from the city, \(161\) perhaps because the rural cultural myth still retains a central place in the identity of all New Zealanders. \(162\)

In addition, an important distinction between pastoral production in New Zealand, to that in Europe and the US, is that agricultural production as well as the rural landscape is the basis of the New Zealand economy, whereas they form a secondary place in Europe and the US. Perhaps also our ‘clean green’ is not understood as a country/city conflict (urban/rural is a continuum in New Zealand rather than a duality). Instead all New Zealand is being contrasted with the rest of the world. Dairy farmers, however, need to be aware of this increasing rural conflict in Europe and its likely impact on market perception, as well as the possible development of this conflict in New Zealand.

Consumer perception is likely to develop in response to local conditions, their local context, rather than what is, or is imagined to be, in New Zealand. If the local farmer in Europe is seen as a despoiler then the same image may transfer to the New Zealand dairy farmer. Farming in Europe is becoming as much a target for green fundamentalists and animal liberationists as chemical works and mines, \(163\) and the New Zealand dairy farmer could see this pattern repeating here.

\(162\) Sinclair (1988).
\(163\) Short (1991 : 38).
The development of quality assurance systems to substantiate the sustainable management practices adopted by dairy farmers seem likely to become increasingly urgent and so too the need to adopt symbols to convey messages both to farmers and stakeholders to assist in developing trust and avoiding conflict over rural stewardship and agricultural management practices.

Our 'clean green' myth may come to be seen as a paradox, a two edged sword. It has taken widespread modification of our previously natural forested landscape to arrive at the pastoral ideal, yet the pastoral landscape is portrayed as being natural in terms of the myth. As modification of the natural landscape is the essence of agriculture, if the myth should becoming inward looking, it may be read as either a salute to agriculture, or to primeval landscape. The latter interpretation places nationality in conflict with agriculture. The two conflicting images, both bearing the 'clean green' banner place the image of scenic wilderness which is being fostered as the 'clean green' image by tourism and marketing, in contrast to the 'clean and green' of heavily modified agricultural systems, promoted by the pastoral myth. If this conflict of images becomes more pronounced, agriculture may be seen as not part of the image at all. The consequences of such a view developing would be to place the New Zealand dairy farmer in a similar situation to that currently held by the European farmer, where there is a widespread assumption that farmers are destroyers of rural quality. Greatly decreased national sympathy and increasing environmental constraints could be the result.

Evidence from a recent study of water pollution in Europe including Rhineland dairy farmers indicates that the result of stringent bureaucratic restrictions has converted farmers into fatalists, who feel themselves powerless to bring about change or do anything that will make any difference. The adoption of this fatalist world view and consequent lack of steps to control effluent pollution then serves

164 Symons (1967).
to reinforce the public view of farmers as uncaring. This is a situation that New Zealand dairy farmers have expressed a fervent desire to avoid.

Rayner\textsuperscript{166} has described a ‘discourse reflecting a debate that is fundamental among different world views and competing value systems.’ He terms this dominant theme a hegemonic myth. Such a myth cannot be challenged and sets the terms for a debate. The example given is of the earth as a fragile globe in terms of the climate change debate. The ‘clean green’ national image could be regarded as a hegemonic myth for New Zealanders: those not accepting the myth being then at odds with a broadly held view, or their nationality. New Zealanders would be unwise to assume that ‘clean and green’ New Zealand is an international hegemonic myth - but there may be many New Zealanders who fail to appreciate that it is only locally that this cannot be challenged.\textsuperscript{167}

The political promulgation of the ‘clean green’ myth has been described by educators in New Zealand\textsuperscript{168} as indoctrination, to justify the status quo as well as to justify and promote tourism development. McKay suggests that the acceptance of the myth, along with ‘expert opinion’ on environmental management has lead to complacency about environmental quality by the New Zealand public. He argues that this may mean that symptoms of environmental degradation will continue to go unnoticed until it is too late to effectively deal with the symptoms. Such complacency among farmers could lead to unrealistic expectations about the environmental standards of their competitors.

A value of the ‘clean green’ image, as with other symbols, is in the ability of the same image to be understood by conflicting world views each in their own terms. An egalitarian may see ‘clean and green’ as fragile and ephemeral; a fatalist as an image over which no control can be exerted: it is there. An entrepreneur would

\textsuperscript{166} Rayner and Malone (1998 : 288).
\textsuperscript{167}Hayward (1990 : 5-9).
\textsuperscript{168}McKay (1998 : 51).
hold that 'clean and green' is an enduring quality reflecting a benign nature and
the hierarchist would see the symbol as needing limits to prevent scarcity of the
factors that create the image. However, as we have seen in the conflicts over the
pastoral myth, the world views are in dynamic contention and association of the
'clean green' image with any one world view, would in doing so, place the myth
and the purpose in adopting it, further into this dynamic arena of conflict.

Two other current issues colour the rural discourse: that of sustainability, and the
difficulty in defining rurality.169 Both these topics are contentious, relating to the
various disputed views of nature.170 They will also need to be taken into account in
the context of the 'clean green' image.

2.11 Summary
Cultural Theory was selected as the means to consider and address the issue of
'clean and green' in the dairy industry. Cultural Theory paints a picture of
dynamic interaction and constant conflict between different world views and
conceptions of nature. As a theory of culture it is consistent with understanding a
cultural myth, the 'clean green' national image.

A reflexive application of symbols is adopted in conjunction with Cultural
Theory, where symbols are modified to conform with each world view by the
holders of that world view. Specific symbols including 'cues for care', the 'clean
green' image, environmental indicators and branding may therefore be useful as
tools for the dairy industry. Dairy farming is seen as part of an agricultural
production and consumption system that interrelates with two other systems: that
of ecological systems and cultural/institutional systems. Symbols are identified as
a means of linking aspects of the three systems and bridging world views.

The diagram indicates the three overlapping production systems: agriculture, culture and biological ecosystem, and the location of world views in the cultural system but also overlapping other systems. The land influences culture, and culture in turn shapes the land. World views influence how agriculture is undertaken. Symbols operate in the cultural system.
Methodology: case study research

'Sustainability is intimately wrapped up with human values and institutions, not just ecological functions'...therefore... 'both methodological research and case studies are needed to synthesize ecological and economic perspectives.' Toman

3.1 Introduction
Methodology is the 'process, principles and procedures by which we approach problems and seek answers.' The purpose of data collection is to understand the context and issues relevant to the research questions, and to develop and refine theory. Following Greene and Caracelli, a mixed methodology was adopted for this study. This included the combined and iterative application of several methods including a case study, then a trial followed by a workshop; and the analysis of several kinds of information including farmer and other stakeholder's discourse; farming, ecological and institutional systems; symbols; documents, and media reporting.

The purpose of adopting several methods was threefold. Firstly, to deal with different types of information such as feedback from a group on an environmental management system, individual farmers' world views, and environmental indicators. Secondly, to gather information on the same matter from different sources and in different ways, in order to verify that information, for instance by discourse analysis of interviews as well as observation of farmers' actions, and

2 Bogdan and Taylor (1975).
then farmer self-ascription to establish farmer world views. Thirdly, to provide a 'richer picture' on the topic and context, such as discourse analysis of media reports. In all cases the mixed methods were contributing to the same research question concerning the 'clean green' image.

![Diagram of the research strategy adopted](after Swaffield)

The implications of this mixed methodology for evaluation was that each section of the study needed to be separately analysed, and then integrated by comparison and testing against criteria in order to reach conclusions which took the various parts of the study into account.

A case study with farmers and their teams was undertaken as the most accessible means of gaining detailed information about farmer perceptions and actions, of understanding the dynamics present and providing a process for building theory. This approach allowed a broad collection of information, and understanding of farmer decision making as well as the context of those actions. The aim was to ascertain was 'what is the main story here.'

The research question concerning farmers' contribution to the national image of 'clean and green,' was located within the broad topic of rural environmental quality. This enabled a clear focus on the kind of data to be collected. Ten

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constructs were tentatively specified to shape the theory building approach. (See Appendix F.) The constructs were used as an interview guide to facilitate comparison of emergent phenomena. Potentially important variables had been identified from the initial literature search. The case study method selected was based on the work of Yin, Strauss and Eisenhardt, and the aim was to develop theory of conceptual density as well as the fit and flexibility appropriate to the complexity of the subject matter.

The field study and analysis indicated that there was not one ‘main story’ but multiple stories, explanations, attitudes and actions associated with the research topic of ‘clean and green.’ The next steps then were further literature searching and the development of the provisional theoretical framework. Cultural Theory merged with a reflexive approach to symbols and systems was used to interpret these five key themes: farming objectives and practice, environmental issues, options for change, farmer understandings of the ‘clean green’ image and ‘cues for care.’ The themes selected were those that not only addressed the direct research question but also addressed the context of farmer decision making.

An iterative process of data collection, analysis and theory development was undertaken as the case study proceeded. Intensive interviewing, participant observation and reviews of farm practice were undertaken with 29 farmers and their teams. Follow up information was then gathered from additional farmers, discussion groups, farmers’ meetings, interviews with industry representatives, local and regional council staff and politicians, media, reports and other documents and some consumers and competitors in the market. In this latter phase the views and actions of regulators, and the media analysis formed major parts of the study.

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8 Yin (1989).
9 Strauss (1987).
3.2 Analysis
The process undertaken to analyse data took eight steps, that are now listed and described. The first phase of analysis was undertaken to test the validity of the theory in terms of world views.

1. Identify indicators for each world view from Cultural theory literature (see Table 2 below).
2. Identify the world view of each farmer by comparison of world view indicators with discourse and farm practice. From this analysis describe the perceptions and characteristics of each world view for farmers in richer detail, and note inconsistencies.
3. Analyse and assess the implications of farmers’ perceptions and actions relevant to key themes: farming objectives and practice, environmental issues, options for change, the ‘clean green’ image, and ‘cues for care.’
4. Repeat the process (although modified) for other stakeholders: industry representatives, regulators, iwi and environmentalists.
5. Invite key informants to undertake self ascription and a review of the analysis.
6. Compare farmer and stakeholder perceptions, then define issues and options.
7. Select option for change, based on need for technical rigour and possible perception as a symbolic action; trial and evaluate.
8. Integrate evaluation of trial with theoretic construct and contextual data to develop policy, strategy, implications and conclusions.
Table 2. *Indicators for four of the world views distinguished in Cultural Theory (author).*

The stages in this analysis are now described in more detail. Indicative aspects which were characteristic of each world view were identified\(^\text{13}\) from the detailed explanations of Cultural Theorists.\(^\text{14}\) Indicators selected were those central to Cultural Theory and those which seemed to meet with the consensus agreement of Cultural Theorists; social interactions, economic preferences, ‘myths of nature’ and decision making.

The accounts given by the farmers were then categorized using the indicators to identify individual world views. This was undertaken in the following way.

Discourse, which was considered as an important source of information by Marx, Frouws, and Harrison and Burgess,\(^\text{15}\) was recorded from all interviews with each farmer, on a range of pre-defined topics. This was analysed using the indicators

\(^\text{13}\) following Yin (1984 : 35) re pattern matching as a strategy for internal validity in a case study.

\(^\text{14}\) following Price and Thompson (1997); Rayner and Malone (1998); Thompson (1996); Thompson, Genstad and Selle (1999); Thompson, Ellis and Wildavsky (1990); Verweij (1998).
identified, to inform this cultural context. A key element in interpretation of
discourse (as with Cultural Theory and understanding world views and social
patterns) is context. This is because what a person says does not remain constant
from one occasion to another and people produce different evaluations depending
on the context.\textsuperscript{16} The ‘transactional context'\textsuperscript{17} was limited to dairy farming and
the environment so the difficulties of an individual changing world view in
different contexts was minimized.

Discourse analysis is a useful approach because:

‘Discourses do not just reflect or represent social entities and relations,
they construct or constitute them.'\textsuperscript{18}

In addition:

‘Lay beliefs are not merely descriptions of the social world, but are the
constitution of that world, as the organised product of human acts. The
natural world is transformed by human activity, but is not solely
constituted as an object-world by human beings. The social world, on the
other hand, is constituted and reproduced through and in human action;
the concepts of common sense, and the everyday language in which they
are expressed.'\textsuperscript{19}

Discourse analysis is not without hazard, though, because:

‘understanding other people necessarily involves an interpretive effort,
which in turn, must draw on shared criteria of meaningfulness... All
depends on how telling is the telling.'\textsuperscript{20}

Fairclough held that discursive practice was determined by social structures (he
did not identify Cultural Theory world views but this is consistent with such

\textsuperscript{15} Marx (1996); Frouws (1998); Harrison and Burgess (1994 : 291-310); Senge (1993 : 5-31).
\textsuperscript{16} Potter and Wetherell. In Fairclough (1992 : 24).
\textsuperscript{17} Douglas. In Thompson (1996 : 80).
\textsuperscript{18} Fairclough (1992 : 3).
\textsuperscript{19} Giddens (1995 : 234).
patterns) of which participants may be unaware. They in turn influence social structure in ways of which they are also usually unaware. In addition to interviews, notes were taken during and after farm walks. Participant observation was carried out at such times as milking, feeding out and animal husbandry. Observations concerning social relationships with staff and other stakeholders were recorded by note taking, taping and photography, to provide further data about each informant and the selected indicators for each world view. This was undertaken because literature had indicated gaps between self-reporting and actual actions, especially behaviour such as environmental action, and had called for caution when dealing with self-reporting. This data was compared with the discourse analysed, to check for discrepancies. The world view of each farmer was thus categorized, and then a richer picture of each world view of dairy farmers was described.

Having established the world view of each farmer, and described their world views in more detail, the next step was to consider the extent to which Cultural Theory explains and predicts perceptions and actions relevant to these key themes: farming objectives and practice, environmental issues, options for change, the 'clean green' image, and 'cues for care.' Data on the key themes was analysed to deduce what this indicated about farmer actions and perceptions, and also to look for contradictions to the Cultural Theory indicators, and countervailing views. The focus was on farmer (and later other stakeholder) perceptions as well as actions because studies on the assumed links between learning, values, beliefs, attitudes, behaviour and action including theory incorporating the farmer, community and customer indicated at best only a moderate link between attitudes and pro-environmental behaviour. Behaviour change therefore is unlikely to be achieved

by relying on attitude change.24 As the discussion in the case study will show, three categories were found. Firstly, perceptions on three themes were consistently differentiated by farmer world views; secondly, for two of the themes all were in general agreement (in other words the response was consistent across world views); and thirdly, exceptions that did not appear to follow a pattern were identified. In addition, it was also apparent in the context considered, that farmers did not report or indicate a change in world views as the result of a change in circumstances or a change in environmental conditions.

The next stage was to return to key informants for follow-up interviews, to check understanding of some of their responses, and to ask those farmers and stakeholders to ascribe their views of nature in terms of the descriptions and diagrams developed by Cultural Theorists (as shown in Figure 7 below).

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THE FATALIST

THE HIERARCHIST

THE INDIVIDUALIST

THE EGALITARIAN

NATURE CAPRICIOUS

NATURE PERVERSE/ TOLERANT

NATURE BENIGN

NATURE EPHEMERAL

Figure 7. The four representations of the 'myths of nature.' 25 (after Thompson).

Note: this study uses the term 'entrepreneur' in place of the word 'individualist,' as indicated above.

A check was also made to ascertain whether informants accepted the categories and descriptions of the ‘myths of nature’ as a realistic explanation. All so asked, agreed that the construct seemed realistic and useful. It ‘made sense’ to them.

Informants’ self-ascription aligned with the categories assigned for each, although four indicated that their views, in some circumstances, also aligned partly with another world view as well, or held a world view which was partly two world views, such as hierarchist and fatalist. Although Douglas argued that it was not possible for an individual to hold two world views at once, Thompson demonstrates that world views may be consistently altered according to context, and confirmed that research had also indicated that individuals may hold a world view that is part of two (but not more) world views; between two views rather than holding two distinct world views. This does not necessarily conflict with Douglas’ formulation.

Finally, key informants were invited to review the case study draft, particularly with respect to their input. At this stage some informants made further comments on some items raised, adding additional detail rather than changing interpretation of the data.

This process was repeated for interviews with other stakeholders (with the exception of customers), although instead of farm walks and other methods of observation, documents such as policies and plans were collected and reviewed, and the interviews and analyses were less detailed. Farm objectives and practice were not considered but environmental issues, options and the ‘clean green’ image were analysed. The farmer interviews were then compared with the stakeholder interviews.

28 Thompson, responding to a query on the case study findings by the researcher, pers comm. (1998).
29 from Yin’s (1984 : 36) advice on construct validity.
Based on the interviews, options for addressing environmental issues were identified and several positive symbolic actions were considered in more detail. The options suggested by farmers and stakeholders included independent auditing, financial 'carrots,' benchmarking best systems, consumer services, communication and advocacy with other farmers and the community, company or industry leadership, training, market monitoring and branding. Symbolic actions were then assessed according to their applicability to agri-business systems, technical rigor, likely role in the market, and likelihood of acceptance and adoption over the range of world views.

From the options suggested by farmers, one option which could be treated as a symbol, that of an environmental management system (EMS) was tested for its ability to reflect world views of the farmer and stakeholder, response to the 'clean green' image and efficacy as a change agent. The test consisted of a trial of the system on six farms over a nine month period. The six farmers who took part in the trial each had an EMS developed for their farm at the start of the trial and were asked to review and consider it. At two to three monthly intervals the farmers were visited to assess their understanding of the EMS, and to evaluate whether the EMS had led to a change in perceptions and/or actions. At the final farm visit a questionnaire was conducted with participant farmers. A report was then prepared of the trial, circulated to a range of stakeholders for comment, and a workshop held with farmers and industry representatives: trial farmers, agri-business staff, dairy company staff and board members. At the workshop, the results of the trial and feedback from stakeholders were presented as the basis for consideration of future action. The purpose of the workshop was to assess the value of an EMS as a means to achieve sustainable dairy farming, and as a signal to farmers and the market that the industry is working towards environmental quality; towards the industry as 'clean and green.' The workshop report was then circulated to the twelve participants for additional feedback and to confirm understanding of discussions.
The results from the trial and workshop were then re-integrated with the theoretical analysis previously undertaken to develop a technically robust response that could be presented in a symbolic way in order to match the various world views of farmers and stakeholders. Policies and strategies were then developed and implications and conclusions were drawn.

3.3 The case study focus
The decision was made to focus the study on the individual dairy farmer, on the understanding that it is the cumulative actions of individual farmers that are the basis for the rural image of New Zealand. Although Cultural Theory is about social patterns of groupings, for each world view there is a holder of that world view. Thus while the dynamic interaction of world views was to be considered, much of the action appeared to be down on the farm. In addition, the context in Cultural Theory is vital and it seemed difficult to clearly establish context factors if attention was not focused, at least initially, on the farmers.

From the researcher’s knowledge of the time and seasonal pressures that dairy farmers work under, and the aim of the industry to work toward improvement and change, it seemed unlikely that change could be achieved unless dairy farmers themselves saw benefit in the mooted change. Hence, the determination to focus on farmers, their views and values as well as their actions.

3.4 Farmer selection
The issue addressed by this thesis concerning ‘clean and green’ was posed by the dairy export industry through the New Zealand Dairy Research Institute. A local dairy export company also agreed to support the study and so the farmers included in the study were those supplying the export dairy company. Two thirds of the way through the study the company amalgamated with another company, thus extending its territory some 500 kilometres further south. Farmers from this area were included when follow up information was required.

50 Morris, Loveridge and Fairweather (1995); Saltiel and Bauder (1994).
Farmers were selected on the basis of location, age and farming experience, ownership, established and recent conversions to dairying and size of the property/number of cows milked. These factors were identified as influences of farming practice in an earlier study for the participant dairy company. An attempt was made to identify female dairy farmers but only one was found, and she was unable to take part. Instead, care was taken to include the female partner from a farming operation in the interviews and other study. The age of respondents spread from about 20 years to nearly 80 years, with the average in the 40s. No dairy farmers claiming Maori ethnicity were located in the study area. However, two families had started dairy farming in Holland and another (one partner only) in the United States. Farmers were identified and access gained with the assistance of a Livestock Improvement Corporation (LIC) farm advisor, the company and board members, agricultural companies and the snowball method. No attempt was made to achieve a random sample of any sort, rather the sampling was intended to fill theoretical categories, that is farmers with different experience (age and background), from different but replicated locations and different but replicated ownership types. In-depth analysis rather than extrapolation of the findings was the purpose of the case study so although there was replication of categories the view that all social situations are unique was accepted.

Five out of the 40 farmers approached, refused to take part. Their reasons given were: too busy (converting a farm, other issues), not interested, disagreement with the company and aspects assumed to be considered in the study (conservation issues). Six other farmers were found to be inappropriate (not the category of farmer sought/ a town milk supplier).

To address a concern that the study included mainly above average farmers, in terms of skill and business success, (because several had been suggested by farm advisers from those who attended discussion groups and had already been found

to be average or better farmers), two farmers with quality supply problems were included, and three were sought out for their particular environmental management conflicts with neighbours or the regional councils.

All farmers included in the first phase of the study, which comprised twenty nine farms, and in almost all other instances, were generous with their time and forthright in interviews and discussions.

3.5 Farmer case study process

Farmers were contacted by phone and invited to take part in the study. Those who requested more details were posted a description of the study and then followed up by phone to ascertain willingness to participate. Appointments were made with those who immediately agreed to take part, for some as an initial meeting and to observe milking; for others as a first interview. At the interviews and visits the researcher endeavoured to match clothing and language to that which was similar to the dairy farmers: blue overalls and gum boots were worn for milking and farm visits, and casual clothing otherwise; in order to attempt to make informants feel most comfortable and to help to develop empathy.

There were two particular aspects that may have affected the responses of some of the farmers, and these were taken into account in considering the effect of context. The first was the relative age difference, and therefore perhaps power imbalance, between the researcher and some of the younger farmers. In addition, the topic that some farmers perceived as being the topic of the study (pollution, or landscape) may have encouraged some to tell the researcher what they thought they should be saying, or was being sought. For these reasons farm walks and management discussions on the farm were helpful. The second aspect was one of politics. Some farmers, when they remembered the tape recorder, appeared to

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modify their view to that which is currently thought to be politically correct. Again, inconsistencies were scrutinised carefully.

At the first visit before commencing an interview, the informant was offered a consent form that had been provided at the request of the university ethics committee (Appendix E). The consent form sought the participation of the informant, on the understanding that anonymity would be preserved. All farmers signed this although several key informants asked that their own name, rather than that of an alias, be substituted after reviewing the draft of the case study. One informant asked for a copy of the first interview transcript as a means to improve his English, and this was supplied. The Lofland and Lofland format\textsuperscript{33} for the introductory interview (explanation of purpose, free to interrupt and so on) was followed and proved useful. No respondent subsequently asked to withdraw from the study.

An initial pilot study was undertaken with an owner-operator, in order to test methods and approach and to develop and refine a system for data analysis. Farm walks, observation of other farm activities, intensive interviewing, attendance at milking and follow up interviews were conducted and documents collected. The farmer’s partner was present for some of the time. Three other local farmer/contractors and two farm cadet employees were also included in this pilot study.

The pilot study, and subsequent farmer visits, were commenced with a life history description from the farmer, on the basis that context, particularly experience, was a key influence.\textsuperscript{34} The pilot study indicated the value of at least one ‘farm walk’ to look at farming practices and set up, as well as attendance at milking to observe stock health, type, treatment, and product handling. Much other participant


observation\textsuperscript{35} was found to be less effective for information collection: the researcher was quickly converted by busy dairy farmers into a tractor driver/farm worker/animal health assistant, and this was not helpful for the data needed. While Spradley's rationale for participant observation was learning 'another way of life,' 'learning from the people' and 'understanding human behaviour,'\textsuperscript{36} the researcher's knowledge and association with dairy farming made these aspects of participation less necessary.

From one to five visits were made to each farm and the farm visits and follow up calls extended over a two and a half year period. From the second meeting with the first farmer, all interviews and farm walks were taped, with respondent knowledge and approval, and notes and photographs taken as well. However, at the end of meetings, the tape recorder was switched off, and note taking stopped while a general discussion was held on farming issues. This often proved helpful in clarifying farmer world views. Tapes of interviews were transcribed by the researcher and checked against notes taken, particularly where the tape was unclear or non-verbal messages had been given. Memos were also written by the researcher to record apparently significant insights or information, and reviewed during the case study and analysis. The funnel technique\textsuperscript{37} was used as interviews proceeded, and the focus of interviews narrowed considerably by the end of the farmer case study as data became 'saturated.'

Data collection overlapped with data analysis. Field notes, through memos and questions posed as information was gathered, as well as analysis as information was collected, provided a flexible approach to theory interpretation. Questions posed in interviews were amended as the case study proceeded, as themes emerged and opportunities were presented. Within-case analysis proved helpful in

\textsuperscript{35} following Spradley (1980).
\textsuperscript{36} Spradley (1980: 16).
enabling thorough familiarity with the context. However it was not until a number of farmers had been interviewed that patterns and differences emerged.

Analysis of field data generally followed Bogdan and Taylor’s guide as listed below:

1. Transcribe and read field notes
2. Code important topics, copy, sort and examine for patterns
3. Construct typologies and note contradictions
4. Read relevant literature
5. Refer to theory on topic
6. Modify and elaborate theory then recode according to the construct, showing relationships
7. Check construct against data; seek contradictions and comments
8. Consider observer influence
9. Utilize other material including personal documents

To test whether farmers who did not comply with quality standards had differing views on ‘clean and green,’ or had changed their views as the result of conflicts, interviews were conducted with farmers who had been prosecuted, or currently faced problems over non-compliance with resource management legislation. These farmers were located through media articles, and information such as court reports provided on request by regional councils, and telephoned to ask if they would be willing to contribute to the study. None of the three approached refused to assist, although it took several months to find a mutually satisfactory time for an interview with one farmer.

In reporting the case study in Chapters 5 and 6, quotations selected were those that seemed to most clearly illustrate the particular world view relevant to the theme, or most clearly expressed an exception. In many cases farmers expressed similar

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38 Bogdan and Taylor (1975).
opinions and in such cases, the least discursive quotation was selected, or
statements from key informants.

A second phase of the case study, described below and following a similar
approach to that of the farmer study, was undertaken and analysed, then
information compared with data already collected from the farmer studies.

3.6 Stakeholder interviews
The second phase of interviews was undertaken with industry representatives,
territorial regulators, Maori representatives and environmentalists, comprising
56 respondents: 8 from industry (all male, in the 35 to 55 year age group), 28
regulators (mixed sex, with males as majority), 10 iwi and 10 environmentalists
(with similar age and sex mix to regulators and industry, although the proportion
of females was slightly higher among environmentalists). There are other
stakeholder groups who were not included in the study, such as those providing
services to farmers and the industry including agricultural contractors,
transporters, research scientists and advisors, bankers, accountants, and farmer
lobby groups such as Federated Farmers. The range of stakeholders included, were
considered sufficiently diverse to provide examples of various interests. The
process followed was similar to that adopted for the farmers: world views were
first analysed on the basis of the same pre-defined indicators; informants’
perceptions and actions concerning key themes were assessed on the basis of
universal, consistency, or exceptions to world views; key informants were then
asked to ascribe their world views and comment on the draft analysis; and other
relevant information was collected and analysed. Industry staff interviewed were
those with environmental responsibilities and Board members were those with
supplier, particular leadership (chairman) or environmental roles. Most regulators
noted that they did not seek anonymity (for publication purposes) as they were
merely carrying our their role or staff function. However, two, from an area where
there had been heated local concern, asked that they not be identified.
The most senior relevant resource management staff from councils that managed the territory covered by the participant dairy company were approached for assistance, and elected representatives were selected in consultation with the Ministry for Environment. Only one senior staff member refused an interview. The latter saw urban issues as more important, and offered a relevant staff member in his place.

Usually one interview of one to two hours was held with each representative. In some cases several staff attended, or meetings were held successively with various staff members. A semi-structured interview was undertaken using similar questions for all interviews. These were also taped, notes taken and relevant policies and other reports collected.

Maori informants were located through Maori network contacts and iwi representatives. Environmentalist informants were contacted through the staff of the Royal Forest and Bird Society as well as network contacts.

3.7 Market views

While global consumer views were considered important for the study, information collection proved an obstacle, from size and rapid changes of the markets, time and cost of sourcing information and language barriers. Further, there was commercial sensitivity to information collection both from within the New Zealand industry and from competitors approached in Denmark; and Argentina while on a study visit.

However, the view from the markets has clear patterns and insights. Two main strategies were therefore adopted. A recent study in two market areas to investigate consumer attitudes and patterns relevant to New Zealand dairy products and environmental quality, was used as a primary source of
information. In addition, investigation of my own was undertaken focusing on interviews in Indonesia and an email questionnaire in Asia. Information was also gathered from government trade research. Asian contacts were derived from those randomly selected and self volunteering from attendees at an international conference on landscape architecture. Those interviewed included government employees, professional practitioners and students. The aim of these interviews was to explore notions of the New Zealand countryside and ‘clean and green’ in the market context. The information was used as a check for perceptions overlooked or not considered and to assess the use of the term ‘clean and green’ as a market symbol. A further brief email questionnaire was undertaken with Asian respondents using professional contacts to circulate the questionnaire through the ‘snowball’ method. Key contacts were asked to translate the questionnaire into the relevant language.

Some investigation with view to initial bench marking and competitor comparison was initiated in Denmark and Argentina. Danish contacts were asked for assistance to provide copies of performance standards and similar documents and they advised that their dairy industry clients had instructed that no material be forwarded. During a trip to Argentina in 1998 a visit to a dairy factory near Buenos Aires, of a similar size to the Clandeboye (South Island) factory was arranged, an interview held with the environmental manager, documents collected and a tour of the factory was provided. Field trips to factory effluent ponds and supplier farms had been requested. The company was unwilling to facilitate this though, on the basis of confidentiality, it appeared. (The reason stated was lack of access due to mud on the roads). The responses however were illuminating and from the reactions and outdated information supplied it appeared that bench marking information would not be readily available.

39 Billones (1999).
Information collected in 1999 through a Masters study by Billones concerning ‘clean and green,’ by way of surveys undertaken in UK and the Philippines was analysed.\(^{40}\) This information proved both timely and helpful for information on consumer attitudes in the two markets, a comparison with information gained by the researcher, as well as guidance on the direction of future changes. Liaison was also undertaken with Billones to help facilitate a follow up farmer survey for her in New Zealand.

### 3.8 Media analysis

A study of various media was undertaken to identify environmental concern and issue attention both overseas and locally in the industry for dairy farmers and the general public. Particular attention was given to representation and use of the ‘clean green’ idea and the rural environment and nature. Four longitudinal media analyses were undertaken:

- the *Journal of Dairy Science*, and *Dairy Farmer Annual* for 1997
- the monthly *Dairy Exporter* (received by all dairy farmers) for 1977, 1987 and 1997
- the weekly farming and related sections of the Christchurch daily *The Press* newspaper for 1997

Each publication or series was reviewed, searching for environmental topics and key words, such as effluent, environmental risk, pollution, environmental quality, resource management, ‘clean and green,’ assurance and monitoring. Headlines, placement on the page and in the publication, space provided and treatment of the data or story, particularly as it may reflect world views or attitudes to ‘clean and green’ and ‘cues for care’ were recorded.

\(^{40}\) Billones (1999).
3.9 Other data collection
Research on the history of dairying in New Zealand was undertaken to chart the changes in agricultural production, ecological systems and cultural/institutional systems. The context and prevailing world views of dairy farmers and decision makers in New Zealand, and representation of the export product and marketing signs and symbols over time were included. Literature searches, as well as interviews with retired New Zealand Dairy Board staff, retired administrators and retired dairy farmers provided information sources. New Zealand Dairy Products Marketing Commission Annual Reports (1942-1961) were the prime source of information for market symbol development.

Finally information on the dairy industry, opinion and change was gathered from a wide range of sources including annual reports, factory and company flyers and publications, media stories and rural commentators.

3.10 Environmental Management System (EMS) trial
One of the options for change suggested by farmers and stakeholders was an environmental management system. The theoretical construct had indicated that symbolic systems, which could include environmental management systems, offered prospect for bridging communication between the differing world views. However, farmer interviews from the earlier phase of the case study indicated that such a system would need to show that it could provide a tangible benefit for farmers, either immediately or in the future. This in turn raised questions about how farmers might perceive benefits.

Since such benefits have yet to be clearly quantified or promoted, the decision was made to test whether it made a difference to farmer actions and change of farm practice if a farmer was enthusiastic about the adoption of an EMS as compared with a farmer who might be more cautious.
After initial investigation into available systems; a recent farmer developed, computer based EMS was selected for trialling with six farmers. The system was developed by a farmer landcare group, the North Otago Sustainable Land Management (NOSLaM) group. This EMS, subsequently named the Ag-vantage system, was used for its availability, depth, attention to follow-up action and local applicability. The EMS trial set up was undertaken with a Farm Management Honours student at Lincoln University in 1998.\textsuperscript{41}

Trial farmers were from a range of locations and farm ownership options and were selected in pairs: an enthusiastic farmer with one more cautious about the value of an EMS. Farmers were provided with an individual EMS for their farm and follow up monitoring was undertaken at least quarterly, to assess application and value perceived by the farmer through the season. The trial farmers had a range of world views; hierarchist, egalitarian and entrepreneur, identified through discourse analysis, observation and self-ascription. A review of the trial together with a questionnaire was forwarded for comment to representatives of industry, environmental groups, iwi, regulators and the farmers involved. A workshop (or focus group) was then convened near the end of the 1998/99 farming season to review results and to assess the value of such a system.

\textbf{3.11 Integration and interpretation}

The final steps were to then integrate the results of the trial with the theoretical construct and context analysis in order to assess whether and how the EMS might be successfully implemented. A model for evaluating the EMS was developed to respond to the need for a technically robust tool which could be presented in a symbolic manner but which could be implemented in ways which would be perceived to match the various world views of farmers and stakeholders. Policies and strategies were developed and implications for theory, practice, process, future research identified; and finally conclusions were drawn.

\textsuperscript{41} Pannett (1998).
3.12 Summary and conclusion

In order to respond to the dairy industry's research question on the ‘clean green’ image, a mixed methodology was adopted. This comprised several methods, including a case study, a trial of an environmental management system and a workshop; together with the analysis of different types of information, including interviews with farmers and other dairy industry stakeholders, assessment of biological systems on the farm, and analysis of literature, consumer views collected by survey and interview, symbols used, documents and media reports.

The case study was the main focus and the research strategy was iterative, to review and analyse information as the study progressed. Farmers interviewed were contacted at later dates to check additional ideas, understanding, issues and world views and the overall context was examined in a range of ways to gain a ‘rich’ impression of the industry. The case study approach gave a detailed understanding of views at the farmer and industry level and broader context inquiry filled in gaps, and allowed for verification of information. The different types of information were then integrated and interpreted as the basis for responding to the question, and to draft policy and strategy for the industry.

Throughout the study, farmers though desperately busy, continued to assist with time and views in the expectation that the study would provide benefit for the industry.
Context for change

The historical perspective is critical to understanding.... the expanded context is critical to explaining the complexity of associated meanings in environmental relations. Lawrence-Zuniga

4.1 Introduction

Change has been at the heart of the dairy industry from its inception. Constant adjustment has had a profound effect on the culture of the industry and this expectation, acceptance, and determination to change continues today. The application of technology, plant and animal research, and a sincere effort to improve farm working conditions continues to alter the rural environment. Cultural Theory holds that as the environment changes and as those effects accumulate, circumstances arise where people with another strategy, another world view, are better suited to the environment. The kinds of environment perceived and sought locally in the past, and the kinds of environment sought globally more recently are discussed in the context of four of the five interdependent ‘myths of nature’ and their associated ways of organising.

This review follows the dairy farmer in the context of a dynamic interplay of systems over time: agricultural production, ecological and socio-cultural systems. A feature of this account is the ‘complex plurality’ of world views, or patterns of

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2 Sunckell, retired dairy farmer and retired dairy company board member, responding to the researcher by letter to a request for information, pers comm. (1999).
social relationships from Cultural Theory; each world view manifesting a different set of assumptions and adopting a different ‘myth of nature.’ The influence of changing world views of farmers as well as institutions, political policy, technology and market expectations on agricultural production, and the resulting modifications to the environment are considered.

4.2 Agricultural change

4.2.1 Background
Missionary Samuel Marsden brought the first cows to New Zealand in 1814, and the first commercial dairying was probably undertaken on Banks Peninsula from the 1840s, shipping butter and cheese to Wellington and later to Australia.

Dairy farming ideally requires gently rolling pasture and a reliable and good water supply, and from the start dairying in New Zealand has featured all year pasture grazing and efficient pasture production. Flax and forest was cleared, ditches dug and grasses sown. Farms were small, limited in size by a lack of personal capital, the heavy labour commitment of hand milking and the food requirements of the horse transport and ploughing team. Although the first dairy factories were often privately owned, built by the local store keeper who had started buying butter and cheese to send to Australia, the move to egalitarian co-operative ownership was influenced by the lack of farmer capital and the staunch individualistic view that farmers should control their own production. An efficient and responsive processing system is vital to dairying because milk is an extremely perishable product and farmers saw the needed security in the co-operative system. In 1871 (midway through the ‘Long Depression’) the first co-operative dairy factory was founded on the Otago Peninsula. Edendale in Southland was established as a proprietary company ten years later but became co-operative in 1903.

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8 Ward (1975 : 5).
Refrigerated shipping, which commenced with the first proving load in 1882 from Port Chalmers, provided a further boost for the infant industry. The 'co-operative movement'\(^9\) was becoming the predominant mode through the 1890's and by 1903 over half the butter and cheese factories were co-operatives, built with cheap state loans.\(^10\)

The initial expansion of dairying took place in the South Island, encouraged by the availability of open country. The discovery of gold in Otago and Westland also drew a stream of settlers to the south and the population of the South Island between 1860 and 1880 was almost twice that of the North Island. Dairy farm expansion moved from south to the milder, more productive climate of the north after the land wars, so that by 1935 over half the herds and more than half the production came from Auckland or north.\(^11\) The growth of dairy farming in Taranaki, the Waikato and other regions gave rise to the mushrooming\(^12\) of many small to medium sized country towns to service the farming community.

Severe setbacks occurred in 1889 and 1890 with prices so low in the London market that a number of butter factories closed, and quality problems\(^13\) resulted in customer criticism in Britain. This was the start of two major influences in the industry. First, was the recurrent cycles of fluctuating prices which imbued in the dairy farmer caution, and a suspicion of city merchants. Secondly, the Government commenced involvement in factory standards and quality control, to encourage product uniformity.

The late 1880's saw the growth of dairy associations, to reduce freight charges and promote information exchange, the largest being the National Dairy Association; as well as factory competition for suppliers. A protectionist move by

\(^12\) Hamer (1995 : 33).
\(^13\) Ward (1975 : 6).
the government to encourage the industry in 1895 was a legal restraint on margarine sales.\textsuperscript{14}

By 1933 there were 534 export dairy factories, mainly 'co-ops,' which produced 129,560 tonnes of butter and 104,100 tonnes of cheese and 99\% of the produce was exported to Britain.\textsuperscript{15} Co-operatives remain as the basic organizational mode for the industry today. However, for a variety of reasons including improved infrastructure such as roads, technological changes offering economies of scale, and market demand,\textsuperscript{16} factories and companies have gradually amalgamated and been taken over. In two decades between 1975 and 1995 the number reduced from 75 to 14. Now (July 1999) only 8 remain and further amalgamations are expected soon. The recent changes have reflected corporate company views as well as solid entrepreneurial support (strong agreement for amalgamation is required from the farmer owners before agreements can be concluded). The amalgamated company has been seen as the best means of maintaining payout income. In 1998 the number of cows in New Zealand producing milk was estimated to be 3,064,526.\textsuperscript{17}

The distance a farm cart could reasonably travel in a day initially limited factory size and location and so factories were built from 2 to 15 kilometre intervals. Between 1882 and 1935, dairy cow numbers increased from 240,000 to 1,830,000, expansion being encouraged by profit and technological advances. Commodity prices for agriculture turned around in 1896, technical innovation raised productivity, and from then until 1921 there was a virtually continuous period of prosperity based on the proliferation of small family farms. By 1911, one in every three farms was a dairy farm, typically a small (40ha.) family farm.\textsuperscript{18} Grass species better suited to dairying were introduced and fertilizer applications

\textsuperscript{14} Ward (1975 : 14).
\textsuperscript{15} Duncan (1933).
\textsuperscript{16} Gibson, Harris and Ware (1995).
\textsuperscript{17} Garrick (1998 : 26).
\textsuperscript{18} Bassett, Sinclair and Stenson (1985).
boosted the carrying capacity of farms. In 1933 factory supplier numbers peaked at 71,837.\textsuperscript{19} Cow numbers rapidly increased during and subsequent to the 1930 depression, as farmers milked more cows to counter diminishing prices received, by increasing production.

However, guaranteed prices to encourage farmers, and lending for settlement, resulted in over-inflated land values and farmer debt grew in the 1930’s after 4000 soldiers from World War 1 were put onto the land.\textsuperscript{20} This, coupled with oversupply, which gave rise to a decline in commodity prices from 1926 through to 1935, encouraged many farmers to switch from dairy to sheep farming, or to leave farming. From then on the economic recovery was punctuated with crises and downturns.

In the 1920s and 30s the average farmer was milking around 35 cows; 50 were regarded as a large herd.\textsuperscript{21} A farmer would know every cow by name rather than number and stock handling was more a matter of empathy than production management.\textsuperscript{22} The Second World War then intervened, with many active farmers departing for the great adventure overseas, and ‘land girls’ and those unable to leave maintained production until the soldiers returned.

Three particular aspects stimulated variations in the extent and intensity of dairying between the 1950s and 1970s. The first was people’s perception of farming price relativities, which have been a major driver of change.\textsuperscript{23} The Korean war, which raised demand for wool, caused a shift in favour of sheep farming. With wool prices booming the decision to abandon the regularity of milking twice

\textsuperscript{19} New Zealand Dairy Exporter (1999 : 6).
\textsuperscript{20} Fairburn (1975).
\textsuperscript{21} Connell, senior New Zealand Dairy Board staff member, commenting in an interview on his experience of marketing and packaging at the New Zealand Dairy Board, pers comm. (1998); deRenzy (1998) recently retired dairy farmer of Temuuka commenting in an interview with the researcher, on his experience over some 50 years in the industry, pers comm. (1998).
\textsuperscript{22} deRenzy, pers comm. (1998).
\textsuperscript{23} Gow, Senior Lecturer in Farm Management, Lincoln University, Canterbury, during an interview with the researcher, pers comm. (1999).
a day to convert to sheep farming appeared to have been an easy one for many dairy farmers, especially in Southland where daylight hours and temperatures particularly favour sheep production. Price relativity is the driver that is now encouraging farmers to reverse the earlier conversions, although the changes have been slower as dairy conversion has a comparatively higher financial entry barrier.

The second stimulus for change was the result of Government policy and department activity. The Department of Lands and Survey, with partly conservation and partly land development responsibilities, undertook land settlement work in the Central Plateau of the North Island in the 1950's and 1960s, to set farms up for returned servicemen and new farmers. The impact of this development on the landscape of the boron deficient pumice country of the Central Plateau was as great forty years ago as that occurring on the dryer gravel plains of Canterbury today. Capital fertilizer transformed productive capacity and landscape colour but erosion problems occurred as well. Dairying expanded at Reporoa, Murupara and Tirau and interest was so high that field days at Ruakura, a Government research centre in the locality, attracted between 2,000 and 3,000 farmers.\textsuperscript{24} High interest in large scale dairy conversion is now occurring around the Lake Taupo area.

A third change was stimulated by the active advocacy of a dairy consulting officer, dubbed 'More Cows' McKenzie. McKenzie espoused a high input high return approach, and prices were sufficient to make this attractive. He encouraged Taranaki farmers to apply as much as 600 kgs of fertilizer per ha. at a time when scientists were only testing the effect of an increase to 200 kgs per ha. This stocking rate revolution of the 1960s proved less sustainable when prices later slid downwards and some farmers found themselves caught by high input costs and a slump in the value of their stock. The effects of such high fertilizer applications on

\textsuperscript{24} Gow, during interview with the researcher, pers comm. (1999).
ground and surface water were scarcely considered in the 1960s and 1970s, but awareness grew.

In the early 1980s dairy farming expanded rapidly in Canterbury, and to a lesser extent, Southland. The availability of comparatively cheaper irrigated flat land, allowed farmers to sell in the Waikato and double their herd size when they moved. With larger herds creating greater impact and farmers' experience from Taranaki and the Waikato where more stringent demands had been applied by Catchment Boards some three years earlier, effluent discharge was regarded as an environmental risk. Farmers were encouraged to install efficient treatment and disposal or utilization systems to deal with point source pollution at the time of new conversions. New conversions rather than incremental growth were more common and Catchment Boards had an opportunity to enforce appropriate (as they then saw them) design standards, aiming to 'get it right' at the start.25

At the same time smaller dairy units with 70/80 cows became uneconomic in the 1980's and dropped out of the export industry. 1982/83 was a time of economic turmoil in the dairy industry. The milk payout had dropped rapidly and at the same time interest rates had risen to double digits and were rising. The government was losing ground and some dairy farmers were forced to find supplementary jobs and depend on wives working to pay mortgages.26 In addition, a persistent drought reduced incomes and farmers who had adopted high input systems faced difficult decisions. Catchment Boards were also demanding that farms with herds over 70 cows have an acceptable effluent disposal system. Smaller farms had often had less 'environmentally friendly' systems and with pressure from the amalgamated dairy companies and Catchment Boards requiring capital investment to 'clean up their act' some farmers had been unable to respond, and sold.

25 Scarf, retired chief executive of Catchment Board and current Fish and Game manager, Temuka; during interview with researcher, pers comm. (1998).
Today the average South Island farm milks over 300 cows and a large farm may milk 1500-1700 cows. Large herd farming has demanded a different set of farming skills: now strategy, economic forecasting and staff management are as important as stock handling and pasture management.

Trends in the industry are a decline in private farm ownership and the increase in the career sharemilker (sharemilkers have increased from 24% in the industry (by number of farmers) in early 1990's to 35% in 96/97); the removal of government assistance, a decline of real returns, the increase in alternative investments, and an increasing size of herds and investment to capture economies.

4.2.2 Technological change
The centrifugal separator was an important innovation that encouraged dairy expansion, and released rural labour for urban employment. Introduced in the 1890s (the first in 1884) it enabled farmers to separate skim milk from cream on the farm and so minimized the quantity of product needing to be transported to the factory. Supply to cheese factories required the delivery of bulk milk and although cheese production commenced at a higher level it did not expand so fast after separators presented an option. Milking machines introduction also started in the 1890s, although more effective machinery was not in full use until well into the next century. The reticulation of electric power into the rural areas during the 1920s facilitated more extensive use of milking machines.

Vehicles also stimulated expansion and change in the pattern of social relationships, or institutions within the industry. The motor lorry became popular in the 1920s, enabling dairy companies to collect from farms and to expand their

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28 Fairburn (1975).
areas. This was the stimulus for a period of intense competition among dairy companies for suppliers. Tractors which became popular in the 1940s meant that the four horse cultivation team could be dispensed with and their hectares of feed converted to pasture for an expanded herd. The introduction of tankers from the 1930s onwards to collect milk from on-farm silos had an impact on the networking opportunities of farmers and was seen by one retiring dairy farmer as the most negative change in dairying during his time. When milk had to be transported to the factory by horse and cart and later by tractor, the morning socializing at the factory while milk cans were washed out was an important daily event that the telephone could not duplicate. Tanker transport also favoured competition by those factories able to utilize whole milk for a range of products. As more and larger tankers were introduced from the 1950s, dairying areas expanded and factories amalgamated to gain benefit from economies of scale. Dairy design also enabled more efficient milking and consequent expansion. The first dairies were walk through sheds; internal races were introduced in the 1950s, and rotary turnstiles with stands for 40 to 60 cows at a time are now not uncommon.

