

Entrepreneurs and Organisations:

A case study of the Gisborne aquaculture cluster.

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Attestation of authorship

I hereby declare that this submission is my own work and that, to the best of my knowledge and belief, it contains no material previously published or written by another person (except where explicitly defined in the acknowledgements), nor material which to a substantial extent has been submitted for the award of any other degree or diploma of a university or other institution of higher learning.

A handwritten signature in black ink, appearing to read 'B. Johnstone', with a long horizontal flourish extending to the right.

Bruce Alexander Johnstone

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However, tragedy was to strike again. In September 2005 my oldest son, Brian, contracted *necrotising fasciitis* and underwent emergency life-saving surgery to have his left arm and shoulder amputated. To gain the time to be able to provide Brian with the practical support he needed I was granted permission from Auckland University of Technology to suspend my research for a period. Resuming work on this project in 2006 coincided with launching a demanding new business and this made for a year of slow progress with my studies. Fortunately the encouragement of my supervisors and my return to the field in 2007 for a third cycle of data gathering, reinvigorated my motivation and began a productive period during which this research was completed.

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Abstract

This research contributes to the discussion surrounding New Zealand's *entrepreneurial environment* and *Innovation Framework* and addresses the research problem of whether the New Zealand government should seek to support entrepreneurship and innovation through the various knowledge-based or regulatory organisations it owns or funds, and if so, how it should go about accomplishing this. The approach taken was to use qualitative methods to examine how the government's support for entrepreneurship and innovation was delivered to an emerging cluster of entrepreneurs from the point of view of those entrepreneurs.

The entrepreneurs were involved in the innovative industry of land-based aquaculture and fieldwork was carried out in the Gisborne Region, on the east coast of the North Island of New Zealand. This study began by reviewing relevant literature from academic, industry and government sources to identify relevant sub-themes and create a framework for analysis. Fieldwork was undertaken using ethnographic methods to explore how the entrepreneurs experienced the New Zealand entrepreneurial environment and innovation framework in their interactions with knowledge-based and regulatory organisations.

Data was gathered primarily by participant observation and semi-structured interviews and transcripts were coded and analysed using NVivo® software. An ethnographic narrative was produced and the interview transcripts analysed for relevance to the sub-themes from literature and to identify patterns that emerged from the data.

This research reports that four of the entrepreneurs failed in their ventures due to a combination of factors both within their operations and within the entrepreneurial environment. These factors included technical difficulties maintaining livestock health and growth within an artificial marine environment, an inability to obtain assistance from knowledge-based organisations, problems in dealing with regulatory organisations, difficulty retaining trained staff, uncertainty about the market, and high energy costs.

The Māori training organisation, Turanga Ararau, formed the Gisborne Aquaculture Society in an effort to establish a Gisborne aquaculture cluster however, this initiative proved unsuccessful primarily because the society failed to attract the

involvement of key stakeholders. This research contributes to the policy and practice of cluster facilitation by examining the extent to which best practice was followed in this attempt to establish a cluster and presents conclusions as to how the process of establishing the cluster could have been improved.

This study also reports that the entrepreneurs were cut off from access to knowledge and research resources and received little advice or support from the knowledge based organisations that might have played a role in the development of their cluster. It examines how and why New Zealand's Innovation Framework might be failing to recognise and support the vital role of entrepreneurs in economic development and suggests how this might be improved.

The methodology chapters of this thesis contribute to literature regarding the use of ethnographic methods in entrepreneurship research and a further by-product of this thesis is an ethnographic account of the participant observation and semi-structured interviews with the entrepreneurs. This research also provides an insight into the obstacles and challenges faced by entrepreneurs in New Zealand, in particular those involved in the emerging recirculating aquaculture industry.

1 Introduction

1.1 An outline of this research

Should the New Zealand government seek to support entrepreneurship and innovation through the various knowledge-based or regulatory organisations it owns or funds, and if so how should it go about doing this? This is the research problem that this study set out to address by examining New Zealand's *entrepreneurial environment* and *innovation framework* from the viewpoint of a group of entrepreneurs.

To address this question this research used ethnographic methods to explore how such organisations affected the emergence, existence and ultimately the collapse of an emerging cluster of entrepreneurial ventures seeking to create a new export industry in a small provincial location in the innovative and technologically challenging industry of land based aquaculture.

Ethnographic methods were used to gather data and fieldwork occurred in three main cycles spread over a four year period from 2003 to 2007. This study was carried out in the Gisborne Region which is located on the east coast of the North Island of New Zealand. The Gisborne Region has both a small population of just 45,000 and is geographically remote from both New Zealand's capital city of Wellington and the country's largest city of Auckland.

This study followed seven entrepreneurs including three who each established or bought into two ventures that used recirculating systems to farm New Zealand abalone or *paua*¹ in the Gisborne area. Despite their initial promise and the enthusiasm and skill of the entrepreneurs and organisations involved, both ventures ended in business failure and closure.

A fourth entrepreneur abandoned work on a half-built building that was to house a paua farm and was, at the end of this study, involved in a bid to establish a new aquaculture venture in North Carolina in the United States. A fifth entrepreneur remains successfully in the business of land based farming of the much less troublesome species of goldfish while two other entrepreneurs were included because

¹ New Zealand Blackfoot Abalone (*Haliotis iris*).

of their key roles in Turanga Ararau, an organisation attempting to develop a commercial paua hatchery while providing aquaculture training to over 100 people in Gisborne.

Of interest to this study were any knowledge-based organisations that were engaged in relevant training or research or were actively seeking to develop the industry as well as organisations that supported, contributed to or regulated some aspect of the lives of the entrepreneurs involved in the industry. This was deemed relevant as these organisations form part of the entrepreneurial and institutional frameworks within which the ventures operate and can be viewed as part of New Zealand's Innovation Framework. This study focused on the interactions, transactions and relationships that the entrepreneurs had with these organisations and examined the operations of the organisations and the innovation framework from the point of view of the entrepreneurs.

The data gathered, primarily by the ethnographic methods of participant observation and semi-structured interviews, were analysed using a framework made up of a selection of research questions drawn from literature. The outputs of this research were an ethnographic narrative account and a number of conclusions based on both the framework for analysis applied and a number of additional patterns that emerged from coding of the data.

The conclusions have been used as the basis for a number of recommendations for policy and practice and in particular how cluster facilitation and outcomes for both the entrepreneurs and organisations could have been improved. The methodology chapters of this thesis contribute to literature regarding the use of ethnographic methods in entrepreneurship research and a further by-product of this thesis is an ethnographic account that describes the obstacles and challenges faced by the emerging recirculating aquaculture industry in New Zealand.

1.2 Selection of the research problem

The exemplary case study is likely to be one in which:

- *The individual case or cases are unusual and of general public interest.*
- *The underlying issues are nationally important, either in theoretical terms or in policy or practical terms.*
- *Or they are both of the preceding. (Yin, 1994, p. 147)*

Strauss and Corbin define a *research problem* as ‘the general or substantive area of focus for the research (Strauss & Corbin, 1998, p. 35)’ as opposed to the *research questions* which are specific queries that ‘set the parameters of the project (Strauss & Corbin, 1998, p. 35)’. Governments are increasingly called on to support entrepreneurship (Reynolds *et al.*, 2004; Teske & Schneider, 1994) and this research set out to contribute to the discussion surrounding New Zealand’s entrepreneurial environment and innovation framework. In particular the discussion addresses the research problem of whether the New Zealand government should seek to support entrepreneurship and innovation through the various knowledge-based or regulatory organisations it owns or funds, and if so, how it should go about accomplishing this.

This research approaches this problem by examining how the New Zealand government’s support for entrepreneurship and innovation appears to be delivered to entrepreneurs in an innovative emerging industry in a small New Zealand centre, from the point of view of those entrepreneurs.

This is a research problem that is nationally important in policy and practical terms, and therefore meets Yin’s test in the above quotation, because (as Chapter 2 will go on to discuss) entrepreneurship is widely considered to be linked to economic growth which in turn results in improved standards of living.