A service to test herd milk production for butterfat was initiated in 1909, in the Wairarapa. This was the start of organised enhancement of production through herd improvement. From 1936 the Dairy Board has assumed control of herd testing and recording. The appointment of the first consulting officers in 1939 provided links with government, suppliers and herd testing associations. Consulting officers also undertook research on mastitis, nutrition, and fertility. Artificial insemination research was also commenced at Ruakura in 1939. Use of herd testing increased from 14% in 1925 to 87% in 1998/99. In addition, in

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1998/99 84% of the national herd were artificially bred and 98% of dairy cows were recorded at birth on the Livestock Improvement Corporation database.38

After new membrane technology was introduced, spray-drying the whey for powder and casein to minimise discharges became feasible. The research, equipment installation and management of whey processing was initiated and funded by the New Zealand Dairy Board, motivated by concern from European customers/competitors that factory discharges be more effectively dealt with on-site.39 Up till the end of the 1960s, when the UK joined the EEC, almost all export dairy products were sold in Britain and the industry was sensitive to the concerns and interest of the British retailer. The whey product was initially sold as stock food, subsidising the cost of disposal, but new uses and customers were identified and in 20 years this process became profitable. Other factories introduced ultra filtration stations, to consolidate the product. Factories also supplied private or their own pig farms, or sprayed whey and wash water onto factory owned and supplier owned dairy pasture. Some factories installed ocean outfalls for effluent disposal and a few continue this practice, while others have now introduced ponds and biodigestors for final discharge treatment. Factories are now so large that effective risk management procedures are essential to deal with disposal of discharges should breakdowns occur.

Dairy farmers have rapidly adopted a range of technology and innovations, from electric fences to laser levelling of paddocks for border dike irrigation. The reason farmers so readily adopt these innovations, Yerex argues, is because they have never enjoyed boom conditions so long as to become complacent.40 They have therefore remained fiercely independent, as well as cautious.

38 Whittaker (1999: 30-35).
4.2.3 Animal health and welfare changes

Changes in animal health and welfare have reflected changing perceptions, veterinary advances and understanding of environmental interrelationships. The first co-operative veterinary practice was established in Southland in 1903, but it was not until the Veterinary Services Council was established in 1946 that vet clubs expanded to provide an effective rural service.41

'The arrival of veterinarians, who until the late 1950s could only receive their training in Australia, really transformed dairying.'42

Prior to this farmers relied on other farmers who were regarded as experts in such things as calving, footrot treatment and milk fever, to assist them. The coming of the vet provided not only expert advice but antibiotics, new treatments such as drenches and improved animal husbandry skills for the farmer. The vet was often the first professional advisor farmers had on their farms and their influence and contribution to farming has been substantial.43

A number of endemic diseases have been controlled or eradicated with the combined effort of vets, MAF and farmers. In 1945 tuberculin testing was introduced for all cows. The disease is controlled through continued testing and movement control. Introduced 'possums, feral deer and more recently ferrets and hedgehogs, have been found to be carriers of TB and have therefore needed to be combated. Since work started in the 1960s bovine brucellosis was gradually brought under control through compulsory vaccination, and later testing and slaughter, until in 1986 it was proclaimed officially eliminated in New Zealand.44 Leptospirosis is also controlled by the use of compulsory vaccination. The reduction, control and elimination of these three diseases has been motivated by four separate incentives: customer demand for product from disease-free animals, elimination of health risks from debilitating diseases of farmers and farm workers,

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42 Roberts, retired Chairman of Kiwi Co-operative Dairies, Eltham; responding in writing to the author to a request to review research draft, pers comm., (1999).
43 Roberts, retired Chairman of Kiwi Co-operative Dairies, Eltham; responding in writing to the author to a request to review research draft, pers comm., (1999).
improvement of animal health and welfare, and the increase in farm productivity and profitability. The farm environment has improved dramatically for animal health since the 1950s.45

As herds have increased and labour units have been kept to the minimum, various strategies have been developed to increase production efficiency. Tail docking became a common practice, partly to address a health risk from Leptospirosis, passed to milkers through cow urine, and partly for argued reasons of hygiene, convenience and milker welfare. While there has been widespread debate over the impact of this practice on production, the view is growing that this is a practice which is not appreciated in Europe, cannot be reversed and so is a risk to a capital asset.

Induction is another practice that has assisted management but is facing increasing market concern, particularly from cultures with religious objections. The current custom of leaving 'slinkies' at the farm gate for processor collection draws visitor attention to the practice. Other animal health and welfare issues, which also have an impact on image and production, are dehorning, sore feet in cows, provision of shelter, and the impression given by break feeding and cows in mud in winter.

4.2.4 Food safety changes
Milk management has changed as understanding of science has changed and innovations have been adopted. Milk was originally transported in metal cans to the factory and cooling apparatus initially streamed milk over open faces of the cooler. Now the milk is not exposed to the air: instead it is transferred directly into refrigerated stainless steel silos, and after testing for contaminants is pumped directly from stainless steel farm silo to tanker. A total quality management focus has now moved particular attention from factory process control to control of

milk quality and hygiene at each stage of the process from food and health management of cows through their life cycle, to milking practice and maintenance of equipment in the farm dairy, to later stages. Milk quality is monitored closely at each collection and tests undertaken for somatic cell count and contaminants, such as animal health remedies, on a regular and random basis.

More recent attention to thermoduric organisms in milk (those resistant to the heat treatment of pasteurisation) is resulting in stricter vegetation and hygiene management around dairies and factories.

4.3 Ecological change
New Zealand was largely covered in forests before people arrived. The complex and diverse forests intercepted and absorbed much of the rainfall.\(^{46}\) The practices of Polynesian colonists from about the 10th century onwards, particularly the fires of the moa hunters, gradually converted the forest areas from 80%\(^{47}\) cover to closer to 60% cover and grasslands.\(^{48}\)

European settlers brought about swifter change, rapidly converting rain forest to exotic pasture grasses.\(^{49}\) This same rapid pastoral conversion took place in other 19th century British settlements throughout the world. The impetus for this conversion was stimulated by the pastoral or Arcadian myth, which was in ascendance in Europe, and the entrepreneurial world view of the colonists who set out to acquire and farm the land. The predominant assumption was that this new nature was bountiful\(^{50}\) and catastrophic collapse was impossible. Forest (called by the pejorative ‘bush’) clearing began in the 1850s and 1860s: ‘in a small way in isolated districts and gained momentum as organised settlement increased,\(^{51}\)

\(^{45}\) Sunckell, retired Board chairman of dairy company, Leeston; responding to questions, pers comm., (1999).
\(^{46}\) Taylor (1997 : 7.33).
\(^{47}\) Buhrs and Bartlett (1993 : 40).
\(^{48}\) McLaughlIan (1986 : 439).
\(^{49}\) Meurk and Swaffield (1998).
\(^{50}\) Fairburn (1975 : 8).
peaking in the 1870s and 1880s. The work of felling and undercutting was done in winter, the mass left to dry out and set alight in summer, leaving charred black tree trunks and a thick soil covering of potash from the fires, in which grass seed was sown. Teams of horses with block and tackle were used to drag out the broken stumps. Some, who perhaps lacked the skill to farm, changed to other activities; others, after climate and acclimatization surprises, came to see nature as capricious and remained in subsistence farming at the whim of nature, or quit.

Much of the initially suitable land for dairying was in lowland forest and this was converted to pasture so rapidly in the later 1800s that, as Park recounts, very little lowland forest now remains. Swamps were drained, pasture was divided into small blocks and dairy farms started proliferating initially at the south and north ends of New Zealand. Between 1893 when 9 million hectares remained in bush and 1925, 4 million hectares were cleared. Not all colonists were oblivious to the effect of the clearing on the appearance and stability of the land. William Pember Reeves, a leading socialist in the administrative hierarchy lamented the removal of the forests:

'All glory cannot vanish from the hills.  
Their strength remains, their stature of command  
O'er shadowy valleys that cool twilight fills  
For wanderers weary in a faded land;  
Refreshed when rain-clouds swell a thousand rills,  
Ancient of days in green old age they stand,  
Though lost the beauty that became Man's prey  
When from their flanks he stripped the woods away...  
Ah bitter price to pay  
For Man's dominion - beauty swept away!'

53 New Zealand Official Year Book (1925 : 445); New Zealand Year Book (1937 : 304).
Exotic grasses intercept less water than forests and water run-off to agricultural catchments, along with flooding and erosion, gradually increased after the initial years of clearing and establishment. The consequences of forest removal from the hills were having an effect on dairy farming in the north by the 1920s, through regular and more persistent flooding. Steps were not taken at that stage to address the problem and waterways were regarded, by one account, as a useful transportation and rubbish disposal system, which provided for removal of garbage, sewage and dead animals.

Initially dairies were located next to waterways and unquestioning farmers drained effluent from the shed directly into the stream. A 75 year old dairy farmer who had farmed on the same site for over 60 years confirmed this use.

'We thought it was a more natural way and, as my neighbour said, nobody ever died of a bit of effluent in the water.'

The product from the separation for butter was generally fed to pigs and many dairy farms either had or were near piggeries. However, tanker collection from the 1930's onwards resulted in the transport of all the product and separation at the factory, with no skim milk remaining on the farm. Surplus whey from cheese factories, along with wash water from cheese and butter factories was initially discharged into streams, which in turn drained to lakes and the coastline, and impacted on aquatic biota. Sea water was viewed as an effective and cheap means of disposal and dispersal, and cultural conflict with Maori sea food collection was not considered an issue at the time.

The 1940s and 1950s saw the expansion of use of weed and pesticides, such as 2,4,5-T including application by aerial spraying. Wilson comments:

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54 Reeves. In Laing and Blackwell (1906 : 13).
56 Scarf, pers comm., (1998)
‘The environment was not a matter of great concern to the majority of New Zealanders in the 1960s. With an abundance of clean water.. there were many who believed New Zealand was indeed God’s own country.’

New Zealand was the last country to make 2,4,5-T, which was produced by Ivon Watkins Dow until the company ceased manufacture in 1987.59

Although people overseas were already aware of the link between agricultural chemicals and pollution, industry and contamination, New Zealander’s were keen to see diversification and expansion of development. However, the warnings of concern in such literature as Rachel Carson’s *Silent Spring*60 were gradually heeded and DDT use, previously thought to be a boon to agriculture, was banned in sheep dips in 1961, along with dieldrin and other organochlorins. In 1966 it was also banned for use as a pasture pest control.61 Prior to that date DDT had been an additive to fertilizer such as super phosphate and although some farmers may not always have been consciously aware that they were applying DDT to their properties, dairy farmers were warned on the use of DDT and strongly advised to limit application to only one third of the farm annually.62 The product was cheap and so applied relatively frequently, particularly to lighter land where warmer, dryer soils favoured the attack on grass roots by porina moth and grass grub, and it was also used to control black beetle in Taranaki. Dairy farmers on heavier soils tended to use fewer chemical herbicides or insecticides. If they had a grass grub problem they could plough the paddock and plant a winter feed crop of swedes or turnips, an option not so attractive for a sheep farmer.63 Contamination from chemical residues still remains. Some Canterbury and Southland farms which still have significant levels of DDE in the soil are now limited in their use.

59 Buhrs and Bartlett (1993).
60 Carson (1962).
for farming. In anticipation and responding to customer food safety standards, the dairy companies both prohibit acceptance of suppliers from farms with significant pasture levels of DDT and also penalize farmers if DDE levels above 0.02 ppm are detected in the supplied milk.

By the early 1900s the benefit of phosphatic fertilizer to pasture growth had already been established but importation and use of fertilizer was still comparatively low. By the 1930s the impetus of low prices encouraged greater farm production efficiency: better grassland management, increased stocking and intensified fertilizer application was the response. Fertilizer and other costs were subsidized during World War Two and the government controlled guarantees price system, although the war restricted availability of phosphatic fertilizers. In the late 1970s the Kapuni ammonia-urea plant was built, providing a cheap source of nitrogen fertilizer for the farmer. Cropping farmers were initially the main users of nitrogen fertilizer. Dairy farmers had relied on clover to supply nitrogen needs. However, higher prices for dairy products encouraged the rapid increase in high volume applications of nitrogen on dairy farms, particularly in the central North Island, and this in turn resulted in the increase in nutrient discharges from farms to waterways. Between 1990 and 1996 nitrogen fertilizer use trebled. Research on energy efficiency has indicated that urea use contributes a sizable amount to the indirect farm energy inputs. Fertilizer use overall comprises 38% of the total energy inputs to the dairy production system. The trend of increasing use of urea though appears to have slowed, with a reversal of milk payout levels. In addition farmers have become more cautious following information on nitrification problems in Europe and the administrative controls introduced there to address the problem, such as fertilizer budgeting. Sources of nitrates from dairying include animal urine, clover-based pastures, fertilizers and effluent. Current monitoring by Regional Councils indicates that while confined New

65 Ward (1975 : 76).
Zealand aquifers have low nitrate concentrations, most unconfined aquifers have elevated nitrate levels.⁶⁸

Water quality was a particular issue in Taranaki and the Waikato in the 1970s, where 'everyone was talking about effluent in streams.'⁶⁹ In 1972 half the untreated dairy waste in Taranaki was dumped into open drains and waterways. Of the 2100 dairy farmers in Taranaki in 1975, only 250 had waste treatment ponds.⁷⁰ But by 1996, 21 years later, all 2593 dairy sheds had approved effluent disposal systems, 60% using ponds and 40% using the effluent for irrigation and fertilizer.⁷¹

Soil pugging has been a recurrent problem that the needed climate of frequent rainfall has exacerbated. Management methods to avoid pugging and likely soil structure breakdown, with consequent fall in production, have been more widely adopted and cross breeding from Jersey over Friesian, for smaller, lighter stock, as well as increased milk solids, has recently been encouraged.

A water quality issue to gain attention more recently has been the management and vegetation clearance of stream banks. The riparian zones provided an important habitat for a wide diversity of fauna and flora⁷² and had also protected the streams from sediment and shaded stream biota. Increased nutrient-high run-off together with replacement of riparian growth with pasture grasses and cattle grazing at the edge of waterways, has been identified as causing bank erosion, sedimentation and loss of stream health in some areas. Riparian protection measures are increasing through attention from regional councils. Taranaki, for instance, has prepared riparian management plans and Otago Regional Council prepared guidelines in 1997 for land activity neighbouring streams.

⁶⁹ Scarf, pers comm., (1998)
The taking of irrigation water from surface bodies or the ground depletes the source. When applied it recharges ground and surface water downstream but may also elevate ground water levels. Irrigation draw off of ground and surface water is a further topic that has been gaining increasing attention from environmental groups and bureaucrats. Early dairy farmers did not generally irrigate and farm location was either restricted to areas with a consistent rainfall or farmers risked droughts. As herds and pasture production increased and risk management was needed, farmers with water access began to irrigate. From 1964 regional water boards controlled water abstraction and approval for water use must now be obtained from regional councils. Prior to the late 1980s the government had initiated and subsidized large-scale irrigation schemes for farming. This enabled land previously regarded as too dry for dairying to be developed, particularly in Canterbury. This in turn triggered movement of farmers from the North Island where higher land values (brought about by horticulture, horse breeding and other development) and recurrent droughts, had made dairy farming less attractive.

New irrigation schemes are now comparatively small scale.\textsuperscript{72} Change has therefore moved from development of water abstraction schemes by a socialistic government keen to encourage farm development, to a combination of egalitarian concern over natural resource scarcity, local government concern over resource depletion and free market dependence on privately developed irrigation schemes, with low key compliance control. However, this trend is countered by continuing pressure for production to counter free market price competition as well as boost local economies and irrigated dairying expansion into the flat large inland high country McKenzie plains is now being mooted.

Gorse hedges were planted initially in the late 1800s for stock shelter as well as subdivision, and hedges were kept trim. Only more recently has particular

\textsuperscript{72} Taylor (1997: 7.34).
attention been given to the benefits of trees for shelter, pasture protection, increased land value and aesthetic reasons. An increase in the diversity of shelter and riparian planting will help to turn around the previous decline in biodiversity which the focus on specially bred grass and clover pasture cultivation had brought about.

4.4 Institutional change

4.4.1 Policies and social change
The economic policies of the government in the late 1800s and early 1900s encouraged farmers to take up or expand dairying. An example was the deferred payments system to aid closer land settlement, introduced in 1887. Political assistance from leaders such as Rolleston and McKenzie (for ‘humanitarian reasons’) and Stout and Ballance (for ideological reasons: every worker should be his own landlord) helped the small land holder. In addition, assisted immigration in the 1870’s, 1904-15 and 1922-27 from areas where ownership was not possible brought rural labourers and rural families to New Zealand to take up ownership of small holdings. Family farms were seen as the key to social success, to ‘civilizing the country.’ This view was reinforced by changes in the national education curricula by Hogben between 1895 and 1915, to train the yeoman farmer, including future dairy farmers.

In the 1900s the prevalent world view in New Zealand was that the country was a garden paradise. Nature cultivated and domesticated was thought to be pure and wholesome. Nature tamed became ‘God’s Own Country.’ and Hamer notes that the pioneers of New Zealand most celebrated were settlers from the backblocks: goldminers, shepherds and the dairy farmers. By contrast the city was seen as

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73 Taylor (1997); Buhrs and Bartlett (1993 : 91).
75 Fairburn (1975).
76 Fairburn. (1975).
77 Fairburn (1975 : 15).
impure, parasitic, predatory and degenerate, lacking a productive base, although no inconsistency was seen in this view.\textsuperscript{79}

The trend though was to urban living. In 1881 40\% lived in towns and cities, in 1911 more than 50\% and by 1936 nearly 60\% were urban dwellers. Between 1906 and 1926 the growth of those working in dairying (the cow cockies) was exceeded by those in government employment. The pastoral myth was rigidly held but the social structure had become urban,\textsuperscript{80} hierarchical, with an increasing institutional dependence on government decision making. The yeoman vision had changed from the dairy farm to the suburban state house for the family. The majority of urban residents still had close friends or relatives living in rural areas and an understanding and exchange of knowledge was possible. As the urban population increased, information exchange and mutual understanding declined, particularly as the pace of change increased.\textsuperscript{81}

As institutions developed, the Dairy Produce Control Board was established (in 1923) at farmer instigation, following the post-war coincidence of depression and the free marketing of primary produce.\textsuperscript{82} New Zealand was the first country to become involved in the economic management of its dairy industry, reflecting the importance of the industry in the national economy\textsuperscript{83} and the then preponderance of small scale farmers who lacked the capital to market on their own account.\textsuperscript{84} Concerns over marketing and payouts from this time led to acrimony between the industry and government. In 1934 the Board was empowered to ‘regulate the marketing and production’ of dairy products.\textsuperscript{85} It assumed the name of The New Zealand Dairy Board in 1935, and later amalgamated with the NZ Dairy Products Marketing Commission, a 50:50 government and industry administered

\textsuperscript{79} Fairburn (1975).
\textsuperscript{80} Fairburn (1975).
\textsuperscript{81} Sunckell, pers. comm., (1999).
\textsuperscript{82} Sinclair (1959 : 252).
\textsuperscript{83} Woods (1988 : 20).
\textsuperscript{84} Le Heron and Pawson (1996 : 127).
\textsuperscript{85} Sinclair (1959 : 263).
institution, which had been set up in 1947 with the task of purchasing butter and cheese from the co-operative dairy companies. The authority of the Board was later extended to other products. It later become the New Zealand Dairy Board again, after amalgamation of the two agencies in 1961. The amalgamation was driven by farmers to get control of the industry. The final annual report of the NZ Dairy Products Marketing Commission records the outlook for the industry as being 'confused and uncertain,' with large stocks of butter, high production, subsidization of dairy farming in other countries and Britain’s entry to the EEC indicated.

Agricultural education and research was also an important aspect of context and change. Massey Agricultural College was established and during 1926/7 Lincoln College was overhauled. Both provided sources of technological innovation as well as support for scientific approaches to sustainable development. Other important dairy institutions have been research establishments such as New Zealand Dairy Research Institute (established in 1927), now funded by the New Zealand Dairy Board; the Livestock Improvement Corporation whose advisory officers have been influential in networking through farmer organised discussion groups throughout the country (now also funded by the New Zealand Dairy Board) and the Dairy Research Corporation, previously a government funded section of the Department of Scientific and Industrial Research, but spurned by the Government when privatisation and minimal government funding became the strategy for survival.

In 1984 a Labour Government took office and with a zeal set about reform of the public service, national environmental administration reform, local government restructuring, corporatisation and privatisation as well as legislative reform. Cultural Theory argues that changes in environmental world views come with

87 Sinclair (1959 : 263).
surprise: the surprise that the world views previously held are no longer consistent with the environment as it has become. The radical transformation of the state and institutions were certainly a surprise: ‘no one expected’ such a New Right shift towards market-led resource management, although environmental changes including New Zealand’s declining position in the global economy, the failure of the Keynesian policies to address this, and the shift of power from labour to capital were evident.

Changes introduced included the replacement of over 700 special purpose and local government agencies with 74 district councils, 7 special purpose boards and 13 new regional authorities. While it was termed a ‘virtual re-creation’ of local government, the staff and elected representatives remaining when the chairs stopped moving were the same, albeit fewer, and many still held the same values, so change was not quite as radical as the structural reform made it appear. A key purpose of the reform was to strengthen local government in anticipation of the major devolution of responsibilities planned by Government, particularly environmental administration responsibilities. However, the changes were sufficient to argue that not only was the state reshaped, ‘but much of New Zealand society has been transformed.’

The transformation has been contradictory: while legislation has required that all New Zealanders take account of ‘intrinsic values of ecosystems’ and social values have been strongly influenced by Maori and egalitarian environmental views, Buhrs and Bartlett found that ‘New Zealanders continue to adhere to materialist (including authoritarian) values and do not appear to be ready for a radical change in their lifestyles or values.’

89 Buhrs and Bartlett (1993).
90 Buhrs and Bartlett (1993 : 113).
91 Buhrs and Bartlett (1993 : 113).
92 Buhrs and Bartlett (1993 : 89).
The contradictions perhaps arise from the egalitarian rhetoric and increasing national preoccupation with a ‘clean green’ image—national symbols and national identity associated with the environment93—and the new legislation which is designed to enable streamlined environmental decision making and facilitate development and change. That the streamlining has not occurred as rapidly and comprehensively as expected, and that rural entrepreneurs now face administrative constraints that were previously restricted to urban development change has been a matter of rural grass roots distrust and anger. The Government has promised farmer networks that legislative changes away from egalitarian values will be made in 1999.

The Government is also working under a changed system. The introduction of the Mixed Member Proportional representation (MMP) election system in 1996 is leading to new ways of political bargaining94 and a blurring of the dominant political world view. Political surprises have caused the Government to place expediency high on its agenda and to adopt ambiguous rhetoric.95

A further political change has occurred through attention to addressing past wrongs between Maori tribes and the Government, particularly land acquisition contracts and water rights. Treaty of Waitangi negotiations and financial agreements together with the recognition of Maori world views and status in new legislation such as the Resource Management Act 1991, has brought about a change in the political power of Maori tribes.96 Although in the 1970s there was some special encouragement of Maori participation in the dairy industry, such as a Maori dairy farmer of the year contest, that has not been a particular factor more recently. It seems possible that Maori world views and interests will increase in

93 Buhrs and Bartlett (1993 : 55).
95 Hager and Burton (1999).
political importance and that this will be a further stimulus for change in farming practice, particularly for water management.

Although infrastructure and technological change brought an end to daily face to face contact among farmer factory suppliers, the industry has remained the main network for dairy farmers, primarily through neighbours, Livestock Improvement Corporation discussion groups, focus farm groups, and dairy company 'shed' meetings. Service agents and other suppliers such as irrigation contractors, vets, Artificial Insemination technicians, farm advisors, and baling contractors now form part of an extended farmer network that is maintained by regular face-to-face and cell phone contact. In addition, the monthly *Dairy Exporter* and video *Farming with Pictures* are distributed to all export dairy farmers by the industry. With the recent company mergers the majority of dairy farmers are now also receiving the same monthly company newsletter too.

This network has generally excluded sheep and cropping farmers where there is no mutual business interest. The network separation was reinforced by exclusivity among sheep farmers, who portrayed dairy farmers as being inferior and aggressive; and the daily routine of dairy farmers who need to structure their social time differently. Values among these other farmers have been forced to change recently with the marked downturn in returns for sheep farming and doubts some cropping farmers face that intensive rotations are not sustainable. Many Canterbury farmers who had previously reacted to dairy conversion in the mode of 'not over my dead body' are now unable to ignore the diverging difference in sheep and dairy returns and are testing their pasture soils for DDT contamination in anticipation of possible conversion. The changes have been accelerated by more regular dairy/sheep farmer contact through symbiotic practices such as provision of winter grazing and calf rearing.
The key farmer organization Federated Farmers (FF) commenced with strong grass roots networking but has recently moved to a more hierarchical national structure. After loss of financial support from a compulsory levy; networks have weakened and internal conflict occurred. FF were a powerful lobby group for sheep and beef farmers in particular but, membership has now dropped to around 15000. The membership is similar to the total number of dairy farmers, of which half (7800) are members of Federated Farmers. Along with growth in the comparative profitability of dairying, dairy farmers have risen to leadership within this lobby group. FF attention has been in combating regulation and facilitating production. The Federation has not taken a leadership role in quality issues.

Fish and Game are a new environmental lobby group with a particular interest in water quality and waterway and wildlife health. Their origin was as the Acclimatisation Society, a body whose interest was in the introduction and habitat protection of animals for game or profit. They were government funded but lost their main source of income as the free market philosophy gained dominance in Government. However, their leaders gained legislative support through effective lobbying and they maintain a practical role persuading attention to agricultural impacts on game and wildlife.

In the last five years the Landcare movement has gained momentum. Stimulated by experience in Australia where large sums of government funding were put to encouraging ‘self help’ farmer and stakeholder environmental problem solving, similar groups have formed in New Zealand and have also received government funding support, through a Landcare Trust, and environmental grants such as the

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97 a consensus view of a number of local government elected representatives interviewed by the researcher as part of the case study in 1998.
98 Lyden, Public Affairs Manager, Federated Farmers, responding to an information request from the author, pers comm. (2000).
99 NZ Landcare Trust undated pamphlet. Landcare through Community Development.
100 Curtis, Birchhead and De Lacy (1995); Curtis and De Lacy (1996).
Sustainable Land Management Fund.\textsuperscript{101} Success in tackling and resolving identified issues has been largely up to individuals involved and there has been a duplication of systems and research, as farmer groups and research agencies vie for funding to produce handbooks and demonstrate environmental concern.\textsuperscript{102}

Environmental groups raising concerns over pollution and other environmental issues were a feature of the 1970s in New Zealand. They drew attention to the use of 2,4,5-T as a health issue and debate over manufacture and sale lasted over a decade. Their strongly egalitarian views found support in Labour Government administrations although they were bitterly opposed by National led Governments, a feature of the 1960s, 1970s and 1990s. Environmental groups that have vigorously lobbied for greater attention to conservation issues, the ‘new wave of environmentalism’ from the late 1980s as Buhrs and Bartlett characterize them\textsuperscript{103} have included the Royal Forest and Bird Protection Society (hardly new as it formed in 1923), Greenpeace, Maruia Society and many single focus groups. They have promoted a staunchly egalitarian view but with the increasing attention to entrepreneurial values in the media in New Zealand, are becoming less ‘visible.’ Differences in world views have resulted in recent farmer clashes with environmentalists and neighbours over resource management issues.\textsuperscript{104}

\textbf{4.4.2 Regulations and legislation}
The first dairy legislation, the Dairy Industry Act (1894) provided for inspection of farm and factory premises and the establishment of cool stores and produce grading. This was followed by ad hoc enactments, including the Dairy Produce Regulations from 1938 that were the first procedural controls to address issues such as effluent disposal. The Ministry of Agriculture (MAF) had the role of setting standards but they also saw their aim as supporting agriculture, and

\textsuperscript{101} administered by Ministry for the Environment, Wellington.
\textsuperscript{102} See Ministry for the Environment (1998) for the range of projects funded by the Sustainable Management Fund.
\textsuperscript{103} Buhrs and Bartlett (1993 : 89).
pursuing environmental quality standards was a low priority. MAF advisory officers had the role of policing but saw this as a conflict of interest, a barrier to their advisory function. MAFQual, a department with less ambiguous functions, was formed in the late 1980s to monitor and address quality issues.

A dawning perception of conflict between the image of the pastoral idyll and what the growing urban-based population could see of the state of waterways gave rise to demand for controlling legislation. The Ministry of Works introduced the Water and Soil Act 1967 to address water pollution and other problems. The focus of the Act was the regulation and allocation of water as a natural resource. A consent process was introduced to deal with water as a public resource. The Act contained environmental protection provisions that became more stringent as public concern became more vociferous and successive amendments and other controls, such as Trade Waste bylaws, were gradually introduced.

The National Water and Soils Conservation Authority (NWASCA), which administered Catchment Boards, had a number of associated advisory and stakeholder groups that, in conjunction with environmental groups, were largely instrumental in implementing the changes. Other influential ad hoc bodies included the National Conservation Council. Catchment Boards, which were introduced under the Soil Conservation and Rivers Control Act (1941) for such works as stop banking, gained extra water monitoring duties and developed momentum. The Government regarded them as an effective model. With this elevated profile there was the expectation that the Boards would keep rivers clean from effluent. The Government though had also been encouraging further forest clearance for pasture from steeper land through Land Improvement Subsidies to farmers, and had also been paying subsidies per head for sheep, encouraging an expansion of flocks. This in turn resulted in erosion from marginal land and river

104 An example has been the promulgation of the Banks Peninsular Proposed District Plan, which resulted in public acrimony, and long running negotiations. Described to the author by Pam Richardson, representative of Federated Farmers, pers comm. (1998).
siltation. However, in July 1984 the 4th Labour Government removed subsidies for farmers. This coupled with a rapid rise in mortgage rates and the low commodity prices sharpened the resolve of dairy farmers who survived the experience, to focus on risk management and low input farming. Catchment Boards continued another few years, carrying out effluent disposal inspections on farms every second year, unless there was reason to visit more frequently. National Water Conservation Orders, introduced in 1988, were a key change that limited water abstraction from protected rivers.

The Water and Soils Act (1967) and amendments were superseded by the Resource Management Act 1991 (RMA). The RMA has an integrated management planning approach with the purpose of promoting sustainable management of natural and physical resources. Decision makers are required, among other things, to have particular regard for the maintenance and enhancement of the quality of the environment and every person has a duty under the Act to avoid, remedy or mitigate adverse effects on the environment.106 The Act replaced some 70 statutes, and introduced an integrated consent process for land use change and water abstraction and discharges. A resource management hierarchy has been put in place using an effects based approach and 'strong presumption favouring individual private property rights'107 by expressly permitting all land uses unless otherwise identified. However, the Act 'does not provide a vision or goals for society,'108 has necessitated a change in approach from procedural to substantive rationality which many Regional and District Councils have yet to come to terms with, is not integrated with agricultural policy, and 'the knowledge basis remains weak.'109 The criticized 'lack of vision' has somewhat been addressed by the Government's Environment 2010 Strategy which identifies 11 principles for integrating the environment, society and the

107 Buhrs and Bartlett (1993 : 130).
economy, generally in free market language such as ‘defining environmental bottom lines,’ and couched in very general terms such as ‘managing our land resources.’ A six-part Environmental Management Agenda is included in the strategy, with the aim of bringing a consistent approach to the environmental policy development programmes of various government departments. In addition, a Sustainable Land Management Strategy, also setting priorities, was adopted in 1996. This includes a strategy for the support of industry initiatives by the promotion of environmental management systems from land to market.

A factor in the inconsistency between the different expectations of the Act and decision making could be attributed to the national belief in the ‘clean green’ image. Although each group can read what they believe into the image, hierarchical decision makers and farmer entrepreneurs have tended to reject information which conflicts with their perception of the environment.

'A myth of nature provides its holder with a way of seeing the world and with a way of not seeing it.' As one of the bases for the image has been ‘the predominance of primary products in the economy’ conflicts have arisen over denial, or rural problem recognition.

The new local government structure and new legislation has required new regional policy statements and district plans, and these changes and the conflict in world views and consequent policies have yet to be fully resolved. For the first time in one district dairy farming has been specifically identified as a rural use requiring environmental and land use controls and the industry has reacted with surprise and some resentment.

4.4.3 Industry structure and change

The industry structure has been a simple system of largely farmer owned and controlled, vertically integrated manufacture and distribution. The farmer supplier has delivered product (and later had it collected by factories) to mainly farmer co-operatively owned dairy factories. From 1923 the factories have in turn supplied the Dairy Produce Control Board, and since 1961 the New Zealand Dairy Board has had total control of exporting and marketing the product. While smaller than competitors such as Nestlé or Unilever, the New Zealand Dairy Board is now the largest global solely milk products marketing organization.115 Town milk supply farming has been managed under a separate structure. This evolved into a quota administered local government processing and distribution system. When local government was restructured in the 1980s, the factories were taken over by the town milk dairy industry. More recent acquisitions by larger companies, particularly Kiwi Dairy Company, has led to the merging of town supply into the production system.

In 1961 there were 40 dairy companies in Taranaki and 83 manufacturing units. Mergers were slowly taking place. The main driver was the New Zealand Dairy Board’s payment system to dairy companies for dairy products, which was based on the averaging of manufacturing costs, known as a manufacturing cost allowance. It exposed poor decision making by directors and management and drove dairy companies to find more efficient ways of manufacturing dairy products. The formula for this payment was agreed by the industry as a whole and fine-tuned to aim for an equitable payment system. However, the cost-pricing model had problems, such as the lack of market demand feedback of signals to companies. At the same time, from the early 1960s, improved mechanization for manufacture of all types of dairy products became available to the factories. For example, in 1969 Kiwi directors made a decision to build a cheese factory ten times larger than the average cheese factory in New Zealand. About three years after it was commissioned, its size was doubled again to make it the largest cheese
factory in the world.\textsuperscript{116} Up till then tanker size and staff manning required by the powerful Dairy Factory Workers Union had restricted expansion. Kiwi has recently looked to investment in production with competitors in Australia. In addition, a few private or non-farmer owned manufacturing companies, such as Glaxo, a lactose company, and some ice-cream companies have remained until recently. They have needed to negotiate with the New Zealand Dairy Board to obtain permits for export of their product.

\begin{figure}
\centering
\includegraphics[width=\textwidth]{diagram.png}
\caption{Diagram of the structure of the New Zealand Dairy industry in 1999 (author).}
\end{figure}

\textsuperscript{115} Le Heron and Pawson (1996: 31).
\textsuperscript{116} Roberts, pers comm., (1999).
Recent Government and commercial free market pressure to deregulate the industry and remove the powers of the New Zealand Dairy Board (and of other producer marketing boards) for export marketing, eliminating the monopolistic 'single seller status,' has resulted in widespread industry debate. The New Zealand Dairy Board advantages of 'critical mass' in a global market and power through strategic alliances has been weighed against the suggested disadvantage for production (lack of market signals to farmers) and under capitalization of the industry. Other criticism has been the lack of efficiency of monopolies and the negative impact the state protection has on free trade negotiations with other countries.

The pressure has stimulated vociferous farmer support for retaining the Board's protected status, although some farm leaders have supported change. Structural amendments have enabled farmer protection by company share issues to farm suppliers, including shares to sharemilkers, and in turn company share acquisition of the Board. In addition the two largest companies, Kiwi Co-operative Dairies and New Zealand Dairy Group, comprising over 80% of the industry, formed an alliance in 1997 in order to protect the present monopoly role of the New Zealand Dairy Board although inter-company competition for the acquisition of South Island Dairy Co-operative strained the alliance. Reinforcing this change, those two companies have appointed their chief executives on to the Dairy Board, the first time non-farmers have been appointed by farmers, and suggests a trend to even tighter vertical integration, a diversity of management skills and increasing hierarchical influence.

The Board has addressed efficiency criticism and the need for clearer market signals through a different payout system after reviews by the Boston Consulting Group: the introduction of the Business Development Project (BDP). The BDP

118 Federated Farmers (1997).
passes more rewards to companies for consumer products, encouraging flexible and targeted manufacture and requiring increased investment and financial management skills at company level.

Following on from the Kiwi and New Zealand Dairy Group alliance to support the New Zealand Dairy Board as the single marketer, and the merger of South Island Dairy Cooperative and New Zealand Dairy Group, the latest merger proposal is being developed and explained to suppliers. This is for a merged entity of manufacturing companies and the New Zealand Dairy Board to result in even closer vertical integration, a move anticipated to deliver $200 million in increased efficiency and effectiveness to the owners of the industry, the suppliers. Apart from government pressure, a stimulus for the merger has been competition that has grown between the now larger and fewer companies and the New Zealand Dairy Board, stimulated by the payout system. This, industry leaders agree, is not an effective way to manage the industry for suppliers. A further stimulus is similar amalgamation moves and rapid growth by competitors and the need for critical mass to act as an effective global marketer. The merger proposal is to gain empowering legislation, which will come into effect if approval to merge is given by 75% of the dairy company owners of the New Zealand Dairy Board, the Commerce Commission who are concerned to see effective competition maintained, and 75% of owner suppliers of the dairy companies. Within this merger proposal is a plan to set up a separate supplier owned company to deal with the rents from quotas negotiated by the New Zealand government on an intergovernmental basis, worth currently about 11% of farmer income.

An important factor in the dairy industry has been the farm and capital ownership structure. Sharemilking was introduced early in the development of dairy farming (first recorded in use in 1884) in New Zealand. The main reason for its
introduction and continued use is to allow a farm owner to discontinue milking but retain a reasonable income and return on investment.\textsuperscript{121} It is also a means of entry into dairy farming, and by building capital through herd ownership and income growth to purchase a farm. The industry also benefits by the innovation, motivation and productivity that sharemilking encourages combined with minimal industrial unrest and a stable labour force. Contractual practice has evolved and is well respected. By contract agreement, usually for a period of 3 years, the contractor receives a percentage of the monthly milk payout from the factory. The farm owner provides the land and fixed capital equipment and development. Milk quality is the responsibility of the sharemilker, who receives a 100\% penalty for quality infringements. The system commences with ‘low level’ or 29\% agreements where labour is the key input. As the sharemilker increases the size of the herd, including by leasing cows, so a larger share of the income can be negotiated, up to 50:50, and a sharemilker can move to increasingly larger properties with the expanding herd, until all or part, is sold and a farm purchased. At the same time the sharemilker develops business management and farming experience. They may in this way commence their own business as soon as they leave school. In turn the owner of a farm can gradually decrease their contribution to 50\% as they diversify, spread their interest to other properties or move towards retirement. The sharemilker has an opportunity to build capital rapidly although runs a high risk with fluctuating cattle values.\textsuperscript{122} In addition the disparity between land and cattle values, fluctuating payouts based on $/kgms supplied and increasing equity required through increasing farm size puts pressure on the system.

Sharemilking has been adopted in conjunction with employed or contract labour and farm cadetships where insufficient capital has been acquired. It has enabled a

\textsuperscript{120} Leeder, Chairman, New Zealand Dairy Group; briefing at supplier accounts presentation meeting on August 12 1999, noted by researcher, (1999).  
\textsuperscript{121} Taylor (1996 : 3).  
\textsuperscript{122} Taylor (1996) Appendix IV. Between 1985 and 95 the value of a cow doubled but during that time drops and gains were up to 30\% in a year (from Livestock Improvement Corporation data).
production system where most farmers are entrepreneurs, working for themselves, generally as a farm family partnership, rather than as employees. The system, which has evolved with time, has supported individualistic world views and a prime focus on profitability as well as mobility in the industry. The goal for the sharemilker has been farm ownership and the high risk system of herd growth as capital accumulation has enabled the goal to be achieved relatively rapidly. However, the goals of sharemilkers are changing and a greater proportion are seeing this as a short term means of building capital or as a career.

Publicly listed companies with multiple dairy farm ownerships and development are a newer innovation. Dairy Brands (formerly Applefields) and Tasman Agriculture both now contract sharemilkers to undertake farm production. The presence of these companies has provided further diversity and another structural element in the industry.

### 4.4.4 Changing global concerns

The United Nations Human Environment Conference held in Stockholm in 1972 was an important factor in raising and focusing environmental concerns throughout the world, arguing sustainability as a means to address perceived problems. By the time a follow-up United Nations conference took place 20 years later in Rio de Janeiro, the ‘Earth Summit’ or United Nations Conference on Environment and Development (UNCED), environmental issues had become a key problem for both government and non government groups in New Zealand. However, a particular twist in New Zealand environmental values and recent legislation, influenced by environmental groups, has been reframing sustainable development as understood from the Brundtland Report\(^{123}\) to sustainable management. An outcome of the UNCED conference was the Rio Convention and Agenda 21, which has required Governments’ commitment to enhancing the biodiversity of ecosystems. The New Zealand Government approach has been

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largely laissez-faire, relying on the Resource Management Act 1991 to achieve the aims.

Other relevant issues of global concern have related to pesticides and hazardous substances as well as pollution and spill over effects with negative consequences, such as the greenhouse effect and ozone depletion.

The New Zealand Government has tended to take an active role in international environmental fora, for instance in climate change/ozone depletion discussions. Respect has generally been accorded, perhaps due to the role taken in conserving nature through the protection of dramatic scenery and confidence in the ‘clean green’ New Zealand reputation. This in turn has had an influence on domestic environmental policy in order to be seen to live up to the reputation.124

4.4.5 Changing markets and expectations

Early marketing reports record New Zealand dairy exports as being a commodity product, focused almost solely on Britain and Europe.125 The main products were butter, cheese and skim milk powder. Marketing messages featured New Zealand and families, uses of the product, and health. Advertising media in Britain were outdoor advertising, film, TV, trade and popular press, and posters in retail shops and schools. The strategy was low cost, the packaging Spartan. Branding was in its infancy but Fernleaf126 and Anchor127 were being developed. By the mid 1950s marketing was featuring New Zealand scenery and climate, pastures and quality, although low cost positioning was still a feature.

Trade protectionism, and competition from butter substitute margarine were identified as market issues by 1958. Market diversification had been started by the

late 1950s with sales to Ceylon, Hong Kong, Malaya, the Philippines, Jamaica and Mauritius, but the cyclical nature of commodity markets gave rise to product dumping in Europe and price fluctuations. Advertising jingles for TV in Britain continued to feature climate and health, and to imply quality.

*Fresh as a buttercup,*

*As golden as the sun*

*New Zealand gives health to everyone.*

More recent marketing images have included caricatures of cows in natural ‘free range’ conditions, thus promoting the national ‘clean green’ image.

Full New Zealand Dairy Board control in 1961, coinciding with the EEC announcing the Common Agricultural Policy, resulted in increased diversification of markets, a trend that has continued through joint ventures and similar strategies in South East Asia, Russia, and Central and South America, as well as the gradual development of consumer products, to move from being restricted to the British market and a price taker on the commodity market.

The quantity of product traded on the global market is only around 3% of total world production, of which New Zealand has under a third market share. In this limited market though there is a high level of protectionism.\(^\text{129}\) An OEDC report noted\(^\text{130}\) that there is no other industry that is subject to such a degree of government intervention and subsidy as the international dairy industry.

Food safety is an increasing concern to consumers. Grant identifies the conflict in the politics of production together with the control and organization of the production process, and the politics of collective consumption. The latter is


\(^{129}\) Grant (1991 : 1).

concerned with the effects of the production process on the environment and on consumers, and in particular with product safety.

‘If consumers perceive milk as no longer being a healthy product, or coming from a healthy animal, no matter how false that perception, the politics of production will be affected.’

While the Uruguay Round of the GATT negotiations resulted in agreement to gradually remove agricultural trade tariff barriers, the market remains predominantly protected and subject to intense political and commercial sensitivity. A recent OECD report on policy reform indicated that New Zealand has the potential to act as a price discriminator in international markets:

‘through changing product mixes and branding to capture the opportunities of “New Zealand” dairy products.’

The report saw this resulting in reduction in production of dairy products with inelastic demand that could have benefits for producers in all countries. However, while the potential may be there Bururu, in a recent research study, could find no evidence that this is being achieved, and some evidence to suggest that it is not occurring.

An example of recent domestic protection is the subsidization by the Danish government for dairy farmers to move to organic production, which may in turn provide a competitive advantage for their industry.

A key factor in export trading for New Zealand products is the relative currency value. Although the industry has developed skill in forward currency buying to protect the farmer from fluctuations, the changing value of the dollar has a marked effect on the trading success of the industry. Changes in currency values have

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111 Grant (1991 : 2).
113 Bururu (1996).
been marked in the last two years, exacerbated by economic upheaval in Asia and Russia. The recent introduction of the Euro in Europe may have further impact.

The need overseas to protect home dairy industries and preserve the countryside at Government level, and respond to increasing ‘green consumerism’ and the demand for commercial social responsibility at the consumer level, is resulting in increasing calls for quality substantiation. The recent EU requirement for random testing for multiple milk contaminants from all company suppliers (Codex) is one such example. The expectations and quality standards imposed by buyers such as Mars and Tesco are other examples. The use of non-trade barriers, particularly environmental quality barriers, is anticipated.

Green business modes of thinking and managing for sustainability are now moving beyond ‘early environmental protection initiatives’ to ‘new ecological paradigm-type commitments’ at different levels in both technology and management. Global green consumer expectation will not only take into account the safety of the product and how it was produced, the impact production had on the environment, animal health and welfare and the quality of that environment, but ethical and stakeholder issues which involve company social responsibility. New Zealand Government supported marketing has continued to put increasing emphasis on the New Zealand ‘clean green’ image in response to environmental concerns in the market and (to promote) green consumer demand. However, various analyses suggest that such marketing may draw attention to aspects which are not so green and are of concern to the various markets. For instance Jahn, after analysing environmental policy in OECD countries found New Zealand ‘at the bottom of a scale on institutionalisation of environmental policy’ (which may not necessarily be a factor in sound environmental management), but also not to the forefront on environmental performance. The reason for this situation might be

\[135\] I.e. the Tradenz abandoned Project 98 on environmental branding.
found in the tendency to reject information which does not accord with a group’s world view: in this case the free market view held locally that sees the environment as robust. Green marketers argue that claim making without substantiation is viewed with extreme scepticism by consumers who have many competing and substantiated product claims to chose between. Such marketing may instead suffer consumer backlash.\textsuperscript{137}

Cultural Theory contends that groups will maintain a dynamically structured plurality\textsuperscript{138} and there will be continued pressure for change. Although

\begin{quote}
\textit{‘further extensive environmental value change is inevitable ... the form and direction of that change is unpredictable.’}\textsuperscript{139}
\end{quote}

Anticipating the nature and type of quality to be demanded is difficult and so a risk management strategy which is flexible and can respond to a range of environmental quality values is indicated.

\section*{4.5 Conclusions}

There is a strong and dynamic interrelationship between the agricultural production system, ecological systems and institutional systems as demonstrated by changes relevant to dairying in New Zealand in all three systems over time. Agriculture, by its very nature changes the landscape and ecological systems, and the effects of development for dairy farming continue, and in turn affect and are affected by institutional changes. Whether the need for change is perceived in the way nature is managed or farming is practiced, or whether change is identified at all is affected by the world views of the dynamic cultural groups, which each vie for dominance.

A cultural review of dairy farming traces a move from one dominant world view to another, reflecting changing national world views as well as other changes such as price relativities of dairying. Dairying grew from an entrepreneurial beginning,

\footnotesize
\textsuperscript{137} Ottman (1992); Coddington (1993).
\textsuperscript{138} Thompson, writer on Cultural Theory, in an email response to the researcher, pers comm., (1999).
\textsuperscript{139} Buhrs and Bartlett (1993 : 167).
with land clearance and colonization. As the social welfare state took hold
dairying became more egalitarian: a family farming lifestyle. Decline in New
Zealand’s economic position and global environmental concerns in the 1970s
stimulated change again. While both egalitarian and entrepreneurial views
contended, the free market views are prevailing, and are having a consequent
influence on production, ecological and institutional systems.