Research Problem: Should the New Zealand government seek to support entrepreneurship and innovation through the various knowledge-based or regulatory organisations it owns or funds? If so how?

Research Approach: How does the New Zealand government’s support for entrepreneurship and innovation appear to be delivered to entrepreneurs in an innovative emerging industry in a small New Zealand centre, from the point of view of those entrepreneurs?

1.3 Selection of the industry

The aquaculture of paua, native abalone species, is developing at a steady rate with 17 farms currently in operation, predominantly as land-based facilities. The farms are scattered around the country including Stewart Island, Coromandel Peninsula, Hauraki Gulf, Kaikoura, Marlborough, Canterbury and New Plymouth. The common paua is the focus of most farming attention as it produces high value meat and half-pearls. Significant commercial development of paua farming has been predicted with sales for both pearls and meat to reach NZ\$62.5M in a decade, from current sales of approximately NZ\$400,000 (Jeffs, 2003, p. 9).

If we accept the viewpoint that successful entrepreneurship results in economic growth and thus higher standards of living, it follows that, if they prove successful, new ventures that employ new technologies to develop new export industries in regions like Gisborne must certainly hold the potential to bring economic growth, new employment opportunities and improve the lives of the people that live there. An example is the case selected for this study; a small loosely linked group of entrepreneurs engaged in developing a number of small-scale land-based recirculating aquaculture ventures in the Gisborne region.

Land-based recirculating aquaculture is an emerging export industry that seemed in 2003, when field work was begun, to hold excellent potential for individual entrepreneurs to create wealth and export income for New Zealand and contribute to employment and economic development in New Zealand's regions. Forty fish species can legally be farmed in New Zealand, including three species of abalone of which the most common variety is the New Zealand Blackfoot Abalone or paua (*Haliotis iris*). The unsatisfied world demand for abalone has been estimated at 14,000 to 18,000 tonnes per year in an Australian government report (Janes, 2003) and this demand clearly cannot be satisfied by New Zealand's 1,200 tonne quota for wild paua. At time of writing, abalone meat wholesaled for \$120/kg and retailed for \$195/kg in Auckland. In Asia, certain varieties of abalone are reported to sell for up to \$1000/kg. Farmed abalone is clearly a high value produce for which a large international market exists (Dann, 2004) and this is evident in New Zealand from the frequency of media reports of cases of poaching and smuggling wild paua.

The National Business Review has rated the land based paua farming operation OceaNZ Blue as the second most exciting company in the fishing and aquaculture sector (Kennedy, 2008). The newspaper's excitement index is described as a calculation made up of 20 executives and business owners' ratings on a range of psychologically based factors measuring excitement for a business. Very high excitement factors are where the index exceeds 80 and OceaNZ Blue received the impressive rating of 81.1. Clearly the business of farming paua in a land based recirculating system, as OceaNZ Blue does, is considered by many to be an exciting one.

Land based recirculating aquaculture seems to offer great opportunity for entrepreneurs to farm a wide range of species for niche local and international markets. The same water treatment technology used to farm paua in recirculating systems can also be used to farm a range of other salt water species, such as seahorses for example. China imports 20 tonnes each year of seahorses at prices of up to \$3000/kg for Chinese medicinal use and the New Zealand variety is the largest in the world. A live market exists in the USA where seahorses are popular for home aquariums. Other examples of the many species that may be farmed in recirculating systems include other native or exotic abalone varieties, soft-shelled crab and whitebait.

However, the emergent land based aquaculture industry faces major challenges and a number of early ventures around New Zealand have failed after suffering operational and/or financial problems. As there is so far very little product ready to market, the new industry's marketing and distribution channels and pricing mechanisms remain undeveloped and untested. Paua farmers face at least a three or four year wait for abalone to reach a good market size of around 80-90mm and this is a long time for any new organisation to operate without income.

In seeking to study the relationships between entrepreneurs and organisations it was important to select a case where it seemed likely that the latter would be interested in interacting with the former. Selection of the case for this research seemed justified because the entrepreneurs were thought likely to have relationships involving advice, support, training, research, collaboration or regulation with a range of organisations based on the following factors:

- Novelty - Land based aquaculture is a new activity and represents a radical change from the well established activities such as horticulture, farming and forestry. It is therefore likely to be supported by organisations involved in supporting emerging industries.
- Technical Difficulty – It is an industry in need of research and development if it is to achieve its potential and therefore likely to interest, and perhaps qualify for support from, organisations with a focus on research and training.
- Export potential - Abalone and other species that can be farmed in land based systems have the potential to become new high value exports for New Zealand and the industry can be expected to attract support from organisations such as government agencies concerned with promoting exports.
- Sustainability – While sea-based aquaculture raises environmental concerns, land-based recirculation systems for aquaculture are generally environmentally friendly and sustainable and ventures were unlikely to be denied support for environmental reasons.

A case study of this type records much detailed information related to the individuals, organisations and industry and this research has recorded viewpoints and knowledge from entrepreneurs about the current state of the recirculating aquaculture industry in Gisborne. As a result it is able to discuss the strengths and weaknesses of that local industry, the opportunities and threats that would confront a new entrant and what the future might hold. While not the focus of this study, this seems a by product worthy of being reported.

1.4 Selection of the entrepreneurs

The seven entrepreneurs that participated in this research were selected because they represented all the entrepreneurs found to be actively involved in establishing land based aquaculture ventures in the Gisborne area at the time when a preliminary cycle of participant observation and a second and third cycle of semi-structured interviews and observation were being conducted. In order to protect their privacy, the names of these entrepreneurs and the location of their ventures have

been replaced with pseudonyms in this report. Those pseudonyms are listed and the individuals briefly described in Table 1.

A number of other people were encountered during this research that had an interest in the industry either as trainees, former trainees or employees. There were also several who expressed an interest in establishing an aquaculture venture on their own or as part of a group but, had not taken any concrete steps to do so. These people were not interviewed; as it was felt they would have had little or no contact with knowledge-based or regulatory organisations while in the role of an entrepreneur.

However, a wide definition of *entrepreneur*² was adopted and two entrepreneurs, Harry Roberts and Meg Matangi, employees of Turanga Ararau, were included as they were seen as being key employees in that organisation's entrepreneurial efforts to establish a commercial hatchery operation and carry out research within a training organisation. These entrepreneurs were also engaged in social entrepreneurship in promoting both sea and land based aquaculture and seeking to develop and facilitate a Gisborne aquaculture cluster.

Joe Warbrick was included as an entrepreneur even though he purchased the Ahuahu paua farm, established by Darby Ryan, rather than creating a completely new venture. Warbrick can be considered an entrepreneur because he saw the troubled Ahuahu farm as an entrepreneurial opportunity and because he took over and attempted to carry on the entrepreneurial venture established by Ryan. His inclusion also allowed the Ahuahu operation to be observed through to its closure.

² The meaning of the term *entrepreneur* is discussed in Chapter 2.

Table 1. The roles of the seven entrepreneurs interviewed.³

The roles of the seven entrepreneurs interviewed.	
Entrepreneurs	Roles
Darby Ryan*	A former fisherman and farmer and the original owner of the Ahuahu* paua farm which he built using NIWA as consultants.
Joe Warbrick*	A former NIWA employee and the second owner of the Ahuahu* paua farm after buying it in April 2006.
John Taiaroa*	A Gisborne shearing contractor who began the construction of a commercial paua farm in Gisborne but, is now involved in establishing a recirculating aquaculture facility in the USA.
William Millton*	Owner of the Wharekauri* paua farm.
Ned Davy*	Owner of Auric Aquaculture* - primarily farming goldfish.
Harry Roberts*	A scientist and trainer at Turanga Ararau also involved in building a commercial paua hatchery at Turanga Ararau.
Meg Matangi*	A trainer at Turanga Ararau and the organiser of the Gisborne Aquaculture Society. No longer employed by Turanga Ararau in 2007.

* A pseudonym (see Table 11 for all pseudonyms used).

1.5 Selection of the organisations

A case can be made for regarding an organisation as “consisting of a set of institutions” according to Matthews. (1986, p. 905)

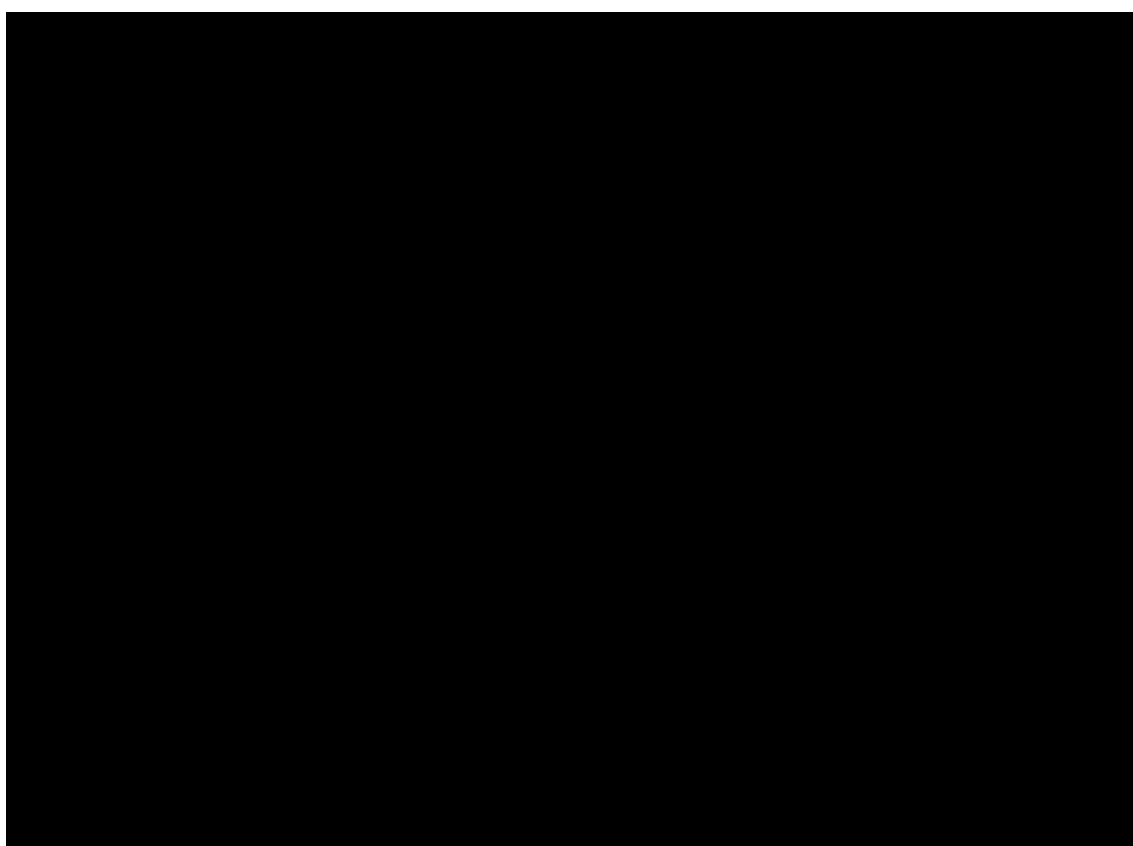
This research is concerned with how organisations which function within the context of New Zealand’s institutional framework, and which interact with the entrepreneurs in either a development or regulatory role, would affect the ventures of the entrepreneurs in this case. Because this research set out to examine the relationships between the entrepreneurs and the organisations with which they interacted from the viewpoint of the entrepreneurs, it followed that the only organisations relevant to this study would be those with which the entrepreneurs interacted.

The universe of organisations of potential interest to this study were all agencies of central or local government and other organisations involved in research, training or education, economic development and regulation - especially those which

³ Source: Developed by the author for this report.

directly or indirectly receive funding from government. This research began with the potential to include any New Zealand organisations of a public character that contributed to New Zealand's institutional framework, or in particular New Zealand's Innovation Framework, through enterprise development activities, provided that there had been some interaction between the organisation and any of the entrepreneurs. For example, it was originally thought that the list of relevant organisations would include (but, not be limited to) any that were involved in the delivery of the list of enterprise development programmes shown in Table 2.

Table 2. A selection of the enterprise development programmes available to entrepreneurs in New Zealand.⁴



However, as fieldwork began the list of organisations of interest to this study was quickly narrowed to those that were found to have had contact with, and be

⁴ Source: Adapted by the author for this report from Gray (2004).

relevant to, the entrepreneurs from their viewpoint (a process described in more detail in the methodology chapters and narrative). This was appropriate because the research approach established for this research specified that it would study the case from the viewpoint of the entrepreneurs.

In fact, most patterns in the data gathered from the entrepreneurs were related to the two key knowledge-based organisations that were most relevant to them. These were Turanga Ararau which is the training organisation that serves the local Gisborne iwi⁵, Te Runanga o Turanganui a Kiwa, and the National Institute of Water and Atmosphere (NIWA) which is a Crown Research Institute (CRI). Other organisations that the entrepreneurs referred to included New Zealand Trade and Enterprise, Work and Income New Zealand, The Gisborne District Council, Te Puni Kokiri, Ministry of Fisheries, the Cawthron Institute and Auckland University of Technology (AUT). These then became the organisations referred to in the title of this thesis and together they represent that part of New Zealand's Innovation Framework with which the entrepreneurs in this study directly interacted.

This research did not attempt to comprehensively study the operations of these organisations but, rather focused on the interactions, transactions and relationships that the entrepreneurs had with these organisations and examined the effects the organisations had, and their apparent contribution to New Zealand's Innovation Framework, from the point of view of the entrepreneurs.

⁵ A traditional Maori tribal organisation.

1.6 Selection of the location

The provision of support for those starting new firms has been widely viewed as a source of employment generation within geographic regions (Veciana & Urbano, 2001) and many governments worldwide implement programmes to support new ventures in order to enhance the economic future of people living in their country's more remote regions. By selecting Gisborne, rather than a larger centre, as the location for this research it was hoped that the effects of government initiatives provided to, and perhaps targeted at, remote regions could be observed.

The Gisborne Region is certainly one of New Zealand's more remote regions as it lies on the east coast of the North Island roughly equidistant from New Zealand's capital city of Wellington and its largest centre, Auckland. The Narrative chapter of this thesis provides a more detailed description of the geography of the Gisborne Region however, in justifying the selection of the location it should be noted that Gisborne is not only distant from New Zealand's main centres, but, is also geographically isolated. The Gisborne Region is linked to larger neighbouring centres such as Napier or Tauranga by windy roads through the mountain ranges or along the coastlines that surround the region. Gisborne does have air transport, and is served by small commuter-style aircraft, but, the only rail link travels south to Napier and carries only freight, not passengers. This isolation also meant that in Gisborne the relationships between entrepreneurs and organisations could be observed in a situation where face to face interactions would be more costly and difficult to arrange and therefore, if anything, those relationships would be more difficult to maintain.

Importantly, Gisborne featured a training organisation, Turanga Ararau, which was not only actively involved in training people to work in aquaculture but, also actively working to facilitate the formation of a local aquaculture cluster (New Zealand Trade and Enterprise, 2003). Turanga Ararau had formed the Gisborne Aquaculture Society, three recirculating aquaculture ventures were already in operation and plans were well advanced for a fourth.

Gisborne was also a convenient location for this research because the researcher had the benefit of local knowledge and connections after having spent some time living and working in the region (see 5.5). To summarise, the choice of

Gisborne as the geographic location for this case can be further justified because of the following factors:

- Regional Development - Gisborne and the East Cape lack the employment opportunities of New Zealand's main centres and ventures in this location are likely to attract the support of organisations concerned with regional economic development.
- Distance – Gisborne's distance from main centres provides the opportunity to evaluate the effectiveness of organisations and support programmes where problems of geographical distance can be expected to be at their most apparent.
- Local Training - Recent training courses in aquaculture run by Turanga Ararau, the training organisation of local iwi, Te Runanga o Turanganui a Kiwa, have produced a cohort of people trained in on land recirculating aquaculture.
- Cluster Facilitation – Turanga Ararau was attempting to facilitate a local aquaculture cluster.
- Entrepreneurial Ventures – Three recirculating aquaculture facilities had been established and plans for a fourth were well advanced.
- Local Knowledge – The research had the benefit of local knowledge and contacts.