Increasing global competitiveness in the industry as well as continued market
subsidization in other countries has required increasing herd size\textsuperscript{140} and
productivity at the supplier level to maintain incomes. In addition, factory
amalgamations, industry structural change and integration has occurred to increase
efficiency and respond to market demands. This in turn is necessitating increasing
business and management skills and market awareness.

Continuing international political interference and increasing global market
sensitivity, again influenced by free marketers, environmental awareness and food
safety and health concerns as well as expectation of social responsibility leaves
the New Zealand dairy industry open to increasing scrutiny of environmental
quality. The products remain largely commodity based and price sensitive but
New Zealand’s national ‘clean green’ image is an expectation that the products are
expected to live up to.

Although New Zealand has climatic, scenic and low population advantages that
encourage a perception of environmental quality, denial of some rural
environmental issues may be giving the farmer and industry a false sense of
security. This may threaten future marketing and a more sophisticated approach to
risk management to substantiate quality is needed.

\textsuperscript{140} Le Heron and Pawson (1996 : 126).
This review of the dairy farmer and industry indicates a constantly changing context: industry change, resource management change, political and economic change as well as rapid change to ecological systems. Throughout this both the farmer and the industry have shown considerable resilience but the dairy farmer of today is an entirely different type of farmer from the easy going home-grown family man the industry portrayed as recently as the 1970s in New Zealand.
Case study: dairy farming in Canterbury/Otago

'Behavior is influenced by a person's attitude towards the environment, not so much as it is, but as he thinks it is.' — Appleton

5.1 Introduction

This case study looks at dairy farmers' world views concerning the rural environment, their views on farming and perceived options for change, and how they perceive their own actions relevant to the 'clean green' image. The objective is to investigate the farmers' range of preferences and the context within which they occur with view to adapting this information to initiatives for change. Cultural Theory is used as the tool to analyse information from the field. While information from each interview, farm walk, and general farm evaluation was separately assessed and compared with like information from other farmers, the overall goal and approach was the same, so the information and analysis has been treated as being for one case study on environmental quality on the dairy farm.

In order to identify the particular patterns of social organization and perceptions of nature held by dairy farmers, and in order to understand the relationship between values and beliefs and decision making and actions, the focus of the study was upon individual farmers. The study assumes that dairy farmers make rational decisions but that rationality is framed by the context within which they make their decisions. The concept of world views is used to characterize key aspects of this context.

Cultural Theory predicts five forms of solidarity or ways of life, for which the
term world view is used. The categories are: entrepreneur, hierarchist, egalitarian,
fatalist and hermit. Each distinctive world view or solidarity is held by individuals
but shared with others in a social context. A world view comprises a pattern of
social relations and a behavioural strategy. For each world view there is a
characteristic perception of the environment, termed a cultural bias. How this in
turn is influencing farm management and New Zealand’s ‘clean green’ image was
regarded as vital. This case study focuses on the expression of three world views
within the dairy industry: the entrepreneur, the hierarchist and the egalitarian, and
investigates their relationship to individual preferences and actions. A fourth
world view, that of the fatalist, is also present in dairy farming - that was clear
from farmer discourse and from confirming research overseas.\(^2\) One New Zealand
dairy farmer who had been part of a local conflict over environmental issues
identified himself as partly of the fatalist world view, and two who had been
prosecuted for environmental non-compliance also appeared to hold partly fatalist
views. Otherwise however, farmers interviewed did not ascribe to this world view.
The nature of dairying as a business tends to preclude the influence of the fifth
world view, that of the hermit, which aims to minimise transactions and avoid
commercial involvement.

Cultural Theory highlights two aspects of context and change in world views. It
holds that an individual may have different world views in different contexts: it is
the world view and social pattern that is the constant, not the individual. In
addition, Cultural Theory holds that a surprise caused by unexpected
circumstances can cause a change in world view. Preferences, Cultural Theory
also argues, are consolidated by experience. In this study, the world views of
Cultural Theory are used as an initial tool for analysis, but they are also tested,
and evidence sought that confirms or challenges their distinctive expressions. As

the Rhine who continue to pollute, believing they do not have the means to contribute to clean-up, and that
to do so is a threat to their viability. He interprets this as fatalism induced by the EU’s Common
the discussion will show, whilst there is extensive confirmation of the basic world views, some aspects of them, particularly relating to change, are also challenged.

The structure of this chapter is to firstly consider an example of change and conflict in the context of dairying in a rural district, Waimate. How this conflict in one part of the study area has come about is explained. The scene is then set for the farmer case study - the context of Canterbury/Otago and the rapid growth of dairying. Having described the context, the farmers’ story is then investigated. Farmers’ preferences and perceptions of farming and their understanding of the ‘clean and green’ image are examined using the Cultural Theory framework. The exceptions and qualifications to the general framework are also considered.

After analysing farmers world views and the influence of differing preferences on their actions, in the following chapter the preferences and world views of other stakeholders are considered: industry representatives, regulators, iwi and environmentalists; the market views of New Zealand as ‘clean and green,’ and finally the role of the media in the political contest of world views.

5.2 An example of change: world views in collision

First, a vignette is presented, of one district within the study area undergoing extensive conversion to dairying, and the environmental issues this creates.

Waimate District Council, in South Canterbury, is not a typical local body because it is transsected by two regional councils, each with different policies; both at the extremity of their territory but in conflict over the boundaries. It is also atypical because in 1996 Waimate District Council promulgated a new Proposed District Plan which indicated dairy farming as a discretionary use in the rural area. This would mean that a consent from the District Council would be needed if a farmer wished to change his or her current land use to dairying. This was the first District Plan to restrict the use of rural land for dairying in this way. There was Agricultural Policy and the sharp increase in environmental regulation that has ‘eroded their individualistic solidarity.’
consternation - shock even - in the dairy industry. Some argued that the dairy industry had been 'singled out' for treatment (although pig farming had been similarly controlled for several years). Heavy criticism and lobbying were directed at the District Council staff and elected representatives.

This planning proposal should not have been such a major surprise to the industry, as the District had faced increasing conflict ever since a rapid expansion in dairying commenced eight years previously. One example of this conflict concerned impacts on natural resources. Angry recreation fishers and sheep farmers had complained to the Council over the degraded state of a once healthy small trout fishery, the Waikakahi Stream.

![Waikakahi Stream showing turbidity but still healthy trout, 1996.](Photo Loomes)

The complaints reached ministerial level with little apparent satisfaction. While publicity and objections had focused on surface water quality issues, such as cows being driven through and damaging creeks and high faecal coliform counts

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in streams, the rapid conversion of some fifty farms to dairying had also given rise to other problems, such as effluent on roads, electric fence tapes left across roads and the safety of milk tanker access. The District Council had not been prepared for the sudden influx of dairy farmers and was trying to respond with rules and regulations to slow and control the emergent problems.

Figure 10. An example of management concerns in Waimate 1997. (Photo Shearer).

The political pressure applied in Waimate District as a response to the Proposed Plan could also have been foreseen. Here for the first time was a District declaring that dairying was an environmental issue that required particular legal consent. Some in the industry could not believe that this was necessary and viewed the Plan as being staff driven: power hungry petty bureaucrats out to make life difficult. Those denying any reason for this special treatment did not appear to have ‘heard’ the local concerns and had not acknowledged the negative media attention that some local dairy farmers had received. Cultural Theory predicts that an entrepreneur tends to perceive environmental degradation later than those with

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other world views.5 Those responding heatedly with shock, denial and aggression to the District Plan proposals included some forthright leaders in the industry who were most likely to be entrepreneurs, so this sudden reaction of surprise and denial was predictable. Some dairy farmers, though, thought that the Proposed Plan should be regarded as a ‘wake up’ call and believed that some in the industry had ‘missed the plot.’

Two years after their Proposed Plan, Waimate District advertised their Amended District Plan, which indicated dairying as a permitted use if the proposal could meet certain performance standards and conditions. Otherwise dairying was now to be regarded as a Controlled Activity. The performance standards were a direct response to the concerns raised by neighbours and the community6 and related to possible effects of dairying, such as discharges causing contamination of waterways. Perhaps partly in response to the concerns being raised in the neighbouring district, but also at the instigation of the Otago Regional Council, a group of farmers in North Otago formed into a landcare group and started looking at systems to address environmental quality issues and move towards more sustainable farming. They gained support with funding from Government and gradually developed an environmental management system which they called the Ag-vantage system. (A review of a trial of the Ag-vantage system is reported in Appendix C.)

Over the regional boundary, farmers and Canterbury Regional Council initiated other activities, the Regional Council arguing that the environmental issue was not so much caused by the rapid increase in dairying but intensification of land use.7 The newly formed Waikakahi Resource Care group, in conjunction with the Salmon Anglers Association, the Fish and Game Council and Canterbury Regional Council staff organised fencing, planting and rehabilitation of sections

6 Whyte, consultant for Waimate District Council, commenting on District Plan submissions and changes, pers comm. (1999).
of the stream bank which had been previously pugged, as a demonstration area to encourage good riparian management.

Figures 11. *Waikakahi Stream showing riparian damage by cows. (Photo Loomes).*

Figure 12. *Growth of flax planted on same site to re-establish riparian cover. (Photo Loomes).*

This response of farmers can be interpreted from a Cultural Theory perspective as a change in perception and preferences brought about by a sudden surprise, and then re-evaluation based on an amended understanding of what has occurred. This

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8Loomes, Salmon Anglers Assoc., photograph. (1997).
in turn led to a change in farmers actions in Waimate. In contrast to the sudden powerlessness that Rhineland dairy farmers felt as a result of bureaucratic strictures and their resulting change to fatalism.\textsuperscript{10} Waimate dairy farmers have moved towards the adoption of systems, limits and controls; towards the preferences of hierarchists.

5.3 Context: growth and change

Waimate is one of nine districts in the case study area that have been responding to changing economic circumstances. I now consider the overall context of Canterbury/Otago, and the particular ‘pressure points’ of change in the dairy industry.

Central dark shade indicates the Canterbury Otago study area: South Island, New Zealand.

Figure 13. Location map of case study area (from South Island Dairy Co-operative Ltd. profile pamphlet, 1998).

The Canterbury plains and downlands were largely shrub land and savannah grasslands, divided by braided rivers in the 1850s when British colonists started developing the land for pastoral farming. In 150 years, most native vegetation has been cleared, swamps drained, land ploughed and grassed, and the landscape now presents a pattern of rectangles; paddocks, shelter belts of exotic trees, sheep and cropping farms with some pockets of more densely developed lifestyle and

\textsuperscript{10} Verweij (1998: 204).
horticulture blocks. Some dairy farms had been located near towns, mainly for local milk supply. Others, in pockets such as Little River on Banks Peninsula, had been small and had been converted to sheep farming in the 1950s when this became a more profitable option. However, in the 1980s, with sheep farming in decline, irrigation presenting alternatives and land prices soaring in densely cultivated dairying areas in the North Island, a few dairy farmers started moving south to develop larger herds dairying in Canterbury. By 1995 dairying was reported to be occupying a third of the 193,000 hectares assessed as suitable for dairying in Canterbury, and between 25 and 35 farm conversions to dairying were taking place each year, bringing 5600 hectares per year into dairy production. Conversions from (mainly) sheep to dairy farming were showing a similar if slightly slower pace in Southland. By the 1998/1999 season, of the 40 conversions undertaken in Southland, the average maximum herd size approved through the consent process was 730 cows, as compared with the current Southland herd average of 350 cows, and the national average of about 220 cows, indicating an accelerating trend to larger herds farming in Southland.

The production of Alpine Dairy Products, the single remaining export manufacturing company in the Canterbury area, in 1995 was forecast to nearly double by the 2000/1 season. By 1999 this forecast appeared close to expectation. The then merged company (Alpine and Southland Dairy) of South Island Dairy expected to process 120 million kgs of milk solids for the season and the company profile noted that the Clandeboye site was the second largest dairy processing site in the world with the largest cheese plant and second largest powder drier in the Southern Hemisphere. $100 million had been spent between 1996 and 1998 upgrading the Clandeboye factory and $140 million had been spent at Edendale (previously Southland Dairy Co-operative) since 1993. South Island Dairy had

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12 Consent applications show dairy herd numbers growing (1999 : 17).
926 suppliers in March 1999, with a herd of 354,000 cows. This rapid increase in growth required the factories to pay particular attention to environmental, particularly discharge, issues. Both sites have new wastewater treatment systems, with land-based disposal, requiring sizeable land holdings.

In the 1980s when Government departments were in their bureaucratic zenith, several catchment and irrigation works were undertaken in Canterbury, such as the Morven-Glenavy irrigation scheme. The available water encouraged the expansion of dairying and development of ridged border dike field patterns. This irrigation stimulated changes and further diversity in large areas of landscape, including smaller more rectangular paddocks, new laneways, increased fertility and a change from predominantly brown summer colours to lusher greens. Drainage of some remaining wetlands, removal and replacement of shelter planting, and new buildings were other effects of dairying development. New seasonal changes have also been introduced such as sausage-shaped balage lines in paddocks from early summer, and winter cropping for stock. The landscape changes are important because the appearance of the landscape in turn communicates cultural values and landscape perception is a social process. In other words the changes in land use and dairying practice are likely to affect people’s perception of New Zealand as ‘clean and green.’

In addition to this pattern of transformation, one in three suppliers were recorded as changing properties each year, creating a mobile social pattern where previously there was more stability. The new farmers in the area not only have their own networks and working hours but have different customs from the longer term residents. Friction has developed between new and local people, because some new farmers are perceived as not supporting community projects (not available in the evenings), or have not responded to welcoming gestures. In the

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14 New Zealand Dairy and South Island Dairy (1999)
winter months of 1999 new logos will be put on all the company tanker fleet, and all farms will replace their identification numbers as suppliers and staff prepare for the next season as part of the now merged New Zealand Dairy company. The logos are no longer painted but temporarily glued to the tankers because still further change is expected. In May 1999 the chairman of the New Zealand Dairy Board, John Storey, signalled the next change through a circular to all farmers announcing that the industry working group on structure had recommended further amalgamation to a single large, integrated company. In the flyer the chairman announced a round of farmer meetings to consider the recommendations of the industry leaders. Doug Leeder, the Chairman of New Zealand Dairy Group, followed this up a month later with a letter to all shareholders and suppliers advising them that the dairy industry had lodged an application with the Commerce Commission for authorization to proceed with the formation of a 'mega co-op.' In anticipation of approval, the Government introduced enabling legislation, the Dairy Industry Restructuring Bill, and yet another round of farmer consultations was planned.

This rapid growth and change has affected the local towns, communities and rural landscape. For instance, trade in service towns such as Temuka (near the Clandeboye factory) is vigorous, and the increasing tanker fleet has an impact on the roading infrastructure, carrying the industrial image of dairying throughout the province. The amalgamations, though, have resulted in staff redundancies and a transformation of the company culture and community of interest.

5.4 The dairy farmer's story

5.4.1 Introduction

The field study is now described. Twenty nine farmers, most with partners and some with staff, totalling fifty seven, from Culverden (some 150 km. north of

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Christchurch) to Southland (800 km. to the south) were contacted and interviewed. Time was spent with them at milking in the early dawn and during the day as they worked on the farm or organised labour and the range of farming activities. Some farmers were interviewed at night in winter, their only spare time.

The methodology outlined in Chapter Three provided for firstly categorising farmers into four world views on the basis of four selected indicators: mode of social interactions, economic preferences, cultural bias as expressed through the ‘myths of nature,’ and decision making. Having categorised farmers by their world views, which were later confirmed through self ascription with key informants, the description of each world view was then expanded, by analysing individual dairy farmer discourse and actions to provide a better understanding of the preferences of each world view. Farmers’ preferences and perceptions are then presented under a series of themes that emerged from the study. In each case farmers’ preferences and perceptions are characterized in terms of the three main world views of Cultural Theory relevant to the study.

5.4.2 Farmer world views
The discourse and actions of each of the 29 farmers were assessed against the four indicators for world views. Each farmer was thus ascribed with a world view relevant to the farming context. (A farmer may have held another world view when operating in different circumstances.)

Table 3 below categorizes farmers according to their world views and gives an example of typical discourse associated with the relevant world view. Having categorised the world view of each farmer as it related to the study context; expanded indicators, or characteristics of each world view as it applied to dairy farming, were derived, to give a richer picture of the world views. These are now described, commencing with the dominant world view, that of the entrepreneur.
<table>
<thead>
<tr>
<th>World views of farmers</th>
<th>Example of view</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Entrepreneurs</strong></td>
<td>‘our objective is to increase our profitability’ ‘we have a great deal of pride in our cows’</td>
</tr>
<tr>
<td>Earl, Sam (and Jenny), Simon, Jim, Matt (and Linda), Mark, Tom, Paul, Graham, Malcolm, Murray, Dave (and Di), Beavan, Dick.</td>
<td></td>
</tr>
<tr>
<td><strong>Hierarchists</strong></td>
<td>‘We farm so that we are not running the system down or abusing the system.’ ‘The satisfaction is coming through the system... and there’s certainly lifestyle.’</td>
</tr>
<tr>
<td>Claas, Gray, Andrew (and Sarah), Nick, James, Derek, Geoff (and Jill), Jeff</td>
<td></td>
</tr>
<tr>
<td><strong>Hierarchist/egalitarian</strong></td>
<td>‘You’ve got to have a lifestyle and involve the family.’ “I don’t think anyone farms just for money these days. There is more money to be made elsewhere... it’s the sustainability thing”</td>
</tr>
<tr>
<td>Ray, Bill.</td>
<td></td>
</tr>
<tr>
<td><strong>Egalitarian</strong></td>
<td>‘I want to get my land looking well. That really annoys me to think that I’m trying to do things right and some people are just killing off the wildlife.’</td>
</tr>
<tr>
<td>Wade, Ian</td>
<td></td>
</tr>
<tr>
<td><strong>Fatalist/ Hierarchist</strong></td>
<td>‘The Regional Council are just out to get me.’</td>
</tr>
<tr>
<td>Alan, Jock, Heiner</td>
<td></td>
</tr>
</tbody>
</table>

Table 3. *The world views of the case study farmers (author).*

**Entrepreneur.** Fourteen of the farmers, out of twenty nine interviewed in depth, had the world view of the entrepreneur. Entrepreneurial dairy farmers have clear goals such as profitability and growth of capital and expect to work hard to achieve their goal (they have no expectations that society will do it for them). Their aim, and source of satisfaction is in ‘doing things right’ and they generally have a strong sense in pride, not only in their own property but also in their stock and the company. Entrepreneurial dairy farmers have independent ideas and decision making is usually decisive, perhaps done after consultation with key members of their network such as the banker or accountant, as well as relying on their own judgement. The entrepreneur is also characterised as being manipulative, forming extensive informal ego-centred networks. This dairy farmer
has close and trusted contact with other dairy farmers and service providers, and
does not put short-term profit objectives ahead of maintaining those valued
networks. Risk taking with farm or stock purchases is a characteristic of the
entrepreneurial dairy farmer. They are not constrained by strong family or
community dictums. However, experience with uncertain conditions such as snow
storms heightens their awareness or ‘sensitivity’ to that particular risk and they
then take some care to control for that factor. Their hatred of bureaucracy is
demonstrated by their general rejection of paperwork, because bureaucracies
inflict this. They see the industry, and society as over regulated. Few trust their
local and regional government although this depends on performance: where
tolerance, trust and understanding has been shown, the entrepreneur has responded
likewise. An entrepreneur is a competitive individualist, in the business of
bargaining and bidding, and sees markets as the mode of transaction. Profits,
gained through skills, courage and risk-taking in the market are the entrepreneur’s
goal. For dairy farmers this includes capital gain from sale of land or stock. An
entrepreneur is characterized by Cultural Theorists as willing to ‘test and see’
rather than adopt exacting controls to prevent the breaching of environmental
thresholds, the concern of the hierarchist. Their preference is for unfettered
competition based on equal opportunity. The entrepreneurial dairy farmer sees
nature as benign, a source of raw materials. They believe resources are abundant
as well as self-created through trial and error and their own farming skills.

An entrepreneur requires clear identification of issues before change is considered.
They prefer to use only those systems that can be measured, and are suspicious
about techniques or methods that require judgement. The most effective way of
modifying an entrepreneurial farmer’s actions is through economic incentives and
the demonstration of benefit. Regulation is less effective because the
entrepreneurial dairy farmer may ignore or explain away what they do not agree
with and may react aggressively to coercion. However, entrepreneurs take steps in
advance to conform to or anticipate regulations to avoid confrontation. Pride of
performance and the respect of their network are powerful catalysts for action.
**Hierarchist.** There were eight hierarchist dairy farmers in the case study.

Hierarchists see their goal as restraining competition and observing and enforcing rights and obligations such as the law of contract. The hierarchist is described as attracted to power wielding, adopting collectivised manipulation. Self-sacrifice is characterised as a common mode. Large groups and organizations are favoured and professions, trade unions, national industries and departments generally adopt the social pattern of hierarchies. The hierarchist dairy farmer is therefore likely to be found in company leadership positions (along with innovative entrepreneurs) and in lobby groups such as Federated Farmers. Their stance there is to resist change, to minimise risk and maintain the status quo. Status and loyalty are important to a hierarchist and they seek to identify dividing lines in procedures, categories or other aspects and then police them. The hierarchist dairy farmer does not take short cuts or question procedures. They are generally cautious and react to change rather than instigate it.

The hierarchist dairy farmer’s view of nature is that the environment is tolerant up to a threshold, and then perverse. Their approach is to avoid problems and to manage this dividing line by control, using the advice of experts such as technical staff from LIC Advisory, their dairy company and Regional Council. Resources are considered scarce and protection from risk is perceived to be best achieved through administered authority.

The most effective way of modifying a hierarchist farmer’s actions is through codes of practice and regulations as well as tightly prescribed and monitored systems. Three of the farmers holding this world view, noted that they were members of Federated Farmers and saw the lobbying undertaken by that organization as important to control the influence of environmentalists or other groups. Several were cynical about the value of a system for environmental management change unless it was strictly enforced. It may be that some farmers were indicating a cultural bias towards the hierarchist view on environmental
management as a response to the influence of the Resource Management Act, which calls for environmental assessment.

**Egalitarian.** There were four egalitarians in the main farmer case study, although two also held partly hierarchist world views. Egalitarians seek equal opportunity without competition. Conditions have favoured the egalitarian dairy farmer in New Zealand because export dairy farmers are generally not in direct competition with each other and information has been freely shared between farmers. Interviews with retired dairy farmers and analysis of articles in early *Dairy Exporter* magazines suggest that a greater proportion of farmers held egalitarian preferences in the past, influenced by the dominant political world view of the time. Competition has instead been at the company level in the dairy industry and recent company takeovers are viewed with some distrust by egalitarians.\(^{21}\) The series of recent changes in the industry and dominant egalitarian political preferences appear to be modifying dairy farmer preferences towards that of the entrepreneur or hierarchist.

An egalitarian dairy farmer expects to be tightly bound by the farmer group, with no rank or differentiation. Other farmers are excluded from their group by a ‘wall of virtue’ and the egalitarian adopts a ‘collectivised survival strategy.’\(^{22}\)

The egalitarian dairy farmer sees nature as ephemeral, resources finite and they take an holistic view of the environment. Their aim is to avoid eco-catastrophes and resource depletion. They reject threatening information and refuse compromises. Egalitarian dairy farmers could also be expected to be organic producers, aiming for minimal chemical inputs. Egalitarians in the study were not organic farmers. Although they exist, there are few export organic dairy farmers in New Zealand, (one interviewed, from outside the study area,\(^{23}\) was indeed

\(^{21}\) Simpson (1999) dairy farmer, Dunsandel, and Federated farmers representative, interviewed on TV1, 6pm. News, 15 July, expressed concern about company merger process.

\(^{22}\) from Thompson (1996).

egalitarian) but there are many farmers who minimise chemical applications and discharges for reasons of economics and risk management, as much as a wish to ‘step lightly on the earth.’

An egalitarian is characterised as anti-authority but they see a role for government in monitoring environmental threats. The most effective way of modifying egalitarian farmers actions, is through a voluntary comprehensive system, which is undertaken by all farmers. However, the egalitarian is likely to seek a more rigorous system than an entrepreneur.

**Fatalist.** Three farmers who were part fatalist were interviewed. They were identified for reasons other than their world view: farmers who had been involved in local controversy over environmental management, or had been prosecuted. One farmer felt limited by the community. Their call for constraints on him were, he felt, a demonstration of lack of sense in the community rather than a shortcoming on his part.

While this world view is likely to be in the minority, fatalists should be considered, because their world views have an impact on the perception of the industry. According to the Cultural Theory profile, the fatalist adopts a mode of social interaction of inequality with competition. Their general attitude is resignation to all the catastrophe or good fortune that life throws at them; they would not modify their actions as ‘nothing makes a difference.’ The fatalist dairy farmer’s decision making would therefore be randomised. They would see nature as capricious and their approach would be to simply absorb risk in order to survive.

A fatalist dairy farmer is likely to appear to want nothing to do with peers or others in the industry and to avoid discussion groups and other participation because it would not make any difference: ‘life is hard enough as it is.’ As they believe nothing much that they could do makes a difference they do not put
environmental quality high on their list of priorities. They may have strong views but are unlikely to share them. This group may be the frequent polluters and they are unlikely to be troubled by exclusion or loss of respect of peers. Fatalists in the industry are likely to be smaller herd farmers who through age and capital limitations have been economically marginalized by the heightening global competition and removal of previous economic protection. They do not have the resources to expand and so feel ‘caught.’ However, this was not the case with the farmers interviewed. Some of the small number of farm labourers may also be fatalists, again seeing themselves as ‘locked into’ a situation of low pay and a limited future. The very long hours and extreme tiredness faced by many may exacerbate this.

5.4.3 Farming objectives and practice, environmental issues and options for change

Having categorized each farmer and described general preferences according to each world view in more detail, the three main groups of farmers are now considered: entrepreneur, hierarchist and egalitarian, in terms of their preferences on particular themes which emerged from the case study: farming objectives and practice, environmental issues, and options for change. Two further themes, those of the ‘clean green’ image, and ‘cues for care’ are covered in the next section.

Farming objectives and practice. There were significant differences between each of the three world views, in farmers’ descriptions of their objectives and what they perceived as appropriate management. Descriptions of farming objectives and practice demonstrated cultural bias and clearly expressed the world view of the farmer. Examples are now given of discourse from farmers from each of three world views to indicate different objectives, their appropriate management practice, and expand examples of social relationships, their perceptions of nature as well as different decision making.

First, the entrepreneur is considered. The main aim of the entrepreneur is profitability. While a profit is essential for a dairying business to remain viable,
farmers gave a variety of opinions about profit as their key goal. Matt and Linda saw profit as their prime objective.

*Whatever makes our asset worth most is what is influencing us.* The market was their main driver and:

*Everything evolves around us being as efficient and economic as we can.*

Profit was also the main aim of Dave and Di. They had reservations about incentives beyond their main one of profit.

*There's certainly lifestyle attached to it but honestly it's an arse of a job,*' was Dave's view. Jenny saw *the bottom line,* as the key benefit, although both Jenny and Sam agreed that farming provided other benefits such as: *a way of life and personal ambitions.* Sam perceived sustainability in terms of profitability, along with a well managed system. *There is freedom,* he said. *We enjoy the challenge.* Jenny commented:

*It also helps with the decision making down the track to be able to do something for yourself. You can get there faster on your own,* expressing the individualistic world view of the entrepreneur. Earl, the first farmer interviewed, looked for the challenge of achieving profitability targets, farm management goals and quality, consistent with his entrepreneurial world view. He also aimed for capital gain and wanted to be respected as a skilled farmer. His preference was, however, not profitability at any cost (no farmer interviewed took that view), not wanting to be:

*universally hated because you are trying to squeeze the last dollar from everyone you deal with.... I think the profit comes from being a good dairy farmer: from doing things right. The ones that are completely profit driven become penny wise and pound foolish.*

Simon was also driven by profit and challenge. In his words:

*To be able to set targets from season to season, and production levels, is very satisfying, especially if you break the target that you have set for yourself... Certain achievements as far as profit goes are only attainable
with the right measures, otherwise you are only cutting your own throat, like overgrazing of paddocks.'

A reason why entrepreneurs do not seek profit at any price is because they respect their network colleagues, who are an asset they do not wish to lose. In common with other entrepreneurs, Earl had a large network of contacts - farmers and contractors - and was in frequent contact by phone, organising projects, meetings and service. Sam and Jenny helped with the local school and fire brigade and noted that they were part of a rural community.

'There's always talk and conversations going on about farming things, what's happening.' Sam explained.

Simon expressed concern to achieve the respect of his peers while also achieving his goals, this way.

'Everybody wonders what the other farmer thinks of him. Is he an OK farmer or is he not?'

Although Matt and Linda, Dave and Di, Sam and Jenny, Simon, and Earl claimed profitability as a key incentive, it was not a goal that was pursued at the risk of destroying their environment. Expressing pride in his property Earl commented:

'I don't want to leave the world a dirtier place than when I came here and don't think a lot of other people in this area do as well.'

In Simon's words:

'I look at my children and my children's children as far as water quality goes. I've been right into my scuba diving and when you gather crayfish and scallops you think 'I hope there's still going to be some for when my boys want to go diving'.'

This could also have been the view of an egalitarian, who would see natural resources as depleting and finite, but Simon's approach to addressing this was not to suggest group controls, as an egalitarian might, but to put the responsibility on to the individual, consistent with his entrepreneurial world view.
‘It’s only going to be there if people actually take control of what they do now.’

The entrepreneur’s view is that the environment is benign and the best methods of using raw materials can be found by experimentation. Earl’s cultural bias was reflected in a trial and error approach to management and innovation on the farm. For instance, Earl discussed changing fertilizer regimes from year to year:

‘We used chicken manure one year. Chicken litter was the least cost option by a long ways. You were saving about $7000 a year. But what happened? We put it on over a year to a year and a half and our levels dropped dramatically. The first time we got a tremendous response and thought it was the greatest thing in the world... In the end we decided it was just too variable.’

Matt made a similar comment about farm practice and said:

‘I love putting my own ideas into practice.’

Describing farming and the risk of drought and other climatic and economic changes Earl commented:

‘More successful farmers have risk management systems in place. Experience is a big thing; the greatest education in life. There’s a whole group of us who got into farming in the drought when everything was worthless and nobody had anything... The greatest education we had in life was those 18 months, learning to lower stocking rates.’

Many writers from a range of disciplines have argued that experience24 is a powerful modifier of actions. Simon explained how experience of environmental problems had changed his practices, comments which were consistent with an entrepreneurial trial and error approach.

‘A couple of years ago I had a fire with twine and nitrogen bags and things and the smoke was wafting into the cowshed. I felt sick for two days afterwards so I don’t burn any of that stuff any more because obviously it’s not the best,’ he recounted.
Earl believed that age also has an effect on decision making and risk aversion: that farmers tend to become more cautious as they age.

'When you are in your twenties and thirties you basically don't have anything so you can take chances. When you have accumulated assets you are a little more careful, afraid of losing it,' he said, again indicating learning through trial and error. Reflecting the different views of farm practice and knowledge between entrepreneurs and hierarchists, Dave said:

'You learn and enquire and you don't do it like Dad did it.'

Earl did not take the view that the environment was 'shock-proof.' For example, he was critical of the Regional Council's heavy use of 1080 poison against rabbits near his land, because he observed that this was killing non-target species. He was also cautious, along with most dairy farmers interviewed, about use of insecticides on pasture:

'You never know whether something is going to become the DDT of now in twenty years time,' he explained. Earl's caution was likely to have developed after observing the consequences of use of DDT in the past. Sheep farmers who had used DDT, now faced lower capital values for their properties whereas farmers who had applied no chemicals, and in the past had been seen as non-progressive, uncaring farmers, now had DDT free pastures which were more valuable. Earl weighed calves with a sheep farmer who had had his options limited by his earlier frequent use of DDT. The sheep farmer expressed fatalist world views, complaining about the unfairness of life.

The cost of agricultural products is also a factor in limiting the use of sprays and this would be of particular importance for entrepreneurs. Sam commented that he probably put more sprays on his garden to keep it tidy than on the farm, where management methods were more effective to control pests. Matt kept profitability as well as risk firmly in mind when considering chemical use.

'There's a lot of farmers out there who would like to be organic farmers but you've got to be sure of your market,' he said.

The preferences of the hierarchist are now discussed. Hierarchists stated more impersonal thoughts about their farming objectives and questioned the reality of entrepreneurial financial goals. Nick, an hierarchist, agreed that farming gave a sense of challenge, but:

'That challenge is only going to last so long and you've got to have other things.'

Instead Nick gained satisfaction from:

'Coming through the system: starting off with nothing and in ten years having a 600 herd dairy farm.'

As an example of those more impersonal objectives, a Dairy Brands manager and farmer, Gray, argued that:

'One of the biggest things you can do wrong in farming is not identifying what's really going on. It's all about observation and if your observations are incorrect a lot of trouble can stem from that.'

He thought that farmers records were very inaccurate, and pasture cover estimation for instance, was currently a skill which needed to be developed. Accurate monitoring of pasture temperature, fertilizer timing and use, growth and climatic factors were, he thought, vital to farming efficiency as well as sustainable management, indicating the hierarchist preference to use systems and control uses.

Geoff and Jill refuted the belief that a farmer's key motivation is economics.

'If anyone's told you that, they are lying or fooling themselves, because there is no way you can justify dairy farming on the basis of economics.'

Geoff, a farm owner and local leader of Federated Farmers, summed up his view of farm systems and the environment, in both egalitarian and hierarchist terms as:

'... an all encompassing dynamic that just rolls on like a huge machine with millions of parts. It's just quietly rolling on with outside influences
affecting it and sometimes not. Part of that rolling on is dealing with the environment. Farming, by its very nature is the managed judicial use of the environment to create something from the whole environment; the sun, rain, plants and animals and all the consequences of that.’

Geoff saw his place as part of an evolution and his role as in fitting his actions to the environment. He compared dairy farming to architecture:

‘designing and building something that is a reflection of yourself.’

Ray, with partly egalitarian and partly hierarchists views, discussed environmental management in similar terms.

‘It’s knowing what the limit is, and how to get there,’ he said. Ray argued that weed control was: ‘a management thing.’

Hierarchist farmers would generally look for advice on where those limits were from farm consultants.

“You need to get good advice and I listen to what they have to say,” was Jeff’s comment.

Ray saw the involvement of the local community and confidence in the future of the industry as important objectives. He also included ‘the enjoyment of being with the kids,’ as one of his incentives. A part hierarchist and part egalitarian, Bill held similar views.

‘You’ve got to have a lifestyle and involve the family. I don’t think anyone farms just for money these days. There is more money to be made elsewhere,’ he said.

An egalitarian is more likely to view farming in holistic terms. Wayne described his system, with ‘natural’ nitrogen from clover and effluent feeding earthworms to produce the best pastures, but noted the need to avoid urea because it broke down soil structure and was therefore not sustainable. He spoke of his concern about over-use of chemicals and system contamination by effluent and saw the need for much greater care with inputs. Agricultural production to Wayne was part of an
holistic system and, along with earning a living, he aimed to add benefit for the future, rather than leave the farm: 'like a burnt out bowl at the end of the time.' Ray had similar views:

'An emphasis on production,' he said, 'Can result in stress on the system.' Use of urea he saw as trying to buy production. Wayne saw animal health as part of that holistic system of environmental management and commented on tail docking in the following way.

'Nothing annoys me more than to see a herd of cows with their tails only so long. I went looking at a herd and realized that I couldn't buy them because there was only half of them for sale (their tails had been docked),' he said with vehemence. He also took a pride in quality.

'My greatest satisfaction is to see quality milk produced and as low a grade as possible,' was a sentiment several farmers, both egalitarian and hierarchist, expressed.

To summarize: while entrepreneurs, hierarchists and egalitarians were seeing and commenting on similar farming systems, their objectives, perceptions and conclusions differed. The entrepreneurs placed profit as a key objective, the hierarchists tended to dispute this and to refer to more impersonal objectives and needs, and the egalitarians set objectives within an holistic framework that included improving the land as well as relationships with family. For Earl, the entrepreneurial conclusion was to learn from experience, for egalitarian Wayne it was to urge constraint and extreme care with use of natural resources. The entrepreneurial farmers described farm management as benign; the hierarchists view was of a complex system with their role as prescribed use and modification, and the egalitarians saw a system which needed care and improvement.

**Environmental issues.** Farmers gave their attention to issues that needed addressing according to their view of farming and perception of nature and market or other risk or concern. The views of entrepreneurs are addressed first. The entrepreneurs questioned perceptions (or reality) of environmental impact as
opposed to political ideology. Earl argued that New Zealand dairying was the most environmentally sustainable dairying in the world, with animals fed on grass all year around and use of clovers to fix nitrogen as opposed to chemical fertilisers. Earl, Jim and other entrepreneurs would want to see clear, scientific reasons for identification of issues. They generally saw environmental issues as matters of risk or financial loss. Some, such as Earl and Sam, saw climatic surprises as their biggest environmental risk, although a risk that they managed through observation and decision making. However, environmental issues, which needed to be addressed, were listed by a range of entrepreneurial farmers as nitrates in the ground water (because it had been identified in Europe), antibiotics and pesticides (because they affect milk quality and food safety), silage and balage disposal, water quality and quantity (for efficiency and continued supply), effluent disposal, and inadequate animal welfare.

Earl, for instance, was not concerned about receiving stock race water with leached fertiliser. 'It's free supply,' was his joking response, but wanted information to prevent fertiliser leaching from his pasture, because it was money wasted otherwise.

Animal welfare issues were a particular area of dispute among farmers. Entrepreneur Sam docked cows tails and thought that it made no difference to their health or production. He preferred the practice for hygiene and health reasons but:

'It's something I've got to be aware of,' he said. 'If it's a law, we've got to go with the flow. If the dairy company says they're not going to pick up our milk from cows that have short tails, to sell the cheese overseas, well that's our income and we've got to go with it.'

By contrast Matt was not docking his cows tails because he saw market risk in this. Matt divided issues into animal health and market issues, and those of farm management such as pugged pastures or the spread of ragwort.
Entrepreneurs, such as Sam, generally perceived that fatalist farmers caused environmental problems: those who 'just did it and were oblivious to the issues.'

Hierarchists did not necessarily perceive environmental issues as a market risk but it was not a priority.

'For the staff member from Regional Council who visited, it was the most important thing to her, Jeff commented, 'But it is way down my list of priorities.'

Geoff, an hierarchist, thought that New Zealand farming is sustainable, but thought that there were environmental issues which needed to be controlled. He referred to water quality as an issue. Other issues noted included balage wrap, where no clear disposal option appears to have been developed; and collection of unlabelled chemical drums on farms. Geoff, however, thought that accusations of pollution were incorrect. He believed that environmentalists had a 'cultural problem,' rather than it being a farmer problem.

The egalitarians generally saw a greater range of issues requiring addressing than those with other world views, and saw this as a priority. They were concerned about systems issues such as nitrification, impact on soil structure, wetlands management and streams, as well as food safety and animal health. Ray noted possible contamination of water races from earlier farming practice and contamination from dumping of unknown disused chemicals. 'You just don't know,' he said.

While many environmentalists regard biodiversity as an important indicator of environmental health, it appeared an issue that had seldom been raised in dairying discourse and few dairy farmers except egalitarians had given the matter particular attention.

**Options for change.** An unexpected and sudden change in circumstances, termed a surprise, can be the catalyst to bring about a change in world views, and
therefore actions, Cultural Theory argues. However, while unforeseen climate conditions such as drought had encouraged a more cautious attitude to risk, the case study suggests that farmers seemed to have maintained the same world view, with unforeseen events merely confirming their particular bias. It may be that if events were of a great magnitude or the event had a marked and sudden effect on the actions and incomes of farmers, as has been described for Rhineland farmers, that a change in world view may occur. However, surprise does not seem to be a reliable or realistic means of initiating a change in actions. The perception of the likely success of options for achieving improved environmental quality differed according to the mandatory nature of the option and the stringency or rigor of application, and this in turn, was consistent with farmers respective world views.

Taking the entrepreneurs view first: Matt saw need for change but said:

'It worries me that they're going to change the rules... Sometimes it feels like people are trying to make your day longer by bringing in new laws. Haven't we got enough already? ... We have to be careful that we don't over-regulate.'

He also doubted that regulation and monitoring were effective because:

'I don't think farmers ever think they will ever be caught doing something and are going to be prosecuted.'

Simon agreed. He commented that rules for environmental management were regarded by some farmers as 'guidelines for awareness.'

Earl indicated strong distrust of the regulators: the regional and local government staff: 'They are influenced by vested interests,' an abhorrence of regulations, and a dislike of paper form filling to fulfil government requirements.

'I hate bureaucracy. All this paper work that you have to do. Anything that involves filling in paper would be negatively received by the general farming population. I think that if there were regulations then that would be very negatively received.'

Jim, an entrepreneurial farmer from Culverden, had a similar view.

'There's new rules and regulations coming in all the time, and we are just getting too many. It doesn't just apply to dairying. It's through all society. People aren't allowed to do anything. I'd hate to be a kid brought up today. To get the best out of a man he's got to be able to do something, to learn. We're becoming too soft,' he argued.

Both Earl and Jim agreed that the regional council had changed, with better training and more understanding of environmental management issues. As Jim said,

'Now they have some tolerance whereas before they had no tolerance. And they were totally impractical. Now they are being honest so we are being more honest and tolerant with them.'

Earl accepted that there was a value in some legislative control to address environmental problems.

'I guess the good thing about Government intervention is setting up policies for the public good, so if it's proven that certain practices are bad, the Government legislation is good,' he commented. Agreeing with this, Tom argued that if a farmer flouted regulations then he should be treated firmly.

'No farmer has got the law with himself to actually drive his cows across the road any day of the week, making a bloody nuisance to everybody... the day is coming that he will be forced out of dairying.'

Sam, however, thought that the crudeness and inflexibility of regulators made people angry. 'If you make it too hard to get a consent, you don't do it (apply for it),' he said.

Monitoring would need to be convenient and have clear benefits to be attractive to entrepreneurs. Matt thought it may have prospect if it indicated 'real time' response from a dial at the back door:
‘If they read that they had just lost $20,000 worth of nitrogen leaching out of the soil, they would be kicking themselves,’ he said.

Simon, though took a more restricted view on systems monitoring: farmers sold milk not water so while they were responsible for minimizing discharges, until the market linked environmental monitoring with milk value he would not see environmental monitoring as a business priority. He regarded as: ‘Just silly,’ the possibility that people might link the quality of the milk that they drank with perceptions of how it was produced on his farm.

The entrepreneurial farmer seemed more likely to address a problem if the solution was not regulated but left for the farmer to resolve. In such a case the farmer may find a management or other solution that provided greater profitability and efficiency. Matt thought the: ‘only way to do it is through discussion groups.’ He also suggested promotion of competitions as a means for ‘raising awareness’ and change but warned that the competition winner would need to be known as a good farmer.

‘If people are recognized as good farmers, their practices rub off on us. If the person that won the competition was known as a hopeless farmer then it would backfire.’

In order to bring about change Earl recommended using economic incentives to raise quality standards.

‘If there is nothing to be gained for it, unless you are off on a tangent and trying to save the world... it will depend on how easy it is to do and how well defined it is, and the media promotion that comes with it. Using the Alpine TQM example, you could make it even better by incentives on superior milk.’

Matt saw a problem of farmers being ‘vulnerable to smooth talking chemical salesmen,’ not knowing what was effective and what could be a risk. The solution,
he suggested, was for the industry to develop a consumers' environmental quality bureau which could test the safety and claims of chemicals and similar products.

Now the hierarchists' views on options for change are considered. Although an hierarchist, Claas noted that heavy reliance on regulations can have the opposite effect to that which the policy makers intended. Claas recounted examples from his home country in Holland where resource management legislation is strictly applied and: 'Every consent is rejected ten times before it is granted.' He explained that while farmers in Holland are very aware of the environment and conscious of their responsibilities, they removed trees if given the chance because approval may never be given again. In such circumstances, he said, there was no trust. These comments, in seeming contradiction to the hierarchists world view, point to the significance of context. Claas regarded himself as an hierarchist but thought that regulations in Holland were excessive.

Derek though, took an authoritarian approach. He argued that education, discipline and personal responsibility were important. If farmers did not respond, financial penalties and prosecutions for non-compliance should be applied. While the industry or regulators could not force people to do what they did not want to do, systems could be put in place and those who did not respond should be penalized. If existing consents were monitored vigorously, he thought, environmental management such as effluent contamination would improve 'overnight'.

'I think you do have to regulate because people will always go to the limit,' he said. He took a long term view.

'It doesn't have to be something that's going to occur tomorrow .. it might even be something that's going to happen in 10 years time or 20 years time but if we can see a direct benefit for that we will do it. If we can't actually see a direct benefit in doing it most farmers will politely forget about doing it,' Derek said, although he qualified this by saying,

'I don't see that you should have to provide someone with an incentive to dispose of their effluent correctly. The biggest incentive for the farmer is
that he gets the value of the nutrient rather than sees it end up down stream. That's the incentive.'

James, an hierarchist, also refuted the view that options for change should focus on incentives and market profitability and argued that farmers should monitor and use their expertise.

'But a dairy farmer is a scientist, he should be,' he said. 'I don't think there should be financial reward... I think every farmer should be striving to produce high quality. It comes back to a pride thing,' he said.

Gray, a farmer and farm company manager argued that the manufacturing company should give the lead. The industry should take the 'good corporate citizen' approach and satisfy Fish and Game and similar bodies. He advocated an environmental 'clearance,' code or standards covering effluent, irrigation systems efficiency and water disposal as well as animal welfare. Best systems could be benchmarked in Sweden and other European countries where public pressure for an enforcement of quality standards had required research on these aspects. This could save duplicate research, he suggested.

Another hierarchist farmer, Nick suggested that there should be better guidance for dairy farmers buying into an area as a first priority so that the more fragile ecosystems were avoided. Peer pressure, he suggested, could be used to discourage farmers from polluting their environment, and this should be supported by legislation in order to protect the 'clean green' image.

Geoff argued that the community of farmers were New Zealand's biggest resource. While some environmental issues required precise limits (such as effluent in streams and cattle in creeks), other long term changes could be achieved by gradual education. Some environmental issues, he thought, needed to be dealt with by a joint or coordinating body.
The egalitarians did not favour enforcement. Wayne thought that farmers feeling good about what they are doing was an important factor in environmental improvement and: ‘regional council preaching and enforcement are not incentives.’ Instead, he suggested that regulators should offer management solutions and options rather than threats. Wayne argued that the regulators should be informing newcomers to the area about physical land capabilities and environmental problems and issues. His view was that better communication would resolve the environmental problems. However, this should be undertaken with the farmers limitations in mind.

‘If they want to meet with dairy farmers they should not plan it in the middle of calving, when people cannot go there,’ he said.

Wayne thought that the way to achieve change was to tell farmers through the LIC Advisory discussion groups.

Ray suggested the use by the industry of a demonstration farm, an average farm which could show the value of shelter and demonstrate recycling. Commenting on the doubtful efficacy of competitions as the means to change, Bill noted:

‘The one’s who aren’t in are the ones you want to change the most.’

In summary, the range of options suggested by farmers for change generally reflected their preferences and world views. Care will be needed to find options for change which will have acceptability across the world views.

5.4.4 The ‘clean green’ image and ‘cues for care’

Asking how farmers understood the ‘clean green’ image was the next step in considering whether this was where the industry should aim to be, and how this might be achieved. Farmers gave a range of descriptions or representations of the ‘clean green’ image. However, there was no significant differentiation in the way farmers with different world views described the image, except with respect to measurement.

Many argued that ‘clean and green’ was what the market prescribed:
'As long as people perceive taking a dairy cows tail off to be cruel, well it's cruel,' was Gray's comment.