Figure 1. Map showing Gisborne's location on the East Coast of the North Island of New Zealand and distant from both Auckland and Wellington.⁶

⁶ Source: Google Earth.

1.7 Selection of the methodology

Qualitative research is carried out when we wish to understand meanings, or look at, describe and understand experience, ideas, beliefs and values – intangibles such as these (Wisker, 2001, p. 138).

As the research problem required an exploration of the character of relationships quantitative methods would have been difficult to apply. Ethnographic methods were chosen in this research in order to meet the objective of viewing the relationships between the organisations and entrepreneurs from the viewpoints of the entrepreneurs. It was anticipated that by spending time immersed in the field as a participant observer and by carrying out semi-structured interviews with entrepreneurs it would be possible ‘...to understand meanings, describe and understand experience, ideas, beliefs and values (Wisker, 2001, p. 138)’. Dana and Dana (2005) point out the usefulness, if it is accepted that entrepreneurs are influenced by culture, of having a case study where the important aspects of the environment are analysed and understood.

The choice of ethnographic methods provided the opportunity to create a detailed ethnographic account in which the entrepreneurs could describe in their own words the character and nature of their relationships with organisations. A framework for analysis derived from literature would be applied to the analysis of the data but, it would also be possible for themes and patterns of data to emerge and be pursued and refined through multiple rounds of fieldwork.

An additional contribution of this research has been the opportunity to apply ethnographic methods to a research project in the field of entrepreneurship. These methods have been discussed in some detail in the two methodology chapters of this thesis, the former of which, Chapter 4, was published (Johnstone, 2006) as a contribution to the discussion of the use of qualitative methods, ethnography and narrative in the study of entrepreneurship.

Ethnography is a well accepted approach to qualitative research in the social sciences in general and this chapter argues that it should also be seen by researchers in the specific field of entrepreneurship as a valuable tool with which to study the process of entrepreneurship from the viewpoint of the people involved. In addition to a role in exploratory research and hypothesis development, ethnographic methods can

contribute to the development of grounded theory and provide rich narratives that can offer insights into entrepreneurial behaviour and how entrepreneurial ventures emerge and grow. Chapter 4 introduces ethnography as a research strategy, the practical aspects of designing ethnographic research, the use of ethnographic methods of data collection and interpretation and discusses how ethnographic methods may contribute to the study of entrepreneurship. The second methodology chapter, Chapter 5, progresses from the general to the particular to explain and justify the methods that have been used in this study.

1.8 Chapter summary

Table 3 provides an outline of the chapters of this report which shows that this introduction is followed by two chapters that establish a background and a framework for analysis drawn from literature.

Table 3. Outline of chapters and their objectives.⁷

Outline of Chapters		
No.	Chapter Title	Objective
1	Introduction	To introduce and explain this research.
2	Background	To establish a starting point and define the various terms used.
3	Framework for Analysis	To review relevant literature, identify sub-themes and set out a framework for analysis.
4	Ethnographic Methods in Entrepreneurship Research	To discuss the use of ethnography in entrepreneurship research.
5	Methods Used in this Study	To explain the methods used in this study.
6 7 8	Conversations and Observations Cycle Two: Interviewing Cycle Three: Returning for Outcomes	To provide an ethnographic account and document the observations and conversations with the entrepreneurs.
9	Analysis and Conclusions	To examine the data using the framework of analysis derived from literature and to set out the patterns of data that emerged.
10	Implications and Recommendations	To discuss implications for policy and practice, the contributions and limitations of this study and consider opportunities for future research.

⁷ Source: Prepared by the author for this report.

The *Framework for Analysis* chapter introduces the concept of an innovation framework and discusses the facilitation of regional clusters as a possible mechanism for supporting entrepreneurs and ideas about how clusters might be fostered and developed. It considers further research relating to how advice is delivered to entrepreneurs by organisations, reviews the recommendations of the OECD in relation to New Zealand's Innovation Framework and relevant research into relationships between knowledge-based organisations and the New Zealand seafood industry. It concludes by summarising a list of research questions to be used as a framework for analysis of the qualitative data gathered in this research.

The methodology chapters that follow lead on to a descriptive narrative that is the heart of this study. It is a detailed and reflexive first person ethnographic account of the fieldwork in which the voices and viewpoints of the entrepreneurs can be heard in the context of conversations and interviews with the researcher.

Before the penultimate chapter, Analysis and Conclusions, was written the qualitative data gathered was examined with the aid of NVivo® software to find patterns that might be relevant to the framework for analysis developed earlier. For many questions that had been identified from the literature there were clear patterns that could contribute to building theory and there were additional patterns of data that were not anticipated in the analytical framework. Finally, this thesis concludes with a discussion of the contribution of this study to possible further research and implications for policy and practice.

The next Background chapter expands on why this particular case has been selected and discusses the meanings associated with the terms *entrepreneur*, *cluster*, *institutional framework* and *organisation* with the aim of establishing definitions for those terms as they are used in the context of this study.

2 Background

2.1 Introduction

The purpose of this chapter is to establish a starting point for this research and begin to define the various terms used. It will explore the link between entrepreneurship and economic growth, the meaning of entrepreneurship and the role of entrepreneurs in society generally and in New Zealand society in particular.

2.2 Themes and sub-themes from literature

Quantitative researchers are generally able to begin with a clearly stated research question and can review and move forward from the literature to gather and analyse data along a linear path. However, in undertaking an initial review of literature in preparation for an ethnographic study, with a typical non-linear and cyclical design, researchers begin without knowing what course the study will take, what patterns of data will emerge and what direction they will take as the research progresses through cycles and its scope is refined.⁸

Eisenhardt (1989) discusses a process for inducing theory using case studies and points out that many features of the process are different from hypothesis testing research. Ethnographic researchers in particular do not begin by formulating a hypothesis and therefore do not need to exhaustively scan the literature to consider the hypothesis testing that has gone before. Rather they review the literature to seek ethnographic questions, or themes and sub-themes, to use as a starting point and move quickly to undertake fieldwork in a social setting of some kind.⁹

The exploratory approach, the choice of ethnographic methods and the cyclical design adopted for this study necessitated initially making a quite wide ranging survey of literature and to bring some order to this exploration the approach taken was to look for material that could be classified into one of three themes that were relevant to the research. The *Organisations* theme deals with how organisations relate to entrepreneurs, the *Innovation* theme deals with how well New Zealand's Innovation

⁸ This cyclical process will be discussed further in the methodology chapters.

⁹ See Section 4.4 for a more complete explanation of the ethnographic research process.

Framework supports entrepreneurship and the *Industry* theme is for material relating to the aquaculture industry and in particular recirculating aquaculture in Gisborne. The *Industry* theme was established to provide a category to contain sub-themes relating to the aquaculture industry so that conclusions could be drawn about the prospects for that industry.

By examining literature within those three themes it was possible to identify sub-themes that could be expressed as questions. Assembled into their main themes these sub-themes would become a framework for analysis to be used as a starting point for ethnographic field work. This framework for analysis would also be used to inform the analysis of patterns of data that emerged from fieldwork. In this way those patterns of data that emerged could be compared and contrasted with relevant literature, findings could be reported and conclusions relevant to policy and practice could be formed.

Work began on reviewing the literature for this research in 2002 to define basic terms such as *entrepreneurship*, *cluster* and *institutional framework* in order to begin to formulate a research proposal. Consideration was given to compiling a list of questions that would guide the literature review in addressing the Research Problem:

Should the New Zealand government seek to support entrepreneurship and innovation through the various knowledge-based or regulatory organisations it owns or funds? If so how?

And the Research Approach:

How does the New Zealand government's support for entrepreneurship and innovation appear to be delivered to entrepreneurs in an innovative emerging industry in a small New Zealand centre, from the point of view of those entrepreneurs?