Another view was that there were two sets of pressures: that imposed, or self imposed by the market, and the demands and expectations of the local community. Both, in effect, were defining 'clean and green' in terms of stakeholders' rather than their own views. However, a view that constraints and actions are being prescribed by others may be taken as the fatalist world view from Cultural Theory. In this case the view expressed various perceptions: from the entrepreneur's view of the significance of the market, to the hierarchist's and egalitarian's views of the need for constraints.

Andrew and Sarah, sharemilking partners who had worked overseas, warned that New Zealand was very insular and assumed that the rest of the world, the markets, were unaware of what farmers were doing, whereas the reverse was the case.

Visibility was thought to be important, for instance, as Tom said, 'a cow with no tail is visible for almost five miles,' and therefore tail docking, if it is of concern to the European market, should be stopped. Dead calves by the roadside or sick or dead animals in pastures, pugged pastures and animals in mud were images in conflict with the impression desired. On the positive side, some thought that irrigation for dairy farms in Canterbury, by enabling green grass all year round, assisted the image, when compared with the burnt brown pastures of sheep farming in summer. Some noted that first impressions were also very important:

'The cowshed and tanker track are our best opportunity. That's where people go to and if you can get that looking as best as you can, and the main buildings ....,' said Gray, then the image will be maintained.

In addition, smell was also thought to be important.

'If Joe Public are driving along and smells that whiff of dead cow it's not good.'

Paul, a large herd sharemilker, noted that environmental conditions change all through the year - wet and dry - but that urban dwellers expected farms to look
green and unchanged - what they wanted to see was different from 'reality.' This, he explained, was why Europeans were willing to heavily subsidize farming: so that they could continue to see an attractive countryside.

Earl depended on scientific measurements in order to make a claim of being 'clean and green.'

'Cleanliness can only be claimed if it has been scientifically mapped out, and I suppose that if we are in pursuit of greater marketability in using that concept, then there are a whole series of things that can be measured. First of all we have to identify what gives us the right to say that we are 'clean and green' and then set about a program that measures that, and benchmark that to a whole lot of international standards,' Earl believed.

Local performance on factors such as chemical usage, effluent management, groundwater status, diseases and biosecurity should be measured, according to Earl. His opinion was, though, that New Zealand could already make a claim of being 'clean and green' because it would be difficult and expensive for competitors to dispute this (although he had concerns about issues such as TB). He also thought that New Zealand does a 'lot of unnecessary worrying' about environmental management and that while the 'clean green' image is 'a great marketing ploy,' the average customer buys on price. Other farmers agreed that detractors from the 'clean green' image were factors which had a measurable impact on the environment: that they were quantifiable rather than perceptual. These farmers were both entrepreneurs and hierarchists.

Finally, some farmers discussed 'clean and green' on the basis of what the image meant to them, and others. For instance, in arguing that animal health and welfare issues were an important aspect of the image, Geoff said:

'Cows have got to look healthy and they've got to look clean, not in pugged pastures. Cows in mud is inferred as cruelty to animals.'

Tom, an entrepreneurial large herd farmer, in discussing cows in mud, had similar comments.
'It's just that farmers are not thinking of the image that they are portraying for a tourist driving down the road. If they thought about it they would probably think "Hells teeth! I had better put my cows somewhere else." It's not only damaging the pasture dramatically but they haven't even stopped to think about the image that they are giving the tourists and town people and even our own people driving down the road, the country folk, the sheep farmers and the towns people and so on. They portray an image that is not good if they see these things happening.'

And James commented: 'Slinkies at the gate destroy our clean green image.'

Although more views were expressed on what farming might be doing to destroy an image that was already positive, several farmers were taking steps towards reflecting the 'clean green' image, or addressing aspects of dairying, depending on their view of the issues and the context. For instance, farmers beside the Ohape Stream in South Canterbury were fencing wetlands and riparian areas on their properties and were addressing regulators and neighbours concerns. Taking a picturesque approach, Bevan Burrows (an entrepreneur) and his wife Nancy planted 300 rose bushes and colourful shrubs with garden ornamentation next to their farm dairy at Hook.

'After 38 years in sheep farming I decided to convert to dairying and to start on the right foot,' said Bevan. 'I started at the cow shed to get the image right. I think the cow shed should be the same as our home: spic and span. The planting grabs the eye: it takes the tanker drivers by surprise as they come round the corner, and is also important for dairying morale.... I don't want cow muck sitting about. This is the way I express myself, with colour and green.'

Bevan saw this project as a demonstration of creativity.
Di, in discussing ‘clean and green’ and the image of dairy farming, suggested that people formed perceptions through the image of dairy farmers themselves.

'Dairy farmers have earned themselves a bad name because they wear a black singlet and are rough, from lower socio-economic people. I think straight away people perceive that dairy farmers don’t care.'

While dairy farmers more commonly wear blue overalls and gum boots, and heavy aprons when in the dairy shed, they do not follow the social conventions of sheep farmers which Di referred to: tweed jacket, white moleskin trousers and Aertex shirts.

What farmers actually visualized when they thought about the ‘clean green’ image as an aim, was also generally consistent across farmers questioned. Sam, an entrepreneur, was more likely to visualize a production image but:

'It has trees and shelter: a well balanced environment with bird life. Man’s got to have a hand in it to keep it that way. If you had a large building with cows inside, that’s “no.” This is much more natural. It’s like

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comparing battery hens to free range; an image that we’ve got to work with and produce.’

Beavan, also an entrepreneur, thought so too:

‘My image of clean and green is of getting back to Mother Nature: with tree planting and so on; but it’s also about man (or woman) made.’

Dave, an hierarchist, had similar views.

‘From a farmer’s point of view clean and green is sustainable farming. We’d like to think that the practices we use are not polluting the environment or running the system down, or abusing the system. It’s about having a clean and healthy product that we send out the gate, free of contaminants; what’s happening down on the farm. And it comes back to animal welfare: cows not being abused or mistreated. We’d like to think our practices are a step up from battery hens but in reality we are dealing with a controlled system,’ he said.

Claas, who had come from a rigidly managed background, said that the ‘clean green’ image he was aiming for was:

‘A tidy dairy farm where the farmer is aware of what to do and how to do it,’ using the ‘cues for care’ to describe the ‘clean green’ image.

Commenting on organic farming as being part of the ‘clean green’ image he said:

‘It’s nice and beautiful but people in organic farming have often made their money elsewhere in the commercial world. They are cash rich. Commercial arguments are not so important to them.’

Responding on the possible conflict between the tourism scenic image of ‘clean and green’ and the production image, he said:

‘Undisturbed nature is clean and green, the ultimate. Anything else, even organic farming, is a disturbance. But in that situation you are not able to commercially perform. When we talk about clean and green it’s just the image, just leave it at that, and then we all agree.’

Dave saw no conflict with the scenic image either.
'The clean green postcard image is only really a logo, a symbol of excellence,' he said.

Ray, with hierarchist and egalitarian views, said that he visualized an image that was partly scenic and partly farming production oriented, but also included what he produced.

'It's not only a look, it's a quality product,' was his comment.

Anticipating difficulties in responding to public expectations though, an older egalitarian farmer Ian, commented:

'To present a clean green image, there's a balance between stupidity and realism.'

He was referring to the same argument that Claas had put forward: that agricultural production changes nature and has commercial imperatives. Although a farmer might take steps towards the provision for 'non-productive' nature (biodiversity, perhaps), this must be balanced against the need to be financially viable. Andrew and Sarah noted that in comparison to Europe where there were many well-established sheltering trees, New Zealand was like a 'green desert.' 'Clean and green,' they argued, implied more than just green grass. Others such as Sam and Ray (from different world views) seemed to agree by advocating the importance of well cared for shelterbelts both for production, animal welfare, nature and aesthetic reasons. However, consideration of enhancement of farms to encourage biodiversity and complement the 'clean green' image, rather than as a remedial action, was not common.

In summary, there was no significant differentiation in farmers’ perceptions and preferences of 'clean and green' across different world views, except with respect to how (and whether) it should be measured. Several hierarchists and entrepreneurs took the stance that what was thought to be 'clean and green,' or indicators for this, should be quantified. However, some of those same informants agreed that perception was an important factor. Egalitarians, by contrast, all
appeared to rate measurability as insignificant. Farmers represented the ‘clean green’ image by:

- what others perceived it to be
- visibility
- what it was not
- meaning of the image
- measurability.

There was a commonality of understanding because, it is suggested, the myth is grasped across all world views because it is understood as a symbol. The two main images of scenery and pastoral fertility, which are used in conjunction with the words, paint a general notion. There were differences in detail of representation because the image is portrayed in a symbolic way and individuals may subsequently interpret or explain the symbol according to their own world views and context. A review of the personal image of dairy farmers, as suggested, may be of benefit if a change or modification is sought.

‘Cues for care’. When farmers were asked for their perceptions of good or bad farming practice many described ‘cues for care,’ now outlined. There were some entrepreneurial farmers though (not all) who denied that they used these visual cues to indicate farming skills. They instead argued that a good farmer was a profitable one and that this was not apparent from visual signals; in fact visual signals may be misleading because there may be no income gained from the ‘care,’ even though many agreed that this may increase the capital value of a farm property.27

‘You don’t get any profit out of spending money on weeds in some years,’ was a repeated entrepreneurs view. Others disagreed. The presence of a lot of weeds was ‘generally a sign of a fairly useless operator,’ as was falling down fences.
Representations of 'cues for care' echoed the responses of farmers to the 'clean green' image - general agreement. Some expressed their views using visual images, others by describing opposites. However, there was overall consistency, it appeared, because 'cues for care' is a symbolic communication device. In Chapter 2, outlining theory, the idea that symbols and images could be a means of integrating or linking across world views was discussed. They were thought to be sufficiently abstract that they would not be seen as emanating from a conflicting world view. This appears to be the explanation for the commonality of view on farming symbols for care. For instance, farmers from the range of world views had similar opinions about the signs of good farming. Representations of good farming generally tended to reflect visual signs and symbolic 'cues for care.'

Simon, an entrepreneur, would notice:

'pugging, the state of the animals health-wise and condition-wise, also tidiness such as fences that aren't falling over, water systems and a whole lot of... things lying around.'

Tom, an entrepreneurial large herds farmer, also identified:

'The number of dead calves on the roadside; pugged pastures and cows with no tails is questionable from an animal health point of view.'

Matt, an entrepreneur, saw tidiness and gates on hinges as signs of a good farmer. Wayne, an egalitarian farmer had similar comments and so did Ray, who thought of himself as part hierarchist and part egalitarian.

'I think the tidiness of the farm is always a fairly good indicator. Just your general appearance. You know, if the hedges are cut and the fences are tidy and .... You look at a house: somebody cares about it and it has gardens and lawns that have been mown. I think people that are like that are probably doing a pretty good job on the mechanical side of it. Whereas the ones who can't be bothered doing the other work, well, they possibly aren't putting 100% into the running of the farm either.... and if you've got animals in good health they will produce well. The thing that

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27 argued also by Pannett (1998).
28 developed by Nassauer.
probably shows out first is underfed animals, animals under stress, poor coats and poor condition and those cows aren't going to produce well. We're the guys that open the gates and shift the fence. Cows can't do that. They might try to jump fences or push gates open but we're in control of that so how they look is an indication of how we treat them.'

Tasman Agriculture, a dairy farming public company, uses similar 'cues' as indicators of farming skill. Malcolm, a manager, advised that such visual indicators are useful in assessing the suitability of share milkers for contracts for their 68 farms in the area. In addition, they consider record keeping and financial monitoring.

An egalitarian farmer, Ian, agreed with the importance of animal welfare and also drew attention to the significance of time in this context of 'cues for care' and tidiness.

'Years ago white posts meant you were a good farmer, but not any more,' he said. This comment adds weight to the work by Phillips on what farmers in New South Wales think of as 'good farming.' Although she found there were a number of factors involved in the definition of good farming, the ability to change and adapt, and to keep pace with technology seemed important, but farming as a way of life and local/global forces needed to be considered in this analysis. 29

To summarize: indicators of care identified by farmers were tidiness: fences straight, hedges trimmed, buildings well maintained, equipment put away, lack of rubbish, old containers, muck and weeds; sometimes a mown strip by the front gate and tidy areas around farm accommodation. 'Things should look as if they are there for a reason,' many said. They also looked for signs of efficient pasture management, orderly systems such as water management and at stock condition.

‘Cues for care’ such as tidy farms, and sound and sustainable environmental management though are not necessarily the same, a matter which Nassauer tackled by using the ‘socially-recognised signs of beauty and stewardship,’ the ‘cues,’ to indicate farmer care for ecological systems.\textsuperscript{30} Nassauer advocated the association, for instance, of mown grass strips adjacent to ‘natural’ or enhanced indigenous vegetation and wildlife habitats to enable such areas to be perceived as also under active management, thus enabling the encouragement of biodiversity rather than clearance as perceived untidy weed growth.

5.4.5 Context, exceptions and reservations

Two factors in New Zealand dairying seem to be encouraging a particular world view. The first is the industry structure that provides for sharemilkers (who own their own business and may have various sizes of capital investment), as well as for private farm owners. A growing proportion of company farm ownerships has also enabled farmers to manage their own independent business as sharemilkers in partnership with the companies, thus encouraging the entrepreneurial pattern.

The second factor is that farmers do not compete with each other for a share of the market or profitability. Although there has been competition between manufacturing companies, the main competition is with other major international dairy exporters such as Unilever and Proctor and Gamble. In the absence of direct competition, dairy farmers are happy to work together through discussion groups, focus farms and other networks to assist each other. As Simon commented:

'It just seems to be a business where all other farmers really seem to enjoy helping dairy farmers. Every dairy farmer wants to see other dairy farmers succeed for some reason.'

This in the past supported the egalitarian world view, with the prevailing socio/political culture in New Zealand of mutual dependence. However, such an approach also favours the entrepreneurial pattern of social preferences as is now the prevailing world view, by supporting networks.

\textsuperscript{30} Nassauer (1992 : 39-250).
Two factors peculiar to the study area also appeared likely to be having a strong influence on world views. The larger and increasing size of farms and herds seems to be diminishing the influence of the group and society on local farmers. Farms are now sizable business operations, and growing; rather than smaller family farms. Contacts are with networks of business service providers: contractors, accountants and equipment suppliers. Thus context appeared to be encouraging the development of stronger entrepreneurial preferences.

Conversely, hierarchies are developing within the larger farms: from the owner/operator and share milker, to contract milker, herd manager, development staff, farm hands and milk harvesters (shift workers) as well as within manufacturing co-operatives. In such cases the farmer may have two (or several) modes of working: as an entrepreneur when dealing with business planning but also as an hierarchist in his day to day work.

A further factor that may be encouraging this trend is mobility (currently one in three farms change operation each year in Canterbury). This mobility may again be weakening the influence of neighbours and the social group, thus encouraging entrepreneurial preferences. By contrast sheep farmers in the area, with stronger local ties seemed to have more hierarchical and egalitarian preferences. Several sheep and cropping farmers commented that dairy farmers were ‘only interested in the money and not their local community.’ Discourse from the case study indicated that this was not the case, but was the perception of those outside the industry. On current trends these two influences are likely to continue and so the entrepreneurial world view, which appeared most evident, seems likely to continue. As one farmer commented:

‘The difference in Canterbury is that farmers come here to get ahead.’

The company changes, while in the direction of one large company, and thus a bureaucracy, in the short term may also be reinforcing the fluid social networks of the farmer, further encouraging entrepreneurial preferences.
Location also appeared to affect perception and action. The context was significant because ‘every farm is unique,’ presenting a different combination of physical factors against which to pit skill and knowledge. In addition to this the development of the farm was said to have an effect on perspective. A recently converted, well set up farm ‘made it easy for managers and owners to be environmentally friendly.’

Ray, recognizing the importance of context as locality, noted that although ‘cues for care’ were recognized on the West Coast, they were much more difficult to achieve because high rainfall and salt air corroded and rotted fences quickly and rushes grew in pasture.

Awareness of an aspect, and definition of it by peers as an issue of concern also appeared to be a significant aspect of context. For instance, if a farmer had not been ‘sensitised’ to a practice as an environmental issue and was an entrepreneur he had few scruples about loading dead cows and rubbish into an offal pit. Sam commented that he and neighbours spread oil on their shingle road to keep down the dust even though the district council was opposed to this on environmental grounds. Their view, in line with other farmers who took a more trial and error approach to discharges and contaminants, was that it was not such a big issue and that the council should look at individual cases on their merits. In contrast, those in areas where there had been friction and concerns raised such as over dead cows in offal pits in the Waitaki basin, were very uneasy and sought an industry solution to deal with the problem.

Farmers referred to changing public values as important modifiers of actions. Several, from a range of world views, argued that public opinion on appropriate practices had changed and that farmers must respond to this.
Farm ownership, as an aspect of context, also seemed to have some influence on preferences: whether a farmer owned and managed the farm, was a share milker or working as a contract milker/employee. Share milkers, for instance, saw their stock as more important than land.

'Your stock are your income and if you don't look after them they're not going to produce for you,' sharemilker Sam explained.

Environmental impacts for share milkers therefore tended to be perceived in terms of their possible effect on stock and profitability, such as soil pugging and overstocking. Sam was more concerned about contaminants like antibiotics affecting milk because this could immediately affect his income, rather than a possible effect on biodiversity of weedicides or other chemical applications to paddocks. Perceptions of good farmers and 'clean green' images tended to be described with reference to cows and pasture quality by share milkers whereas owners seemed to take a broader perspective. In addition, several farmers argued that share milkers may be more aware of and respond to 'cues for care' than owners because they needed to get contracts in the future and would be judged by the appearance of their farm as well as profitability. This argued sensitivity of share milkers to farm appearance and 'cues' counters the common perception of share milkers as swashbuckling, brash farmers concerned only with short term profit, to the detriment of sustainable farming. Share milkers with farm companies such as Tasman Agriculture, who were 'in the public eye' were particularly driven to take action on farm appearance and environmental management issues. In addition, as a Dairy Brands (another farming company) manager commented:

'You get to the stage where you get accustomed to accepting what you see- mud and slush. As a corporate we are looking over their shoulders a lot to see it from someone else's eyes.'

Marriage status was another aspect noted by a farmer as affecting values and actions: single farmers 'lived rougher' and put less emphasis on the appearance of a property and so in turn would have an effect on the 'clean green' image. This was evident from farm inspections.
Several owners and share milkers on farms milking 800 to over 1700 cows were interviewed and all agreed that large herd farming (as opposed to an increase in intensity of dairy farming) was not markedly different to a smaller operation, from an environmental point of view. Animal welfare issues were thought likely to be accentuated as farms grow larger. The key difference, however, was thought to be in managing staff and systems rather than pasture and animals. Larger farms employed milk harvesters on shift work and were competing with factories in the city for staff. All were relatively recent developments (as is the norm in Canterbury). As these larger properties consolidate over time and family ownership develops it seems likely that farm management will tend towards the caution of the hierarchist. This is likely to be balanced by the continued expansion of farms, mobility of share milkers and new conversions (72 were approved by South Island Dairy Co-operative for the 1999/2000 season,31 and 14000 cows are moving south across Cook Strait this year.)32

The trend suggests that integration with sheep farmers and other land users in the rural communities will continue to be difficult, through difference in world views and values. It also suggests that the importance of the company and other dairy networks will continue to dominate dairy farmer contacts and that service networks, necessary for larger farms, will continue, thus further consolidating the preferences of entrepreneurs.

Several farmers who had either been prosecuted for non-compliance with environmental regulations, or had come to the attention of neighbours and the media over environmental management conflicts were interviewed to ascertain how they saw their farming in relation to the ‘clean green’ image, and to identify their world views.

While all farmers concluded, for reasons that were exceptions to normal circumstances, that their practices did not align with the image, they all agreed that the image was one which the industry should pursue as a marketing aim. They also all believed that the industry is not ‘clean and green’ now. Alan, a farmer, noted:

'\textit{The barrier is getting the farmer to go along with the aim because environmentally friendly costs money... The industry needs to be clean before we market it.}'

Commenting on conflicts with neighbours he said:

'\textit{People want to enjoy the rural lifestyle but not the nasty things. They need to be realistic. It does get messy but this is my livelihood. It makes you wonder what planet they come from.}'

Alan held both fatalist and hierarchist world views.

Heiner, a sharemilker, thought that the regional council had been trying to make an example of large herd farmers and thought it would have been more helpful to tell new sharemilkers of the Council’s standards and particular local risks rather than prosecute. He blamed lack of information on his prosecution for an offal pit discharge problem. Jock, a large herds farmer, held a similar view of his prosecutions for illegal discharges. He argued that the regional council would be much more constructive if it published and provided field days on solutions to problems. Referring to their problems, all three thought that their predicament was not their fault, they had no control over the particular issue and there were extenuating circumstances.

5.4.8 \textbf{Summary}

The case study indicated that farmers do indeed hold different world views and these are reflected in different objectives and perceptions of the environment. However, few were of the view that New Zealand could or should confidently claim to be ‘clean and green’ at present.
Perceptions of ‘clean and green’ and ‘cues for care,’ did not appear to differ markedly between world views, although considering the framework of the ‘myths of nature’ this might have been anticipated.

There was a general consistency of view, it is suggested, because these two concepts are symbolic and therefore perceived, but not differentiated, in terms of each world view. However, as might have been anticipated, there were a variety of options presented by farmers on how the industry, and they, could work towards the ‘clean green’ image as a market goal.

Table 4, below, compares contrasting world views from Cultural Theory with the unanimity demonstrated with views on ‘clean and green’ and ‘cues for care.’

<table>
<thead>
<tr>
<th>World views (Management issues)</th>
<th>Entrepreneur</th>
<th>Hierarchist</th>
<th>Egalitarian</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Farm Objectives</strong></td>
<td>profit</td>
<td>control</td>
<td>improve for future</td>
</tr>
<tr>
<td></td>
<td>challenge</td>
<td>not economic</td>
<td></td>
</tr>
<tr>
<td></td>
<td>respect</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>pride</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Farm practice</strong></td>
<td>manage by trial &amp; error, OK: is hardy</td>
<td>manage by monitoring quality</td>
<td>holistic, use care to add benefit, quality</td>
</tr>
<tr>
<td><strong>Environmental issues</strong></td>
<td>ones that can be measured</td>
<td>a number noted: need systems monitoring</td>
<td>many issues of concern, a priority</td>
</tr>
<tr>
<td><strong>Options for change</strong></td>
<td>non regulatory, farmer decides financial incentives</td>
<td>regulations and systems</td>
<td>discussion and peer advice</td>
</tr>
<tr>
<td><strong>Clean &amp; green</strong></td>
<td>not at present includes range of issues</td>
<td>not at present includes range of issues</td>
<td>not at present includes range of issues</td>
</tr>
<tr>
<td><strong>Cues for care</strong></td>
<td>tidy</td>
<td>tidy</td>
<td>tidy</td>
</tr>
</tbody>
</table>

Table 4. *A comparison of farmers' preferences concerning farm management (author).*
6 Other perspectives

One of the keys to understanding the process of leading change is to link that process to its context. Whipp and Pettigrew.

6.1 Stakeholders
The legitimacy of the Cultural Theory framework has been established by demonstrating that dairy farmers hold a range of perceptions and preferences about farming objectives and practice, environmental issues, and options for change which are consistent with their individual world views. In addition, farmers have been shown to indicate general agreement across their various world views on two further themes, those of the ‘clean green’ image, and ‘cues for care’. The reason for this difference, it is argued, is the form in which the two latter concepts are communicated: they are symbolic ideas and so are not perceived as conflicting with, or associated with any particular world view. The ideas are abstract.

The perspectives of other relevant stakeholder groups are now investigated. Those stakeholders who were interviewed included industry representatives, regulators - district and regional council elected representatives and staff, Maori, environmentalists, and consumers. The regulators were interviewed because a number of dairy farmers had drawn attention to difficulties in communication with them or noted their significance to the context; Maori and environmentalists because they are generally separate and concerned parties to debates on environmental quality in New Zealand. The objective of this investigation was to ascertain:

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• whether these stakeholders held characteristic preferences
• how they perceived dairy farming
• whether their views of ‘clean and green’ differed from that of dairy farmers
• and finally whether on the basis of this information a better response to
  stakeholder preferences might be achieved.

The stakeholders (except consumers) were first ascribed a world view, on the
basis of their discourse analysed from interviews, using the indicators listed in
Chapter 3: social interactions, economic preferences, ‘myths of nature’ and
decision making, then confirmed with key informants through self ascription.
Once this was undertaken, stakeholder preferences were reviewed. The farm
objectives and practice, good farming and ‘cues for care’ themes investigated in
the farmer interviews were not all explored for stakeholders: those were not so
relevant for factory managers (for instance). However, stakeholder perceptions of
environmental issues, options for change and their perspective of the ‘clean green’
image were considered, commencing with industry representatives.

The eight industry representatives interviewed included Board members and staff
of the manufacturing company. These interviews were briefer than farmer
interviews, lasting from half to one and a half hours, partly because of the major
structural company change underway at the time. Context was an important
matter, as previous experience, status and employment seemed to strongly
influence world views. The world views of the three staff interviewed followed
the pattern of the hierarchist.

Environmental issues are considered first. Earlier company and industry attention,
staff said, had been focused on production and milk quality: an interest in farm
environmental quality was only recent. Steve, a staff member who had previous
government experience, referred to complaints from the public about cows in mud
and was particularly concerned about misuse and disposal of chemicals on farm,
seeing limits and controls as important. John’s view was that the company should
focus on food safety, leaving animal welfare and farm management as the farmers’ responsibility.

Steve saw a role for the company in on-farm environmental quality. Jim agreed. He thought that pursuit of indicators and an independent audit system were likely to give the company security for visits by buyers. John, however, was opposed to the company taking a role in environmental quality management:

‘unless there was a direction to do so by the company or the New Zealand Dairy Board.’

However, John also noted that any quality assurance scheme should be customer driven, that the company should not patronize or attempt to run a farmer’s business, that bottom lines were needed and that an environmental management system would help to minimise risk.

‘Resource management legislation is currently,’ he thought, ‘the biggest driver in environmental management, not the market.’

Staff saw a tension between scientific indicators of ‘clean and green’ and visual/perceptual indicators, and had more confidence in quantitative measures.

Company Board members interviewed held both entrepreneurial and hierarchist views and it seems possible that, in common with Maori leaders, they modify their preferences depending on their role, changing perhaps from entrepreneurial farmers to hierarchist Board members. During the interviews some spoke on occasions as farmers rather than Board members, and this created difficulties for ascription of world views.

Both Alan and James thought that water use and quality were risk issues that the company should give attention to, including undertaking liaison with irrigation companies.

‘It is a global resource so we have an obligation to use it wisely,’ was James’ view.
'We've got to make sure that our operation is sustainable. We need to ensure that a river's life is not in jeopardy, but agriculture is wanting ongoing access so we need quality research.'

James also thought animal welfare practices, especially winter management, were matters that should be given careful attention. He thought that the vast majority of farmers would be appalled if they were accused of environmental rape, but if change was required farmers needed a long lead time so that information could be presented to them; and then it needed to be backed up by rules.

Craig thought that change needed to be customer driven and noted that New Zealand Dairy Board drive is 'sadly lacking with respect to animal welfare.' He saw the establishment of an industry wide environmental management system as an 'opportunity for leadership.' Like Craig, James thought that the biggest driver for improvement was the market, but he saw no extra premium for quality assurance on the farm. Instead he said:

'It's a given. If you haven't, you don't do business. It provides the customer with security. And we need national consistency.'

Alan also thought that the company should be adopting environmental standards and thought the TQM model should be the way, so that farmers understand 'how things work.' He pointed out that the company had already had inspections of farms by overseas product buyers. He also thought that benchmarking should be undertaken in other countries. However, he thought that there was a need for an attitude change, pointing out that the company is a cooperative and so: 'simply must have buy in,' from the farmers.

James thought that:

'Clean and green is a cliché, past its use by date. It is fine to promote New Zealand (for tourism) but not for the industry or farm. It is not reality. I would not promote my own farm, it is often dirty. We need something different.'
Alan adopted ‘cues for care’ in describing the ‘clean and green’ image: ‘a tidy farm,’ as did Craig: ‘caring - fixing up messes.’

Thus staff and Board members indicated attitudes consistent with mainly hierarchical views, preferring administrative systems and controls. Informants confirmed farmers views that there is need for change and noted issues such as animal welfare, control of chemicals, water use and abuse and sustainability.

There were divided views on whether the company should take a role in environmental management, as among dairy farmers, but general support for a ‘customer driven’ environmental quality system. Industry representatives shared farmers views on the ‘clean green’ image and referred to ‘cues for care.’

Now the regulators views are considered. Within the study area nine district councils and two regional councils administer territorial areas. Demarcation disputes between district and regional councils over environmental quality issues and between the two regional councils over territorial boundaries were evident during the field study. This had the effect of lowering the farmers esteem for the regulators.

Eighteen district regulators, both staff and elected representatives, were interviewed. District Council staff might be presumed to generally hold an hierarchist view and this proved to be the case. However, the context was significant as all staff interviewed had responsibility for district resource management and were interviewed in that context only. The district council politicians were less homogenous, demonstrating preferences that indicated both entrepreneurial and hierarchist patterns.

Following the previous pattern, environmental issues are considered first, followed by options for change, then the ‘clean green image.’ The growth in dairying had brought economic, social and environmental benefits to all districts, including increased land value, population retention and increase, diversification
of rural skills and support for the service sector and schools. Views on dairying ranged from:

'positive, brilliant, ... vibrant and exciting, with huge benefits. I wouldn't mind being a dairy farmer. There are a lot of smiles and delight at the mixture of dairying ... Properties are changing from poorly farmed to well managed properties - a joy to drive past, with good stock and prosperity,'

(from an entrepreneurial councillor from Ashburton); to a more cautious approach focused on controlling effects (in Waimate). Such was the interest in the growth of dairying in Waitaki that the mayor commented:

'There is even pressure to sell our airfield for dairy farming and some councillors support this. My philosophy though is to maintain our assets for as long as possible.'

However, he noted some concern over the growing sole economic dependence on dairying in his district, as well as possible consequences for environmental management.

'I shudder to think what would happen in the district if there was a problem at Clandeboye,' he said.

A Waimate councillor commented on the increase in soil fertility from dairy conversion, and several politicians also noted that irrigation and shelter planting for dairying had enhanced their rural landscape, increasing diversity. 'Much prettier,' said a Waimate staffer. Others spoke of the:

'new ideas, enthusiasm, products, grasses and technology which dairy farmers have embraced... .' (Waitaki councillor).

But the changes regulators reported did not come without conflict and concern. Issues raised by district representatives covered animal welfare such as lack of shelter and cows in mud, cows and effluent in waterways, riparian management, cows on roads and road crossings, silage pit discharge, slinkies at the gate, safety for tankers and damage to roads, damage to native bush (Banks Peninsula) and wetlands and coastal areas (Timaru), offal pits, nitrate contamination of ground water, soil compaction, smoke pollution through burning wheat stubble (not
caused by dairy farming), disposal of balage plastic, health issues (in Ashburton and Hurunui), general intensification and lack of social cohesion. One staffer (from Ashburton) described seeing slinkies at farm gates as like 'scabs on a big sore - the system.' This issue also concerned a Waitaki staffer.

'New Zealanders should not feel the need to change to conform with the tourists way of doing things but slink skins on the road goes beyond tourism. Do they want to be associated with a country that does these things?' he asked.

A Banks Peninsula councillor, commenting on conflicts with the 'clean green' image, expressed concern about other animals welfare issues such as docking of cows tails. Community complaints to councillors centred around 'hot spots' for dairying such as cows on roads and water quality.

The Mayor of Waitaki noted with concern:

'the loss of community stability. We don't know who owns the land now.' Another councillor expressed concern over the increasing community conflict in Ashburton.

'People are expected to take their turn to help. Barriers go up if farmers say 'too busy', especially if they are a (corporate) sharemilker.'

Options for improving farm practice suggested were: the voluntary adoption of codes and promotion of best practice, national standards, environmental management systems and addressing issues through landcare groups. Some suggested that these approaches presented an opportunity for the industry to be seen as 'clean and green'. Another saw education as the issue. 'In Ashburton we try to get compliance without prosecution.' she said, expressing entrepreneurial preferences.

Several staff noted that their elected representatives were farmers who did not favour farming restrictions. Dairying, they said, was regarded by the farmer councillors as one of a range of legitimate rural land uses. However, several
staffers noted that resource management legislation, requiring better knowledge and more rigorous monitoring may be a catalyst for changes in councils' policies. Some districts, such as Ashburton and Selwyn, were working together to study joint problems such as effluent spread by trucks transporting herds.

A Banks Peninsula District Councillor thought that the industry should show greater concern for its image and listen to the community.

'The industry needs to be aware of the media and public opinion because once confidence it lost, it takes a long time getting it back,' he said.

He also commented that the: 'days of trying to hide things,' were over, that perception was all important and that the dairy industry should use the 'press' such as Straight Furrow (the Federated Farmers newspaper) and local newspapers to publish 'good stories,' rather than 'preaching to the converted.'

A southern Councillor agreed:

'Dairy farming needs to promote itself as a more responsible industry.'

He foresaw the time when:

'Production that is not environmentally sound can't be sold.'

Several suggested that the industry needed to identify what neighbours and local people perceive as important and use those factors to achieve measurable outputs, such as these indicators suggested by a Timaru councillor:

'Creeks with frogs and trout in them, clean cars after trips around rural areas, products with low residues of pesticides, line-fulls of clean washing and neatness and tidiness with no plastic wrap and tidy, trim shelter belts.'

Most district regulators noted that on-going communication with the industry would be helpful so that farmers could be given the chance to tackle issues raised and take responsibility for monitoring their resources wisely. Both staff and politicians believed that there was much to be gained by working with the industry on local initiatives. Honesty and trust developed with a pro-active and responsible rather than a defensive industry would, several thought, be of great benefit.
Regulators were asked to comment on the New Zealand 'clean green' image. A definition generally expressed for 'clean and green' was 'meeting the latest standards,' (from an Ashburton councillor).

A Waimakariri staffer responded:

'While there is nothing standing in the way, should they really pursue this because there are some very emotive issues?...' Perhaps it would be 'better to push sound practice, good neighbour, good corporate citizen, responsible management by owners,' because this is 'better to quantify and defend.' However, he later said 'What people think is as important as measurable output.'

There was some anxiety that promoting a 'clean green' image may leave the industry vulnerable to criticism on animal health and welfare issues, discharges, effluent management, use of synthetic chemicals and acceptance of DDT in milk. Several regulators echoed issues raised by farmers and identified as 'cues for care.' Paraphrasing these views a Selwyn staffer said: 'Awareness and care is the issue.'

Noting that the image of towns and cities was important for the dairy industry too as this may affect the perceptions of their buyers, an urban councillor argued that the urban image was integral to New Zealand's 'clean green' image and should therefore also be enhanced.

Regional regulators views are now described. Several district council staff expressed concern that the regional council was not addressing their responsibilities. Two issues where there had been different performance were water quality standards - Otago (they said) had given little guidance (although their plan has now been produced) - and hazardous waste disposal, where Otago had undertaken a collection but Canterbury had not done so. Some districts saw this as an inadequate response. 'We should hang our heads in shame,' said a

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2 similar comments were recorded in Phillips. In Burch et al (1996 : 275).
Waimakariri council staffer of the lack of rural waste services. Some overlap and conflict in responsibilities seemed apparent.

Again following the previous pattern, regional regulators views on environmental issues, options and the ‘clean green’ image are each discussed. All of the eight regional representatives interviewed indicated strong hierarchist preferences, seeing control and technical oversight of the industry as important. Speaking of the Lower Waitaki Plains and in support of the visual effects of dairying an Otago Regional Councillor said, ‘it’s an oasis now.’ But in contrast a regional council staffer, now employed by the dairy company, noted with concern that:

‘There is a problem of sediment. Streams have lost their rural charm. They don’t look any good - dirty and brown. This is caused by dairy farming activity.’

A Canterbury Regional Councillor commented,

‘Changes are needed at all levels. In general though there is an acceptance that the industry has come a long way - in hygiene and understanding. There are some renegades who come in without proper regard ... then we need to have the Council to back up their bottom lines.’

Regional councillors reiterated the comments of district councillors on:

‘the decline in social atmosphere. New Zealanders are paying the penalty for the lack of spiritual and family support,’ was the opinion of one councillor. Lack of cohesion, a councillor thought was caused by the increase in ‘young, aggressive sharemilkers.’ The key issues identified related to the regional councils’ areas of responsibility: effluent and waste management, nitrate and other contamination of ground water and water abstraction

On the subject of options for change, several staff noted that there had been a change in the views of farmers to monitoring visits over the last 10 years: an improvement in understanding of environmental systems. (Farmers views had been similar, referring to regional council staff, suggesting that communication and mutual understanding has changed over the time). Few saw enforcement and
prosecutions for illegal discharges or other issues as being the best means to achieve sustainable management.

'We are not a Council that throws the book easily,' (Otago Regional councillor), was a common sentiment. In contrast a staffer from the same region took a more bureaucratic view.

'We have discussed this with other regional councils,' he said, 'and we are not prepared to let dairying expand at the risk of water quality.'

A Canterbury Regional councillor noted:

'The dairy industry need to understand what customers and the community demand. If the industry cannot move as fast as the community would like, they need to tell the community why it can't be done.'

Definitions given for 'clean and green' were similar for regional regulators:

'farming systems where the environmental costs are internalised' (from a regional staffer). 'Our farms will have to show that farms don't leak,' he said.

Regional council staff and elected representatives also saw nothing standing in the way of the industry making a claim of being 'clean and green' (this they believed was what the community and the customer desired).

In summary: regulators identified a wider range of environmental issues than had been raised by farmers or industry representatives, including social issues, which farmers scarcely referred to. Their options for change were similar to some of those suggested by industry: generally relating to systems management, an expression of their mainly hierarchist views. However, they also suggested identifying what both the customer and the community demanded and considering the public profile of dairying.

Their representation of 'clean and green' was a clearer, more consistent reflection of their world view than from any other group. They generally saw 'clean and green' in terms of systems - discharges and externalities; perhaps a result of the accepted wisdom from the Resource Management Act 1991, and some included
'cues for care' in their comments. Cues were similar to those of farmers: tidiness, awareness, trim shelter belts.

The views of Maori informants are now considered; adopting the previous format of issues, options and 'clean and green.' Ten respondents gave their views and preferences, and most were asked to also ascribe their world views. Maori preferences are a particular example of the significance of context - time and place - for preference formation and action. There are accounts that describe the entrepreneurial preferences that early Maori colonists brought to New Zealand. More recent debates have shown that some iwi have strongly egalitarian views but are also pragmatic and look to resource use rather than an assumption of environmental fragility. Other iwi who have had resources stripped from their control have shown strongly fatalistic views. This diversity not only indicates that there is not one Maori world view but that time and circumstance are also important.

Two rounds of interviews were undertaken to investigate whether there was a predominant Maori preference or world view and what views were held concerning dairying and the environment. The interviews were initially with tangata whenua in the Canterbury area, Ngai Tahu and local hapu, but further interviews (lasting from half to two hours), were conducted in Hawke's Bay with Ngati Kahungunu representatives, as a means of checking whether initial information may be particular to Ngai Tahu. The key Ngai Tahu informant, Don, exhibited the preferences of and regarded himself as a fatalist. Other Ngai Tahu interviewed held the three other world views: entrepreneur, egalitarian and hierarchist. The two latter groups each regarded their preferences as 'the Maori view.' Kahungunu interviewed ascribed their cultural bias to be that of egalitarians but Tumoana noted that when dealing with change they would need to work in conjunction with the Crown (in terms of the Treaty of Waitangi) and at this time they would be acting as hierarchists. A similar example of adopting
different world views in different circumstances is given in another rural case study, of a Himalayan village where land management and transactions are undertaken in the mode of the world view appropriate; sometimes as trading individualists but also as egalitarians for managing commonly owned forest. When political change brought about forest degradation villagers switched to allowing trees to grow between their terraces to reduce the pressure on the village forest. 4

Don, a key informant in Canterbury, recommended by tribal resource managers, had spent a lifetime fishing and living near Lake Ellesmere (Waihora) which over his lifetime had shown increasing water quality and environmental health degradation through agricultural land use and discharges. Dairying and other agricultural uses extend to the edge of the lake. Don now regarded recovery of the fishery as unlikely: the lake being overcome by the impact of point and non-point pollution, abstraction and drainage. One pollutant is exotic weed which is being cut and poisoned in adjoining streams, and then floats into the lake to become a 'toxic cocktail.' Those Maori who believed they had an ability to influence outcomes Don thought were: 'suffering from cruel self-deception.' This included those who sought kaitiakitanga or a guardianship role of resources. 'They have had no effect,' he said, 'and have no ability to have an effect.'

Commenting on fights to maintain water quality and protect resources he said: 'Maori knowledge has no validity.' He saw court action as the only recourse now as: 'everything else is frustration and disillusionment.' Pollution and the lowering of stream flow rates, he believed, were a 'a crime against Mother Nature.'

Kahungunu representatives interviewed included the tribal head, Ngahiwi Tumoana. As with Ngai Tahu informants, Kahungunu were concerned with the effect of dairying on traditional food resources (such as mussel beds), and on

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3 one example is from O'Reagan. In Douglas (1984).
water quality. Degradation following colonial development was raised as an issue and an example given was of a river, Ngaruroru, which was regarded as the centre of tribal identity and was now polluted by discharges, thus affecting tribal self-esteem. Informants stressed that they were not opposed to dairy farming: it had been advocated by a Maori leader in the 1930s, and there was hope in the tribe of greater participation again, but there was also concern over discharge issues, and protection of aquifers from degradation.

As an option for change, Don suggested that the involvement of indigenous people early in any development or change process, rather than 'tokenism' would be the means to address current pollution issues. He believed that the environment was so modified now that a 'hands off' approach was not acceptable. The highest water quality standards should be established as objectives and the regional council should manage those resources through consents to achieve the objectives. Company management towards these objectives, with the incorporation of Maori values in management plans for farms, to achieve high water quality standards would fulfill this ideal. His greatest fear was of foreign ownership of the industry. No New Zealand dairy farmer, he believed, "wants to will a ruined environment."

Market forces though may encourage overseas owners to do so.

Commenting on a visit to a New Zealand joint venture dairy factory in China, Tumoana put the view that the stringent hygiene standards in the factory appeared insincere. The industry, he thought, should:

"Clean up its own backyard in New Zealand first."

Industry controls developed through a industry/Crown/iwi working group were thought to be the best way to bring about improvements and change. The quality of water was regarded as the 'litmus test of concerns' for iwi acceptability and improvement was needed.

Maori interviewed understood the notion and claim of the 'clean green' image but regarded it as an illusion.
Thus Maori were seen to have a range of world views, to see water (quality and quantity) as a key issue and seek a role as part of a quality assurance scheme for the industry to communicate their values. They took issue with the ‘clean green’ image.

The ten environmentalists who were interviewed typically held an egalitarian world view. Several, as with Maori, also but not exclusively, held hierarchist preferences; and one held fatalist views. There were no entrepreneurs among those environmentalists interviewed.

The review commences with environmental issues and then moves to options and the ‘clean green image.’ Discharges and the impact of dairying on water quality were seen as the greatest environmental issues relating to dairying. Eric drew attention to the use of pharmaceuticals and his perception of the profligate management of resources by dairy farmers. Several, from all world views, commented on the loss of natural vegetation - biodiversity, and landscape, particularly lowland forest and wetlands, for which dairying had been partly, or in some opinions wholly responsible. There was one comment on the effect of methane from cows ‘burping’ on ozone depletion. Several, both hierarchists and egalitarians were concerned about weed and animal pests such as ‘possums, goats and water weeds, an issue for which dairy farmers are not primarily responsible, but they saw this as an inclusive issue. The fatalist was concerned with long term habitat destruction and feared that there was no chance of recovery from the ‘alien invasions’ of exotic pests.

Environmentalists from all world views, referred to the Resource Management Act and regional council responsibilities as the most effective means to address these issues. There was general support though for a system of environmental quality management to address environmental issues and the wish to make an input into such a process, if it was to have credibility.
Eric defined 'clean and green' as:

'an environment where activity leaves resources unaffected, particularly with dairying and waterways. ' 

All denied that New Zealand could currently claim a 'clean green' image, except in a comparative sense.

'It's a sham. It conveys tidy images which are not appropriate to pastoral farming, that should allow for indigenous species,' Jill argued. 'dairy farming has failed to make the image real by doing things like riparian planting. I haven't seen any indication that the industry is putting something back, improving the environment for native species. The only thing that New Zealand dairying has over other countries such as Europe is that the animals are outdoors rather than confined and that is an animal welfare issue. Regional Councils rather than the industry have been the driving force for improved environmental standards.'

The reference to the effect of the regional councils seems to reiterate a view put forward by an industry staffer about the effect of the RMA as opposed to customers on environmental actions of farmers.

'New Zealand may look 'clean and green' compared with other areas because our pollution is modest compared with the northern hemisphere, but we have an appalling record of lowland forest clearing and battalions of alien species have been imported,' were Chris's comments.

'I can see the power of the image,' Eric said. 'But scratch the surface and the picture is not so good. I don't think dairy farming justifies an image of clean and green.'

Several commented on the adequacy of the image itself. 'If it only means tidy, then we need a change,' said Neil.

'There is a poverty of intellect,' said Chris of the image, and:

'We need to provide for different hues of green,' was Jill's view, inferring that the 'cues for care' may present the problem of limited scope to environmentalists, as was Nassauer's view. Not all agreed though.
‘It refers to the environment in its broadest sense,’ was Aneke’s opinion.

In summary, environmentalists held hierarchist, egalitarian, fatalist but not entrepreneurial world views. They were concerned about a range of issues. Their chief concerns were discharges and water quality but there was also a high concern about biodiversity, habitat destruction and imported pests. They saw the main option for change through the RMA rules and policies but also saw an EMS as having prospect and sought a role in such a strategy, if it was to have credibility. They did not see the dairy industry or New Zealand as a whole as ‘clean and green.’

Overall, the stakeholder’s group expressed and self ascribed a range of world views, although hierarchists were the one world view common to all, and hierarchists were particularly represented among the regulators. No entrepreneurial environmentalists, or fatalist regulators or industry representatives were identified. Industry representatives, regulators, iwi and environmentalists identified a variety of environmental quality issues that dairy farmers should be addressing and which conflicted with a ‘clean green’ image. Water was an issue for all groups and a priority for most. There were differing views on who should take the lead to achieve this and how it should be undertaken. Representatives from each group across differing world views suggested that a system with standards should be introduced. Although both industry and some regulators argued that such a system should be market led, industry and environmental representatives also thought that the Resource Management Act was currently having a more significant role in environmental quality than the market. Regulators, iwi and environmentalists all sought a role in communicating their values to farmers for such a scheme.

The analysis confirmed that world views on dairying are generally consistent even though held by different stakeholders groups, but demonstrated that a common world view does not necessarily apply across a particular group.
Environmentalists, for instance are not solely egalitarian and there is not one Maori world view. The most pronounced commonality appeared among the regulators, who also highlighted social fragmentation as an issue. They were perhaps strongly influenced by the RMA.

A common understanding of the ‘clean green’ image was found among stakeholders and some also noted ‘cues for care,’ and held similar views on cues to farmers. Industry representatives, regulators and Maori identified benefits from dairying but environmentalists did not. Environmentalists, regulators, iwi and industry representatives all expressed concern (strongly for some) that the industry was not able to substantiate the ‘clean green’ image, and some from each stakeholder group argued that it was an inappropriate image.

Finally, the analysis again indicated the significance of context in the development of preferences, perceptions and world views. For instance, a lawyer from a government department indicated and self-ascribed an egalitarian world view: his department though was concerned with conservation.

6.2 Market
Having considered how farmers and other key stakeholders in New Zealand see dairying and the ‘clean green’ image, the next step was to consider how consumers in overseas markets perceive dairy farming, the New Zealand ‘clean green’ image, and New Zealand dairy products.

A recent comparison of environmental management in OECD countries did not place New Zealand as a top performer. New Zealand was described as an expansionist with negative environmental performance. Factors used to assess performance were government agencies, laws, constitution, environmental experts and national plans. However, customer perceptions are not necessarily based on these hierarchist perceptions. For instance, a dioxin scare through contaminated

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stock feed in Belgium, had positive repercussions for New Zealand’s trade, particularly in South East Asia, according to senior trade commissioner John Nicholson. Safe, healthy alternatives to dairy products from Europe were being sought. In addition:

'International companies such as Nestles, Dumex and Abbott Laboratories are now publicly confirming the use of New Zealand ingredients in their products to support their on-going consumption,' he said. In response, a New Zealand Dairy Board staffer, Neville Martin commented that:

'These things tend to confirm New Zealand's position in the consumer mind as a clean, green, pleasant place from which to get food.'

An aspect that few farmers raised, but was indirectly referred to by some egalitarian stakeholders, is that there are two distinctly different images of ‘clean and green’ that are being promoted. The first is of wild scenery and lush rampant forest: the untrammeled wilderness. This was the image used by the New Zealand Dairy Board in their 1998 Annual Report, jostposing the image with text stating 'successful environmental management goes beyond New Zealand's clean green image.' The marketing statement could be taken at its face value and would be consistent with the argument put forward in Britain, that there has been a shift in public interest from environment as a setting, to environmental care.

The text could also be taken as a play on words because the accompanying report was not about management of the pastoral or natural environment but was about global marketing - the business environment. In business language, this section of the report broadly comments on changes in marketing organization to harness information technology, human resources, logistical support and value-added strategy for more effective business performance. The article is about global success, products and brands. The environment discussed is the regional market

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6 Robson (1999a : 1).
7 ibid.
and the environment of marketers, not that of either the New Zealand scenic heritage or the dairy farm. However, at the end of the Chief Executive’s report, and printed over the same evocative scenic image, is a paragraph headed ‘Environmental Statement’ which outlines the Board’s Environmental Programme and key activities including:

‘On-farm environmental research is being undertaken and an on-farm environmental quality system is being developed.’

The Statement returns to the priority of environmental care rather than attention on scenery and place as ‘clean and green.’

Figure 15. The scenic image of ‘clean and green.’

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An alternative 'clean green' image is more frequently used in dairy products marketing. It is of a pastoral scene, usually with cows in the foreground and with a mountain scenic backdrop, including snow. The image is of lowland productivity; lush pastures rather than lush forests, with pristine mountains (the source of clean water) as a background. Sometimes images include streams with clear water crossing through the pasture. This image has been used with Mount Taranaki (Egmont) in the background by North Island manufacturers; as well as by Alpine Dairy Products with the Southern Alps, and was also adopted conceptually in the logo of South Island Dairy Co-operative. The difference between these two distinctly different images of 'clean and green' is between untouched wilderness as 'clean and green', and managed farm land as 'clean and green': the paradox of the national image as described in Chapter 2, page 55. The message in the latter image is that New Zealand is 'green' because of or in conjunction with the actions of the farmer.

Figure 16. The pastoral image of 'clean and green,' (taken from publication cover, undated, South Island Dairy Cooperative).
The implication is that New Zealand enjoys good fortune with natural resources such as rainfall, is far from the centres of population and industry, and has been managed well. The scenic wilderness image gives no clear message about the farmer's role or relationship to the 'clean green' image. Although the two representations create no apparent conflict for farmers, it may well be a factor of the disquiet expressed about this market strategy by some industry representatives and other stakeholders.

Consumer views are now discussed. The New Zealand Dairy Board is the single seller currently empowered by legislation to market all New Zealand export dairy product. The Board undertakes this role through joint ventures, direct marketing to industrial and government customers and through subsidiary businesses. The market is large and complex and while desirable, the feasibility of obtaining a comprehensive assessment of perceptions from markets was beyond the scope of this study. However, on the basis that consumer views are vital, as an initial strategy the results of two recent surveys of supermarket shoppers in the Philippines and England, undertaken in 1999 as part of a Masters thesis on 'clean green' issues, were analysed. I now consider the findings from that study by Billones.

A survey conducted at an upper middle class supermarket in the Philippines of customers who had purchased New Zealand dairy products showed that most of the 98 respondents were familiar with the expression 'clean and green,' and 89% thought that New Zealand fits that description. Those surveyed gave similarly positive responses to questions on New Zealand dairy products with respect to 'health and safety,' 'animal-welfare friendly,' 'attractive and well presented,' 'tasty' and 'good value for money.' The customers surveyed gave 'health and safety' as the most important attribute influencing their buying decision of dairy products. Of those surveyed 63% claimed they would be willing to pay a premium of 7% for 'environmentally friendly' and 53% a similar premium for 'animal-
welfare friendly.' Price was not an important product attribute for these customers. It should be noted that most appeared to believe that the New Zealand product already fitted that description, so may not have been prepared to pay a further premium.

In comparison, the same survey was also conducted with 50 British customers who had purchased New Zealand dairy products at a supermarket. Most had purchased spreadable butter and most thought that the product was 'tasty.' Responses to other attributes differed markedly from the Philippine respondents: only a third of the English respondents agreed that the product was 'healthy and safe,' 'attractive and well presented,' and 'good value for money.' Even fewer, 22%, thought that it was 'produced in an animal-welfare friendly way' and the attribute that they were least sure about was 'environmentally friendly', where only 18% agreed, and 62% were not sure, that New Zealand dairy products had that attribute. The same customers thought 'taste' the most important attribute for purchase of dairy products. The surveys did not however, cover buyers who had not bought New Zealand dairy products, so a comparison of buyers who may have selected products on other attributes could not be made. 'Environmentally friendly' and 'animal welfare friendly' were indicated as being of equal and average importance to the English respondents. Customers were asked if they were willing to pay more for environmentally-friendly dairy products and 66% (about the same number who had been unsure of this attribute of the product) agreed that they would be willing to pay a premium of 10% for 'environmentally friendly' products; 70% would pay a similar premium for 'animal-welfare friendly.' However, the same customers also ranked 'price' as the second most important attribute of a product, and two thirds of the British customers seemed to think that the product they had bought was not good value for money. While the two surveys indicated a willingness to pay a premium for an environmentally

12 Billones (1999).
friendly product, this should be regarded with some caution as other research\textsuperscript{13} has shown that claimed willingness to pay a premium, and actual action are not the same.

The surveys reported by Billones paint a similar picture to the perceptions expressed in interviews and email surveys undertaken by this researcher in Asia (described next); and also that indicated by the OECD study: that is that there is a perception that New Zealand is ‘clean and green’ in areas of Asia, but a more negative view of our environmental management and performance standards in Europe.

Responses from surveys with Japanese and other Asians living in New Zealand analysed in the Billones study, and from the interviews conducted by this researcher, also indicate that Asia is not an homogenous market and that Japanese (for instance) have differing perceptions of New Zealand and have different values, from Indonesians or Philippinos.

Interviews were carried out during a visit to Indonesia with Indonesian and Japanese users of dairy products and a written questionnaire was circulated by email to ‘snowball’ contacts in Asia, with responses from Taiwan, Singapore, Indonesia, Japan and Philippines. Twelve interviews were carried out while in Indonesia in 1998, of Indonesian and Japanese users of dairy products, in order to gain a better understanding of potential customer’s views of the New Zealand rural landscape and of their understanding of the New Zealand ‘clean green’ image. This was a heuristic check on whether there were environmental issues obvious to Asian customers which New Zealand stakeholders do not perceive as significant. The interviews did not explore world views. Interviews with informants were undertaken through interpreters, in order to explore nuances of perception in depth. The informants world views were not assessed because I

\textsuperscript{13} Hall. In Gummesson (1991), Geller (1981); also relevant are Karp (1996), Bright and Manfredo (1995) and Pelletier, Legault and Tuson (1996).
believed that my understanding of informants' local context was not sufficient to make such judgments and I was not confident, even though I may have used self ascription, that translation or other cultural issues may not have biased the results.

Explaining Japanese preferences concerning rural landscape, a city planner, Haruo, referred to a questionnaire\(^\text{14}\) in Japan on preferences for landscapes:

> 'Japanese people like golf course-like landscape with topiary: pillar-like cedar trees. Japanese people do not like wild uncultivated landscapes', he said. "They think they are scary with snakes and so on. Most people have the impression that the New Zealand landscape is like a golf course and admire this.'

Other Japanese respondents reiterated this view. It suggests that although the pastoral idyll emanated from Europe and supported or encouraged the development of pastoral farming in New Zealand, an empathy or yearning for the Arcadian vision also exists in Japan. Haruo explained this through reference to human evolution, the move of human ancestors from forests to fields and the ability to gain more food from agrarian habitation. He qualified his comments on the pastoral by saying:

> 'Speaking as a professional, the New Zealand native bushes should be kept, particularly on the steeper slopes. Forests should be preserved and the fields located on the flat areas as this is most relaxing.'

Haruo had visited New Zealand several times and spoke of his concern about erosion. He linked this to the Asian philosophy of Feng shui, which details desirable landscape configurations, and noted that we should return to what the landscape was like originally. The Japanese landscape retains 60% land use in forests, particularly in the mountains, and he saw this as a desirable objective for New Zealand. This same concern was reiterated by other Japanese informants. Hajime noted that he had seen large areas of erosion from the aeroplane and that

while New Zealanders just seemed to leave this to nature, in Japan it would have
been terraced, planted, irrigated and cultivated to stop the erosion.

‘That is why the landscape in Asia looks so different from New Zealand,’
he explained. ‘We can pass the land on to our children.’

Hajime had seen some cattle in high country in New Zealand, and (having formed
the view that cattle must be for dairying rather than solely for beef) had decided
that ‘dairy farming is too high up.’ He argued that:

‘the whole country needs to work in a coordinated way. Dairy farmers
should save native plants to form continuous green corridors within the
country to preserve the green and integrate rural land.’

No one interviewed had used the term ‘clean and green’ but several had heard of
it.

‘The term would fit the Japanese landscape better. We need clean water
for rice,’ Keigo commented. ‘Maybe New Zealand should use better ways
to conserve healthy water. It would create a better environment.’

Yuko, who had travelled extensively, compared New Zealand dairy farming to
Californian farming and commented that New Zealand was like factory farming
and that more variety was needed in the rural landscape.

None of the Indonesian respondents interviewed had visited New Zealand, and the
most one had learnt of the New Zealand countryside was on Australian television.
Most imagined that the countryside was mainly either mountains or forests and
agreed that the words ‘clean and green’ may fit New Zealand, although they had
not heard the phrase before.

Only two of the thirteen Taiwanese who responded to the questionnaire had
visited New Zealand and all but one were professional people. All though, had
gained an impression of the countryside: from newspapers, magazines, posters,
and advertising on TV for milk power and tourism. Their impressions included
descriptors such as ‘peaceful, beautiful, well preserved, natural, pollution-less,
quiet, clean, healthy, free, picturesque, green, a vast open meadow with cattle and
wild flowers;' - an apt description for the pastoral myth. All agreed that the term 'clean and green' was a fair description of New Zealand and only one had any suggestions for farmers:

'Just keep on what has been undertaken since the last decades.'

Of the three responses from Singapore, one had visited New Zealand and described the countryside as 'clean, green, peaceful and refreshing.' Other descriptors were 'sheep, volcanoes, bush, clean, cold, green and picturesque.' Again, all concurred with the 'clean green' image as fitting New Zealand but one noted that we apparently have more vandalism than Singapore.

Twelve Indonesians responded and again none had visited New Zealand. Although most had not seen any information about the countryside, they had gained an impression which included: 'fresh air, clean environment, cows, meadow, farms, green, lots of sheep, snow white hills, cold weather, less people, clear blue sky, all sorts of terrain, and ranches.' All agreed that the term 'clean and green' seemed a fair description of the New Zealand rural landscape.

A Philippine who responded and had visited New Zealand, in agreeing that 'clean and green' is a fair description, noted:

'I've talked to many people who have never been to New Zealand who have this same perception.'

In summary, from the various customer views from the markets in Asia, there seemed to be a different view of our image depending on location: perhaps evaluation of the 'clean green' image is a factor of market information. The general view is that New Zealand is 'clean and green' but there are clear differences in perception in different areas of Asia. Food safety appears the most important issue for Philippine customers. The survey of British consumers suggested that further substantiation of environmental quality, including animal
welfare standards would be welcomed by consumers but that a market premium for environmental quality could not be assumed.

6.3 Media

Burgess\textsuperscript{15} warns that much closer attention should be given to the fundamental role that the media play in the cultural construction of reality, through 'selectively providing knowledge about the lives, landscapes and culture of different social groups.' She describes the conflict between different ways of seeing and using nature as a 'form of cultural politics.'\textsuperscript{16} Further research on the importance of discourse, investigated through the study of print media in the construction of knowledge and agricultural meanings\textsuperscript{17} reinforces the explanatory value of this approach. Prompted by this, a survey of a range of media was undertaken to establish what message was being broadcast to both the dairy farmer and broader public in New Zealand on environmental issues, the prominence of the 'clean, green' image and whether this had changed over time.

A survey of the farming section of \textit{The Press}, the only daily paper for Christchurch and Canterbury, was undertaken for the 1997 year. The farming section appears weekly on a Thursday and is usually two to four pages long. It includes news stories, the occasional feature article, information such as stock sales, and advertisements. The section attempts to reflect all agricultural and horticultural activities in the top half of the South Island as well as country life issues, from olive growing to ostriches. Some readers purchase the Thursday and Saturday issues only, reflecting the benefit to those customers. The editorial policy for the farming page assumes farmer as well as urban interest, is non-technical and covers general and investment topics such as orcharding, nut trees, cereals, vegetables, and seasonal events (droughts featured in 1997) as well as specific news stories. There is now a dairying story each week and dairying has

\textsuperscript{15} Burgess (1992 : 235-251).
\textsuperscript{16} Burgess (1992 : 235).
\textsuperscript{17} Liepins (1996 : 3-10).
expanded to the business and general news sections, from 10 years ago when there was virtually no such reporting.

Analysis of coverage indicated that sheep farming is the main focus and the rabbit calicivirus (now haemorrhagic disease) release story appeared through most of the year. The section contained a number of stories received as news releases: from Federated Farmers, political and industry releases (four Heinz-Wattie organic items were printed through the year) and regional council or government department releases on farming issues,particularly bovine TB (five stories noted), suggesting that investigative journalism for farming was not well funded. Dairying issues reported tended to be on industry structure, politics and payout details.

Stories, which were on environment topics, covered organic farming issues, eco-labelling, biological control of weeds, effluent and stock trucks, and European rural countryside protection. One headline referred to resource management, a story about high country farmers 'rebelling' against resource management controls.18 There was one story that included 'quality' in the headline, on wheat harvesting. Several stories (probably also press releases) reported conference papers from Lincoln University including one on the environmental pollution costs of pesticides (from Professor D. Pimental of Cornell University to the 50th Plant Protection Conference)19 and a presentation by Guy Salmon on eco-labelling and Project 98. Salmon is quoted three times referring to New Zealand's 'clean and green' image in the same short report.

'New Zealand's clean green image is vulnerable to consumers' concern about food safety, environment and animal welfare matters. Many NZ farms do not look environmentally friendly to Europeans,' he said.

'The eco-label could assist NZ to change farming practices. The label would say to consumers that the product was safe, cleaner [sic] and it

involved sustainable management, natural resources, protection for the planet, caring for animals and responsible suppliers,' he said. 20

The two stories during the year which referred to New Zealand's 'clean green' image and issues which may detract from this, were both from non-marketing people (a scientist and an environmentalist) and neither gave evidence to support their contention of consumer concern. Conversely information from marketing suggests that most of New Zealand dairy products are traded in the commodity market as a price taker. It appears that those raising issues by indicating that this is a market concern may be either anticipating such concern, or using fear of concern as a lever to stimulate change. In either event it seems likely that they are demonstrating a political interest in environmental quality. These two stories indicate some support for Burgess' argument that the media are constructing meanings and engaging in cultural politics about the environment. In this case they are helping to create New Zealand as 'clean and green.'

Stories in The Press reflected political or commercial interests from such organizations as Federated Farmers, MAFF and companies. Dairying focus was restricted to financial issues, and environmental reporting was generally critical rather than positive. The New Zealand 'clean green' image was accepted as a 'given.'

Alpine Xpress was the monthly newsletter of Alpine Dairy Products. It ceased publication in June 1998 and was superseded by Scene and Herd, the newsletter of the amalgamated South Island Dairy Co-operative Ltd., which in turn ceased publication with another amalgamation, in 1999. The Blue Book is Anchor Products monthly newsletter, is larger and has a more corporate image. Alpine Xpress was distributed free to staff, suppliers and interest groups such as District Councils.

The *Alpine Xpress* was a twelve page A4 format. At the start of the 1997 year the newsletter took on an upgraded appearance with full colour banners, improved design layout and glossy paper. The contents included a bimonthly report from the CEO and Chairman, weather data, a staff interest story, one page each from the supplier liaison team and consulting officers and a variety of other stories including ‘good news’ features on suppliers. In comparison to *The Press*, the *Alpine Xpress* had more information on environmental topics and almost every issue included an article on an aspect of quality, whether it was staff or supplier involvement, systems or dairy hygiene. The world view generally reflected the hierarchist perspective.

One story, from a supplier liaison staff member after a study tour in Japan, reports Japanese expectations of quality. New Zealand is seen in Japan as a:

‘*low cost, clean and beautiful country, but our quality did not stand out as exceptional,*’ Linaire Ryan said.\(^{21}\)

Noting that Australia was marketing on quality and moving ahead of New Zealand, she said:

‘*New Zealand must establish itself as a leader in quality, not just one of the pack.*’

She also noted that Japanese marketing images of their own dairy industry showed cows in green pastures with mountain backdrops, but on the two farms she had visited the cows were all housed inside.\(^{22}\) This again demonstrates the use of images to construct reality.

There were a range of stories over the year about maintaining a high standard of appearance and hygiene in the dairy, including a front page story\(^{23}\) headed ‘Dairy that smells of roses,’ about suppliers who have a garden of 200 rose plants beside their dairy. The same newsletter, in another article, notes that


\(^{22}\) Araki (1998) visiting Japanese Associate Professor of Dairy Farm Management at Rakuno Gakuen, Hokkaido, interviewed using a translator. Kazuaki Araki, contined that most herds are tethered indoors in Hokkaido, the main dairying area, and animal health is a critical issue.
'on occasion Alpine staff visit farm dairies which are at best high risk and at worst unacceptable for production of a food promoted as a clean green product.' The inference is that perception is important for the 'clean green' image.

The October/November 1997 newsletter featured a milk quality award winner saying that it is cheaper to produce good quality than poor quality. Effluent and resource management issues were covered in a paragraph of longer stories in three of the twelve newsletters, indicating that this was a significant factor. One consulting officer's report described seminars to be held on farm engineering (race ways, stand off pads) and environmental issues. Finally DDE issues were covered twice but bovine TB which was a repeated topic in The Press was not mentioned.

The overall impression was of a company focused on the quality of the milk product as well as making rapid changes. In contrast to the one article in The Press, which took an aggressive approach when reporting a resource management issue, in three articles on environmental management the Alpine Xpress encouraged farmers to take responsibilities seriously. Almost every newsletter urged greater care with tidiness, and hygiene standards in the dairy. The significance of 'cues for care' seemed well appreciated by the company, but articles in The Press ignored these aspects.

Quality is a serious and important topic in Alpine Xpress, and a strong and encouraging message is given by the company through the newsletter. Although the area around the dairy is referred to, the wider farming 'platform,' as an aspect of environmental quality is rarely mentioned even though the link between the broader New Zealand landscape (the 'clean green' image) and milk quality is made.

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The New Zealand Dairy Exporter is the monthly magazine produced by the dairy industry. In an article on information sources for farmers the New Zealand Dairy Exporter was reported to be the dairy farmer's most important source of information. Next in rank were: the banker, the Farming with Pictures video (also produced by the dairy industry), neighbours, discussion groups, New Zealand Dairying Today, The Dairyman (free monthly newspapers); and then farm advisors and consultants. A further report in October 1997 confirmed that the farming press was the prime source of research and technical data for dairy farmers. Evidence from farms visited during the field research seemed to verify this. There was frequently a half-read copy of the latest issue lying open on a table in the farm house. Earl, one of the farmers interviewed, buys an extra copy for his staff and they discuss articles. He commented,

'I love the Exporter. People would be better off reading it than going to conventions.'

Issues were reviewed over each of the 1977, 1987 and 1997 years to not only assess weight of coverage and reporting on environmental issues, but also to assess what changes had taken place over this 20 year period, indicated by topic, coverage, placement and indication of world view.

The magazine produced an annual index of topics in 1987 and 1997. There was no category for 'environment' listed in the 1987 index, although environmental topics were covered in other sections such as agricultural chemicals. The 1997 index lists 11 items under 'environment' and also includes other topics not listed in 1987, including effluent, and marketing stories dealing with consumer views.

There has been a significant increase in importance given to environmental issues over this 20-year period; from very little prominence or coverage other than soil management, irrigation and quality assurance systems in 1977 to a greater frequency and significance. In 1977 and 1987 the overall impression from the

The Resource Management Act, he thought, while:

'laudable in concept, has caused immense frustration and cost to dairy farmers because of bureaucratic application by regional councils.'

When the current editor took over the magazine in 1991 he dropped lifestyle sections such as recipes to develop a sharper focus on 'production efficiency within an environmentally sustainable context' while also increasing coverage of marketing and industry matters.28
There were at least six articles during 1997 that specifically referred to the 'clean green' image from a range of sources including a farm leader, a judge of a farm competition, a consultant and two researchers. One Australian researcher noted that a pasture based dairy system is very public and that animal welfare issues may tarnish the 'clean green' image. He noted that the market value of this image has never been quantified. Conversely articles on customer preferences in the market do not mention environment as a concern.

The *Dairy Exporter* indicates an increasing attention to environmental issues over the twenty year period and also accepts the 'clean green' image as a given. While there are an expanding number of stories exhorting farmers attention to issues such as water quality, in order to respond to market demand, the stories do not appear to emanate from the market or marketers, again suggesting that political interest is being expressed under the guise of market interests.

The *Journal of Dairy Science* is an American publication for researchers and technicians. A review of 1997 volumes was undertaken to assess whether there was overseas research interest in 'clean and green' and what attention was being given to environmental issues. Most papers covered very technical topics but four referred to environmental matters, one on a quality assurance programme using risk management, another on the economic impacts of water quality and two on manure management. A food safety symposium also indicated some significance of this topic and hazard management. In promoting a systems approach for manure management, the authors of a paper argue that the trend to larger farms are likely to result in more regulation and less public acceptance of real or perceived damage to the environment, that:

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29 Macmillan (1997: 30-33).
30 such as Customer Satisfaction. *Dairy Exporter* July 1997, p.107, lists customer service, a 'consistent quality of raw materials', competitive price, and flexible delivery as priorities for a manufacturer of baby foods. Another article in the same month lists 'quality, safe, fresh and animal welfare friendly' as customer priorities (although does not state which customers).
'performance expectations .. that will protect the environment will very likely be set by society.'

The conclusion can be drawn from this technical journal (strongly featuring the hierarchists' world view), is that American dairy scientists are not taking a lead in environmental concern but are beginning to respond to what they see as society's concern. 'Clean and green' was not mentioned during the year and nor were any 'cues for care.' However, this publication may not have been the best to use for evaluation purposes. For a comparison with a New Zealand technical publication, *Dairy Farming Annual*, the annual volume produced by Massey University for 1997 was reviewed. In one article the writers state:

'As the use of non-trade tariff barriers increase in the international market place, the maintenance of New Zealand's clean green image will become more important. If the country is to trade on the strength of the image, then there will be the requirement to authenticate the environmental soundness of management practices, by auditing or scrutinizing soil quality.'

A similar topic was covered five years earlier, maintaining that the future of New Zealand dairying is in Asia, employing a 'clean green' image.

The review supports Burgess' contention that the press have an influential role in cultural preference formation, particular as market research shows that the *Dairy Exporter* is the main source of information for dairy farmers. One conclusion that could be drawn is that the publications express the world views held by particular editors (reflecting their readers' preferences), and the publications indicate values changing towards the entrepreneurial free market view. A further conclusion is that the press have been part of the creation of New Zealand as 'clean green', and are increasingly focusing our attention on this as a national myth.

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34 Frampton (1992 : 115-117).
6.5 Summary
While many local stakeholders did not see an impossible barrier to the dairy industry making a claim of being ‘clean and green,’ the predominant view appeared to be that the industry is not yet at the stage where it can legitimately make such a claim and a range of issues, which caused some anxiety, were identified for attention. Some from each group claimed there would be benefit in their contribution, or on-going role, in a scheme for improving or addressing quality standards. Those believing that New Zealand is environmentally or animal welfare-friendly were in the minority of the British consumers of New Zealand dairy products surveyed. Their perceptions therefore seem to align with those of local regulators and environmentalists. In contrast, of the Asian consumers who were interviewed and who responded to a short questionnaire, and who were included in a market survey undertaken by Billones, the majority agreed that the term ‘clean and green’ described the New Zealand environment. The issues identified as being of concern to some in this group were erosion and water quality.

The review of the media reflected the contested politics of ‘clean and green’ in the public arena, and a serious approach to environmental quality at an industry level, although the links from milk quality, to on-farm environmental quality, to the ‘clean green’ image are not made at the company level. The review also suggested that ‘clean and green’ is a New Zealand rather than overseas or scientific issue. The table below summarizes the majority responses from stakeholder groups to issues, options and the ‘clean green’ image relevant to environmental quality in the dairy industry. From the table can be deduced that the one world view common to all is the hierarchists world view. Most groups, except areas of the Asian market, seem to agree that change in on-farm management is needed in order to make a claim of being ‘clean and green’ with integrity, and most stakeholders appear to have confidence that an option for change which is based on a system with benchmarking and monitoring would be helpful. Such a system

35 Billones (1999).
appears as important for local confidence in the industry and on-going sustainability, as it is for market assurance.

<table>
<thead>
<tr>
<th>Stakeholders</th>
<th>Views of ‘clean green’ image</th>
<th>Dairying benefits and issues</th>
<th>Options for improvement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Industry staff/Board members (hierarchists &amp; entrepreneurs)</td>
<td>Market important industry currently not there: conflicts</td>
<td>Animal welfare &amp; discharges need to be addressed</td>
<td>Hands off, ask market, leadership</td>
</tr>
<tr>
<td>Regulators (predominantly hierarchists)</td>
<td>Conflicts to be resolved: not there yet</td>
<td>Economic &amp; visual benefit but social, animal welfare and discharge issues</td>
<td>Codes, standards, landcare, education, EMS, ask community</td>
</tr>
<tr>
<td>Maori (4 world views)</td>
<td>An illusion</td>
<td>Water quality, abstraction &amp; pollution issues</td>
<td>Regulation, &amp; iwi/ Crown/industry liaison</td>
</tr>
<tr>
<td>Environmentalists (egalitarians, hierarchists &amp; fatalists)</td>
<td>Comparative image; a sham</td>
<td>Biodiversity &amp; discharge issues</td>
<td>Enforcement; demonstrate action, ask community</td>
</tr>
<tr>
<td>Market (world views not analysed)</td>
<td>Differs by market, term not used but notion understood</td>
<td>Erosion a concern in Japanese market (?)</td>
<td></td>
</tr>
</tbody>
</table>

Table 5. Views of stakeholders on dairying and the ‘clean green’ image (author).
Discussion

'Only by incorporating multiple viewpoints that integrate and merge cultural, social and political intents do we develop perspectives that capture fully the realm of meaning associated with particular discourses.'

7.1 Introduction

In this chapter dairy farmers' world views and preferences as outlined in Chapter Five are compared with the world views and preferences of other stakeholders in the dairy industry (in Chapter Six). Perceptions of environmental issues, the 'clean green' image and options for future management of environmental quality are compared, noting areas of agreement and contrast. Consumer views and perceptions expressed in the media on the 'clean green' image are then discussed. How a cultural theory perspective can assist in providing guidance for change is considered. The outcomes of the EMS trial are then assessed and the findings are evaluated.

In the final section in this chapter the question is discussed: how can an industry strategy gain the trust and respect of stakeholders, market and farmers, government and neighbours, in a society where competing world views vie for dominance?

7.2 World views: dairy farmers, stakeholders, consumers, media

Four world views were identified among the farmers interviewed in the case study. The dominant view was that of the entrepreneur, although hierarchist views were also significant, with fewer expressing egalitarian and fatalist positions.

Stakeholders demonstrated a similar range of world views but there were significant differences in emphasis in the different groups interviewed. Industry staff and regulators both held strongly hierarchist views, although company Board members who were also farmers typically held entrepreneurial views, as did regulators who were farmers and elected representatives. No egalitarians or fatalists were identified in the groups of industry leaders and regulators. Maori and environmentalists both had a range of world views including fatalists within their members. No entrepreneurs were found among environmentalists interviewed. The egalitarian view was in the majority in these latter two groups. The hierarchist world view was the only one common to all stakeholder groups. Table 6 illustrates the relative weight of each world view for each group of stakeholders.

<table>
<thead>
<tr>
<th>World views →</th>
<th>Entrepreneur</th>
<th>Hierarchist</th>
<th>Egalitarian</th>
<th>Fatalist</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stakeholders</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Farmers</td>
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<td></td>
<td></td>
<td></td>
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<tr>
<td>Industry</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Regulators</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maori</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Environmentalists</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Proportion
Key: high medium low nil

Table 6. *Comparison and relative proportions of world views identified among dairy farming stakeholder representatives from the case study (author).*

In interpreting Table 6, it is important to note that the table does not imply that the proportions indicated will in entirety hold true across larger samples of stakeholders. For example, there may well be regulators who are fatalists or egalitarians (an egalitarian regulator from a different agency was identified when interviewing environmentalists), as well as entrepreneurial environmentalists. However, the table indicates that none were identified in this case study. Competition in global trade is requiring the farmer to place much greater emphasis
on technology and efficiency\(^2\) so it is not surprising that egalitarians and fatalists appear to be minority farmer world views. The table above does show, though, that there was a range of world views identified within each stakeholder group, indicating that within both farmers and other groups, the environment and other factors are likely to be perceived in different but consistent ways. The perceptions and preferences of both farmers and stakeholders are now compared.

Farmers’ views of the environmental issues that needed to be addressed in order to sustain a claim of being ‘clean and green’ generally increased in number and range from the entrepreneur, who believed that measurement and justification would need to be shown before an environmental aspect should be regarded as an issue, to the hierarchist, who identified a range of issues, and finally the egalitarian farmer, who not only identified a range of issues but also saw the need for change as a priority. The fatalist farmers held an ambivalent view to change, arguing that improvements needed to be made and enforced, but also doubting that they would make much difference or whether change could be achieved.

Table 7 below compares farmers’ views of environmental issues with those of other stakeholders. While similarities are evident between the groups who hold particular world views; for example farmer, industry and regulators who took an entrepreneurial world view all thought that issues should be defined by the market; there are also differences in the way similar world views are expressed in the various stakeholder groups. For example, whereas hierarchist regulators spoke of externalities when they were referring to the effects of dairying on water quality, Maori hierarchists, referring to the same issue, spoke of the effect of discharges on their identity as iwi.

In the stakeholder groups, the increasing concern about change from entrepreneur to egalitarian, as evident in the farmer group, was not so clearly expressed, partly because the only other group to have had all world views represented was Maori

214

(who did follow a similar pattern to farmers). There was a strong similarity between the way regulators and industry representatives in each world view expressed their opinions, and in the views held. Similarly Maori and environmentalists expressed similar views, and in similar language, in corresponding world views. For example, Maori and environmental fatalists both saw long term ecosystem destruction as inevitable.

<table>
<thead>
<tr>
<th>World views</th>
<th>Entrepreneur</th>
<th>Hierarchist</th>
<th>Egalitarian</th>
<th>Fatalist</th>
</tr>
</thead>
<tbody>
<tr>
<td>Farmer</td>
<td>efficiency, measurable, market defined</td>
<td>quality, effluent</td>
<td>many, a priority: animal health, water</td>
<td>issues need control, but would it be effective?</td>
</tr>
<tr>
<td>Industry</td>
<td>risk, market defined</td>
<td>water, chemicals, sustainability</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Regulators</td>
<td>benefits, damage, social impact, market &amp; community defined</td>
<td>water, others, discharges, health, externalities, regulator defined</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maori</td>
<td>access to resources</td>
<td>identity water quality and quantity, others</td>
<td>many, a priority: water, health, biodiversity</td>
<td>toxicity and destruction</td>
</tr>
<tr>
<td>Environmentalists</td>
<td>water and many others</td>
<td></td>
<td>many, a priority: water, habitats biodiversity, pests</td>
<td>long term destruction</td>
</tr>
</tbody>
</table>

Table 7. A comparison of farmer & stakeholders views on environmental issues for dairying (author).

In regard to change management, all farmers indicated a need to change in order to substantiate the ‘clean green’ image. Preference for change differed according to the world view of farmers, from a non regulatory emphasis on measurable market benefit and the creation of financial incentives for entrepreneurs, to guidance, control and enforcement where necessary for hierarchists, to

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3 Blunden et al (1996) indicate that subsidies would not be sufficient to change actions relevant to environmental protection because time and money are major constraints; Dwyer et al (1993) found
information and advice (not regulation) for egalitarians, to ambivalence for fatalists.

<table>
<thead>
<tr>
<th>Stakeholders</th>
<th>Entrepreneur</th>
<th>Hierarchist</th>
<th>Egalitarian</th>
<th>Fatalist</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Farmer</strong></td>
<td>non regulatory incentives</td>
<td>guidance, education, EMS peer, legislation</td>
<td>advice, non regulatory, positive</td>
<td>ambivalence</td>
</tr>
<tr>
<td><strong>Industry</strong></td>
<td>hands off, leadership, EMS</td>
<td>systems, customer demand, EMS liaison</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Regulators</strong></td>
<td>industry systems</td>
<td>systems, customer &amp; community, regulation</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Maori</strong></td>
<td>no suggestions</td>
<td>Govt./iwi industry EMS system + regulation</td>
<td>regulation, with input to system</td>
<td>prosecution</td>
</tr>
<tr>
<td><strong>Environmentalists</strong></td>
<td>RMA rules and regulations, EMS with input</td>
<td>regulation and communication, input</td>
<td>change ineffective in long term</td>
<td></td>
</tr>
</tbody>
</table>

Table 8. *A comparison of farmers & stakeholders views on viable options for change for dairying (author).*

The stakeholders: industry representatives, regulators, Maori and environmentalists, held similar views to farmers on the need for change, but their perceived options differed. There were divided views on whether the company should take a role in environmental management among industry representatives, as among dairy farmers. Industry entrepreneurs preferred self administered systems. Regulators options were similar to those suggested by industry hierarchists: generally systems management. They also sought community input into such a system. Maori saw regulatory enforcement as the main option but sought input into a quality assurance system. The main option for change for that financial incentives change farmer environmental behaviour only when incentives are in place - the measures are not durable.
environmentalists was through legislation: rules and policies enforced by the Resource Management Act 1991.

In contrast, farmers' views of 'clean and green' and 'cues for care' showed much less variation. Their perceived image was similar across world views. However, entrepreneurial farmers were more inclined to believe that in order to substantiate the image, farmers must focus on aspects that are measurable (a feature of their preference for change) whereas those from other world views were more inclined to accept subjective perception as equally valid. Similarly, all other stakeholders: industry representatives, regulators, Maori and environmentalists showed consistency across world views and stakeholder groups on how they perceived the 'clean green' image, except that hierarchist regulators tended to describe the image in more impersonal terms such as 'externalities.'

<table>
<thead>
<tr>
<th>Stakeholder group</th>
<th>Interpretation of 'clean and green'</th>
<th>Identification of 'cues for care'</th>
</tr>
</thead>
<tbody>
<tr>
<td>Farmers</td>
<td>landscape</td>
<td>tidiness</td>
</tr>
<tr>
<td>Industry</td>
<td>landscape: measurable</td>
<td>tidiness and caring</td>
</tr>
<tr>
<td>Regulators</td>
<td>landscape: externalities</td>
<td>tidiness and awareness</td>
</tr>
<tr>
<td>Iwi</td>
<td>landscape: health</td>
<td>not stated</td>
</tr>
<tr>
<td>Environmentalists</td>
<td>landscape</td>
<td>tidy: may need broader scope</td>
</tr>
</tbody>
</table>

Table 9. A comparison of farmers and stakeholders interpretation of 'clean and green' and 'cues for care' relevant to dairying (author).

The differentiation of hierarchist views on 'clean and green' from other world views may be explained in two ways. Firstly, the language used: externalities, bottom lines and so on, is jargon borrowed from economics, influenced by free market ideology, and the vogue language of resource management. The 'new' language has been widely adopted as part of the change from a planning to a policy and management approach, with the change of legislation to the RMA and political influence to that of free market. The words were as much describing the
regulators political ideology as the 'clean green' image. Secondly, the staff regulators were the most homogenous group and so their views are likely to be a stronger expression of hierarchist preferences. The world view is a pattern of social relationships as well as shared beliefs, values, and a behavioural strategy which seems rational to the holders of those beliefs. Staff regulators are dealing with one specific and unambiguous transactional context and in such circumstances, values become more consistent, orderly, integrated and shared.4

There was general unanimity across both the farmers and stakeholder groups that good farming was indicated by tidiness and care, with the exception of some entrepreneurial farmers, who based their evaluation on profitability, not visual signals.

Context was clearly a significant influence in the development of these preferences. The structure and change in the industry and locality, and mobility and trend to increasing size of farming operations appeared to be favouring the entrepreneur in the short term but the hierarchists, in the long term as complexity develops. This is because preferences develop and become more staunchly held as the transactional context aligns and becomes more consistent with a particular world view. A mobile farmer is less likely to be constrained by an established peer group and family in the area. In a situation of rapid change and mobility, entrepreneurs, who are not constrained by a hierarchy, are likely to be able to take advantage of opportunities, and so their numbers will expand. However, as the pattern of larger properties with several layers of control, and a clear separation of functions become more frequent in the industry those whose world views align are most likely to feel 'at home' and this will encourage an ever strengthening pattern to develop.

Two particular influences appeared to be property ownership and awareness of an issue. Firstly, sharemilkers saw environment in terms of its relationship to their

stock. Secondly, awareness of an issue through strong public concern, appeared to change farmers' responses to that particular issue, although not necessarily their overall world view.

The importance of context was also apparent in the preferences of different stakeholder groups with the same world view. The expression of preference related to aspects of importance for their particular context. For instance, the industry hierarchist was interested in aspects for the industry. He viewed issues as he believed they would affect factory production, efficiency and profitability, rather than as it might be viewed on the farm. Hence although the preferences of those from the same world view are similar, there are differences and these relate to their transactional context.

Overall, the views were that the dairy industry does not reflect the New Zealand ‘clean green’ image yet, and a significant group questioned the appropriateness of the claim for the industry, rather than an alternative claim such as sustainability. In addition, egalitarians, especially Maori and environmentalists, doubted that the nation could legitimately make the same claim. This finding appears to be in direct contrast to the findings documented in the Billones\(^5\) study where 81% of the 218 dairy farmers who responded to her survey, agreed that ‘New Zealand dairy farming deserves its “clean green” image.’ However, several factors are pertinent to this apparent difference. Firstly, the Billones question presumed that the dairy industry already had a ‘clean green’ image. This was at odds with the result documented from her survey of British consumers, who generally ‘were uncertain and held negative perceptions about New Zealand dairy products,’ except for taste.\(^6\) The British consumers were not directly asked whether they perceived that New Zealand had a ‘clean green’ image. However, her supermarket survey result does not conflict with a Fact Finders literature

\(^5\) Billones (1999 : 104).
\(^6\) Billones (1999 : 107).
review and research through 'gatekeepers' in key markets,\textsuperscript{7} which reported that although New Zealand generally had a 'clean green' image in UK and other markets in the survey, the perception was that New Zealand is not necessarily committed to environmental conservation. In the Billones survey of farmers, the perception of the image, or whether the industry was indeed making the claim, was not questioned, but the question was confined to whether dairy farming deserved such an image or not. Framed in this way a 'no' response may have appeared to have been a vote of no confidence in the industry. Hoek et al,\textsuperscript{8} note that a range of researchers have demonstrated that:

'respondents over-report their behaviour or intensify the strength of the attitudes they report when responding to questions about socially-desirable behaviour.'

The above seems likely to be a factor in the farmers' response in the survey. In addition, the question was placed in a group of three. The second question asked whether New Zealand's 'clean and green' image improves the marketing of dairy products internationally. This received a clear (90\%) affirmative response. In this context it would have been unlikely many farmers would agree to the second question, yet respond 'no' to the first. However, later in the survey, 80\% of farmers (the same proportion who had thought the 'clean green' image deserved), also noted a farm practice which 'had a negative effect on the 'clean and green' image of New Zealand dairy products,' and 59\% stated that some practices needed to be changed in order to meet consumers' expectations of 'clean and green' products. This seems at odds with the responses given to the first question and therefore draws attention to the significance of how a question is asked, and in what context. These responses, and the discrepancies raised in the Hoek paper\textsuperscript{9} between survey responses and actual performance, suggest that a survey may be too blunt an instrument to apply with confidence to this type of issue. These comments are not intended to denigrate a thoughtful study by Billones, rather than to draw attention to the difficulty in relying on survey results. Quantitative

\textsuperscript{7} Project 98 (1997).
\textsuperscript{8} Hoek, Gendall, Hedderley, Jardine and Peterson (1998 : 5).
research, especially in the environmental field, suffers from the halo effect, where interviewees wish to be thought to be doing the right thing. Taking the farmers’ affirmative response to the first question in the survey ‘does New Zealand dairy farming deserve its “clean and green” image,’ at face value, change managers might envisage a lack of dairy farmer interest in modifying environmental practice at all, and extreme difficulty in achieving change, because farmers apparently assumed firstly that the industry already had such an image and secondly agreed that it is deserved. Neither aspect appeared to be the case from in-depth interviews and on site verification conducted in this study. The current existence of such an image relating to the dairy industry is a matter of dispute in the media, and was seen as a goal by many farmers in this study.

<table>
<thead>
<tr>
<th>Stakeholders</th>
<th>Entrepreneur</th>
<th>Hierarchist</th>
<th>Egalitarian</th>
<th>Fatalist</th>
</tr>
</thead>
<tbody>
<tr>
<td>Farmer</td>
<td>now (?); in future</td>
<td>not yet, appropriate?</td>
<td>not yet ‘clean &amp; green’</td>
<td>not ‘clean &amp; green’</td>
</tr>
<tr>
<td>Industry</td>
<td>in future appropriate?</td>
<td>not yet, appropriate?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Regulators</td>
<td>in future appropriate?</td>
<td>not yet, appropriate?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maori</td>
<td>no response</td>
<td>not ‘clean &amp; green’</td>
<td>not ‘clean &amp; green’</td>
<td>not ‘clean &amp; green’</td>
</tr>
<tr>
<td>Environment-</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>alists</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 10. A comparison of farmer & stakeholder views on whether dairy farmers currently reflect the New Zealand ‘clean green’ image. (author).

At the annual New Zealand Institute of Agricultural Science conference nine years ago, similar reservations were expressed. Hayward warned:

‘While we may wish to promote clear blue skies, snow-capped peaks and verdant forests as an image of clean, green New Zealand, it would be a mistake if we were to believe our own rhetoric.’

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11 Salmon (1999); Robson, S. (1999b : 5).
12 Hayward (1990 : 5).
Consumer views on the New Zealand 'clean green' image are now reviewed. Asian consumers contacted on the message of the 'clean green' image presented a consistent response: images described were part scenic, part pastoral. There appeared no strong differences even though most respondents had apparently not visited New Zealand and had very little information on which to form this view. Philippine, Indonesian and Taiwanese respondents seemed to have the most positive perception of the 'clean green' image and its fit to New Zealand. Japanese were less, but still positive. The pastoral rather than the scenic image, with integration of managed biodiversity, appeared to appeal most to Japanese respondents. However, it is unclear whether this positive perception influenced consumer purchases of dairy products. Philippine customers in a supermarket survey indicated food safety as their priority for purchase decision making for dairy products, not environmental friendliness. As previously noted, the majority of English customers surveyed did not know whether the New Zealand dairy product was environmentally friendly. Their purchase motivation though, put priority on taste and price ahead of animal welfare and environment.

Differentiation therefore appears to be occurring in markets between the positive landscape image of New Zealand, and products and how they were grown. Whereas 'research in major overseas markets' indicates that 'New Zealand's 'clean green' image is one of the most pervasive,' the Fact Finder study indicated that the same image was not necessarily ascribed to New Zealand products. 'Image for image's sake' is no longer regarded as credible in markets where cynical consumers are suspicious of vague, unsubstantiated claims and now expect accountability and commitment. In addition, environmental image advertising 'plays directly into consumers' distrust of corporations.' In the media, reference to 'clean green' issues and dairy farming seemed to depend on the proximity of the publication to the New Zealand dairy farmer. The American

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13 Billones (1999).
15 Project 98 (1997).
16 Coddington (1993 : 9).
dairy scientists' journal did not mention 'clean and green,' and rarely discussed environmental quality assurance. The local daily newspaper appeared to accept New Zealand as 'clean and green' (a given), but carried the occasional article expressing anxiety that markets may be concerned about farming practices, as did the New Zealand dairy scientists' publication. The industry magazine followed this pattern in more detail and frequency, but the company newsletter carried a high number of articles on quality issues, although there was not a clear association with on-farm issues and 'clean and green' rather than milk quality. The treatment of 'clean and green' was as a goal or branding\(^1\) rather than either as an implicit given or in a critical stance. Table 10 (below) summarizes the majority view from each group in the case study on whether the New Zealand dairy farmer currently can make a claim of being 'clean and green' with confidence.\(^{20}\)

<table>
<thead>
<tr>
<th>Opinions of farmers, stakeholders and print media</th>
<th>Can New Zealand dairy farming claim to be 'clean and green'?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Farmers</td>
<td>Not yet</td>
</tr>
<tr>
<td>Industry</td>
<td>Not yet (is the image appropriate?)</td>
</tr>
<tr>
<td>Regulators</td>
<td>Not yet (is the image appropriate?)</td>
</tr>
<tr>
<td>Maori</td>
<td>No (NZ is not 'clean and green')</td>
</tr>
<tr>
<td>Environmentalists</td>
<td>No (NZ is not 'clean and green')</td>
</tr>
<tr>
<td>Customers Asia</td>
<td>Yes</td>
</tr>
<tr>
<td>Customers Britain</td>
<td>Don't know</td>
</tr>
<tr>
<td>Print media</td>
<td>Address market concerns</td>
</tr>
</tbody>
</table>

Table 11. *Summary of views on the question, 'can the New Zealand dairy farmer make a claim of being 'clean and green' with confidence.'* (author).

\(^1\) Pawson (1997 : 17) argues that 'clean and green' has come to be seen as New Zealand’s national brand image, although not 'an adequate description of environmental realities.'
To summarize:

- A range of opinions on whether New Zealand dairy farmers can make a claim of being 'clean and green' with confidence were identified. Characteristic preferences, associated with relevant world views, and modified by context, were found among farmers and other stakeholders. Overall, the response was 'not yet.'
- Consistent understandings about both the 'clean green' image and 'cues for care' were found throughout farmer and stakeholder groups.
- A variety of environmental quality issues that dairy farmers should be addressing and which conflicted with a 'clean green' image were identified.
- Water quality was an issue for all groups and a priority for most.
- Representatives from each group across differing world views suggested that a system with standards should be introduced. Farmers, industry and some regulators argued that such a system should be market led, but regulators and other stakeholder groups also thought that such a system should respond to stakeholder needs.
- Consumer views on dairying and the 'clean green' image differed, with positive views recorded from Asia and doubtful views from England.
- Apparent market concerns about the industry's response to the image were raised by some print media.