Questions that seemed relevant were as follows:

- What is the role of entrepreneurs in society?
- How might entrepreneurs be supported by society?
- What is the approach of the New Zealand government to entrepreneurs?
- How might organisations support or facilitate entrepreneurs?
- How might an innovation framework support or facilitate entrepreneurs?

The literature search then turned to research that seemed relevant and useful and that might address these questions. The results of this initial review of the literature were incorporated into a research proposal that was approved by the AUT Doctoral Studies board in 2003. The review of literature continued and from this point work also began on gathering texts relevant to the recirculating paua farming industry and material relating to the case as the first cycle of participant observation began.

The work of writing a contribution to a handbook on the use of qualitative methods in entrepreneurship research during 2004 and 2005 (Johnstone, 2006) required the researcher to undertake a review of some the basic texts of ethnography including the work of Malinowski (1922) (1944), Lévi-Strauss (1966) (1978) (1997) and numerous others. The output of this review of literature relating to methodology can be found in the two chapters that follow this one. The chapter *“Ethnographic methods in entrepreneurship research”* is a general introduction to ethnographic methods. The chapter that follows *“Methods used in this research”* draws on literature relating not only to ethnographic methods but, also to case study research and how theories can be built from these methods.

As the scope of the study narrowed it was necessary to discard much which had at first seemed useful and return to look for literature that seemed relevant to the data as it emerged and the process of literature review continued into 2007 so as to include recent texts that were relevant to the patterns of data that had emerged. This review included the contributions of Frederick (Frederick, 2002, , 2005a, , 2005b; Frederick & Chittock, 2006; Frederick & Monsen, 2006), Sautet (Desrochers & Sautet, 2004; Kirzner & Sautet, 2006; Sautet, 2006) among others and the recent OECD reviews (OECD, 2007a, , 2007b) as well as a NIWA commissioned report by Katherine Nemec *Enhancing innovation within the seafood industry; What helps and hinders relationships between research providers and the industry?* (Nemec, 2006) that promised to be particularly relevant.

2.3 The link between entrepreneurship and economic growth

There is a direct link between entrepreneurship and the wealth of nations. Prosperous regions throughout the world exhibit the same patterns of economic development, namely, a vibrant entrepreneurial sector supported by a civic culture that reassures the passion, imagination, energy and intelligence of its people

- Ernesto Sirolli (*Regional Development Conference, Rotorua, 2001*).

Economic growth is desirable because, as Todaro (1977) observes, as a region develops economically the standard of living and material well being of its people are raised along with their self-esteem and the range of economic and social choices. The New Zealand Government (2002) therefore seeks to encourage those successful new export industries that bring new employment opportunities and create wealth that flows through the economy funding social services and bringing benefits for all New Zealanders. Successful new export industries located in small provincial centres are perhaps particularly valuable as providers of new forms of skilled employment to counter the effects of declining employment in other industries and bolster the limited range of employment opportunities that exist in smaller centres.

The existence of an entrepreneurial framework that allows such successful new ventures and industries to become established and prosper is therefore a matter of great public interest and national significance. It is also a political issue and the New Zealand Government was, in 2002, rightly concerned that the economic standard of living of New Zealanders should increase rather than fall relative to that of other developed nations and stated the objective '*to return New Zealand's per capita income to the top half of the OECD rankings and maintain that standing* (The New Zealand Government, 2002, p. 6)'.

The economic performances of OECD nations are commonly compared by ranking their Gross Domestic Product (GDP) per capita¹⁰ and the graph in Figure 2 shows that the economic performance of New Zealand has slipped from a position in 1960 when it was approximately the same as Great Britain, ahead of Australia and well ahead of Ireland. By 2003 New Zealand had fallen to last in that group simply because it had failed to match the economic growth achieved by these countries (Sautet, 2006).

¹⁰ Accounting for purchasing power parity.

Sautet puts forward the view that New Zealand has slipped in the OECD rankings because a series of factors “*have limited the incentives for entrepreneurs* (Sautet, 2006, p. 584)” and Audretsch *et al* assert that there is a positive and statistically robust link between entrepreneurship and economic growth (Audretsch, Thurik, Verheul, & Wennekers, 2002). The Global Entrepreneurship Monitor (GEM) study compares levels of entrepreneurship and economic growth in 42 participating countries and its data point to a time-lag correlation between economic growth and entrepreneurial activity (Frederick, Virasa, & Chua, 2003). Frederick states that the monitor has enough data to show that the entrepreneurial activity rate in year one accounts for a quarter of the variance in the GDP growth rate in year three and asserts that “*raising the entrepreneurship rate by four percentage points would lead to a one percent rise in the national GDP growth rate two years later* (Frederick, 2002)”. Acs explains that “*Entrepreneurs create new businesses, and new businesses in turn create jobs, intensify competition and may even increase productivity through technological change* (2006, p. 97)”.

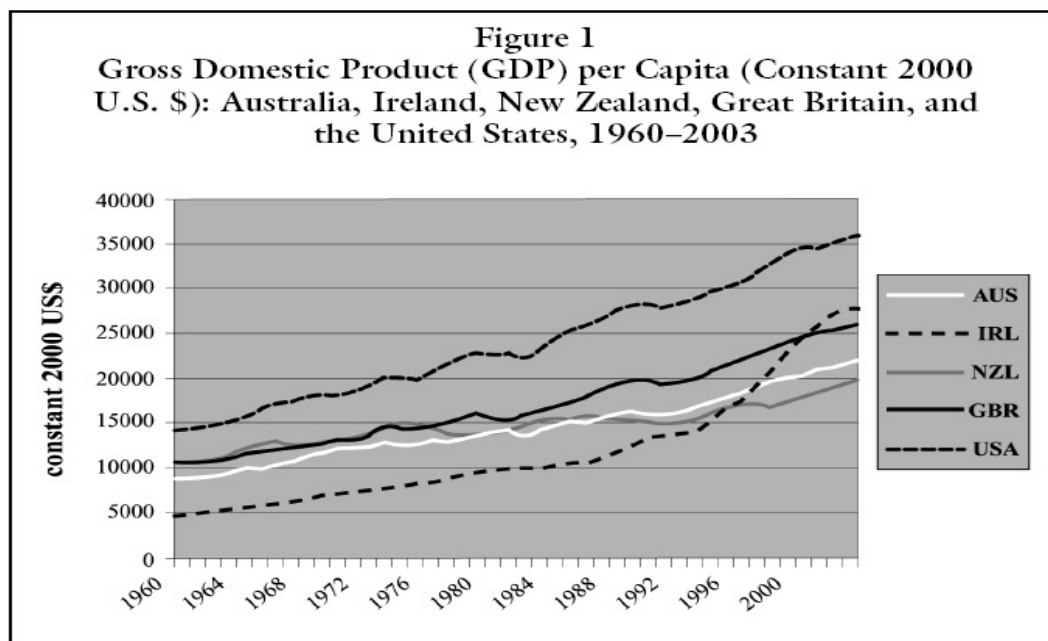


Figure 2. Comparing New Zealand's economic growth (Sautet, 2006, p. 584).¹¹

¹¹ Because GDP per capita is expressed in US dollars, New Zealand's position in the rankings prior to 1967 was influenced by the fact that the New Zealand dollar was pegged to the British pound which was in turn pegged at US\$2.80 (Smith, 2007).

According to Longenecker *et al* (1988, p. 71) “*the growth in entrepreneurial activity has carried with it substantial benefits for society in the forms of increased innovation, productivity and employment.*” However, the link between level of entrepreneurship and economic growth is not entirely a simple one as other factors can come into play that prevent apparent high levels of entrepreneurship from translating into high levels of economic growth. For example, the type of entrepreneurship is important. Growth results when entrepreneurship arises to exploit an opportunity rather than arising out of necessity due to the lack of employment opportunities. Acs (2006) points out that high levels of entrepreneurship do not automatically translate into economic growth if the definition of entrepreneurship includes *necessity entrepreneurs* and the *informal self employed*.