In the next section the implications from the above review are discussed.

7.3 Discussion
In this section the implications from the analysis of world views are discussed, and the link made to reflexivity and the use of symbols, the main one of which is 'clean and green'. The findings in terms of the three aspects of the research question identified at the start of the study, that of sustainable dairying and best practice for the benefit of the farmer and industry; compliance with the Resource Management Act 1991, together with being a 'good neighbour'; and the export marketing opportunities and issues, are then considered.

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*the response aligns with Pawson's (1997) view that the product attributes of a successful brand are demonstrable when required: stakeholders agree that there is currently not a means to substantiate the brand.*
7.3.1 Implications of world views and reflexivity

Different farmers and stakeholders see the world in different ways, and have different views and perceptions of appropriate dairy farm management. The implication is that although an option for change in environmental management may suit those with one world view, there will be other farmers and stakeholders, with other world views, who will not agree.

In addition, if standards are to be developed to substantiate the ‘clean green’ image, to be successful those standards must be recognized and respected by a range of stakeholders with several different world views. Where the ‘brand’ is also dependent on aspects of uncertainty and doubt which apply to environmental management, stakeholder acceptance and trust\(^\text{21}\) becomes even more important.

Resolving how to find a satisfactory outcome when either the plurality of world views is not acknowledged, or there are clearly dissenting views, has been an issue that cultural theorists have recently tackled regarding the policy process and political decision making. Ney and Thompson\(^\text{22}\) have argued that the recognition of all the world views is vital for policy formulation, to ensure that flexibility and double-loop learning\(^\text{23}\) is achieved and costly mistakes are avoided. They describe such a situation as enabling ‘circles of improvement,’ a concept from Total Quality Management. The process they describe for resolving conflicting world views is through argumentation, whereby an option emerges from discourse and a shared understanding is developed and negotiated between the world views. However, while Ney and Thompson’s analysis introduces the role of criticism and reflexivity into the policy process, it does not elaborate on the role of reflexivity. Reflexivity is used in their paper to mean the questioning of an established pattern of social life. The term reflexivity is used in a different, but also accepted way in this thesis to describe:

\(^{21}\) Ottman (1992 : 36).
\(^{23}\) Argyris (1992).
'the intimate interdependence between surface appearance and the associated underlying reality.'

Chapter 2 explained how world views and reflexivity are linked when concepts and ideas are conveyed in symbolic ways. A symbol is a sign that has an iconic nature and indicates another or higher meaning. However, the relationship between a symbol and its underlying meaning is not 'given,' or inherent in the symbol itself. Rather, it becomes assigned, or constructed, through particular use. Each world view imbues the symbol with its own interpreted meaning. One effect of this is that when a symbol is used actively to convey a particular meaning, as in the marketing device, the symbol acts as a bridge or shared icon between different preferences. This is because people perceive the symbol reflexively, as reflecting their reality, and as making sense to their own world view.

This reflexivity was found when the symbolic issues of the 'clean green' image and 'cues for care' were investigated. There was broad acceptance of the idea across world views, without recourse to argumentation or debate, because each world view understood the symbol in terms of their own underlying reality. It was accepted automatically. Each world view associated the symbol with their own preferences. So, for example, both hierarchists and egalitarians could accept 'clean and green' as a goal, even though both interpreted it in different ways in detail.

Furthermore, Asian consumers could accept the symbolism of 'clean and green' even though they may never have seen New Zealand. Notably, the ecologically divergent images of wilderness scenery and pastoral agriculture did not appear to create conflict between world views, although recent debate led by a new conservation lobby group Ecologic suggests that the inherent difference between these images are becoming more widely recognized.

The lack of response to 'clean and green' by the British consumers might be explained by the different local context, where the British farmer, a minority

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contributor to economic productivity, has been perceived as conflicting with the pastoral myth, and so throws into doubt the link between the pastoral and 'clean and green.' The British farmers' role in the 'mad cow' furore is one such example. In this case substantiation of the attributes of 'clean and green,' 'Brand New Zealand' or more particularly, the standards adhered to by the New Zealand dairy farmer, would help to address consumer doubts. A system though, first needs to be put in place to provide records to verify more explicit marketing.

The British consumer may have become more discerning or cynical than, for instance, Asian consumers, when assessing environmental marketing claims, information documenting animal welfare, and environmental management practices. The Fact Finder study notes:

'more than 20 eco-labels are currently in existence around the world, not including character specific marks (i.e. vegetarian) and manufacturers self claim labels (i.e. environmentally friendly). This variety of claims has lead to confusion in the public's mind and consumer scepticism as to the meaning and the value of various claims in the market place.'

Therefore, while an eco-label would seem a useful strategy from the general discussion of world views and reflexivity, the instrumental value may be higher at farmer level, to encourage pride and quality standards, than at a market end where there are so many labels that they appear to be losing their efficacy.

There was unanimity in the symbolic 'cues for care' described by farmers and other stakeholders, as conveying an underlying reality of good farming. However, the interviews support the view that people read into the symbol what they want to believe. For example, those farmers who believed that trees were important for stock welfare, pasture growth, visual benefit and biodiversity, recognized trees and shelter planting as a 'cue for care.' Those who recognized fewer values in tree planting noted that trimmed shelter belts were signs of care, indicating that management had been applied. Those who thought riparian protection a sign of
care noted this, while others saw apparently rank growth beside streams as a sign of untidiness. Many saw the absence of weeds as a sign of care, while a minority thought that the presence of some weeds did not indicate lack of care, because a few weeds made no difference to profitability (the entrepreneurial view). Widely accepted signs of care or stewardship appeared to be: tidiness, straight and maintained fences, trimmed shelter belts, machinery put in an allocated place, lack of rubbish, lack of weeds especially at the entry way, straight posts or signs, even green pasture, well drained even surfaced lanes and well fed cows. The presence of protected native trees, wilderness areas or wetlands was not part of accepted stewardship for most dairy stakeholders. The absence of ‘natural’ vegetation as a sign of care, while similar to studies undertaken in the USA, may present particular difficulties for the dairy farmer and New Zealander, who links ‘clean and green’ with natural scenery. In addition, some current farm practices may be perceived by stakeholders as showing a lack of care. These include the location of lines of plastic covered balage in paddocks, use of car tyres to cover silage pits, and a new irrigation system that uses recycled plastic containers as stands (but may be perceived as abandoned rubbish lying in paddocks), slinkies at the gate and muddy pasture and lanes.

The inference that can be drawn from this is that options for change which can be conveyed symbolically, while responding to identified issues, have the best prospect for success because they can relate to the different preferences and perceptions of reality held by each world view. However, the values which the farmer and industry claim for the product, be it ‘clean and green,’ sustainability, environmental quality, or care, must also be capable of substantiation to the satisfaction of each world view as in the current case of food safety as a key product attribute. A system of standards for environmental quality management that bridges between world views is therefore required.

The findings of the case study therefore have confirmed that Cultural Theory is a useful approach to the study question. A range of relevant world views have been identified, validated, categorized and tested. I have also demonstrated the potential value of linking Cultural Theory with an understanding of symbols and reflexivity. However, the case study has highlighted the significance of context, including history, in reinforcing and differentiating preferences and perspectives which in turn affect action. I therefore now consider the context in more detail as it applies to the three aspects of the study question, within the overall framework already established.

7.3.2 Sustainability and on-farm best practice
The case study found that farmers' and stakeholders' perceptions differ on how land should be managed for dairying, depending on their world view, and also differ on how sustainability and best practice might be assessed. These differences become critical when sustainability is considered, because the concept itself has been the subject of on-going debate over meaning and assessment. To recapitulate, sustainability is defined variously in economic, environmental and socio-cultural or institutional ways. From Aldo Leopold who saw true sustainability as requiring the preservation of the health of the entire system, to Toman who saw the requirement for intergenerational equity, and social capital to be provided for future generations, there has been a wide variety of definitions and views put forward. The term has been confounded by uncertainty and has been captured by commentators from a range of political ideologies. The debate on what sustainability is and how to achieve it, while central to agriculture, strongly reflects the various 'myths of nature' which Cultural Theory describes. This diversity of views of farmers and stakeholders on farm practice and

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sustainable management, is congruent with the results of a survey\(^{30}\) in Northland, on New Zealand dairy and other farmers' definition of sustainability.

Field\(^{31}\) argues that it is not the lack of definition, so much as lack of identification of physical limits, that is at the heart of the debate. Indicators to identify what constitutes sustainability,\(^{32}\) are the way many countries, including New Zealand are currently headed.\(^{33}\) However, there appears a danger of expressing such indicators in terms that can be accepted by hierarchists (who see physical limits as critical) but not in terms which can be accepted by other world views. Indicators which can be recognized and respected by all world views would be a useful output from this current dialogue.

Smith and McDonald\(^{34}\) provide guidance on how this might be achieved. Sustainability indicators, they explain, can be expressed at different geographic scales, different time scales and directness of measurement. Arguing that valid indicators should include biophysical, economic and social indicators, that different indicators are relevant for different scales both spatial and temporal, from field through farm scale to watershed to regional or national scale, Smith and McDonald\(^{35}\) propose a framework for assessing the sustainability of agriculture. They argue that data availability and the potential or actual environmental problems perceived to exist at the location under investigation will determine the selection of specific indicators.\(^{36}\) Indicators therefore will need to recognize the varying perceptions held by those with different world views. Smith and McDonald suggest that at the farm scale, the skills and information base, planning capacity and conservation attitudes and incentives\(^{37}\) are suitable social indicators; and profitability, input and market availability, and economic uncertainty are

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\(^{30}\) Blunden, Cocklin, Smith and Moran (1996: 24-34).

\(^{31}\) Field (1994).


\(^{33}\) Smith and McDonald (1998: 22).

\(^{34}\) Smith and McDonald (1998: 15-37).

\(^{35}\) Smith and McDonald (1998: 31).

\(^{36}\) Smith and McDonald (1998: 32).
suitable economic indicators, the dominant paradigm for the farm scale being socio-economic indicators. Biophysical indicators are shown as relevant at the field and watershed scales: such as nutrient balance at the field scale, or riparian vegetation at the watershed scale. The New Zealand dairy farmer manages at a field scale as well as farm, so all three aspects are relevant.

However, indicators do not in themselves provide quantification of standards, and a means is required to establish what is to be monitored and how that determination is reached. When both the goal is unclear and there are differing views on how this might be achieved, decision making on adoption of a course of action for the farmer and industry becomes a matter of process.

A further but allied issue is that of environmental quality. Again, this is not clearly defined and is not an absolute standard:

‘that can be applied across settings, times, perspectives and functions. Nor is it an inherent attribute measurable in a setting. Rather, it is an abstracted construct requiring further definition and specification.... The determination of an overall rating of environmental quality for a particular setting then requires a sampling of representative perspectives regarding various expectations held for the setting at a given point in time.’ 38

The relevant context which will influence the process of arriving at agreed standards, or indicators for sustainability, environmental quality or best practice, is one of changing world views reflecting political change, as well as rapid structural change in the industry to capture market benefits, rapid local growth as a response to price relativity with other farming sectors, growth in farm size and productivity, and changing practice to respond to this.

37 These indicators reflect a European context, and thus the relevance of context in indicator selection.
Farmers have been moving location within New Zealand, with a marked drift south to take advantage of more reliable weather conditions, irrigation and cheaper land. Those moving from the north or even overseas, bring with them experience of different practices which in turn affect their new context. These are factors that currently influence perception of environmental issues for both the farmer and stakeholder.

Perception of environmental issues is a factor of world view (we see what we believe) and awareness, which derives from the relevant context. This may be differing knowledge, experience\(^\text{39}\) (such as climatic crises or encountering and understanding soil pugging), ownership (is animal welfare and health the prime focus or is it land), and other factors described above. World views develop by social patterns and reinforcement, and when the transactional context provides reason to modify understanding, but does not change values and beliefs, then a farmer’s perception of the issue will be influenced. An example of this was the concern that farmers in Waitaki expressed about putting dead cows in offal pits on their farms. District and neighbourhood concern had altered their awareness of this practice, whereas farmers in North Canterbury, where it has not drawn public criticism, did not perceive the practice to be an issue.

Despite the uncertainty over what is sustainability, environmental quality and best practice, the dairy industry has been developing comprehensive codes\(^\text{40}\) and standards which provide objectives and means to minimise discharges and contaminants, and address practice issues such as hygiene, irrigation efficiency and soil management. These are essentially best practice manuals. Other options for encouraging best practice put forward by farmers were model farms and open days. The advisory discussion group system managed by LIC carries out information transfer (extension) work and farmers indicated confidence in this


\(^{40}\) including Heatley (1996); Dairying and the Environment Committee (1997); New Zealand Dairy Board (1998a).
system, although noted that it does not reach all farmers. Other advisory and extension services were also used and respected.

In summary, the particular aspect of context to which this section refers is that of the farmer (as opposed to the community or the market), as an aspect of the ‘clean green’ image, and how attention to on-farm environmental management could benefit the farmer and the industry. The case study indicated that proposals for on-farm environmental management change will need to identify the benefits of taking action for each world view. Such benefits, as identified by farmers, included:

For the entrepreneur,
- increased profitability through more efficient utilisation of measurable inputs such as energy, fertilizer, water
- increased capital value through minimization of risk and improved animal health
- confidence and pride in the industry.

For the hierarchist,
- increased understanding of farming systems through more effective monitoring, leading to greater management ease and expertise, coordinate staff management, and time saved
- reduction of discharges
- compliance with legislation and local requirements.

For the egalitarian,
- increased confidence that farming systems are sustainable
- increased biological health
- increased respect from neighbours and peer group.

For the fatalist,
- protection from local criticism, and risk reduction.

That change will occur is not in doubt. The industry is committed to change to address the ever-declining product prices on world markets. New innovations and
efficiencies and better environmental systems are being sought. At the same time, regulators continue to develop new policies and rules. What constituted best practice in 1940 or 1980 no longer applies, as social expectations and technology have changed. At the farm level the industry will be more efficient if environmental changes can be translated to quantified quality standards and that information used to inform regulators and markets, while also communicating quality in ways that are accepted by the various world views.

7.3.3 Compliance and community relations
Sustainability is the basis of the resource management legislation. Sustainable management of New Zealand's natural and physical resources is the defined purpose of the legislation and this includes, among other aspects, the management of resources to meet the needs of current and future generations, safeguarding ecosystems and avoiding or mitigating adverse effects on the environment. Regional Councils are producing policies and plans on such aspects as farm discharges and riparian and water management to prevent environmental impacts, and set standards which farmers are required to meet. Similarly District Councils are setting policies and rules to manage the effects of land uses. Dairy farmers in Canterbury, Otago and Southland are likely to be more aware of resource management issues, including discharge and land use standards than farmers from elsewhere because most farms are relatively recent conversions, many undertaken under the RMA 1991, or when Catchment Boards were taking a more stringent view of water use and discharges. However, not only are there farmers who do not have the same priorities for minimizing discharges, but whatever takes place on the new dairy farms is a change that many in the existing community find disturbing.

Social integration is important in rural communities\textsuperscript{43} and the rapid changes brought about by the growth in dairying have led to fragmentation in the study area. There is a need to develop strategies that bring groups together and this may be helped by working with communities (building on and working with local social networks has been found to be effective in dealing with distrust and suspicion\textsuperscript{44} on changes including environmental management issues. An important aspect to tackle is how to encourage trust, honesty and tolerance. Paine,\textsuperscript{45} in a sustainability project involving farmers, environmentalists and researchers notes that ‘an emerging integrity’ was the outcome of the project, with participants advocating each other’s work to those outside the programme. Although only a small group of 11, this project brought those from apparently different world views together, and is an example of how a commonality of purpose can be achieved if trust is developed.

In addition, a pro-active approach to compliance with regulatory requirements and anticipation of community concerns results in lower development and monitoring costs to farmers, faster application approvals, and less local concern and potential market risk.

A key aspect therefore to be resolved is how to establish links with regulators and representative community groups such as iwi so that an on-going understanding of each others needs is established and anticipated changes can be discussed. An acceptable process may also address the issue of social fragmentation perceived in rural communities as the result of dairying growth. Rippe and Schaber\textsuperscript{46} consider various mechanisms for environmental decision making and argue that citizen panels can be effective but only at the very local level for important decisions.

\textsuperscript{43} Sibley. In Cloke and Little (1997 : 229) is a discussion on supposed threats to the English countryside from ‘dangerous outsiders’. Sibley notes the importance of the symbolic role of the countryside because of its ‘nationalistic associations.’

\textsuperscript{44} Day (1998 : 89-105).

\textsuperscript{45} Paine (1997).

\textsuperscript{46} Rippe and Schaber (1999 : 75-88).
because of the time required of participants. A strategy which is efficient, does not create unrealistic expectations, and which is genuinely responsive is required.

A further aspect of context is that community values about the environment are also changing. A strategy which is efficient, does not create unrealistic expectations, and which is genuinely responsive is required. A further aspect of context is that community values about the environment are also changing. 47 Environment in the 1970s and earlier was linked to place. Location and scenic quality were the focus and the rural environment in New Zealand was almost an invisible place, between town and mountain wilderness. Now attention is changing to reflect environment as care. 48 This would appear to be reflected in the clear and unambiguous response to 'cues for care' in both New Zealand and USA, the increasing interest in such activities as recycling, and the dominant political ideology in New Zealand which places less value on environment as a unique place, than economic opportunity. Hence the focus on resource management in legislation as opposed to prescriptive town and country planning. The Resource Management Act 1991 has, through its requirements, drawn attention to the rural environment, and stewardship activities are a matter of increasing public debate and research. 49 Regional and district policies and rules in terms of the Act differ as do the politics of regulators and guiding philosophies on the efficacy of environmental measures such as oxidation ponds to minimise discharges. In addition, as each district and region continues to update and put out new policies and rules (and the Act itself is currently being amended) a busy farmer has a challenge to keep conversant with changed environmental requirements. This is compounded by the mobility of sharemilkers and other farmers.

The view of co-operatives and the New Zealand Dairy Board has been that compliance and on-farm environmental quality is a matter for the individual farmer, as an aspect of their business management. The companies in turn have addressed the environmental performance of their own processing and

47 Ottman (1992 : 5).
49 for instance the Selwyn Stewardship Scheme: research to investigate indicators of sustainability.
manufacturing operations. However, non-complying actions by individual farmers are a risk to the wider industry through altering community perceptions. Hence industry wide information on updated compliance requirements, and anticipated changes, would give the wider industry, individual farmers and neighbours more security.

However, it seems probable that the specific focus of public interest on environmental issues may change yet again, as dominant political ideology, technology and lifestyles change, so continued monitoring of the nature of environmental concern is required, with consequent updating of management actions.

7.3.4 Export marketing and 'clean green' issues
The key aspects of context for marketing are the increasing competitiveness of global marketing, together with the high amount of market protection in many countries, the varying environmental compliance requirements for competitors, such as for EU dairy farmers, which may be regarded as benchmark standards, and the perception of New Zealand dairy products and industry in markets. While the emphasis is now on developing consumer products, much of the New Zealand export production is still in the price sensitive commodity market. Therefore, while the New Zealand image is being used as a means of market differentiation, marketers warn that if substantiation of such an image were to raise the cost of production markedly, this would affect returns to the farmer. Under current economic conditions this could threaten the economic sustainability of dairy farming. However, this is a matter of degree. Marketers also warn that lack of quality substantiation may threaten market access.

50 New Zealand Dairy Group of Companies (1999 : 21).
51 Coddington (1993); Field (1994); Ottman (1992).
54 Meister, undertaking study of differing costs of compliance for competitors, pers comm. (1999).
Research\textsuperscript{56} into the links between environmental concern and consumer buying preference indicates conflicting understandings. Two aspects though, seem grounds for concern about consumer views on the environment. The first is evidence that consumers may punish rather than reward a rural industry for perceived deficiencies.\textsuperscript{57} The second is the widely established interest in the environment and widespread application of green marketing.\textsuperscript{58} However, it seems probable that a certain standard of environmental quality is expected as the 'price of entry' to a food market, rather than it necessarily providing a premium. This may explain some conflicting market responses and the lack of interest shown by overseas consumers in sustainability as identified in the Fact Finder\textsuperscript{59} study.

A further aspect of context becomes apparent from the results of the British customer survey.\textsuperscript{60} Although it is the perception in New Zealand that the country has an image of being 'clean and green,' British consumers apparently do not translate this to our food products. However, the respondents in the survey were not asked for their views on the environmental performance of competitors so it is not clear what the bench mark might be, or how New Zealand farm practice compares with consumers' knowledge or perception of that of geographically closer competitors. In addition, further investigation about general understanding or use of the term 'clean and green' and its link with New Zealand products through environmental groups in Britain - Royal Society for the Protection of Birds (with over one million members), and Greenpeace, suggested that the expression is not widely used.\textsuperscript{61}

\begin{itemize}
\item \textsuperscript{56} for instance, a scan of internet information using the word 'dairy' indicated a weight of US dis-information from Senators and interest groups concerning the role and standards of the New Zealand dairy industry.
\item \textsuperscript{56} Billones (1999), Bright and Manfredo (1995), Hock (1998), Morris, Hastak and Mazis (1995); van Liere, and Dunlap (1980).
\item \textsuperscript{57} Lundan (1996).
\item \textsuperscript{58} Ottman (1992).
\item \textsuperscript{59} Project 98 (1997).
\item \textsuperscript{60} Billones (1996).
\end{itemize}
Conversely, New Zealand as 'environmentally friendly' appeared an assumption among Asian customers who had limited knowledge of the New Zealand environment. However, most of those contacted had not previously heard of the specific expression 'clean and green.'

'Clean and green' as an image (whether scenic or pastoral) appears then to be being driven by New Zealand marketers rather than the market; by some as an aspiration - where we would like to be. In addition, the huge growth in tourism, with attention to scenery and New Zealand as place and experience, has also increased interest in the rural landscape. Tourism marketing, which has focused on the 'clean and green' image, and the expectations created by such marketing, cannot be ignored by a food producing industry which shares the same resource base. The recently introduced New Zealand Tourism Board slogan '100% pure New Zealand' will in turn raise further expectations about the rural landscape and farm management. Not only is the 'clean green' image a focus of tourism marketing, but 'clean and green' New Zealand and environmental quality has been a focus of food manufacturers, such as Heinz Wattie (vegetables) and venison marketing, and again whatever message these marketers deliver in the same markets will also affect dairy marketing.

Branding experts argue that if product producers and marketers fail to provide a clear emotional and perceptual foundation for their brand, the market will create its own. Public focus has moved from place and scenic protection as the center of environmental attention, to active management of place - environmental care and management for environmental quality and sustainability, hence, perhaps, the

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61 Steptoe, RSPB Public Affairs, response was 'We weren't quite sure what you mean by clean and green. Do you mean products which conform to certain environmental standards and carry an eco-label?' pers comm. (1998).
62 Allett, Interbrands Manager, Melbourne, asserts that aspirational market positioning is a valid approach, pers comm. (1999).
63 Heaton (1996).
64 Parliamentary Commissioner for the Environment (1997).
65 Allett, Interbrands Manager, responding to questions from author, pers comm. (1999).
perceived need by marketers to make the 'clean green' claim more explicit. Political advocacy and opportunism is also diversifying, from 'clean and green' to 'smart and green,' and '100% pure New Zealand.' In this scenario, the direct link of scenery with the dairy product, together with claim making without substantiation, creates an ambivalence that makes some farmers and industry representatives uncomfortable, and risks consumer backlash. 

The farmers and industry representatives in the case study believed that a system to substantiate environmental quality should be customer driven. It should address the concerns of customers. Food safety is a key concern of customers and consumers, and the industry, regulators and EU customers have responded by focusing on milk quality monitoring. Market surveys have now also indicated a growing interest in not only what is in the food product but how it was produced.

Cultural Theory suggests that customers will have a range of world views. The Roper Institute identified five consumer segments in the USA in 1992, and suggestions as to how to respond to each of these groups, from 'True-Blue Greens' to 'Basic Browns,' recommended by Ottman, are consistent with appropriate responses to world views. Consumers will therefore hold a range of perceptions of the environment and agriculture's effects, and are also likely to form perceptions based on their local context. For instance, the apparently stronger expression of hierarchists views in Europe suggests that those customers may express a much greater interest in monitoring and definition of environmental quality standards than, for example, the New Zealand consumer.


67 the values that dairy farmers workshop participants, facilitated by Allett of Interbrands, expressed for 'Brand New Zealand' (mountains and sea, clean water, people enterprise, healthy, beautiful) were similar to values expressed for their future mega company, pers comm. (1999).


70 Grant (1991 : 2).

71 Billones (1999).

72 Ministry of Agriculture and Forestry (1999).

New Zealand stakeholders, particularly environmentalists and Maori have indicated that they would seek an opportunity for consultation in any environmental management scheme, and regulators in the case study recommended consulting neighbours. Therefore, a credible scheme to substantiate quality must respond to community as well as customer and consumer concerns.\(^{75}\)

The question then concerning how to deal with conflicts between market and local values, becomes one of how to deal with the various preferences held not only by customers in different markets, but also by New Zealand stakeholders. There are not singular views. The proposition developed in this thesis is to accept that differing views exist, and to seek symbolic means of demonstrating compliance, commitment to quality, care, and an alignment of values with stakeholders, in a way that is responsive to context, flexible and robust.

One option to achieve change and substantiate practice which emerged from the case study and was suggested by farmers and industry representatives, is an environmental management system. The use of an EMS had also been identified as being of interest by the dairy industry at the start of the study. Such a system could be understood as both a symbolic and a practical action, and could provide verification of regulatory compliance monitoring. A trial was therefore conducted to assess whether such a system could respond to differing world views, whether it was sufficiently flexible and robust to respond to neighbour or customer concerns and whether it could be presented in a symbolic way which gained wide ranging support. The next section reviews and evaluates a trial of this option, conducted with six dairy farmers.

### 7.4 Evaluation of the EMS trial

In this section the responses to the EMS trial are described and evaluated in terms of the theoretical framework of the thesis. The review investigates whether such a system could fulfil farmer, industry, customer and community needs. However,

\(^{74}\) Ottman (1992 : 129).

\(^{75}\) Ottman (1992 : 74-75).
first the characteristics of an Environmental Management System are described, then the design and implementation of the trial is reviewed.

In current business management practice, Environmental Management Systems (EMS) are generally part of a quality management system. Quality management:

'is based on having a willingness to see the world from the customer’s point of view and a desire, a burning desire, to solve any problems quickly.'

Quality management involves setting up measurable and monitorable systems to ensure that a consistent product is delivered to customer requirements with minimum waste. Environmental quality is concerned with the relative health, vitality and sustainability of the environment. Product environmental quality is about the impact production systems have on the environment, the product source, and during the life cycle of the product. Environmental quality management demands a thorough understanding and analysis of physical, biological, and production systems and processes.

The EMS is characterised as a cycle of improvement. The main features of this cycle are:

- first draft, and after information analysis, finalise an environmental policy
- understand environmental aspects, including priorities and legal obligations
- develop a strategy, objectives and targets (select performance indicators)
- develop an environmental management programme to achieve objectives
- implement programme
- measure and evaluate performance
- review management objectives and procedures

This cycle, if part of a certification system such as ISO 14001, also has an independent audit to monitor and evaluate compliance with the EMS programme.

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77 Roberts (undated 1995 :?).
The ISO certification sets an international benchmark\textsuperscript{78} for EMS systems. However, an EMS system, in itself, does not verify or set a minimum standard. Instead, an EMS establishes and documents the system, and sets in train a programme for on-going systems improvement.

A farm EMS is concerned with waste minimisation as well as maintaining life supporting systems, or environmental integrity. Such aspects as chemical applications and effluent disposal, which can be regarded as a fertiliser (effluent has a fertiliser value, in 1996 cash terms, of between $1280 and $1550 per annum per hectare, for nitrogen, potassium, phosphorus and magnesium.),\textsuperscript{79} are important parts of a dairy farm EMS.

The EMS adopted for trialling purposes was developed as a computer-based programme on behalf of a group of farmers, who had responded to community concerns about the impact of farming. The North Otago farmers, part of the North Otago Sustainable Land Management landcare roup (NOSLaM), developed the programme, termed the Ag-vantage system, with the assistance of Otago Polytechnic, Otago Regional Council and Ministry for the Environment. The programme was developed to address farming practice in the area and legislative requirements.

The system, which was in the early development stage, was supported with workshops for farmers and guidance manuals for instructors. It set out to characterize the physical characteristics of each farm, to segregate management units and to then apply a risk analysis to identified farm practices, such as chemical storage and weed control. On the basis of this computer analysis the system produced a programme for an individual farm, providing management options and stating monitoring methods. The EMS was trialled on six farms in the Canterbury/Otago area.

\textsuperscript{78} Roberts (undated 1995 : 8) Presenter notes.
\textsuperscript{79} Heatley (1996).
There were several objectives of the trial. The main objective was to establish whether, as an example of a symbolic system, the EMS would be seen as useful and effective by the range of world views, both farmer and stakeholder held, and substantiate the ‘clean green’ image. The world views of each trial farmer were assessed and confirmed by self ascription. It was established that three world views, egalitarian, hierarchist (four of the six farmers), and entrepreneur were represented. However, in designing the trial, a more conservative approach was adopted than testing whether action was undertaken irrespective of world view. Instead the objective was framed in terms of perception of benefit. Although the theoretical construct indicated that benefit would be perceived by all, because the EMS would be understood as a symbolic action, and therefore would not be perceived in terms of a conflicting world view, the design specifically selected half of the trialists who had been identified as farmers who did not see benefit generally in environmental management controls or requirements. The objective then was to see whether these farmers saw benefit in the EMS, and whether their previous reservations would result in different actions to those farmers who had expressed support for an EMS. The two groups of farmers (pro and con) were paired by locality, experience and ownership status, to try to minimise differences arising from those factors. For instance, two younger sharemilkers from the Culverden area, one pro and one more cautious, were paired. In addition, the trial set out to identify whether there were any deficiencies in the particular system chosen, significant time or capital costs, whether it provided for compliance requirements, provided the necessary information for change, could respond to different concerns and whether contextual factors appeared to have influenced farmer actions. However, it was accepted that the limited number of participants would make analysis of contextual factors difficult.

The system was selected after searching literature and undertaking a review of different systems being developed in the region. The system selected was being refined while the trial was being conducted. The system was selected because it
had local applicability and was the most advanced of alternatives; being computer-based, and adapted for dairying. System set-up on each trial farm did not include a workshop on business goals, which the system developers had started conducting to encourage motivation, because the objective was to consider the symbolic system itself. After providing the farmer with a computer generated analysis of issues and recommended actions, based on farm characteristics and risk aspects, four visits were made between June/July 1998 and March 1999 to review perceptions, actions and change. The trial therefore spanned most of the dairy season. Chapter Three describes in more detail the method of trial set up, implementation and review. Appendix C provides further background information on the trial, including the final questionnaire of trial farmers, the analysis of responses from stakeholders (trial farmers, industry, regulators, iwi and environmentalist representatives) to the report on the trial, and the notes taken at the workshop held to consider the report, and future options, with trial farmers and industry representatives.

The system used did not provide for a farm or industry environmental policy, which is generally the first stage of an EMS. An explicit environmental policy or goal would have given the system more focus. It later appeared that this was partly occurring in the workshop sessions in conjunction with business goals, but that had not been clear when the trial was commenced.

7.4.1 Summary of responses to the EMS trial
All farmers in the trial saw benefit in the system (irrespective of their original reservations), as did all other stakeholders who were asked to comment on the evaluation of the trial, although some stakeholders had concerns about certain aspects, such as the effectiveness of a voluntary scheme. Some farmers and stakeholders sought a compulsory approach to ensure adoption; others believed that uptake would be reduced by compulsion.

There was broader agreement on the need for a simple recording system which was not time consuming to carry out, but could be verified by a field officer to
check correct methods, and audited, if chosen, by an independent body. The support by all participants and reviewers indicated that although a variety of world views, and consequently different perceptions of the environment were held, the scheme met differing expectations and preferences. Therefore such a scheme is likely to be acceptable to the wider industry, but requires further assessment.

Those in the trial and review groups saw greatest benefit from the EMS in raising farmer awareness of issues and alternative management practices. Having considered an issue and options to address it, farmers felt better prepared and were able to reflect on implications of environmental issues, such as fertilizer spreading practice. One farmer calculated that some $3000 per annum of fertilizer was being distributed on lane ways, shelterbelts, road verges, into drainage ditches and onto his neighbour's property, through inaccurate distribution. A modified system of application, he realized, would be more efficient. Other risk management benefits were identified, particularly the need for special storage methods for chemicals; and ways to minimise DDT contamination of milk, including testing the soil of every farm paddock. However, apart from these issues, few farmers noted major changes in practice and no farmers started recorded monitoring as a result of the scheme.

The scheme was compatible with current farming practice and there were minimal conflicts with farm schedules. Should record keeping be undertaken this would demand some regular time. A capital cost identified was a concrete floored chemical store, which those affected thought a wise investment. The scheme had been designed to respond to compliance requirements and no difficulties in achieving this were identified. The scheme could easily have been adapted to changes and the adaptability of the scheme to each farm indicated flexibility.

Some aspects were wanting in the scheme such as maintenance of lane ways and the farm dairy yard and approaches. These aspects not only affect animal health but have an impact on visual perception. There was an emphasis on biophysical
aspects in the scheme: animal health and welfare and visual aspects such as 'cues for care' were not so evident, with the exception of weed management.

The review team were unanimous in their view that a system that is voluntary (at least initially), can be audited, has comprehensive company and industry support, and includes animal health and welfare, and food safety was needed and should be adopted. They were keen to see this scheme, with modification by farmers to incorporate omitted aspects, rapidly taken up by the industry. All believed that the system would benefit farmers (in efficiencies and cost savings), the community, consumers, and the environment.

7.4.2. Evaluation of issues raised
Although trial farmers and those in the discussion group were urging haste in implementing the scheme in order to minimise market risk, there are three aspects that require further consideration. Firstly, a farmer indicated that other efforts at encouraging participation in the scheme in his area had been less successful, with farmers paying only 'lip service' to environmental management. This suggests that how the system is set up and promoted to farmers and stakeholders will be a major factor in success. It is contended that it is both the symbolic nature of the scheme as well as its practical application that allows it to be accepted by all the represented world views, and various stakeholder groups. Much greater emphasis on the generic aspects of the scheme are needed. A link is needed to identify and respond to the changing values of farmers, community and the market.

In addition, it seems probable that the trial and review was under-represented by entrepreneurs who may be less convinced than other world views in a systems-based proposal. This is because, although this EMS is regarded as a symbolic action system, entrepreneurs, as a group are more inclined to a trial and error approach. If the system were to be imposed, they are likely to object. In addition, entrepreneurs saw less need than other world views for environmental change. For this group, the inclusion of clear international benchmarking and an emphasis on market benefits and farming pride, as well as quantification, and perhaps financial
incentives, will be needed. Clear benchmarks or standards will also be relevant to those who seek rigor in such a scheme.

The third aspect is that although all participants noted that it raised their awareness of issues, there were none who made substantial changes to their farming practice, or started monitoring, an essential part of such a scheme. It seems that when such a scheme moves from the general to the operational detail, barriers are likely to emerge. Therefore flexibility to allow options which align with the various world views should be provided.

Not only then does the quantitative detail need establishing, along with clear generic indicators, but the scheme will need simple straightforward guidelines, to allow farmers to develop improvement graphs or other tools and to know what is expected of them. Branding at the farmer end of the process would reinforce the symbolic action.

A further aspect of the scheme is that although it allows for monitoring, it does not provide for input from stakeholders. This would need to be considered at different levels, and mechanisms developed for review and updating. At a very local level for instance, forging on-going relationships, or building coalitions\(^\text{80}\) perhaps through working groups, or an annual invitation to neighbours for comments on management systems, repeated at regional or company level would address the deficiency - an annual report card or open day.

A participant noted that contractors and suppliers of dairy farmers were not part of such a scheme, and that this could prove critical to environmental quality, as with ISO 9000 where service suppliers are linked to the standard. Fertilizer spreaders and suppliers, and dairy graziers are also important to the perception of dairy farming. Such a scheme will need to be capable of extension to all suppliers and contractors for dairying once the initial set up has been completed.
An aspect of significance in the earlier case study, that of ‘cues for care,’ was not part of the EMS scheme. Those developing the scheme had apparently been less aware of, or assigned lower priority to, positive visual signals or indicators. Aspects perceived as ‘good practice’ need to be part of such a scheme so that benefit is gained not only by reducing impacts, but also by signalling to stakeholders that this is occurring. Pannett,81 in her evaluation of the scheme, also noted the omission of aesthetic factors, which she regarded as an important contributor to capital farm value. Nassauer, Smiley, Eaton and others82 have argued that the aesthetic appearance of a farm also plays an important role in sustaining environmental health and ecological integrity; and they therefore should be part of the EMS.

Several stakeholders questioned the appropriateness of the ‘clean green’ marketing strategy. They were concerned that to the public, the marketing strategy was perceived not as an aspiration, as some farmers had seen it, but a claim of fact. Although many farmers were comfortable with this claim on a comparative basis,83 they were also aware of environmental management deficiencies on their farms, and thought that making such a claim, may be inviting loss of reputation should a competitor seek to contest the claim. While some entrepreneurs saw the image as a successful marketing ploy, others saw risk in consumer backlash. This concern has substance, as green marketers indicate that while the premiums that customers indicate they are willing to pay are not borne out by sales, customers punish companies for misleading advertising, by avoidance of their product.84 The participants in the review drew attention to the emotive public debate linked to genetic modification and argued that a strategy which did not invite repercussions may address risk better.

82 Nassauer (1997).
83 which aligns with the response to the Billones farmer survey.
7.5 Interpretation: a strategy for stakeholder respect?

If a green marketing strategy were to be adopted, focusing on positive farmer action and care rather than on an image of ‘clean and green,’ this would avoid the current media conflict over agriculture’s role in changing New Zealand’s natural scenery. It would also avoid drawing international market attention to the substantial changes to New Zealand’s original vegetation that has been undertaken to achieve productive agriculture. In addition, Wasik argues, a successful green marketing strategy requires the integration of an environmental strategy throughout the organization, such as for energy efficiency and packaging. Therefore the support of the New Zealand Dairy Board and joint initiative partners is needed.

As the industry moves to become more integrated, and therefore more visible as one entity in New Zealand, it appears likely that it will risk more negative publicity if the current growth in intensive farming continues. An EMS in conjunction with an environmental strategy would help to address this. Should a coordinated environmental quality strategy be considered, Interbrands85 marketing consultants advise that values and aspirations should be investigated with farmers and others in the industry.

Although there was some concern in the review group that standards for an EMS might be set too high, there is evidence that for ethical and competitive reasons farmers are likely to set their own standards higher than minimum compliance. Such examples as ISO 14000, The Natural Step, HACCP (Hazard Analysis Critical Control Points), TQEM (Total Quality Environmental Management), the Valdez / CERES / Caux principles are currently applied to agricultural processes and products, many for public and company benefit rather than to merely meet compliance standards. In free market economies competitive pressures to continually establish higher levels of quality can be expected.86

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85 Allett, Interbrands Manager, Melbourne, pers comm. (1999).
It is therefore surprising that an industry that has tacitly adopted ‘clean and green’ as a marketing strategy and has based the strategy on quality and national reputation, has no established system to substantiate environmental quality. The workshop participants’ sense of urgency appears well founded.

To be successful, an environmental management system for export dairying needs to respond to market, community and neighbour concerns about the quality of the rural environment, but it also needs to be presented in a way that achieves support from farmers and stakeholders with divergent world views. If a management system is presented in sufficiently generic, or symbolic terms, different world views each take from it what they seek. Entrepreneurs see that it is beneficial for their decision making, is quantifiable as well as addressing risk perception, the hierarchists perceive that the option adapts to thresholds and complies with legislation; and the egalitarians perceive that it is a rigorous system, not ‘green wash.’ Fatalists would assume that no option would make a difference so will question the necessity, thus encouraging a more robust initiative. This, from a marketing perspective, is then more likely to be responding to customer needs, which, it is argued, is the purpose of green (and all) marketing.

The EMS trialled by six farmers and reviewed by stakeholders could fulfil these requirements and be a means of substantiating a market claim of environmental quality. However, it needs:

- development of a strategy to promote the scheme to ensure comprehensiveness, consistency, co-ordination and industry pride
- development of branding and other symbolic aspects, including ‘cues for care’ so that the message is clear
- agreement on standards and staging for achieving standards

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87 as examples of literature reflecting this world view and decision making under risk: Bieman (1989); Busemeyer and Townsend (1993); Fishburn (1991); Fischhoff, Slovic and Lichtenstein (1988); Fischhoff et al (1981); Hammond et al (1980); Savage (1954); Simon (1955); Shafer. In Bell, Raiffa and Tversky (1988).

development of mechanisms for responsiveness to ensure market and community respect, including benchmarking and stakeholder alliances.

The EMS trial set out to evaluate whether farmers and other stakeholders saw benefit in the adoption of an EMS for the industry, to substantiate the 'clean green' image, and whether the EMS could be accepted as useful by all world views. The trial confirmed the acceptability of the EMS although indicated deficiencies in the system chosen. In addition, it indicated that although the generic idea of an EMS could be perceived as a symbolic action, and therefore gained wide support, conflict could arise over detail. Therefore further development of symbolic indicators and care with implementation will be necessary. An EMS could deliver benefit to farmers by increasing efficiency through more effective monitoring, increasing capital value through attractive property and healthy stock, and lower environmental compliance costs. It could also ensure the industry minimizes market risk and maintains stakeholder respect.

7.6 Summary
On the basis of the case study, the New Zealand dairy industry is not yet in a position to make a claim of being 'clean and green' with confidence. Expectations from marketing initiatives and changing public values indicate that it is no longer convincing to lay claim to a 'clean green' image on the basis of New Zealand as a place. An active indication of farmer care is expected and legislation demands environmental monitoring for sustainable management. While there are differing views among both farmers and stakeholders concerning appropriate short and long-term farm management, change to substantiate quality is required.

An environmental management system, which is flexible, responsive and rigorous has been shown capable of fulfilling requirements. In Chapter Eight the strategies and policies necessary to introduce an industry wide environmental management system are discussed and evaluated.
Signs of the times: implications and conclusions

'Culture, however we define it, is central to everything we do and think. It is what we do and the reason why we do it, what we wish and why we imagine it, what we perceive and how we express it... It is the element in which we live.' Ottery

8.1 Introduction
In this final chapter, the study question posed by the dairy industry and the theoretical construct developed to address the question are restated. The key findings from the case study are then reviewed: the New Zealand image of 'clean and green,' the relevance of culture and signs and symbols to the way people form preferences and perceptions leading to actions; and the context of dairying. The environmental management system as a strategy to respond to the dairy industry's question is then evaluated.

The implications of the thesis for Cultural Theory, environmental quality including the 'clean green' image as myth, 'cues for care,' and systems issues, and the relationship of findings to current knowledge and literature are then discussed. Implications for the topic of environmental quality and dairying are addressed through strategies and policies. These form the response to the study objectives. Finally, the implications of the thesis for methodology and future research are considered.

8.2 The question and construct
The New Zealand Dairy Research Institute wishes to establish whether marketers can make a claim of being 'clean and green' with confidence. They also seek
advice on how the dairy farmer can identify with and contribute to New Zealand’s ‘clean, green’ image. Three dimensions of environmental quality were established: first, that of sustainable dairying and best practice for farming profitability; second, responding to legislative requirements and being a ‘good neighbour’; and thirdly export marketing opportunities and issues. ‘Clean and green’ as a symbol and idea was regarded as a potential benefit for the farmer and industry, for neighbours and regulators, and for the consumer.

The research objectives for the study were to:

• understand farmer perceptions and actions relating to environmental quality, their motivation for adopting particular farm management practices, and the factors that influence farmers to adopt environmental management systems

• establish a framework of environmental quality goals and strategies to encourage the adoption of environmental management systems on the farm by farmers, companies, community groups such as Landcare, regulatory agencies and the industry.

The idea of ‘clean and green,’ which underpins this thesis, was characterized as a powerful cultural myth - meaning that it embodies a fundamental truth. Investigation of this myth considered firstly how myths evolve as a form of communication, the power of myth as a means of conveying symbolic messages, and the particular significance of ‘clean green’ as a re-framing of the pastoral myth.

The pastoral myth is one that has been retold throughout European history. It carries the message that peace, security and beauty can be found in the ‘good life’ in the country. In this vision, the countryside has rolling grassland, framing trees, livestock and people. The early British settlers, who toiled to clear forest and

swamp, in order to develop pasture for stock, held this same vision of plenty. The pastoral myth was expropriated to become a national myth and pastoral farming soon became the foundation of the New Zealand economy. However, in contrast to the situation in many parts of modern Europe, pastoral farming still remains an important feature of the New Zealand economy, along with tourism, for which the rural countryside is also important. The ‘clean green’ myth now re-presents two diverse aspects of the pastoral ideal: the indigenous temperate rain forest and the exotic pastoral landscape.

The ‘clean green’ image is a powerful ideal in New Zealand, and conveys a potent symbol for marketing. However, although others may accept the myth, it is not a shared vision, and markets may view the image with scepticism if they have a different view of farmers and the countryside. While we might claim the image to be factually correct, in comparison to some densely settled areas of the world, there is not yet a system to substantiate this image. In particular, intensive pastoral development based upon exotic species has had a range of environmental impacts, including widespread elimination of the natural vegetation cover and native fauna, erosion and water contamination. These impacts conflict with the image, leaving our myth vulnerable to ridicule unless we are able to demonstrate ‘clean and green’ aspects of management of the pastoral landscape. The claim of a ‘clean and green’ image based on scenery alone will not withstand competitor scrutiny. From this understanding, stakeholders views of the pastoral myth were sought and analysed.

The pastoral myth of ‘clean and green’ was also the springboard for two further ideas. A myth is a cultural symbol. In addition, culture is at the basis of how people think. Hence an explanation of how people form preferences and how this affects their actions was sought in theory relevant to culture. The object was the development of a better understanding of how farmers and other dairy industry stakeholders perceive agricultural practice, and how this affects actions. Cultural
Theory was selected from a range of possible approaches because it not only provided an explanation for the identified gaps in understanding on the relationship between belief, attitude and action, but it also explained how the differing and conflicting perspectives held about nature and the rural environment are formed and modified. Cultural Theory interprets preference formation by five social patterns, and ways of thinking, for which the term world view is used. However, while Cultural Theory provided a useful basis for understanding perceptions and action, it did not provide an explanation for overcoming conflicts between the differing world views, so that coordinated action could be achieved.

Again, theory relating to culture provided ideas. The myth of ‘clean and green’ is a symbol and:

'Culture consists of symbols that preserve and direct the life of society.'

The role that symbols were playing in communication and that of the particular symbol of ‘clean and green’ was considered. The interpretation was postulated that symbols are understood reflexively, that people read their own preferences from the image and relevant context, and that they construct meaning in terms of their own world view. The symbol is conveyed as a simple concept or image, and is not perceived as emanating from a particular world view. Hence the symbol becomes the mechanism whereby ideas bridge across conflicting world views, and this is what gives the symbol such power. The symbol is assigned meaning in terms of each world view. This reflexive role of symbolic communication was termed the 'looking glass' effect. Having made the link between perception and action through world views, consideration is given as to whether the symbol could be a device for gaining agreement and concerted action among those with differing world views.