Other factors appear to be at work in New Zealand because the country apparently has high levels of entrepreneurship¹² while performing poorly on GDP per capita (Frederick & Monsen, 2006). In other words, there appear to be plenty of entrepreneurs in New Zealand but,, they are not succeeding in the economic growth producing activities Acs (2006) describes - creating new businesses, new jobs, intensifying competition or increasing productivity. Or more simply put they are not generating enough *entrepreneurial success* to propel New Zealand up the OECD rankings for GDP per capita. Hamilton and Dana pointed out that the burden of transforming New Zealand’s economy away from its dependence on agricultural commodities and towards modern knowledge-based activities, will “*require a major contribution from the country’s small business sector* (Hamilton & Dana, 2003, p. 402).” Frederick and Monsen’s (2006) study of this concluded that this is due to aspects of New Zealand’s *Entrepreneurial Framework Conditions* (EFC). They conclude that “*measures that overprotect workers, spoil incentives, or indulge welfare passivity can stymie economic growth even in conditions of high entrepreneurial activity*”.¹³

If aspects of New Zealand’s Entrepreneurial Framework Conditions are preventing New Zealand’s high levels of entrepreneurial activity from being translated

¹² Using as a measure the GEM variable Total Early-Stage Entrepreneurial Activity (TEEA). Criticisms of this measure are discussed in 3.5.

¹³ Page number for this quotation not shown as document viewed as HTML page.

into economic growth, clearly this is an area worthy of further study as an improved understanding of the factors at work has the potential to unlock the entrepreneurial success that will produce the economic growth that will in turn deliver improved living standards for New Zealanders. This then is certainly an issue of the “national importance” that Yin (1994, p. 147) calls for in a case study.

Entrepreneurial Framework Conditions include both economic factors and other non-economic factors. Frederick and Monsen (2006) mention government policies and programmes, education and training, technology, demography, culture and social institutions as non-economic factors that influence the rate of start-up entrepreneurship. This research sets out to explore the relationships between a group of entrepreneurs and the knowledge-based and regulatory organisations with which they interacted to search for clues as to how Entrepreneurial Framework Conditions may be preventing entrepreneurial success in New Zealand.

The way in which entrepreneurs collaborate with knowledge-based organisations to undertake research and development, and how this collaboration is influenced by government policy, is seen by The New Zealand Treasury as worthy of study for the potential of those collaborations to contribute to economic growth. A report issued by The Treasury on New Zealand’s economic growth pinpoints that:

Better understanding is needed of the conditions that encourage firms to undertake research and development, that will generate collaboration between research institutes, universities and industry, and of the role that government policy can play to enhance the knowledge transfer processes (The Treasury, 2004, p. 8).

This research aimed to contribute to that better understanding. A case study designed to shed light on the relationships between entrepreneurs and organisations provides an opportunity to examine if or how knowledge-based or government organisations go about transferring knowledge to industry. It also examined if or how those organisations provided support and advice for the entrepreneurs, how they regulated them, and discusses how these activities might be improved.

2.4 The meaning of entrepreneurship

2.4.1 Origins of the word

The concept of entrepreneurship and how the term should be defined has been the subject of much discussion by economists and researchers in the field. In considering a definition it may be useful to consider the origin of the term *entrepreneur*; review the contribution of Schumpeter and list alternative, emerging perspectives on how entrepreneurship may be viewed.

The term “*entrepreneurship*” comes from the French verb *entreprendre*, the origins of which can be traced back 700 years. The French literal translation of *entre* is “between” while the verb *prendre* means literally “to take” so *entreprendre* means literally “to take between” and is perhaps best translated as “to undertake”, although the noun *entrepreneur* could also be translated as “one who comes between and takes hold”. The German equivalent of *entreprendre* is *unternehmen* which translates literally as “to undertake”.¹⁴

Long (1983) provides an historical account of the development and uses of the term. The root of the word can be traced as far back as 800 years, to the French verb *entreprendre*, or “to do something”. Three hundred years later, a noun form of the term appeared, and soon thereafter both verb and noun entered the English language. In 1730, Richard Cantillon used *entrepreneur* to mean a self-employed person with a tolerance for the risk he believed was inherent in providing for one's own economic well being. Toward the beginning of the Industrial Revolution (1830), Jean-Baptiste Say further expanded the definition of an *entrepreneur* to include the possession of managerial skills.

2.4.2 Schumpeter's view

A modern definition of entrepreneurship was introduced by Joseph Schumpeter (1934) who described enterprise as the carrying out of new combinations and noted that entrepreneurs are the individuals whose function it is to carry out

¹⁴ Source: The New English German Dictionary.

those new combinations. That carrying out of new combinations could take a number of forms:

- The introduction of a new good or quality thereof,
- The introduction of a new method of production,
- The opening of a new market,
- The conquest of a new source of supply of new materials or parts,
- The carrying out of the new organisation of any industry.

Schumpeter equated entrepreneurship with the concept of innovation applied to a business context. As such, the entrepreneur moves the market away from a stationary state that, according to Schumpeter, is described by Walrasian equilibrium. The entrepreneur disturbs this state and causes economic development (Schumpeter, 1934). Schumpeter's definition also emphasised the combination of resources. Yet, the managers of already established business are not entrepreneurs to Schumpeter.

Joseph Schumpeter was raised in the stimulating climate of Vienna at the turn of the twentieth century (then a hothouse of new ideas from the likes of Klimt, Schoenberg and Freud) and became a renowned economist who had huge influence in defining the concept of entrepreneurship and on the development of entrepreneurship theory and practice. Schumpeter's 1912 *Theorie der wirtschaftlichen Entwicklung* (or *The Theory of Economic Development*) directed the attention of economists away from static systems and toward economic advancement. In this work, entrepreneurship, which Schumpeter viewed as extremely difficult, is described as the primary engine of economic development. The innovation of entrepreneurship allows economic systems to avoid repetition and progress to more advanced states. According to Schumpeter, "*Without innovations, no entrepreneurs; without entrepreneurial achievement, no capitalist returns and no capitalist propulsion* (as cited in McGraw (1991, p. 380)". This association with innovation stressed by Schumpeter and later by Drucker (1985) remains fundamental to any definition of entrepreneurship.

Agreeing with McGraw (1991), Santarelli and Pesciarelli (1990) comment that interest in the theory of entrepreneurship in general and Schumpeter in particular is increasing. While Santarelli and Pesciarelli take Schumpeter's work on economic

development as their main focus, their work sheds additional light on Schumpeter's influence on the concept of entrepreneurship. In particular, they point to Schumpeter's assertion of the importance of the individual and individual effort, in entrepreneurship. While Schumpeter does not provide a great deal of detail on the characteristics of successful entrepreneurs (Long, 1983), he did state that entrepreneurs must expend great energy and possess a strong will to be successful.

2.4.3 Hunting the Heffalump: Differing views of entrepreneurship

He has been hunted by many individuals using various trapping devices, but no one so far has succeeded in capturing him. All who claim to have caught sight of him report that he is enormous, but disagree on his particulars.

Winnie the Pooh (A.A. Milne) quoted in Kilby (1971)

Kilby (1971) highlighted the difficulty in defining the term entrepreneur which he likened to *Hunting the Heffalump* in the title of a book. The task can be approached by scholars from many fields and Low and MacMillan (1988, p. 141) pointed out that entrepreneurship is of interest to a variety of disciplines including “*economics, sociology, finance, history, psychology and anthropology.*”

In addition to Schumpeter's (1934) concept of carrying out new combinations, it is not surprising that a smorgasbord of alternative definitions emerges from a review of the literature. Entrepreneurship has been seen as encompassing a broad range of activities including the creation of organisations, the exploration of opportunities, the bearing of uncertainty and the bringing together of factors of production.

Table 4 below is a summary of the definitions that have emerged as thinking about entrepreneurship has developed over time.