A particular group of symbols was considered useful. ‘Cues for care’ is an idea developed by Nassauer, who postulated that people identify certain symbols

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2 Salmon (1999: 10).
relating to agricultural practice, which indicate whether the farmer is adopting active and appropriate stewardship. The visual symbols are associated with 'good' farming practice, which in turn reflects the pastoral ideal. Tidiness, mown strips on the front boundary, machinery put away, are examples of 'cues for care.' These cues, being part of the symbolic system of cultural communication, have a powerful effect on farm practice, and might be an effective device for change. An understanding of local 'cues for care' may therefore contribute to adoption of the 'clean green' image, because:

'The well-kept landscape further compels people to attend to landscape care.'

In addition, the 'cues' appear to have a wide, perhaps universal response, and are not recognized only by farmers. The cues may also be perceived by consumers of the rural landscape, tourists and travellers, and may be a useful device for green marketing. Nassauer had also found that the 'cues' can be used to ensure conservation practices such as riparian protection, are not seen as laziness and poor husbandry. But first, New Zealand farmers response to the 'cues' needed to be investigated, and if confirmed as useful, the 'cues' might then be used more widely.

Finally, an important aspect of Cultural Theory, that of context, was considered. This was understood not only as: 'Particularities of time and space' which 'should not be discounted,' but both general and detailed aspects of the farmer's relationship to three systems. The three dynamic and iterative systems were: agricultural production, the ecological system, and the socio-cultural or institutional system. Consideration of each system in turn, acknowledging the overlap and interrelationship of the systems, indicated aspects of context that may influence findings.

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Thus culture from socio-anthropological science, biophysical and management science and marketing were taken into account to build an understanding of farmers and other dairy industry stakeholders' preferences and perceptions. Information collected through a case study of farmers and other stakeholders was then evaluated, along with supplementary data such as print media reporting. The key findings from the case study are now reviewed.

8.3 Key findings

8.3.1 ‘Clean and green’ as myth and symbol

The ‘clean and green’ image was first investigated as an aspect of culture. This approach allowed an understanding of how the image had developed and why it had proved so potent. The link of the ‘clean green’ image to national identity indicated that this myth is more powerful than most for New Zealanders. It is a hegemonic myth: one that cannot be disputed without accusations of disloyalty. The very force of the myth prevented examination of the paradox behind the myth: the paradox being the application of a pastoral myth to both agricultural land which has been developed by removal of the natural vegetation and features, and the underlying image of untouched landscape. Farmers and stakeholders were generally reluctant to differentiate between the scenic and pastoral images: both interpretations were valid for them. Neither did they dispute the image itself by comparing the image with their own view of nature, even though it had been found that farmers and stakeholders held at least four different ways of perceiving the environment. Instead, there was wide agreement among farmers and other stakeholders on what the myth implies. It was not only the image of ‘clean and green’ that was so effective as a communication device, but in addition, people were constructing their own view of what the image meant to them. They were interpreting this simple message in terms of their own world view. It had been postulated that this effect could be achieved by the use of symbols, terming this the ‘looking glass’ effect. The ‘clean green’ image has symbolic meaning, so this effect could have been anticipated. When attempts were made to differentiate or
break down the 'clean green' image, farmers questioned the validity of doing so. It seemed that this symbol is most effective at a simple, conceptual level.

However, farmers and others used the symbol in different ways. To the farmer, the image was seen as a goal or symbol of excellence. 'Clean and green' indicated what farmers wished to achieve. This suggested that use of 'clean and green,' or a similar branding symbol, will continue to motivate farmers to improve environmental quality on-farm. This view is supported by the output of a workshop facilitated by Interbrands on values farmers held about the industry and where they would like to see the industry positioned.7 Descriptors that farmers used for the industry at present included: 'self aware, natural, participative, practical, honest and safe.' Values that they ascribed to their product for the future included: 'good for the environment, good for people, excellence, wholesome, affordable, quality, respected, from natural resources, and 'clean and green.' These values indicate that although there are environmental management issues to address, generally farmers see their goal as being a high standard of management both for milk quality, and how it is produced.

Other New Zealand stakeholders understood the image as depicting New Zealand. To them, the 'clean green' symbol is part of national identity and understood as a fact, although there was dispute over the dairy industry's claim to the image at present.

Stakeholders based their reservations on:

- environmental issues and impacts of dairying which need to be addressed (see Appendix G for a list of issues given by the various stakeholders)
- the view that such claim-making should indicate active steps taken by the industry towards sustainable management, rather than rely on the scenic image

7 hosted by New Zealand Dairy Group, 5 August, 1999.
the risk of adopting the image for marketing when the industry lacks a current means to substantiate the claim

some saw the national myth as being misleading, irrespective of the role of the dairy industry.

As a marketing device to differentiate New Zealand dairy products, information available was conflicting and inconclusive. While market research had widely linked ‘clean and green’ as an image for New Zealand, there was less evidence to suggest that this understanding was transferred to food products, or that it had an impact on preference. There has though, been a large increase in eco-labelling and environmental claim making in western markets, and ‘clean and green,’ without verifiable support may have been given little credence in such markets. However, Asian customers appeared to respond to the image, as support for a New Zealand dairying reputation of food safety and quality. This suggested that there is a diversity of perceptions and knowledge in markets, and local context is a significant factor for green marketing.

In summary, local stakeholders were arguing that the industry could not currently make a claim of being ‘clean and green’ with confidence. They identified farm management factors that first needed to be addressed. In addition, there appeared some risk of making such a claim in markets without a method to substantiate it. However, the symbol of ‘clean and green’ has a powerful impact and a positive response from farmers and some markets, so the benefit of such a symbol should not be dismissed. In Section 8.5 the options for addressing risk at the community and market level are discussed, and recommendations offered.

8.3.2 The link between perception and action

How to initiate coordinated action by farmers towards a goal of ‘clean and green,’ was posed as a question at the start of the research project. The case study investigated farmer perceptions and their preferences for achieving improved environmental quality. Farmers held different but consistent views on how their
farms should be managed. Their responses were based on their world views and each of the four world views identified was linked to rational action, based on their view of the environment. There was therefore not one environment with different attitudes about appropriate action, but four different perceptions of environment. Farmers actions then responded to their environment in terms of consistent values associated with these perceptions. Opportunity was taken to observe farm management and problem solving, and the study established that farmers actions were consistent with their world views. In addition, farmers confirmed their world views through self ascription.

Having established that farmers held four different perceptions of the rural environment, stakeholders world views were investigated and the same range of perceptions were identified. However, while there was a majority of farmers who perceived nature to be benign and who sought clear quantification of any cause for restriction or concern, there was a majority of stakeholders, particularly regulators, who perceived nature to have thresholds beyond which degradation could occur. This group believed that expert advice to establish systems and controls was the appropriate way to manage the rural environment.

The link between farmers' preferences and actions thus established, with not one but four responses. There appeared to be not one but four generic factors which would influence a farmer to take certain actions. The objective of devising a clear strategy for coordinated farmer action seemed confounded.

However, the idea of symbols to bridge across the differing world views provided the opportunity. Farmers were asked for their views on signs or cues which would indicate good farm management. 'Cues' such as neatness were widely recognized and agreed by farmers and stakeholders interviewed. Their responses were consistent across differing world views, with the exception of some entrepreneurs who believed that profitability was the only way to judge good farming and this could only be seen on a balance sheet. Although this was in conformity with their
world view, there were other entrepreneurs who nevertheless, noted visual indicators for care. Local care signs were similar to those already identified in the USA. 8

The efficacy of using symbols as a communication bridge across world views, and therefore of achieving coordinated action, was tested by trialling a symbolic action, an environmental management system.

8.3.3 EMS as an instrument for action
The EMS trial confirmed that even farmers, who had indicated reservations about the need for environmental concern, supported the concept of an environmental management system for the industry. This same affirmative response was also shown by a range of stakeholders who were asked to comment on a report on the trial; and was also reiterated at a workshop held to discuss these responses and consider future strategy. This was taken as confirmation that a strategy that used a symbolic action had prospect of a positive response from all the world views.

The main reservation expressed about the introduction of an EMS was the need or otherwise for compulsion. Some did not believe that strong support could be achieved without compulsion; others thought the reverse, and the opinions aligned with their world views. Those who favoured some form of compulsion were those who favoured rules and controls for management. While those farmers who had not favoured environmental management attention agreed that they would not welcome the introduction of an EMS, because it would extend their work, they nonetheless argued that such a system was beneficial, necessary, and should be adopted by the industry.

However, there are problems to be overcome with an EMS. Introduction of such a system has a sizable time commitment, and time is a very scarce resource for short-handed farmers. Other testing of the system undertaken has had a less

8 Nassauer (1988).
enthusiastic response; and despite reference to monitoring in the system, no farmer initiated formal recording during the trial. In addition, the major benefit was in awareness of environmental issues and alternative management options: no farmers undertook a major change in environmental management in the course of the trial.

Finally, operational systems such as auditing had not been resolved, and neither had the explicit link of stakeholder and market concerns, and identification of bench marks and standards which would be recognized and would satisfy stakeholder concerns. The 'bottom line' standards in the EMS were those set by regulation or by the farmer group who developed the scheme. The EMS could also have benefited by recognition of 'cues for care,' visual and aesthetic factors such as the significance of the entry to the farm, and other identified aspects of dairy farming which have an effect on perceptions such as animal welfare and health.

In summary, the trial indicated that an EMS could be perceived as a symbolic action and gained support across differing world views. The EMS was successful at a generic level: work is required to develop aspects of the system which will encourage application and recording, allow input of stakeholder values, differing regional and district compliance requirements and provide for market substantiation. Most particularly, the procedures for the EMS scheme require options with which each world view can identify with, so that it is effective both at a generic level and at a detailed implementation level. Indicators and 'cues for care' present opportunities for bridging across world views. Further development and wider trialling needs to address the deficiencies outlined. Section 8.5 summarizes strategy for further EMS development for the dairy industry. This is detailed in Appendix H.

8.3.4 Media take active role in cultural construction
The longitudinal review of daily, industry and technical print media reinforced Harrison and Burgess' argument that the media have a powerful role in cultural construction. The media appeared to have assisted in promoting the national myth
of the ‘clean and green’ image, and this in turn appeared to align with changing political ideology. The increasing significance of this myth in New Zealand became apparent when text was compared over time, with different audiences, and particularly with an overseas publication. In addition, entirely different messages on environmental quality were apparent when comparison was made between the various media. This suggested that the role of the various media should be taken into account in any strategy for change, and the instrumental role of a symbol such as ‘clean and green’ should be considered, to avoid the conflict of world views and provide effective and memorable messages.

8.3.5 The context as critical
Theory on culture argues that context is critical to understanding perceptions and actions. This was affirmed in the case study where ownership structure and experience indicated modification of actions, but not necessarily modification to world views. In addition, a review of the history of the dairy industry had highlighted events that had served to develop an industry culture of parsimony, independence and preparedness for change. The current context of change in industry structure and systems to respond to global marketing imperatives; farm size and management systems to increase economies of scale were also significant. The dairy farm is a business, and therefore profitability and continuity, as a necessity for economic sustainability, was a key contextual factor.

Despite growth in productivity, subsidized global competition is delivering diminishing returns for New Zealand dairy farmers. At the same time faster and more efficient responses to issues of resource management are expected of the farmer, particularly where resources are now perceived as part of the public domain and a concern for future generations, such as riparian and water management and wetlands protection. Technology is allowing much greater precision in not only monitoring milk quality for contaminants, but also monitoring the environment, by for example, satellite information systems and

9 Baynes (1998); Memon (1997); Ministry of Agriculture and Fisheries (1993).
soil and water analysis. Information though about complex systems, such as the effects leaching of nutrients from particular soils, is still imprecise. Farmers, who have demonstrated a hunger for knowledge about their ecological systems, must still maintain flexibility and keenly observe day-to-day changes as well as forecast long term effects of their practices. They have also had to respond to learning curves that the new administration systems, particularly regional councils, have experienced: as an example, acceptable effluent systems have changed in the last few years from barrier or long ditches, to two-pond oxidation systems, to direct application to pasture and effects based management.

In summary, the study found contextual influences on world views, the ‘clean green’ image, and systems management at local, regional and global scale, which in turn influenced the farming enterprise, stakeholders and markets. Further changes which will affect the transactional context are anticipated and such changes will need to be taken into account in future theory development, strategy and policy.

8.4. Implications for theory

8.4.1 Cultural Theory
Cultural Theory is evolving from its first development based on a static typology, and this case study not only gained insight from application of the theory but will contribute to the theory. The theory proved helpful in providing a means to understand the link between preference formation, perceptions and actions. The contribution to the theory is in the application to dairy farming and environmental management (previous work in this particular area had been in political studies in Europe, rather than environmental studies), which in turn, provides further insight into the expression of the various world views of dairy farmers.

\footnote{Examples can be found in reports of the Proceedings of the New Zealand Grassland Association annual conference from 1930.
\footnote{See for instance Auckland Regional Council (1999); Manawatu-Wanganui Regional Council (1995); Ministry of Agriculture and Fisheries (1994).}
The case study sought world views of different sectors and groups and indicated several findings that might have been anticipated but had not been tested. Firstly, there was not a singular world view held by local indigenous people - Maori. The same range of world views was identified as for farmers, even though several respondents believed their world view was 'the' world view of the people, and conventional wisdom had held that such groups had one perspective, the 'Maori view.' This was found to be unrelated to particular tribal affiliation: different world views were both identified and self ascribed among Ngai Tahu and among Ngati Kahungunu interviewed; that is, two different tribal groups.

Secondly, although environmentalists interviewed were predominantly egalitarian, there was also a range of world views in this group. The implication of these findings is that it is a mistake to assume that farmers, Maori or environmentalists, as examples of a group, may hold one particular world view, or have one perception about the environment. Therefore, in order to achieve change, or modify views, means must be found to bridge across world views. Otherwise success might be achieved with the predominant world view within a group, if that has been established, but will fail to reach all.

Thirdly, where there was a close fit between transactional context and a world view, such as regulators dealing with environmental regulations, the social pattern was stronger and more homogenous: as in the case of hierarchist regulators. That environmentalists or Maori did not also express this is explained by the different and various transactional contexts with which those latter respondents were dealing. The implication is that context is a vital aspect relevant to world views and should always be considered. It does not imply though that regulators, when dealing with regulations, will always assume an hierarchist world view. There was evidence to suggest that in the recent past New Zealand regulators held egalitarian views. Instead, the findings suggest that regulators views may be closely linked to the predominant political world view, and that sudden external (political or other)
change may in turn bring about a change in their world views. The homogeneity of their views may also predispose the group to such change.

The case study also provided further evidence for the view that people and groups adopt different world views in different transactional contexts. This was clearly described by the respondents, rather than identified by analysis, as with other research. Two examples were Maori and environmentalist representatives, who described changing their mode of preference when acting in different situations. Again, the implication is that both world view and the effect of various transactional contexts must be considered.

In addition, the case study provided examples of people who had intermediate patterns between two world views. Self ascription and respondents' actions were used as evidence for this. While the implication is that there is complexity even in the simple typology of world views, it also indicates that people can clearly identify their preferences and understand the implications of their view of nature. The finding implied that people could identify distinct views, and were influenced by two sets of preferences. In other words, their views may have been evolving, or they may have been operating in two different transactional contexts such as in a hierarchical farmers' lobby group, or in a farming company, and otherwise as a farmer concerned about the fragility of nature (as an egalitarian).

A further contribution to Cultural Theory is in the use of self ascription as a technique for application of the theory. This had not previously been used and proved helpful in resolving areas of doubt and confirming analysis. This in turn has implications for methodology and future research. Surveys, as a data collection tool, might be more effective when applying self ascription, although surveys have limited capacity to deal with the varying contextual influences.

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The confirmation of different social patterns, linked to environmental perception has wide implications for environmental management practice. Received wisdom has assumed that there is one view of nature, although different attitudes to management. This misconception has led researchers and practitioners to interpret community values in terms of their own, usually egalitarian or hierarchist world views. Acknowledgment of the differing world views would enable conflicts to be addressed and may avoid the political wilderness in which a number of practitioners in New Zealand now find themselves.

8.4.2 Myth
Findings further confirmed the power of myth in culture, and provided additional insight on the ‘clean green’ image as a re-expression of the pastoral myth, and as a hegemonic myth in New Zealand. There are a number of implications that the findings indicated. When a myth becomes linked to a particular group or activity, such as in Britain, with the decoupling of the pastoral myth from commerce, and strong link to conservative stability; conflict is likely to arise. With respect to this study in New Zealand, a similar example is the start of the association of the pastoral myth with, on the one hand dairying, and the other, with tourism. The implication is that the myth may be perceived as linking to the predominant world view of that group or activity, and begin to lose symbolic significance. It may be perceived to have been expropriated. The implication of the dairy industry being seen as usurpers of the national myth is that anger and blame for the ‘clean green’ myth not aligning with ‘reality’ may be directed at the industry. In turn, more stringent regulation and oversight, and greater compliance costs, are then likely. The power of the myth is in its simplicity, in ‘automatic’ understanding, and apparent disassociation with any particular world view or perception of nature. When dissection, questioning, or greater details are sought, it appears likely to fail or backfire.

A further implication of findings relevant to myth was the application to policy. Used as a policy myth, ‘clean and green’ holds corresponding strengths and flaws as described before: it conveys a powerful image but when detailed, loses
effectiveness. The implication is that if policy is to adopt myth, or build and
develop myth, as has occurred with the ‘clean green’ image, then a supporting
construct must be developed at each level in the policy process. Otherwise,
conflict will ensue when those oblivious to the instrumental force of the myth,
determine the particular. An example of this occurring is with the Government’s
2010 environmental policy, where, on the basis of seeking ‘clean and green,’ free
market economic theory was so explicitly expressed, stimulating conflict and
rejection; and further, in the recent conflict over rural district planning proposals.

Therefore, in working to substantiate the ‘clean green’ myth, as both a marketing
tool\textsuperscript{13} and to respond to stakeholder concern, care will be needed to avoid detailing
the image and in so doing, destroying it. The application of other symbols, as
described below, provide a means to address this problem.

The ‘clean green’ myth was found to be applied in different ways by different
groups, irrespective of their world view; for example as a goal, as a simple
encapsulation of the truth, or as a value statement or brand. The implication of this
is that a myth has huge versatility, and instrumental value, while its simplicity is
maintained. However, a factor of culture is that a group often do not perceive the
relativity of their own culture. Therefore, while ‘clean and green’ acts as a
powerful cultural myth locally, New Zealanders do not recognize that others may
not respond to the myth.

However, perhaps the most significant contribution to myth theory was in the
understanding of myth as a symbol, and in turn, the role of symbols (with
reflexivity) in bridging across different world views. This, it is posited, is a factor
in the power of a myth.

\textsuperscript{13} New Zealand Dairy Board (1999 : 12).
8.4.3 Symbols and reflexivity

The idea of reflexivity in the perception of symbols, as a means to bridge across the differing world views, does not appear to have been previously used in conjunction with Cultural Theory. In addition to the role of a symbol as a means of cultural production, the idea is that people assign meaning to a symbol according to their own world view. So not only does a symbol, through its simplicity, act as a potent form of communication, but it does not exclude or conflict with the cultural bias of a particular world view because each interprets the symbol in terms of their own world view. Their understanding, in turn, reinforces both their world view and the meaning they have ascribed to the symbol. This was termed the 'looking glass' effect, based not only on the notion of compounding reflection, but on the idea that 'people see what they believe.' If they do not perceive an idea or message to be in conflict with their own view of the world, they are more likely to accept, adopt, take action on, and reinforce the message, in their own terms. The simplicity of a symbol, when adopted and assumed by each to reflect their cultural bias, will enhance the effectiveness of a message. This idea allows further insight into the mode of cultural production, and understanding of the function of particular symbols.

The implication is that symbols can become powerful tools for the policy analyst or industry marketer, to protect the force of a myth such as 'clean and green,' and reach and motivate those with different world views without conflict. Symbols can become funnels to move from the general (myth), which must remain simple to be effective, to the particular. This therefore needs to be applied to industry strategy to move beyond the risk that use of the 'clean and green' myth presents.

In addition, findings imply that symbols which can link strategy to the range of world views will be most effective, and the significance of the symbol will depend on the way the strategy is conveyed. For instance, a strategy that is based on compulsion, would be perceived as aligning with an hierarchist world view. Symbols therefore will be significant to the three other relevant world views. The
use of symbols that might more readily be perceived as representing the world view of egalitarians and entrepreneurs, might therefore be most effective. Fatalists passively expect compulsion, but symbols of significance to fatalists may make the medicine more palatable.

Symbols such as environmental indicators and ‘cues for care’ can be used at an operational level, linking the simple ‘clean green’ image, or symbol, as a goal, with a symbolic action system, such as an EMS, to achieve change in environmental awareness and management. This understanding suggests a hierarchy of symbols, as shown in Figure 17 below.

The idea of reflexivity and symbols, applies to branding. Branding is used as a symbolic way to convey the values of a firm or product. By designing a distinctive brand which most clearly conveys the potential or intended positioning of the product, the brand itself serves to differentiate the product and achieves an intended customer understanding, rather than have the market assign their own, unintended values.

![Figure 17. A hierarchy of environmental quality symbols (author).](image)
Reflexivity and the 'looking glass' effect opens opportunity for further insight into branding theory and design for target markets. Symbols that are not perceived as aligning with a world view, in each market or context, will be more effective. In addition, the symbol is a sign with another or higher meaning so the brands that subtly link with local icons are likely to be more effective: such as the use of the Canadian national symbol applied to their 'Environmental Choice' eco-label. All world views can claim the symbol as theirs, and the symbol conveys authority.

8.4.4 'Cues for care'
Local 'cues for care' identified by dairy farmers and other stakeholders seemed very similar to those identified in the USA. This provides further confirmation of the validity of the original idea, and suggests that there may be universal 'cues' which could be utilized in making changes in agricultural systems, as well as conveying values to markets. This was suggested by an Asian consumer, who believed that Japanese generally respond to aspects of the pastoral image, despite their separation from the European tradition. It explained why local farmers are anxious to 'tidy up' areas of native vegetation regrowth, which to an environmentalist may appear as deliberate and unnecessary destruction. It also explained why, for instance, take up of native plant restoration work in riparian areas has required such effort in advocacy: the results, rank streamside vegetation, have often appeared the opposite of the intention (greater care). Failure to recognise what the landscape communicates is regarded as naive.\textsuperscript{14} It also indicates the means to address this resistance: by adoption of recognized signs indicating that the area is under active management. This technique could be undertaken in conjunction with other management work, without having to compromise the integrity of the initiative.

The 'cues for care' are a further symbolic expression of the Arcadian myth, but at a more detailed level of understanding. They portray the essence, such as neatly maintained sward, and control of rampant growth, of the pastoral image. As such,

\textsuperscript{14} Nassauer (1992 : 239).
they not only provide the means to indicate action, and avoid conflict of world views, but they also provide the link with the 'clean green' image. They can act as cultural indicators, in tandem with resource or issue specific indicators, to help to show how and whether a 'clean green' image is being portrayed. Again, as with the 'clean green' image, they simplify the underlying complexity of systems management, and further understanding, and adoption of additional local symbols will be required.

The additional implication for theory is the link made between the 'cue' or sign as a symbol, and the efficacy of a symbol as a bridging mechanism across different world views of nature. The cue, this is implying, is powerful not only as a well recognized visual sign, but because, as a symbol, it can be accepted by the range of world views, in their own terms. The 'cue' then can be considered as not only a way of communicating active care by a visual signal, but can be used as a means of coordinated action.

This has implications for broader environmental management, both urban and rural. Landcare groups could for instance, use an understanding of such cues as a focus for community action. By basing activities on an aspect that has wide agreement, greater consensus might be achieved between different community groups and between those with different world views. It also has direct relevance for the dairy industry not only by providing insight for marketing, but as a more detailed means of conveying strategy. Not only should 'cues' be a central feature of the EMS and other policy, but by understanding their role, symbols to achieve action at a further level of detailed systems management, might more readily be developed.

Scientific attention is currently turning to the development of physical and biological indicators, such as habitat indicators of natural character of rivers, at a regional and local scale to national environmental performance indicators of air,
Much more work is required to move from the measurement of % cover, pH variation, and pool/riffle ratios, to simple symbolic indicators, which are effective for the range of world views.

8.5 Implications for New Zealand dairying
If the dairy industry decide to proceed with the adoption of an EMS, an environmental policy, the first stage in an EMS, will be required. However, effective environmental policy implementation requires the strong support and commitment of senior industry leaders and the policy will be seen as credible if it is comprehensively applied across the industry. Therefore a pasture to plate policy is proposed, to maintain a link through the value chain from farmer to customer and consumer. An Environmental Management System (EMS) is proposed as a strategy for on-farm environmental change, to assist farmers, for risk management, and as a green marketing tool.

A wide variety of training opportunities are required for farmers, advisors and dairy industry staff members to ensure that the EMS is implemented smoothly and different farmer views are taken into account. The basis of the EMS is best practice for: animal health and welfare, biodiversity, conservation of resources, effluent management, energy use, farm discharges, fertilizer management, productivity, profitability, recycling such as of water, soil quality, silage storage and management, storage and use of chemicals, waste minimization and disposal, and weed and pest management.

Although many environmental impacts give little visual indication, there are also recognized signs of good farming and care for the environment, so emphasis is recommended on using such signs of care, in conjunction with management initiatives, so that there are visible signs that the EMS is under action and farms have an attractive appearance.

17 Senge (1993: 9). Senge argues that personal commitment is the key to building a knowledge-based organization.
Partnerships or networking with local groups could provide feedback on the EMS and environmental issues, as a source of alternative management options,\textsuperscript{18} and for possible joint projects such as streamside planting. Cooperative agreements are suggested with environmental groups such as Fish and Game and Forest and Bird, regulators, iwi and other key stakeholders, to identify changing national and local environmental issues, establish a collaborative approach\textsuperscript{19} as well as to achieve international credibility for environmental standards.

The policy requires support by an integrated environmental research strategy as well as market research, and feedback of findings where applicable to farmers and other stakeholders. In addition, the policy and EMS initiative requires a high profile and consistent and coordinated communication, to farmers and other stakeholders.

The EMS system requires further trialling. As part of additional modifications, the following should be tested and developed:

- the selection of three initial indicators to provide a means to substantiate farmers commitment to 'clean and green.' Suggested indicators are for animal health and welfare (well fed cows); clean water (turbidity of water leaving the farm); and 'natural New Zealand' (a conservation or habitat area being developed on the farm, such as riparian or shelter planting.)
- recording sheets for data, for insertion in the TQM farm manual, along with the agreement on standards and the inclusion of district, regional and national legal requirements in the EMS, so that farmers can become more aware of environmental assumptions and actual performance,\textsuperscript{20} improve efficiency, provide evidence of actions, and comply with requirements.
- a strong branding symbol for farmers taking part in the scheme, for gate signage and other use. Whether such a brand includes the term 'clean and

\textsuperscript{18} Parminter and Perkins (1997 : 107).
\textsuperscript{19} Tarbotten et al. (1997).
green,' 'natural care,' 'excellence,' or a similar phrase, or is graphic only, to be resolved with farmers and brand advisors. In addition, development of an award system for recognition of farmers taking part in the scheme is suggested.

Speed of introduction will rely on resource commitment, consistent promotion, leadership and farmer take-up and support. The aim of 60% take-up within 3 years of introduction is suggested. At this point, a review of the scheme is recommended to assess modifications needed, whether payout differentiation can be given to those on the scheme, and further policy changes indicated. Appendix H details a draft environmental policy, an environmental strategy and a strategy for implementation of the EMS system.

The study indicated that an EMS is a valid response to establish market differentiation through environmental quality, and would also benefit farmers and other stakeholders. Care in implementation though is essential for success.

8.6 Implications for methodological process
The adoption of a mixed methodology was a useful means to gain a rich understanding and was sufficiently flexible to allow for a range of divergent and complex information, from a range of sources. A key demand of this approach proved to be the recording of such a range of information, as well as the utilisation of such information. A danger lay in collecting but not taking account, for instance, of documents, or of analysing but not integrating information such as the media analysis. Methodological design, which provides for such a range of data requires clear strategy to indicate how different information is to be treated, and regular reviews to integrate relevant material.

The qualitative approach enabled understanding of the interrelationships of world views, symbols, systems, and actions and their significance. In addition, attention

to actual actions, and comparison or verification with claimed values or choice of actions, through interviews, farm walks and observation addressed the gaps identified in literature between claims and action.

Self ascription appeared to be a useful technique for further application with Cultural Theory and its use should be taken into account in future design of methodology.

8.7 Implications for future research

8.7.1 'Cues for care'
Further research on visual 'cues for care' in Asia and other key markets may be useful before adoption is considered by the dairy industry, to test how universal the 'cues' are: there may be contextual factors that may modify the apparent universality of the signs of care.

In addition, further research on the instrumental application of the cues as a means of achieving coordinated action through, for instance, landcare and community groups, and at different scales, would provide greater understanding on how this idea could be applied in different places and at different scales. This could be also adopted as part of an action research strategy.

8.7.2 Cultural Theory
Self ascription has not previously been undertaken as a strategy by Cultural Theorists, except through secondary indicators, (for instance, supermarket surveys asked for particular views on nature and from the answers given, analysts determined the world view of the respondent - a technique for which the validity was disputed). While self ascription demands more time, and understanding on the part of the respondent, the positive response by stakeholders to the 'myths of nature' (none disputed that they did not 'make sense') and in turn to ascribing their own world view, which generally aligned with the researcher's analyses, suggests that this technique could be usefully developed for a variety of other applications, such as market research. In addition, profiles of other aspects of the
main world views, such as economic perspectives, could be developed and adapted for self ascription in other fields such as policy research.

There are also many other research areas in which Cultural Theory appears not to have been used; for instance business research on leadership. The examination of world views of leaders, using self ascription, and the fit with others within an organization, the relationship of world views to promotion and profitability of the enterprise, and the application of an understanding of world views in niche markets would seem useful.

Cultural Theory research has not been widely applied in the environmental field. Application by environmental historians to trace changing predominant world views, and their consequent impact on environmental management, and forecasting of likely change presents useful prospects, which would enable organizations to better position themselves.

Environmental education has been widely based on the premise that changing attitudes, changes actions. The findings in this study concerning stakeholders world views and their relationship to actions suggests that the assumption that actions can be changed merely by providing information, ignores the possibility that actions are based on different views of the environment. While the case study indicated that the transactional context, such a raised awareness about a particular issue, may indeed modify actions (without changing a world view) this is only likely to apply to the issue alone. Research on environmental education with an understanding of world views is suggested to see whether, by taking world views into account, change may be more effective.

Similarly, focus groups and comparable research information gathering techniques, on environmental issues, have generally been conducted on the assumption that there is one view of the environment. An approach based on
Cultural Theory may ensure that less researcher bias and a better understanding is achieved.

8.7.3 The 'looking glass' effect
The above comments also apply to linking the 'looking glass' idea to world views, such as in environmental education research.

Further testing of this idea to develop a more rigorous analysis of circumstances under which the idea is effective, is indicated. Again, this could be taken up in the environmental field where the use of symbols abound, or in others such as theology. Action research would be a useful way to explore how an awareness of the role of symbols in cultural construction, and their application for effective coordination of action can be applied in different contexts.

8.7.4 Integrated research
The complexity of issues relevant to environmental management and the gaps in understanding between (for instance) overlapping and interrelated biophysical and sociological aspects of rural land management suggest that much greater research attention should be put to integrating research studies so that much faster and more effective interdisciplinary progress can be made.

8.8 Recommendations and conclusions
Agriculture is about effecting changes to the land and landscape to produce food. While these changes will inevitably alter the appearance and biophysical nature of the land, they need not affect environmental health, or the life restoring capacity of the land. However, intensive dairying is likely to have impacts on soil and water quality, natural features and other aspects, particularly because of the increased inputs and outputs from the process. The objective of environmental management is to minimise impact risk and find ways to enhance systems management so that environmental benefit can be achieved.

However, how a farmer, neighbour, tourist or consumer will perceive the rural environment, and appropriate management, depends on their world view. While
these differ, farmers who aim to farm sustainably and to achieve a high standard of environmental quality have a variety of tools to not only help them continually improve on-farm management, but also to convey this message to stakeholders.

An environmental management system is recommended as one tool to support continual improvement in environmental management. By benchmarking the best appropriate techniques and methods, setting performance standards in line with these, and recording agreed data, the system can be audited and used to substantiate quality standards in the various markets. The changing attention of markets, however, requires monitoring to ensure that the EMS responds to needs. In addition, a system of local and regional liaison has been recommended to enable iwi and other stakeholder concerns to be recognized in the EMS and addressed by the farmer, so minimizing risk and social fragmentation and increasing mutual understanding.

Linking the EMS with a farmer supported, strong branding symbol to identify the scheme and encourage wide support and pride, is recommended. 'Cues for care,' visual indicators of 'good' farming, are another tool that the farmer could use to indicate active stewardship. This could be linked with cooperative on-farm projects with community groups so that mutual benefit can be achieved, such as the use of riparian planting for indigenous habitats and fisheries, while developing barriers to discharges. A staged strategy of extension to farmers is recommended, with modification to respond to local differences, and then use of a range of media to create a profile of dairying care and quality.

The conclusion of this thesis is that although farmers and others see what they believe in the rural environment, and respond accordingly, coordinated action to constantly improve on-farm environmental quality can be achieved by the adoption of such tools as an environmental management system. Environmental management is an uncertain and complex business, despite the years of experience, the advancing technology and considerable public attention it has received. However, the link of the EMS to market research, stakeholder
consultation, strong branding and other symbolic communication devices will enable the farmer to respond to the range of world views and changing perceptions on the environment, while developing greater management efficiency.

While risk was identified in making a claim of being 'clean and green' without a means to substantiate it, the implementation of an EMS will begin to alleviate that uncertainty, and 'cues for care' can demonstrate that action is being taken. When this has been accomplished and an EMS widely adopted for the dairy industry, the claim of environmental quality on the dairy farm can be made with confidence.

I leave the final statement to a farmer:

'If we want to shout out that we are 'clean and green,' we have to demonstrate that we are. And to make sure that happens there has to be on-going education and self discipline to carry it out. We have a huge advantage over the rest of the world and we shouldn't ruin it. It's simple; we just have to educate our people to be aware of the fact that we don't pollute anything.'


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Appendices

Appendix A: Research questions
In order to achieve the objectives several research questions were framed to guide the study. They were:

1. What are the factors which influence dairy farmers environmental management actions and how do these influences work?
2. How do stakeholders currently perceive or account for environmental quality as an aspect of dairy farm management in NZ
   - how do they account for clean and green
   - what indicators do stakeholders use to assess clean and green
   - what indicators would help the farmer establish a clean green image
   - how does current management respond to stakeholder perception: are there gaps in response
   - what options are there for addressing gaps
   - how will an environmental TQM system change farmers environmental actions
   - what are the problems in application of such on-farm systems

Appendix B: terms used

Biodiversity refers to environment and includes resilience, variability, thresholds and uncertainty. Ecological integrity and biodiversity are regarded as aspects of sustainability

Cultural Theory. The particular theory as developed by Douglas, Thompson and others is written using initial capital letters in this study, to distinguish the theory from other theories about culture. Cultural Theory holds that there are five patterns of social interaction, cultural bias and behavioral preferences. The theory is described in detail in the text pages 18 - 24.

Ecological Integrity is defined by Regier as 'the soundness and completeness' of the ecosystem. In addition, 'ecological integrity is specific to the physical, biological, social, and cultural features of the geographic area in question,' and 'reflects our sense of what we value in them.'

Entrepreneur/Individualist. The two names for this world view are used interchangeably in Cultural Theory. There are problems in the use of both words. The word entrepreneur is not value neutral to an hierarchist or egalitarian. However, the word individualist may be confused with the word individual; and a world view relates to the interaction of an association of like-minded people rather than to an individual. I have therefore chosen to use the word entrepreneur.

Environment. In this study a multi-dimensional understanding of environment is used which includes:
   - the physical environment, including air, land and water
   - the biological environment, including plants, animals and ecosystems
   - the social environment, including people and communities
   - the economic environment, including the interaction between people and resources
   - resources, natural and physical and supplies uses and limits

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1 Barbier, Burgess and Folke (1994).
• the aesthetic environment, both built and natural
This is similar to the understanding of environment in the Resource Management Act 1991 and as described by Scott.²

Environmental Quality is a relative term which refers to a valued function, a selected perspective, and a set of relationships. Outcomes, and the evaluations of these are held as important to environmental quality.³ It refers to the state of the natural environment, including the physical, visual and aesthetic environment.⁶

Farmers include owners, partners, owner-operators, sharemilkers, contract milkers and farm staff.

Image an image is the perception of an object or entity. This may be seen through symbols, names, colours, typography; heard, experienced or observed.⁷ An image may refer to perception of an organization, person or country. The ‘clean green’ image is understood as a representation which has been applied to the countryside of New Zealand, and in which the New Zealand Dairy industry seeks to be included.

Industry includes the dairy company and Board members, the NZ Dairy Board (sole marketing agency), NZDRI, LIC advisors, and information such as the Dairy Exporter and Market Update and newsletters.

Myths in social science parlance are ‘stories that embody fundamental truths underlying our assumptions about everyday or scientific reality’.⁸ Myths are selective and generally take a narrative form. They simplify, and through the exclusion of elements, exercise power. Social science does not regard myths as falsehoods, fictions or fanciful tales. By contrast, common usage of the term myth is ‘a fictitious or unproven person or thing...a story about super human beings of an earlier age, usually of how natural phenomena or social customs came into existence.’⁹ It may embody some popular idea.¹⁰

As the ‘lay’ and social science terminology are completely opposite (truth in contrast to fiction), use of the term myth as an explanation beyond social scientists may leave key ideas open to ridicule or misunderstanding. Instead, the two terms image (a representation or likeness of a person or thing) and symbol (something that represents or stands for something else, especially an abstract idea or quality), usually by convention, are used in summaries. Where possible these two terms are also preferred in the text.

Pugged. This term in common farming usage in New Zealand describes soil that has been compressed by animal hooves or machinery (usually during wet weather), with the effect of damage to soil structure. Sometimes pugging refers solely to stock treading.¹²

Reflexivity The term reflexivity is mainly used in two ways in sociology. It can be used to mean general features of modern social life, in particular the questioning of established patterns and social mores. The alternate meaning is applied in this study, that is, that the idea is reflecting back on itself, and to refer to:

⁴ Field (1994).
⁸ Coulson (1962 : 542).
Semiosis is the action or influence of a sign.

Sign is used to denote both a causally related indicator, such as the arrival of migratory birds and indicating a change of seasons; and as conventions, such as the use of language, including the use of notices, such as 'Keep right.'

Slinkies is a term used by farmers to refer to the skins from animals that have been borne dead.

Stakeholders Both primary and secondary stakeholders are included: consumers of the dairy products, consumers of the rural image- rural neighbours and urban residents and tourists, regulators, buyers, the industry and farmers. Paraphrasing Mitchell et al. stakeholders are owners and non-owners of the industry; as owners of capital or owners of less tangible assets; as actors or those acted upon; as those existing in a voluntary or involuntary relationship to the industry, as right holders, contractors or moral claimants; as resource providers to or dependents of the industry; as risk takers or influencers, as legal principals to whom agent-managers bear a fiduciary duty. A stakeholder may be persons, groups neighbourhoods, organizations, institutions, societies and the natural environment, and often have competing claims. In the case study only a few salient stakeholder/groups were included. Salience was identified by those with power, legitimacy and urgency.

Strategy is a term which has gained popularity from its recent usage in business management. It refers to intentional activities 'performed by actors in a world of uncertainty.' Strategy must relate to context and can be competitive or collaborative.

Symbol is a sign that has an iconic nature and indicates another or higher meaning.

World view is the term used to identify the association of attitudes, perceptions, beliefs and values which will determine or influence actions held by each of five defined types or associations. These associations in turn occur through influence and involvement in society and groups. The unit of analysis is the sociocultural grouping rather than the individual who may change from one view to another as the result of a change in perception of the environment (which in turn have changed). Therefore although the word group would be a useful way of describing each association, this is inappropriate as they are in part defined by the pattern of involvement and influence. Thompson uses the term solidarity, on the basis that each entity is more than a type; it is dynamic as is the relationship of one form of solidarity to another. Unfortunately the term has socialistic overtones, having gained prominence from use in Eastern Europe. This creates opportunity for information rejection for a study focusing on commercial matters. Few words are value free and information will inevitably be interpreted according to the world view of the reader. Although the term world view does not seem to suggest the wider perspective and association which cultural theory implies, and strictly speaking should be applied solely to cultural bias rather than to the broader aspect of the type including social patterns of interaction and behavioral preferences, I have adopted the term world view and apply it as Thompson and Cultural Theorists would currently apply the term solidarity.

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14 Eaton In Nassauer (1997).
Appendix C: Field trial & evaluation of the Ag-vantage EMS system

1 Questionnaire for review of Ag-vantage scheme with trial farmers

1 Looking back on the system, would you say that it has any value for dairy farmers, or not
2 If you think it has no benefit, what would be your reasons
3 If you think it has benefits, what would you say were the on-farm benefits and off-farm benefits
4 What areas of the system would you say needed improvement
5 Have any aspects of the system been particularly useful
6 Has it resulted in any changes in the way you farm
7 If the dairy industry adopted a system such as this, who would you see as the most appropriate group to be managing the overall coordination
8 How would you see an audit system working
9 Can you suggest any other systems which would enable the industry to make a claim of being clean and green with confidence
10 What would you see as the key market assets for the NZ dairy industry
11 What do you see as the main threats to long term viability of the NZ dairy industry (and what action would you suggest to address this)
12 Do you have any other comments that would be helpful for me to look at relevant to environmental quality and what farmers do on their farms

General
13 It seems there is a need to reduce conflicts between local government, business and environmental groups. How would you see farmers/industry countering this area of conflict
14 Although there is no one right answer in the area of environmental policy it seems to boil down to fairness and developing trust among stakeholders. What would you see as barriers to developing trust
15 What would be the most important possible change that would be of benefit to you as a farmer, relevant to environmental aspects

2 Testing, testing...


Summary

The Ag-vantage environmental management system (EMS) has recently been trialed over half a season by 6 dairy farmers. The aims were to find out
1. whether farmers' expectations of the benefits that the scheme would provide for them made any difference to their actions
2. whether there were any other aspects that appeared to affect uptake of the system
3. how effective the scheme appeared to be in addressing the environmental effects of dairying
4. whether an EMS could be a marketing tool to help support the clean green New Zealand image.

The trial indicated that there are information gaps in the way the scheme is organised (although the scheme has continued to evolve since the start of the trial), in farmers' knowledge, in current environmental monitoring and in managing key environmental issues outside the scheme. Farmers found that an increase in awareness was the main on-farm benefit of the Ag-vantage system. All participants agreed that the scheme would have market benefits, although the number of changes made to aspects of their farm management ranged from two to nil as a result of the system and no farmer undertook any form of additional recording of environmental activities. However, most trial participants were not involved in a preparatory workshop which is part of the scheme and requires farmers to develop an action plan.

The main conclusions are that the scheme appears to be the most comprehensive of any available in New Zealand and with some modification could be adopted throughout New Zealand by the
industry for implementing in a variety of ways. However, to be effective in supporting the clean green market image, a scheme would need clear benchmarking or performance standards and an agreed system of minimum data recording. This could be included in the scheme.

The recommendation is that the *Ag-vantage* scheme be adopted by the industry as an EMS scheme suitable for gradual and coordinated voluntary introduction throughout New Zealand, through a variety of agencies.

**Background**

The field trial of the *Ag-vantage* scheme is part of a Ph.D. thesis which explains ways of managing New Zealand’s clean green image in the context of the dairy industry. When the *Ag-vantage* environmental management system was selected for field trialing nearly two years ago it was in its early development phase. The first version of a computer assessment package had been produced and workshop manuals such as a farm activities folder explaining the ‘Total Integrated Management System’ and explaining the computer program had been used by a limited number of farmers.

The system had been developed by North Otago Sustainable Land Management landcare group farmers in conjunction with Otago Regional Council. Otago Polytechnic had provided the expertise for the computer program, which enabled a diverse range of factors to be applied to individual farms. The system had initially evolved with downland sheep farming in mind but has since been adapted to apply to dairy farming. The current product has been formulated for implementation through a workshop with farmers to identify personal and farm objectives.

Otago Regional Council was the catalyst for the scheme’s development. They wished to promote the aims of the Resource Management Act 1991, particularly agricultural sustainability, through the voluntary efforts of farmers rather than through regulation and enforcement. However, as scheme development proceeded, it seemed that a benefit for farmers may be its use for marketing, and maintenance of international trade access, by verification of environmental sustainability through a system which would have international credibility. Thus the scheme has been focused towards the possibility of accreditation as an ISO 14001 environmental management system.

This in turn aligns with the dairy industry’s interest in investigating whether and how the New Zealand dairy farmer could make a claim of being clean and green with confidence. This interest had been stimulated by the increasing use of New Zealand’s clean green image in marketing initiatives, and in particular a Tradenz proposal termed Project 98 to adopt and promote a green labelling scheme. The industry were interested in identifying a way to substantiate such claims. Compliance with existing environmental regulations and anticipation of future controls and rules is also an interest of the industry, as is being a good neighbour. All aspects affect the economic and social costs of farming and future viability.

Environmental management systems (such as ISO14000) are derived from quality assurance systems (or Total Quality Management systems) for production developed by Deeming and others. The ISO 9000 system has gained wide international credibility. However, neither this nor the more recent ISO 14001 system gives an assurance of quality *per se*. They verify the thorough documentation of a system, including the establishment of policy, planning, monitoring and the commitment to continual improvement.

**Benefits**

An EMS such as *Ag-vantage* could also be of benefit to statutory environmental regulators, to increase compliance and lower the costs of investigation, monitoring and enforcement. To achieve this it would need to be linked to a strategy for addressing adverse environmental impacts of dairying. It could also be of benefit in ensuring that dairy farmers are good neighbours, by addressing concerns of neighbours through such a system. Marketing overseas and maintenance of market access might be achieved both by identifying and addressing aspects of market
environmental concern, and also by having credible systems in place for monitoring and audit, so that if unforeseen issues arose current status and changes could be rapidly addressed. An EMS also has benefits for individual farmers such as better communication with staff, improved cost control and farm management efficiency through monitoring systems, and reduction of capital and environmental risk.

However, resistance to change is an important factor in the adoption of any new system. If such a system is to be adopted voluntarily by farmers the benefits to the farmer must be perceived to outweigh costs, such as in learning and application, manual purchase and updating, monitoring and audit.

Two review mechanisms were set up to examine the Ag-vantage scheme; one through an agricultural science study, which considered both the broader aspects of EMS costs and benefits and a study commencing with 5 farms and concentrating on one farmer’s implementation of the scheme. The second review trialled 6 farmers take-up of the scheme. The two reviews overlapped and this is an evaluation of the second trial.

Assumptions
The trial started from the assumption that a voluntary system is unlikely to be widely adopted or may be ineffective if farmers do not perceive benefit in such a system. It also assumed that dairy farmers have heavy commitments on their time and in order for such a scheme to be undertaken on the farm, the farmer would need to assign a priority to factors identified as being in need of change. The study assumed that actions were more relevant for assessing scheme success than attitudes.

Objectives
The objectives of the trial were
(a) to evaluate how issues identified by the system were addressed by farmers over the bulk of a season
(b) to assess whether a farmer’s interest in such a scheme or concern for environmental issues made any difference to their actions
(c) to assess whether a farmer’s management status, experience and location appeared to influence response
(d) to assess whether the system addressed key issues of environmental concern.

Process
Six farmers, including two pairs of sharemilkers and one pair of owner operators took part in the study. Farm advisors, corporate dairy farm managers and the dairy company were approached for names of farmers who may be interested in taking part in the trial and of those interested six were selected according to location, experience and management status. The farmers were paired by location, one pair of each being a farmer who had expressed an interest in taking part in the study and an interest in environmental management and the other who may have some reservations about the benefits of such a scheme. However, the fact that all six farmers were willing to spend time on the trial was taken as an indication that they may all see some benefit in such a scheme.

Each farmer was visited, and over a period of an hour and a half farm management information was obtained from the farmer through identification of land management units on their farm and identification of activities which impact on the land management units. This information was fed into the computer program to produce a hazard analysis response table and a plan for on-going management, change and monitoring. The farmers were not asked to address their own goals or priorities (although the formulation of the NOSLaM program now seeks this) but were asked to consider the results of the assessment. Copies of the analysis were given to the farmer.

Follow up visits were then conducted to each farmer at least three times, the last one comprising a questionnaire on the scheme (attached). Earlier visits consisted of semi-structured interviews, a
review of the Hart Chart produced and discussion of aspects of interest or concern, some with farm walks, with the aim of understanding outcomes of the system.

Outcomes

1. Need for further technical information identified
Several farmers noted a need for more information on key topics. A major example was management to prevent DDT contamination in milk. Although information sessions have been held by the dairy company and LIC, discussion with the few farmers in the study indicated confusion over factors influencing grades so this is likely to be prevalent. One farmer, although aware of the issue, suffered grade penalties. Another used the Ag-vantage guidelines as well as additional company advice and avoided grade problems in a situation where he had identified a risk. Other information gaps related to salinity: what is the mechanism and how can it be halted; nutrient leaching: how much is leached under what circumstances in border dikes and in which soils; and techniques for balage wrap disposal. However, a farmer noted that although he had information gaps and needed further information, he may not have time (or may not see a priority) to attend LIC Advisory or similar field days.

2. Need for more monitoring information
Farmers had no information on the water quality of streams in their area and noted the difficulty of maintaining systems without base data for comparison. One questioned whether DDT contamination was higher in water races. (Information on this was not available.) Effluent monitoring was indicated as an issue that did not seem to be being pursued by authorities as efficiently as necessary.

3. Need for the development of systems for shared problems
Dead stock disposal in offal pits was identified as a potential problem by the scheme but there are currently no dead stock collection systems in the study area. Concern was also expressed about disposal of chemical drums where no satisfactory system has been established in the Canterbury region to address the issue. Some farmers questioned the efficiency of border dike irrigation when water was such a precious resource and they also questioned the wisdom of regional councils granting water permits and their commitment to monitoring aquifers when water availability was becoming critical. (Regional councils argue that huge resources have been put to aquifer management.)

4. System not a priority
Several of the farmers had scarcely considered the system from one visit to the next and few had given detailed thought to a change for more than two aspects of the system. While consideration of aspects raised was more frequent in the farmers who had previously expressed interest in such a system, the majority of farmers did not report major changes in activities or actions arising from the system. Several agreed that if they did make changes it may be with objectives other than environmental well-being in mind (such as fertilizer cost saving/efficiency). However some interesting and significant aspects were identified by the study such as the widespread lack of impervious flooring for chemical storage and the need for improved systems for fertilizer spreading alongside non target areas.

5. Issues that require capital development a problem for sharemilkers
The system indicated chemical storage was an issue for all farmers (simply because the NOSLaM farmers had set this as a significant factor) but the trial indicated that change involving capital expenditure was likely to be slow. A concern has been raised from time to time in farming reports that sharemilkers may be reluctant to trouble owners for such development. However sharemilkers in the scheme did not hesitate to take up capital expenditure matters.

6. Animal health and welfare issues should be included
Several farmers mentioned both stock handling and disease issues as factors of importance that were not well covered by the system. These issues are likely to be seen as part of (and detracting from) a clean green image. They had been incorporated in the original scheme and could be reintroduced.

7. Awareness improved: farmers 'thinking about' issues.
The main benefit of the system identified by farmers was an increase in awareness of environmental factors which in turn encouraged them to consider issues more thoroughly. The changes that had been undertaken were the more efficient use of effluent (as a fertilizer), more careful application of fertilizer close to waterways, boundaries and shelter belts (to minimise inadvertent discharge and increase efficiency); the planning of concrete bases for chemical storage and the review of winter grazing and management to reduce DDT contamination of milk. Lane ways were also upgraded by one farmer prior to this trial as the result of an environmental assessment.

8. No regular monitoring/recording undertaken.
Fundamental to the scheme is the development of a monitoring system which keeps regular records of actions. Options such as a manual recording, diary or computer records are given. However, no farmer had commenced entering actions in any form. This would be necessary for such a scheme to be effective.

9. Effluent and water quality identified as key issues.
Depending on the time of the season and location there were various views on the significance of environmental issues: TB, effluent management, water abstraction and quality, nutrient leaching and nitrification were all referred to by most farmers as important environmental issues.

10. Location and experience may influence actions.
Some difference in attitudes towards the system could be related to location in an area experiencing drought, or to previous farming experience. However, difference in actions was not marked.

11. A diversity of views on monitoring and implementation.
While all agreed that such a scheme would need to be flexible, a variety of views were held on who or how the scheme might be implemented. Suggestions ranged from LIC, industry, the dairy company, Regional Council, MAF and MfE for overall coordination; and self audit with back-up by a range of agencies or combination for verification.

12. Unanimous agreement that system useful for dairy farmers.
All agreed that the scheme was useful but they saw benefit in increased awareness and for marketing the 'clean green' image, or to address trade barriers rather than for compliance with the RMA, being a good neighbour or for sustainability.

13. Focus on farmer action rather than farm design, layout or care.
Aspects such as shelter belts for pasture growth, stock shelter, biodiversity and visual amenity; and design of dairy shed entrances were not addressed. The scheme did not appear to cover aspects of 'care' (as identified by other studies as important for neighbours and visitors) or environmental enhancement. However the latest version of the scheme now is reported to have a section on environmental enhancement. Animal health and welfare such as cows well fed or provided with shelter were also absent but could be addressed. The emphasis was on aspects of concern to regional councils and those identified by NOSLaM farmers.

14. Link to a computer system advantageous.
The trial was undertaken by visiting farmers initially with a laptop computer. Not all farmers have their own computer equipment, although for those who do, self assessment and set up by farmers may be a possibility in the future.
15. Current environmental management progress not widely acknowledged

The EMS indicated that many major changes were not necessary on trial farms and these farms appeared well cared for. While this is not necessarily the case over all New Zealand it suggests that farmers are adapting to changing values and can have some confidence in their developing contribution towards a clean green New Zealand. Perhaps demonstrations of what farmers are doing well - best practice - would provide some benefit.

Evaluation

1. Perception of benefit: does it matter

The trial suggested that participation in the scheme was greater for those who already had an interest in environmental issues. However few major changes were instigated as the result of the trial. This suggested that unless benchmark performance standards, industry support and strong advocacy were part of such a scheme, it may lead to few changes in action.

In addition, although all indicated agreement on scheme benefit, no action was taken on recording. Again, if such a scheme is to be introduced some coordination for monitoring is likely to be necessary, with key items such as effluent systems, water management and chemicals use and management targeted for initial monitoring.

The work on introduction of the scheme through half day workshop followed by a half day farm visit is likely to address this lack of uptake somewhat but change through such a system is likely to be slow and the workshops require a major resource commitment.

2. Management status, experience

While other studies suggest that management status and experience is important, it did not seem to be particularly reflected in this study. Sharemilkers and owners seemed to be taking up similar aspects which required capital expenditure, although sharemilkers had less influence on choice in prioritising expenditure.

3. Identification of environmental effects of dairying

The following appeared to require further attention through the system

Environmental effects: discharges: effluent (including on the road), fertilizer runoff, silage leachate, water abstraction, water contamination and riparian impact, biodiversity, visual effects and farm enhancement.

Animal health and welfare: shelter, tail docking, lameness (and farm tracks), animal diseases, collection of slinkies and disposal of dead animals, feeding and animals in mud in winter (is possibly already in the scheme).

Food safety: chemicals disposal (is possibly already in the scheme).

4. Diversity of farming views and values

Interviews indicated that in the small trial group there was a wide divergence of views on how such a scheme should be introduced and run, and some inertia in making changes. This suggests that variety in application should be considered while applying only the one scheme rather than a diversity of EMS schemes, so that clear advocacy and coordination can be undertaken.

The current half day training and half day on-farm set up for implementation of the scheme is a significant time demand that is unlikely to find wide favour with all farmers, despite its attention to business planning and goal setting, and reduction in previous time requirement. This suggests that a range of options for implementation be provided for so that those with greater interest, and perhaps opportunity to capture market benefit can chose a more rigorous approach.

Farmers seem unlikely to be willing to pay for increased costs of monitoring and audit at present (the diminishing farm gate returns were seen as a major threat to sustainable agriculture) so a very simple benchmarking system that is gradually introduced, with options for audit seem most likely
to succeed. It also seems likely that a number of farmers will not take up such a scheme unless there is a requirement.

5. Ag-vantage EMS supported
All farmers generally supported the Ag-vantage EMS system. Although there are a number of other EMS systems or other approaches, no major concerns were seen in the system itself (as far as it went). Other systems have been found to be less comprehensive and therefore less effective in addressing environmental effects.

Recommendations
- That the dairy industry takes up the Ag-vantage scheme for voluntary adoption throughout the industry over a phase in period as a means of supporting the clean green market image of New Zealand
- That a simple system or systems of recording be adopted and introduction be coordinated with other interested agencies so that a variety of options for up-take and monitoring are put in place
- That only one EMS system be promoted so that there is a clear and unambiguous industry message, and coordinated marketing can be achieved
- That a system of random audit for the dairy industry be devised and tested but not introduced until widespread adoption is in place and market benefit can be achieved
- That a strategy be developed for dealing with information gaps

3 Questions for evaluation of report:
for District Council, Regional Council, iwi, environmentalists, industry and farmers
1. What are your views on the recommendations
2. The report does not refer to costs of adoption. What costs do you see for the following and where do you think they should fall.
- farmers
- industry
- companies
- regional councils
- district councils
3. What cost savings do you think can be achieved for the above stakeholders
4. If such recommendations were adopted what would you see as the ideal phase in period ie. within 2 years, up to 5 years
5. What do you think would be the most effective option(s) for recording/monitoring
6. What do you think are the priority issues for monitoring
7. What problems can you see for the scheme
8. What would you see as the advantage(s) of voluntary uptake of such a scheme

4. Testing, testing, testing...

18 following the Massey et al (1998: 74) report on QA/EMS.
Notes from a focus group meeting of industry and participant farmers held on 29th April 1999 to:
• respond to feedback on the review of the trial
• advise on next steps concerning the Ag-vantage scheme
• advise on the value of an environmental management system for the dairy industry


Diane Menzies started the focus group discussions with a review of her report and then outlined the feedback she had received from those at the meeting as well as an additional trial farmer (not present at the meeting - on holiday), district and regional council staff and elected representatives, environmentalist and tangata whenua. The following questions and discussion then took place.

SL Did you look at Lower Waitaki farmers who have been trialling this scheme for a while?
DM Yes.

PF (a Waitaki farmer) There have been 8-10 on this scheme in the Lower Waitaki working on it progressively over 8-10 months. The report is a fair summary. We initially attempted to get farmers involved - the likely ones - but we have yet to see the rest. Most indicate verbally that it’s a good thing. Our promotion has been through the Landcare Group, Regional Council and LIC.

MF Gisborne Milk have been looking at it and we are looking at running it there too.

TL Did you look at specifically dairy farms only?
DM Yes, just the dairy industry.

SL The program is as applicable to dairy or beef.

PF It was the Otago region that took this up, not dairy farmers - because of environmental degradation, as they saw it.

TL Specifically what are they being asked to do?

PF Effluent management: not into streams; dead stock disposal. Some things that are statutory requirements. This has been the Otago Regional Council’s approach to getting involvement, with prevention as the aim. I wasn’t one of the early ones involved but see the benefits.

TL Is it specifically involved with water quality?
PF Yes, with water quality.

CB I’d have thought marketing is the incentive. We don’t need the DC/RC intervention. Codex, the EU farm gate monitoring scheme is the stick to get people on board.

DM Yes, the application I saw for the scheme was that if the markets are concerned about particular issues, the industry could respond with proof of standards that farmers keep to. This could work in a similar way to the Cervena pasture to plate system.

MF A lot of meat companies also have a monitoring system like that. Perhaps not so much focusing on environment as animal welfare - farm traceability. They can get into higher return
markets if they are on the scheme such as Sainsbury. In their case their customers are concerned and their inspectors come here to check.

TL It seems to me there are two pressures: the market side dictated to us, and the environmental which we implement ourselves for our own benefit.

DM An important aspect of the market side, the clean green image, is that it is not simply a case of collecting numbers and data but it is also about peoples perceptions, what they think farmers are going. The neighbours, local people are important here as well because if they are very unhappy about what they think dairy farmers are doing, they just have to tell a bad story to a visiting TV crew from say the EU countries and that clean green image could be gone overnight.

MF There has been a recent advertisement on TV in Britain about our free range farming starting with a calf breaking out of an egg. The perception of NZ dairy farming given is that it is idyllic. But an English journalist who sees cows in the rain or in the yard on a hot day could give a different view. And overseas farmers are keen to retain their market share so may want to change this perception of clean and green.

CP It was a controversial step to market that clean green image: that tall poppy syndrome might be just setting us up to be cut down. Maybe marketing “sustainable” would have been a better strategy. Even our own people have already challenged the advertising. I think we should be careful about ‘clean and green.’

MF We’re not as clean and green as we think we are if put under a microscope. At present we have no backup for a claim like that.

PF The processing industry can be claimed as being clean and green but stepping down to farmers it isn’t so.

MF Overseas people are now asking for supplier lists to target anyone on that list. They are awake to visits to ‘show farms’ now.

CB We won’t be able to fudge things for much longer. We have to have an industry-wide concerted effort on this. Why not take our own resources to do this, for instance audit around the dairy as well as the milking plant. Employ the right people to do it. Codex is the stick and give the farmer who qualifies a label to say so. Brand the quality farms, branding is everything. There is lots of good work being done. It just needs picking up, under the industry banner.

TL Years ago the approach might have been ‘how much could we cover up?’ Now there is a lot of support for change.

CB The EU market won’t close down the company, Sidco, but they will target the individual farmers. This is how it used to be for individual disease outbreaks: it was contained on farm. Now we need to grab as a concept the individual farmers recognition of their own risk, not the company’s. Other businesses do this such as meat and vegetables.

DM Do you see in the future companies being able to separate the milk from farmers taking part in an on-farm quality scheme?

CB That’s not impossible. It needs more branding, a brand on the gate of the farm and the understanding that farmers are like lepers without it. The other side of this is the encouragement that this will give to the farmers who have the right standards.

NG the most important message that I get from Chris Bolderstone is that farmers must recognize that the camouflage of ‘averaging’ is gone, if the individual farmers are to be recognized. The
average dairy farmer still doesn’t understand the likelihood of this. Another stick which is new to
dairy farmers comes from an example I saw when I was in the States just recently. Two dairy
farmers took an adjoining dairy farmer to court over a water quality issue. The farm had gone
from 250 to 1200 cows and ruined the ground water quality for the other farmers. He got off
because they couldn’t prove the previous quality of the water but farmers have now started
monitoring the water quality themselves and the New York State took notice of this as a catchment
issue.

DM So an EMS scheme could help as a risk management strategy for the industry and for
individual farmers as well?

NG Overseas experience shows this.

CB There is an example of three areas: Winchester, Ashburton and Woodend where there are 3
farms north of rivers. In Winchester the farm was not good and quality standards have now been
turned around, similarly in Ashburton but the Woodend property is a disgrace and people see this
and comments fly. Dairying is one of the best land uses around. By contrast cropping farmers have
burnoffs and create air pollution, their chemicals and fertilizers have an impacts, ploughing
damages the soil structure and kills worms and there is noise from bird scarers and headers going
night and day in season. Dairying is a lot friendlier to be near.

PF What do you think we should be monitoring?

LV It depends how far you want to go overseas a lot of time is spent on it.

PF It doesn’t have to be taken to ridiculous levels.

LV In our view they might be extreme: In their view, to them, it's normal now. Nutrient
monitoring is just part of what they have to do. Who says that we are doing it right?

CB RMA requires monitoring be undertaking. It is not a case of right or wrong. We have to know
what we are doing. We need to draw our own line. We need to become a self monitoring body.
The industry should organise dead stock collection, if that is a problem. No one else can make it
pay. The dead hole can’t go on. We’ll be targeted.

TL We need good information for setting levels. The monitoring itself is OK. It is the technical
information that is needed.

NG We have good indicators now, such as the work that has been done on soil types to sort out
fertilizer levels.

TL This varies region by region and within regions.

NG Yes but the more that is known the more chance we have of setting the correct levels.

RS Aren’t they basic management issues? We found that there was not a lot to be done. It was
more a case of being aware, monitoring. We now need to start stamping it or else neighbours will
act. It will drive itself. Peer pressure will drive it.

CB The biggest thing with this is the effect on farm values.

DM That can be a real incentive, a carrot. This scheme could also help farmers understand their
own farm better, the physical characteristics. They could become more efficient and save money
such as on fertilizer application.
The workshop then broke for half an hour for lunch. When they reconvened Diane Menzies outlined suggested steps which needed to be undertaken to roll such a scheme out. She made the point that perceptions and values were important rather than just monitoring numbers.

TL Wouldn't this be the most important aspect?

NG Yes but this can be difficult. For instance some animal welfare people visited a diary farm recently and thought the cows had been tranquillised because they were so well fed they were sitting around half asleep.

MF Another example of this was a visitor group who noticed that the cows who were on lush grass had very liquid dung and thought that they had diarrhoea and were sick and said that we shouldn't take milk from them.

DM There are certain signs that people look for on farms. This has been called 'cues for care'. They are things such as straight fences and tidiness. They show that farmers are concerned about their property. However, visitor perceptions may also arise from misunderstandings of what they see such as Japanese visitors who thought erosion in the high country was caused by dairy farming, rather than being a natural phenomenon. We need to think about how we deal with this sort of problem. Is it the consensus then that the scheme is useful?

JO On animal welfare the drive is coming from the market perspective, they are the driver. The environmental benefits are a bonus.

PF NoSLaM can take up animal welfare: it was dropped our of the scheme because it was thought it would make it too complicated at the start. Environment, animal welfare and food safety are the three things to be addressed.

MF The Regional Councils are aware of the environmental issues. Animal welfare has been left out in the focus on environment. We need to get that right and use that experience to help with other aspects.

DM Animal welfare is often perceived as part of the environment. When people see signs of problems or well treated animals they get impressions about land and environmental management, make judgments such as with tail docking, slinkies and feed. In Europe, or some areas there has apparently been a perception that cows are starved because they are outside feeding only on grass.

PF Yes bobby calves are not good from an animal welfare image.

MF In EU calves are worth so much that they can't understand that we are giving them away. They also think we are 'jailing them.'

NG The perception of clean and green by overseas people: what does it mean? There is very little data so if anyone has any would they let Di Menzies know.

TL The clean green perception: there is a range of attitudes and they would be very diverse.

PF No genetic modification would be allowed.

TL Another issue! And one that could be significant to our important markets. We need to find out their views.

CB It's hugely controversial. It is far better to adopt to adopt an environmental sustainability programme than to defend 'clean and green.'
SL That is why the Dairy Board is pushing 'sustainable agriculture', not 'clean and green'.

NG The Tourism Board though is pushing clean and green. What time scale are you looking at Chris?

CB The quicker the better. It will be easier if we are all supplying one company. We should have started 3 years ago. If we are not well on in 3 years time we will have missed the boat.

MF Environment, animal welfare, food safety and on-farm safety are all involved. Funding for an MfE project on an EMS comes in on July 1. It is a 3 year project with a goal to produce a nation wide system, gaining experience from Noslam and then testing in the Waikato. More farmers are hearing about it and will want to get in on it. It is a case of raising awareness.

CB Is there a working party?

MF At the moment it is between Kiwi, NZ Dairy Group, LIC and the Dairy Board. No real management team is in place. We will be working on this is the next two months. The aim is to produce a common vision for the industry. We have been working in the background. Having got the funding approval the aim now is to really get into it.

SL Sidco saw that it was important enough to go and talk about the Ag-vantage programme, then the merger came along and it was put to one side. NZDG see it in a different way.

MF Kiwi saw the need for an industry-wide programme. The only problem has been Gisborne Milk. They have been left out of this sort of thing for so long and are only half way there. They have identified issues but there is no planning process. Ag-vantage can do it.

CP 3 or 4 little schemes need to come together. Funding is an issue and the more I hear about this the more important I see it. There is a potential to be driven from overseas and we don’t want this. 3-5 years is far too long to let this hang fire.

MF We have a process in place for moving forward. The Equal group have been going for 2 years and have lots of ideas. That’s why we are trying to bring groups together.

RS It needs to be driven harder than 3-5 years. For instance other issues have been tackled quickly such as DDT. There was 12 months for testing, and then the penalties came in.

MF It is excellent that farmers are saying this.

CF 'Structure follows strategy.' The industry has to drive it. Farmers can do it. They can adopt technology overnight when it suits (although they may regret it later!)

RS I don’t see this on-farm deal as a big issue. It is a matter of launching it and getting involvement. We are probably doing 85% of it anyway.

PF It possibly needs a strong push. Our experience has been of ringing round farmers for a meeting and they don’t turn up.

MF There are enough advisory groups to get it going right away. But mention the word ‘environmental’ and poof! They don’t turn up. We are now backing off that approach; putting the stick away and are now working through the issue.
CB It is a matter of marketing. For instance for land on the Inland Road now the District Council has to approve any new tracking for land adjacent to the scenic highway. To make any change you have to get the plan approved. If we don’t take the initiative ourselves we will be told to do it.

QM is about self monitoring and its easy.

MF The audit that the Ag-vantage people ran, a mock ISO 14001 mock audit, was easy. the auditor looks at the plan and then looks at each bit to see what has happened. For instance they go to the silage pit and say ‘lets have a look’ then, ‘that’s OK’ and on to the next thing.

PF Yes, the audit was about the system. The thing that came out of the mock audit was that plans had things in them that farmers should have left off, or had been overlooked. And then they were asked, what are you doing about it. Such as chemical storage. For us, effluent, lanes, noxious weed control are the most important things.

RS Dairy graziers can blow it for us.

MF This could be tackled by branding: if you’re not set up, we’ll pay less or not graze there. You can even look at fertilizer codes of practice. All these suppliers are beginning to do it.

CB Yes, we need our own QA done. Chemical applicators are currently doing the same thing. We don’t have to reinvent it at all.

DM What do you think the next steps should be?

CP Coordinating everyone.

JO By the industry as opposed to outside bodies such as the regional councils.

SL And Matt’s group.

RS If we have funding: it is a shame to duplicate. Where is the force driving this study Di?

DM My work is responding to a question raised by NZDRI two years ago.

RS So LIC have the biggest drive? So that’s the best way?

PF We need to shoot it into meetings that are already being held, on a range of other topics, not special meetings.

SL We don’t want to waste time looking at it again, but start promoting it as it is now and add bits to it as we go along.

MF That’s what we are trying to do. We are going to be testing in the Waikato. We can’t add in animal welfare yet because it’s not defined. We have to chip away at it, identifying the issues. One of the next steps is that we want feedback from you guys (farmers). We have an initial bench mark but want more quantitative responses than Di’s work. We have a chart and want to rank out of 5 for various aspects. This will also give a comparison with the industry average. The information is there.

RS Schemes have been introduced very quickly before, such as for OSH and ACC. they just let us know the date when it has to be in place and then apply penalties for those who ignore it.

MF You said you wanted a voluntary system!
TL Yes, but we have to get it started. Get the motivated ones to take it up.

RS There are examples from other farming and industries that show that the motivated ones will take it up and the rest won't.

MF The issue is that it works well here. But will it work in another region? What will need modification? What is needed for other regions?

RS It will be self-modifying, because of the way the system is set up.

LV The average age of the farmers here is 15 years younger than those in the Waikato so it is easier to get underway here!

MF The reason why we want to look at the Waikato is that there is good back-up data there.

SL The need for trialling in the Waikato doesn't mean that you can't do it elsewhere.

MF The plan is to trial in Waikato and Gisborne first.

CP If you are in doubt give farmers the information and if they choose not to follow it, it's their problem. You have to drive it. That is the first step, then build on that.

RT (to MF) Sounds as though you don't believe in it?

MF I'm a little out of my depth and I didn't sign the funding document!

DM We are near the time limit that I agreed we would keep to so before we finish I would like to check for final views from the farmers who took part in the trial.

LV I'm not looking forward to it. But I agree with CB. Farmers won't volunteer to start it. The industry need to drive a stake in the ground.

TL How practical is that?

LV It's common sense: awareness. Most things are already law, such as chemical storage.

TL Common sense?

LV Yes, for instance keeping fertilizer out of the drains, just practical things like that. I'm reluctant: to me it's just another of those wee jobs that has to be done before I go to bed.

TL What do we have to sell it? The importance of the scheme to the industry?

LV We have to put a stake behind it. Or a big sign on the gate. The dairy company must check it, too.

RT I think we have to get on and do something now.

RS It's just another pin in the wall. Another part of the work is to improve our operation. I didn't find it a big deal: just part of management. Older farms might struggle with the cost of facilities.

CP At the start I was dubious but we have to change. A recording system has to be driven from here, not from overseas. The report needs to be kept simple. I say sooner rather than later.
PF I think it has to be pushed harder from industry. I have sympathy for Matt. The farmer
meetings I have had, some have just been lip service. To take it up needs more pressure. The
Otago Regional Council were an enormous help, that went to huge effort. Communication lines
are very important.

LV I could walk away and forget it without any compulsion to do it.

RS If an auditor could arrive at any time then you would still think about it!

LV Then it needs more than a push!

RS Start with a voluntary system and get the first % of farmers on the scheme and then have a big
stick coming in behind that. In other words, a phase in period and then compulsory.

CB There is a saying 'walk softly and carry a big stick!' That big stick could be that the truck
doesn't come! In Southland guys slipped out of the EU farm gate monitoring programme. It is an
issue for them. There will be shareholders in the next two years who won't get milk picked up.
Somatic cells, potable water, refrigeration, farm chemicals.

S McB The thing that concerns me: with milk quality measures are available. With environment
what sort of figures are we to aim for. Who decides? It scares hell out of me, such as for nitrogen.
Once a figure is there it won't get shifted. It may be too harsh and make us inefficient. We have to
be very careful about the figures that are decided on. It has to be driven by the industry, by the
farmers themselves.

TL It may come down to stocking rate: only allowed a certain rate.

MF Lots of issues do not relate to figures. We need a plan but don't need to define these things.
For instance fertilizer use refers to a 'code of practice.'

CB The worst thing would be to have too many figures We need to identify what we are trying to
do and what we need to do to achieve that.

The meeting finished at 2.20pm with DM agreeing to circulate notes of the meeting and inviting
any further comments that those present wanted to make.

4. Summary: Ag-vantage EMS Workshop, 29 April 1999.

The following were key points from discussions between farmer and industry participants.

1. There was a feeling of urgency, especially from the farmers. The view seemed to be that if
farmers did not take the initiative concerning on-farm environmental management then the
following may occur:
   - requirements such as nutrient monitoring may be forced on farmers by regulators
   - farmers may be faced with liability prosecutions for environmental damage such as water
     pollution, through private cases brought by other farmers as is now occurring in the US
   - the market may drive requirements and monitoring regimes.

2. The need now is to implement a scheme rather than develop a new scheme, the participants felt.
The view was put that Ag-vantage should be modified by farmers as implementation was put in
place.

3. The scheme needs to include animal health and welfare and food safety.
4. The scheme needs to be put in place at farmer level as responsibilities for on-farm environmental management will increasingly be attributed to the individual farmer. However, to be implemented successfully the scheme requires strong endorsement, co-ordination and to be driven at company and industry level.

5. On-farm recording/monitoring by farmers should be followed up by companies and an audit procedure to ensure the scheme is supported.

6. The scheme should be commenced as a voluntary scheme but be compulsory at a later date for those who need stronger encouragement.

7. All procedures/reporting should be simple and straightforward, considering perception and values as much as technical figures. Adoption of codes could be useful.

8. Clear objectives, and a strategy for implementation should be developed: the structure of the scheme should follow from this - a working group to start the process and develop strategy should get underway.

9. There was some hesitancy among participants about promoting the 'clean green' image versus promoting/marketing NZ on the basis of 'sustainable farming.' Contentious issues such as genetic modification related to 'clean and green' gave participants concern that competitors may see NZ as not conforming to the image, and publicise this.

10. There was a strong view that branding of farms adopting the scheme should be promoted through a logo which could (and should) be used on the farm gate. This could have a positive effect on farm values.

Appendix D: Email questionnaire for Asian consumers

1. Have you visited New Zealand? (Yes, No).

2. If you have not visited New Zealand, have you seen any information about the rural landscape? (What and where, briefly).

3. What is your opinion/perception of the New Zealand countryside?

4. New Zealanders describe their rural landscape as 'clean and green.' Do you think this is a fair description? (Yes, No).

5. If not, what changes do you think farmers should undertake to more fairly/accurately reflect this description?
Appendix E: Consent Form

Environmental quality on the dairy farm
Diane Menzies
Department of Landscape Architecture
P O Box 84, Lincoln University, Canterbury.

This research project will be looking at environmental quality on the farm from the dairy farmer’s point of view.

Name of interviewee:
Address:
Telephone:

I have read and understood the description of the above-named project. On this basis I agree to participate as an informant in the project, and I consent to publication of the results of the project with the understanding that anonymity will be preserved. I understand also that I may at any time withdraw from the project, including withdrawal of any information I have provided.

Signed: Date:

Appendix F: Constructs for initial case study interviews

Ten constructs were developed from initial literature searches as a basis and structure for the farmer interviews. These were:
- benefit and satisfaction
- profit and environmental quality
- goals and motivation
- experience of environmental problems/successes
- measures/indicators of environmental management
- leadership
- risk
- competition
- self esteem
- shared values/networks

The constructs were to be omitted or augmented as the result of data gained and analysis.

Appendix G: Stakeholder identified environmental issues

Key: issue identified by the following group(s)
1 farmer  6 media
2 industry/advisory  7 consumer
3 local/regional regulator  8 research scientist
4 iwi  9 government
5 environmentalist  10 contractors
6 contractors  11 other stakeholder

The following issues were noted more than once. The origins are noted. Issues are grouped according to resource or management. Those mentioned most frequently, or noted as a major problem, in bold.

Animal health and welfare
- cows in mud in winter
- cows without shelter in winter
- cows underfed
- dehorning
- induction
- hormone use
- dead calves (slinkies) at the gate: also cultural issue
- bobby calves in pens at the gate
- diseases such as TB and Leptospirosis
- lane management
- tail docking
- drugs and antibiotics

Care
- dairy, and farm buildings
- farmer appearance
- lanes and entry
- dead stock removed
- fence lines maintained
- gates on hinges
- livestock in good condition/health
- pasture management
- shelter, other planting
- shelter belts trimmed
- tidy farm: no rubbish
- weeds controlled

Chemicals discharge and contamination
- Nitrogen and other fertilizer
- toxic chemicals residues (and overuse)
- DDE contamination

Effluent management
- effluent pond management
- contamination of surface and groundwater

Energy conservation
- electricity, fuel, fertilizer use, systems

Marine pollution
- factory ocean outfalls

Nuisance, safety, property damage and pollution
- cows and effluent regularly on the road
- stock transport and effluent leakage
- electric tapes left across roads
Recycling  
Social impact  
- fragmentation of community  
  stakeholders values: Fish & Game, fishers,  
Streams, habitats and bio-diversity  
- cows in or damaging streams  
  riparian damage and overgrazing  
  diversion and channelling  
  removal of habitats such as wetlands or patches of remnant forest  
Soil conservation  
  pugging (compaction in winter)  
Visual /ecological impact  
  mud on lanes and around dairy sheds  
  trees and biological diversity  
  breakfeeding  
Water conservation  
  water abstraction/raised water table  
  irrigation methods and efficiency  
Water quality  
  effluent contamination  
  siltation  
  cows in streams  
  wetlands drainage or dumping  
Waste disposal  
  balage wrap disposal  
  twine  
  disposal of chemical drums  
  and unused toxic chemicals (by other farmers)  
  silage stack and feedstand leachate  
  dead cows in offal pits on farm  
  rubbish
Appendix H: Draft environmental policy and strategy

Environmental Policy

Introduction Policies are:

'rules or guides that express the limits within which action should occur.'

The motivation for environmental policy development is a mix of commercial opportunity and threat: the opportunity to meet or exceed the quality standards of competitors, as well as market positioning for quality; the threat posed by consumer pressure, legislation and ethical expectations of other stakeholder groups. Research indicates that key factors in environmental policy change are 'values relevant to the perception of the need for innovative change,' and the power and influence of the policy champions. Therefore, environmental policy 'is not a matter that can be left to the technical experts' and all senior managers need to be involved. Unambiguous commitment from the top will facilitate acceptance of change. Policy emphasis is not only therefore needs to be upon environmental aspects, but on managing complex change. In addition, developing environmental policy, and implementing it, is a long term business which needs to be sufficiently flexible to adapt to changing values and circumstances. The following is a draft for industry consideration, to build on the New Zealand Dairy Board’s Environmental Statement.

1. Pasture to plate policy. The environmental policy of the New Zealand dairy industry is to commence with the farmer and relevant contractors and suppliers, and to extend through the value chain from the manufacture and distribution process to the customer and consumer. The emphasis in this policy is on the farmer, but change will be achieved more rapidly and effectively in tandem with industry wide attention to environmental policy. An Environmental Management System (EMS) is to be used as a strategy for on-farm environmental change.

2. Risk and uncertainty. There is uncertainty from the relative effects of different processes, costs and benefits of alternatives, different time scales, values and political agendas, and current knowledge of environmental processes. The complexity and uncertainty of agricultural change, and the change process, indicates farmer need for information and assistance. Farmers will be supported in making systems changes and adapting to respond to stakeholders concerns. Information is to be presented in a wide variety of ways, from self run focus groups, company discussion groups, model farms or techniques, demonstrations, computer learning programmes, catchment and other systems management models, landcare and conservation demonstration projects, and information sheets on new topics, in order to support those with different perceptions, and present new insights.

3. Environmental training. The purpose of training is to build awareness of relevant and important environmental issues, and motivation to make changes; as well as to provide the skills and knowledge for decision making, and activities which minimise impacts and enhance sustainability. Training will be encouraged and supported through manufacturing cooperatives, LIC Advisory, other advisory service providers, video and the Dairy Exporter. The training will be based on two key premises: that farming is a business which must show profit to be sustainable, and that adoption of an EMS as an environmental marketing tool and risk management strategy, must be shown to have benefit for farmers, stakeholders, the industry and markets. Acknowledgment will be given to the different perceptions of benefit that farmers and others will hold and so particular attention will be given to communicating benefits in different ways.

21 Mintzberg and Quinn (1991 : 5).
22 Barrett and Murphy (1996 : 81).
The perception of benefit will depend on the various farmer-held world views, so the EMS and other changes must have the means to indicate industry pride: to support entrepreneurs. A strong branding label which can be claimed when farm practices meet and exceed standards expected by regulation, clear endorsement of industry leaders, and work towards financial reward through market differentiation, will be seen as benefits by the entrepreneur.

A clear system, which has explicit standards and has support from stakeholders and farmers groups, aiding farm management, would be seen as benefits by the hierarchist, and clear progress by all farmers towards environmental and animal welfare improvements, as well as help towards this, and response to community concerns, would be seen as benefits by the egalitarian farmer.

4. On-farm quality system: EMS. An on-farm environmental quality system to support TQM in the dairy, is to be introduced and promoted to all dairy farmers. The purpose of the scheme is to increase awareness, provide options, enhance skills, monitor for efficiency, support change, assist risk management, substantiate green marketing, and to respond to stakeholder concerns. The aim is to have all dairy farmers taking part within 5 years of introduction.

5. Best practice. The basis of the EMS is best practice for: animal health and welfare, biodiversity, conservation of resources, effluent management, energy use, farm discharges, fertilizer management, productivity, profitability, recycling such as of water, soil quality, silage storage and management, storage and use of chemicals, waste minimization and disposal, and weed and pest management.

6. Perception of on-farm quality. Quality is currently judged by the dairy product. However, environmental quality takes into account all aspects of production. An important factor is therefore how dairy farming is perceived. Attention is to be given to the appearance of dairy farms, particularly aspects which indicate care and quality, such as tidiness at the entry and around the dairy, maintenance of and around houses and other buildings, lanes, shelter, and animal welfare. These indicators will form a focus of the EMS scheme. However, while visual impression is important, emphasis should not only be given to efficient resource use, but also to farming in harmony with nature. In addition to limiting discharges, this can be achieved by creating and enhancing natural habitats where there is opportunity within the farm site, to demonstrate the farmer’s contribution to the ‘clean green’ image. Farm conservation opportunities will vary but a feasible goal is riparian enhancement of all streams, to work towards biological corridors for wildlife, and at the same time a system for discharge prevention. Patches of land which fall outside the pasture grid system might also present opportunities and farmers might link with adjoining features on neighbouring farms. Farm conservation projects might be undertaken in conjunction with local schools or interest groups so that information can be shared and mutual benefit obtained. The goal is to build a mosaic of areas on dairy farms throughout the country, where space and care is given to ‘natural New Zealand.’

In addition, dairy farmer presentation contributes to the impression communicated to the stakeholder. Farmers taking part in the EMS quality scheme will be encouraged to also consider personal presentation, as an indicator of industry pride.

7. Collaboration. Partnerships or networking groups are to be encouraged to provide feedback to the EMS and environmental strategy, and as a source of alternative management options.

8. Communication. Profile development for the EMS and quality strategy, consumer monitoring, and reporting on environmental performance will be the three aspects of the communication plan.

9. Research. Coordination of research and dissemination of findings are to be undertaken by the Dairy and Environment Committee to ensure research spending is most effective. Adoption of new technology such as geographic information systems will be encouraged as a means to locate at risk aspects and monitor environmental change.
Research funding for environmental management issues will be given priority alongside consumer product research. Such research may produce mapping of sites more vulnerable to various impacts, and therefore requiring more stringent procedures for use for dairying.

10. Branding. A strong and consistent brand for environmental quality at the farmer end of the value chain is to be developed to support the dairy industry's differentiation strategy, but not to compete with branding strategy in the markets. The brand is to be widely promoted in New Zealand, to address local stakeholder concern, and act as a goal for farmers.

Draft Environmental quality strategy

Introduction A strategy can be defined as:

'A pattern or plan that integrates an organization's major goals, policies and action sequences into a cohesive whole. A well formulated strategy helps to marshal and allocate an organization's resources into a unique and viable posture based on its relative internal competencies and shortcomings, anticipated changes in the environment and contingent moves by intelligent opponents.'

An environmental quality strategy is not only a sustainable market strategy for differentiation, along with the building of strong brands, but also commitment to and the credibility of the strategy is an essential aspect of green marketing. In a quality strategy the business must distinguish itself with respect to delivering quality to customers and improve customer satisfaction. The dairy industry has focused on milk product quality but not specifically on environmental quality.

Environmental marketing is not about claim or image making so much as environmental management, because if consumers identify marketing communications as being inconsistent with the environmental track record of the company, and corporate commitment and accountability, the claims run the risk of backfiring. If the dairy industry is to include environmental quality within its marketing strategy, then a substantiation system is urgently needed and overall industry commitment to it is required, from the top down. The following components form the draft environmental quality strategy for the dairy industry.

1. Industry commitment. The Chairman, Board and senior management of the New Zealand Dairy Board and the manufacturing cooperatives take responsibility for leading the environmental strategy for the dairy industry. Their role will be to encourage commitment to this strategy throughout the industry. The purpose of the scheme is to enhance farmer efficiency, minimise environmental risk and substantiate green marketing, by responding to stakeholders concerns. Action will involve the setting of performance standards, the promulgating of codes and best practice guides, the encouragement of adoption of ISO 14001 standards and similar quality assurance schemes as well as an environmental management system (EMS) and indicators, for on-farm environmental assurance.

2. Industry standards. Codes and standards provide clear guidance on expected performance. However, detailed manuals are not user friendly for day to day use and are not a system for ongoing change. They do however, provide information support for an EMS. The strategy is to continue to develop a linking system of information manuals and performance standards based on legislative and market requirements, to put such data on-line, and supply update notices regularly on codes available, and develop farmer information systems that can be easily catalogued and updated.

26 Mintzberg. and Quinn (1991)
29 Coddington (1993 : 3).
3. **Stakeholder liaison.** Cooperative agreements are to be developed with national and local environmental groups such as Fish and Game and Forest and Bird, and other key stakeholders, to identify changing national and local environmental issues, establish a collaborative approach as well as to achieve international credibility for environmental standards. Local and regional iwi representatives are to be invited to such forums. The strategy is to work towards an agreement on what stakeholders would like to achieve: an affirmative statement. The Forest Accord which was agreed between West Coast forest owners and environmental groups is an approach that may prove helpful: a symbol of collaboration.

4. **Market research.** The purpose of environmental market research is the identification of consumer needs and empowerment of consumers. Research is required on the latest ‘green’ consumer criteria i.e. Tesco’s purchasing criteria, as an indicator of wider concern.

5. **Environmental research.** An industry wide environmental research programme will continue alongside technical and product research. This programme will coordinate and integrate biophysical, social and economic environmental research and communicate findings through a variety of channels and ways so that the range of farmers and industry staff can take best advantage of it.

6. **Promotion.** The New Zealand ‘clean green’ image has been adapted for industry marketing. However, market research indicates that where detailed product information is provided, a ‘green image’ has limited credibility. A further aspect raised by marketers is the use of the term ‘environmentally friendly.’ Green marketers recommend greater specificity, arguing that such terms are too vague to carry sufficient meaning for successful green marketing to sophisticated consumers. Therefore industry green marketing will be backed by an industry wide EMS, and regular audits for substantiation.

7. **Information and Training.** The industry strategy is to adopt a well resourced but flexible approach to information and training so that a variety of sources and means can be used to respond to different views and learning methods. Training will target the key aspects of the EMS, initially set up and recording.

**Draft Strategy: Environmental management system**

**Introduction**

Establishment of an environmental management system across the industry has prospect of achieving three benefits. Firstly it will provide benefit to the farmer through business risk reduction, greater efficiency, and better understanding of both broad scale and local environmental systems. Secondly it will ensure that stakeholder values and legal requirements are taken into account, it can lower environmental risk and repair rural fragmentation. Thirdly it will provide a means of substantiating on-farm environmental quality to support green marketing strategies. The following proposed strategy is based on findings in this study.

**EMS Strategy**

1. **Implementation and coordination.** Further trialling of the EMS system is required by the Dairy and Environment Committee (the Committee). As part of additional modifications the following should be tested and developed:

   • The identification of (say) three key indicators for which a performance measure is set and for which recording is taken throughout New Zealand. These factors should ideally be representative of aspects which are of concern to markets and indicate that farmers care for their environment. The three suggested are: a standard for water quality leaving the farm, measured initially by water turbidity (water being a key issue of local and international

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Concerns, the goal being to work towards sparkling water and healthy fish species; a standard for animal health and welfare measured by condition score, the goal being well fed, contended herds; and contribution to biodiversity (Agenda 21 highlighted this as an international interest), measured by active steps taken to create, protect, restore or enhance a habitat area, the goal being that each farm cares for both efficient production, feeding people, and 'natural New Zealand.' This might be riparian protection, shelter belt planting or similar.

- The frequency and method of monitoring and recording of the indicator standards to be resolved with farmers and compared with international benchmark standards. The data recorded can then form the basis for ongoing monitoring and quality substantiation.

- The development of recording sheets for data, for insertion in the TQM farm manual. The sheets to be straightforward, capable of forming graphs or to similarly show progress, and not time consuming.

- The identification of performance standards required by regulation by each regional council, and where relevant, district councils, for additional inclusion in the manual.

- The establishment, through the Committee, of a liaison system to consult with regulators, and at district and local levels with iwi and other stakeholders to ensure that stakeholder concerns are acknowledged, plans developed for staging to address them; risk is reduced; and progress made is communicated, in the form of indicators.

- The development of a strong branding symbol for farmers taking part in the scheme, for gate signage and other use. Whether such a brand includes the term 'clean and green' or 'natural care' or 'excellence,' or a similar phrase, or is graphic only, to be resolved with farmers and brand advisors.

- The training of LIC Advisory staff for advice on environmental issues, co-ordination with other advisory providers on needs, and setting up and demonstrating selected monitoring systems.

- Planning for an audit system, which may be applied to a random sample of farmers on the scheme, which can be conducted when the scheme is established, on a 3 yearly basis. An environmental audit is:

  'a systematic process of objectively obtaining and evaluating evidence regarding a verifiable assertion about an environmental matter, to ascertain the degree of correspondence between the assertion and established standards and criteria and then communicating the results to the client.'

An audit, along with stakeholder consultation, can help identify relevant environmental issues. It can also help to evaluate regulatory compliance, assess environmental risk, help improve performance, identify opportunities and cost saving potentials, improve public image and demonstrate that due diligence has been practiced. It can also be seen as a symbol of quality assurance.

- The link to market research so that market concerns can also be addressed.

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2. Communications plan. While trials are being undertaken, a communications plan to be developed for introduction of the system in the first three years. The plan should provide for updating key stakeholders on the system by an email and paper newsletter, and regular articles in the popular press, and Dairy Exporter, such as vignettes on farmers who are taking part in the scheme. Media and regulators to be provided with topic information sheets so that they have the information they need, and relationships are developed.

The key stakeholder group with which the Committee liaise, particularly regional and district councils, environmental groups such as Forest and Bird, Fish and Game and iwi, to be part of this plan so that information needs of, for instance, councils can be indicated and links made with other monitoring requirements to avoid duplication. This group might provide advice on community interests for future additions to the scheme.

3. Market values. Market research is required to identify environmental interests and indicators in the range of markets, as well as benchmarking the best standards, so that the EMS both responds to markets and matches the standards (where appropriate) of competitors with the highest quality.

4. Future monitoring standards. It is likely that three standards will not satisfy customer interests for substantiation, and standards on antibiotic use, GM tracing, energy conservation, packaging, recycling, and solid waste disposal may also be necessary soon. Other output indicators that may help to substantiate the scheme for consideration are: the number and type of relevant environmental complaints received and successfully addressed by cooperatives, district and regional councils and other stakeholders; and the reduction in volume of pesticides or other hazardous chemicals used. In addition, further standards are likely to be needed for key factors such as animal welfare, discharges into water and soil, and indicators of long-term sustainability. The EMS is sufficiently flexible to be amended.

5. Link to company policy. Introduction of an industry wide EMS should be linked to an industry wide environmental policy which deals more broadly with environmental issues, such as packaging and sustainability. This will assist in conveying commitment and credibility to the consumer, an essential aspect of environmental marketing.

6. Farmer recognition. A system to recognize those farmers who are setting high standards would be beneficial to promote the scheme, and develop industry pride. This might be an annual award which has both a monetary reward, trophies, as well as wide publicity.

7. EMS establishment and on-going development. To be effective the EMS must have consistent national performance standards, respond to and anticipate regional and district regulations (which are likely to reflect local risks) and provide for farmers’ site specific issues and opportunities. The EMS needs to have local flexibility but consistency at the national level. Therefore, to respond to different farmer and stakeholder views and requirements, a variety of support groups and means of implementation will be encouraged including: local resource care or landcare groups, focus groups and networks, regulator led schemes and company schemes, within the umbrella of the EMS.

8. System extension. While not necessarily or appropriately needing standards, several aspects identified as lacking in the original scheme should be trialled and included. These include indicators of ‘good’ management, or ‘cues for care,’ so that the system communicates the right message. In addition aspects such as lane ways and entry areas and animal health and welfare need to be included.

9. Timetable. Speed of introduction will rely on resource commitment, consistent promotion, leadership and farmer take-up and support. The aim of 60% take-up within 3 years of introduction is suggested. At this point, a review of the scheme is recommended to assess modifications.
needed, whether differentiation can be given to those on the scheme, and further policy changes indicated. Introduction of the scheme at the time of the 'mega-merger,' should it occur, seems timely.