Table 4. Evolution of the definition of entrepreneurship.¹⁵

Evolution of definitions of entrepreneurship	
	<ul style="list-style-type: none">• Richard Cantillon (circa 1730); Entrepreneurship is defined as any kind of self-employment. The entrepreneur is also seen as a bearer of uncertainty. Entrepreneurs buy at certain prices in the present and sell at uncertain prices in the future.• Jean Baptiste Say (1816); The entrepreneur is the agent 'who unites all means of production and who finds in the value of the products...the reestablishment of the entire capital he employs, and the value of the wages, the interest, and rent which he pays, as well as profits belonging to himself.'• Frank Knight (1921); Entrepreneurs attempt to predict and act upon change within markets. He stresses the entrepreneur's role in bearing the uncertainty of market dynamics. Entrepreneurs are required to perform such fundamental managerial functions as direction and control.• Penrose (1963); Entrepreneurial activity involves identifying opportunities within the economic system. Managerial capacities are seen as being different from entrepreneurial capacities• Harvey Leibenstein (1968, 1979); the entrepreneur fills market deficiencies through input-completing activities. Entrepreneurship involves 'activities necessary to create or carry on an enterprise where not all markets are well established or clearly defined and/or in which relevant parts of the production function are not completely known.• Israel Kirzner (1979); the entrepreneur recognises and acts upon market opportunities. The entrepreneur is essentially an arbitrageur. In contrast, to Schumpeter's viewpoint, the entrepreneur moves the market toward equilibrium.• Gartner (1988); the creation of new organisations.

Taking an historical perspective, Long (1983) concludes that three traits have, to varying degrees, been included in the definition of entrepreneurship: *uncertainty and risk*, *complementary managerial competence*, and *creative opportunism*. He argues that to ignore any of these areas is to risk repeating, rather than learning from, the history of the concept of entrepreneurship.

Bygrave and Hofer (1991) defined the entrepreneurial process as involving all the functions, activities, and actions associated with the perceiving of opportunities and the creation of organisations to pursue them (as cited in Carton, Hofer *et al* (1998)). Legge and Hindle (1997) also quote Bygrave and Hofer's set of parameters and criteria that have to be met by any model of entrepreneurship as follows:

- It is initiated by an act of human volition.
- It occurs at the level of the individual firm.
- It involves a change of state.
- It involves a discontinuity.
- It is a holistic process.
- It is a dynamic process.

¹⁵ Source: Adapted by the author for this report from the website of the Kaufmann Centre for Entrepreneurial Leadership Clearinghouse for Entrepreneurship Education.

- It is unique.
- It involves numerous antecedent variables.
- Its outcomes are extremely sensitive to the initial conditions of these variables.

Legge and Hindle (1997) note that a number of high profile Australian business people in the 80s claimed to be entrepreneurs but, in their view, did not deserve the title. Legge and Hindle (1997) write that in reality they were better described as swindlers who brought cast a cloud over the use of the term entrepreneur as a job description in Australia. They draw a clear distinction that an entrepreneur is not a business person who simply sells assets and treats the returns as trading income, or someone who borrows money and then raises new loans to pay interest on the earlier ones.

Carton, Hofer, *et al* (1998) offer an operational definition of entrepreneurship that attempts to bring together definitions from scholars like Schumpeter into a comprehensive concept: They suggest that entrepreneurship is the pursuit of a discontinuous opportunity involving the creation of an organisation (or sub-organisation) with the expectation of value creation to the participants. The entrepreneur is the individual (or team) that identifies the opportunity, gathers the necessary resources, creates and is ultimately responsible for the performance of the organisation. Therefore, entrepreneurship is the means by which new organisations are formed with their resultant job and wealth creation. The important elements of the Carton, Hofer *et al* definition is that the organisations must be created and that those organisations will provide goods or services to society.

More recently Montayne (2006) sees entrepreneurship more widely as the process of getting ahead in society on many levels. Of achieving an *economic rent* that is beyond what we would receive in the market for our labours. He explains it in terms of human desires.

Individuals desire to live comfortably relative to their family members, friends, and colleagues. Entrepreneurship, defined broadly as the successful creation and capture of economic rents in the face of uncertainty and scarcity, enables talented individuals to realize rewards that exceed the equilibrium level of perfect competition and

so to live better than others as gauged in subjective utility terms. We all are entrepreneurs in this sense... .. performing entrepreneurial functions as if seeking to capture supranormal economic returns on personal capital of all sorts. We compete in life as in business for Knightian profit, broadly defined to include rewards that are pecuniary and non-pecuniary, tangible and intangible (Montanye, 2006, p. 569).

This view of entrepreneurship as social competition highlights the role of entrepreneurs to *exceed the equilibrium* and compete to *live better than others*. This is a suitable working definition for the purposes of this research because it highlights the fact that the motivation of the entrepreneurs is driven by social and cultural factors as well as economic goals and does not exclude employees of Turanga Ararau from the definition. With a wide range of both pecuniary and non-pecuniary rewards at stake, including social status and personal capital, it follows that entrepreneurs will shift the balance, upset, disrupt or overturn the established order and subvert social and economic equilibrium as they bring about a change of state and status in pursuit of rewards of all kinds.

2.5 The entrepreneur's role in society

Todaro (1977) wrote that as a region develops economically the standard of living and material well being of its people are raised along with their self-esteem and the range of economic and social choices. Successful entrepreneurs contribute to producing these outcomes by creating what Peterson (1981) calls "social mutation" through the unprogrammed, innovative, recombination of existing elements of activity.

However, individual entrepreneurs clearly do not generally set out primarily to develop regions. Schumpeter (1934) suggested that the entrepreneurial class are likely to be motivated by the desire to found a kind of private kingdom or dynasty or that they may enjoy proving their superiority. Improving society is not usually a primary objective so the contribution they make to economic development is a by-product linked to their personal success.

Entrepreneurs are also often looking to exercise their creativity, energy, ingenuity and individualism. Longenecker *et al* (1988, p. 64) pointed out that

entrepreneurs are “people who do things on their own, who initiate action, and who make their own decision, in contrast with people who merely carry out the directions of others.” They note that independence of action has been recognised by theorists through the years as a central feature of entrepreneurship.

Dana (1993) pointed out that some cultures value entrepreneurship more than others and that governments may perceive entrepreneurship in one of these three ways:

1. Entrepreneurship has a high social value worth being encouraged.
2. Entrepreneurship is a socially acceptable activity but, is not worth promoting actively.
3. Entrepreneurship is undesirable behaviour (Dana, 1993, pp. 73-74)

Dana used a model in which a government’s attitude towards entrepreneurship can be assessed and positioned on a scale that runs from positive to negative. His model also included a scale for the extent of government intervention in supporting entrepreneurs. This can range from, on one hand a complete laissez faire approach in which the government simply avoids regulation and interference, to a Strategic Interventionist Policy in which the government actively helps the process of creating new entrepreneurs by adopting favourable policies or actively intervening.

Dana noted that many developed nations up until almost the late 1970s gave little if any support to entrepreneurs and preferred to encourage small firms to merge into larger units. These governments believed that larger firms would be better able to work in close partnership with state agencies to facilitate economic development. However, Dana observed that there had been a policy shift amongst the governments of Australia, Canada, Japan, Singapore, Sweden, the United Kingdom and the United States during the 1980’s towards recognising “...the usefulness of entrepreneurs, a healthy small business sector and an environment fostering entrepreneurship...(Dana, 1993, p. 74)”

2.6 The subversive role of entrepreneurs

In considering why a government or society might see entrepreneurship as undesirable behaviour, an obvious possible reason is because of the potential that entrepreneurs have to disrupt society. “*Entrepreneurship is a societal force: It changes*

our daily practices and the way we live” according to Hjorth and Steyaert (2004, p. 3) who note that such changes to our lives are not always welcome and societies can have an uneasy, at times adversarial, relationship with individual entrepreneurs, who often do not fit well within conventional social structures.

Casson (1982) defined an entrepreneur as someone who specialises in taking judgemental decisions about the coordination of scarce resources, and pointed out that while opportunists may be tolerated for the services they provide they will be punished by society if they overstep the mark. The disruptive changes that entrepreneurs make to a society will often not be welcomed by those with vested interests. Peterson (1981) noted that it is the tendency of organisations to ossify that creates opportunities for entrepreneurs to upset the status quo with what he described as unprogrammed, innovative recombination of pre-existing elements of activity.

These views of entrepreneurship as creative destruction and a disruptive process in society suggest that those in authority that benefit from maintaining a stable society may see entrepreneurship as a subversive activity. *Subversion* is defined as the *undermining of authority*¹⁶ and the subversion brought about by entrepreneurs, *entrepreneurial subversion*, can be seen as occurring on two dimensions – the subversion of institutions and the subversion of incumbents. Successful entrepreneurs may undermine structures of authority by affecting the current *institutions* (see 3.6) or social rules and/or they may affect the current business models or industry systems of the incumbents, the rules of the game.

Hence, a theoretical model of entrepreneurial subversion might be expressed using a matrix to consider the extent to which an entrepreneurial activity brings about subversion along these dimensions (see Figure 3). Entrepreneurial activities might affect only incumbents and have little or no social effect if the entrepreneur simply steals a march on competitors. Alternatively an entrepreneur might exploit an opportunity that subverts both incumbents and institutions and creates social

¹⁶ Source: Webster’s Online Dictionary (at time of writing).

upheaval. The history of New Zealand provides a series of examples of such social upheavals.

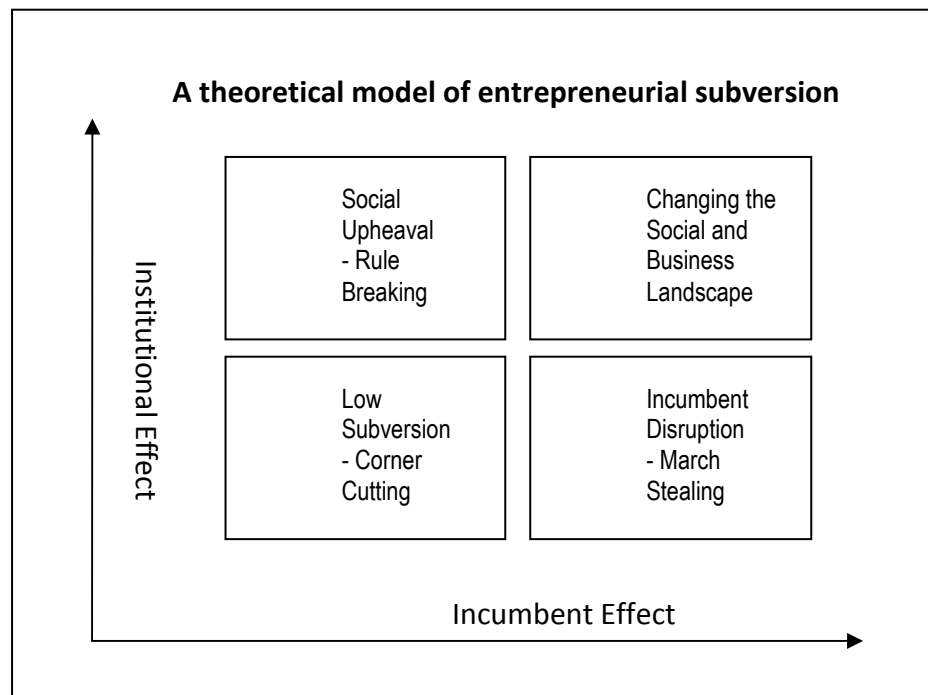


Figure 3. A matrix for entrepreneurial subversion effecting incumbents, institutions or both¹⁷

2.7 A history of entrepreneurship and social upheaval in New Zealand

In his 1994 Hocken Library lecture, New Zealand economist Brian Easton described the economic history of New Zealand as a process where new economic systems have clashed with the incumbent system and used the analogy of “tectonic plates” to describe the upheaval brought by these changes.

Just as in geology the clash of the plates generates earth movements which modify the land on which we live, the conflict between the political economy plates also leads to political and social change (Easton, 1994, p. 1).

Easton’s outline of New Zealand’s economic history began with the Palaeolithic economic and social system that existed around 1000 years ago which was followed by

¹⁷ Source: Developed by the author for this report.

a Neolithic economy and society as the growing of food by Māori replaced dependence on hunting and gathering. Easton notes that the kumara (sweet potato) transformed Māori society. (Easton, 1994, p. 11) The arrival of Europeans to exploit resources created an early Quarry economy and society that was soon supplanted by a Settlement economic and social system based on pastoral farming. The Pastoral economy and society created a Post-Classical Māori society and benefited immensely from the introduction of the technology to allow refrigerated exports. Easton asserts that New Zealand boasted the most efficient pastoral farming in the world (Easton, 1994, p. 5) however, this farm-based society was to suffer upheaval from the moving tectonic plate of Industrialisation as urban economic and social systems emerged based on manufacturing and service industries.

Wool was New Zealand's top earner of foreign exchange until 1966 when, subverted by synthetic materials, wool prices collapsed. By the 1990's it was tourism that was earning the most foreign exchange for New Zealand. As an export earner, the wool clip had fallen behind such industries as horticulture, fish, wood products and general manufacturing. Butter exports were subverted by margarine. Red meats were subverted by white meats. Easton reported that, while meat and dairy remained in second and third place for their export earnings, in 1994 they had been reduced to a much smaller share of export earnings as the industrialising New Zealand economy had diversified rapidly during the 1970's, 80's and 90's (Easton, 1994, p. 7).

New Zealand's history can be seen as a series of profound social upheavals brought about by the introduction of new products, technologies or systems. Among the examples to be found in Easton's speech were the kumara, the various technologies used in the quarrying of natural resources, the sheep, farming methods, the refrigerated ship, synthetic fibres, chicken and margarine. Since Easton's 1994 speech New Zealand has seen this process continue with information and telecommunications technologies bringing new opportunities for entrepreneurs to wreak creative destruction and in the process subvert existing social and economic systems.

2.8 Entrepreneurs bring change to incumbents and institutions

The auction website TradeMe, large format retailer The Warehouse and film maker Weka Workshops are three examples of entrepreneur-led businesses that brought significant change to New Zealand society. These quite separate and different businesses were created by individual entrepreneurs Sam Morgan, Stephen Tindall and Peter Jackson respectively and because of their success these men's names are well known in New Zealand.

Sam Morgan's Trademe changed the way many New Zealanders buy and sell cars, houses and all manner of goods, how they do business and even how they form personal relationships. Trademe provided a new environment for many small home-based businesses in New Zealand to prosper by trading merchandise online. Trademe not only subverted traditional newspaper classified advertising but, also changed society to some extent by allowing many people to move from traditional employment to self employment.

Stephen Tindall's The Warehouse changed the shopping habits of New Zealanders and in the process disrupted established retail business models and changed the face of communities. Many small main street shopkeepers were forced to adapt their business when competition from The Warehouse arrived in their town. Others closed their doors and were replaced by businesses that did not compete directly with The Warehouse such as cafes or service businesses.

Peter Jackson's Weta Workshops is a film effects facility best known for their five Academy Award wins for work on such movies as *The Lord of the Rings* trilogy, *Narnia: The Lion, the Witch and the Wardrobe* and *King Kong*. The success of this firm is perhaps a sign of the emergence in New Zealand of a post industrial economic and social system. Talented New Zealanders can now aspire to produce world class creative work, and perhaps win an Oscar, without having to leave Wellington.

These three entrepreneurs seized the opportunities of the auction website, the large format retailer and the computer generated special effects facility and applied them to New Zealand. They were successful in subverting and changing not only established industries but, also subverting and changing the way things are done in New Zealand society, bringing varying amounts of social upheaval.

This view of entrepreneurs as subversives recognises that a key role of entrepreneurs is to implement change that will be welcomed and rewarded by markets. In doing this they are likely to subvert, circumvent or reinvent institutions and subvert incumbents by undermining their position in the market. In this view entrepreneurs are not necessarily individuals involved in business. They can be people who act alone or in groups to bring about change within organisations or corporations (*corporate entrepreneurs* or *intrapreneurs*), or within communities or societies (*social entrepreneurs*). They are not necessarily inventors or innovators themselves but, they are agents of change that to some extent subvert institutions, incumbents, or both.

Successful entrepreneurs may reap economic rewards for themselves and their investors but, at the same time bring losses to established industries. Closed factories, lost jobs, mass unemployment and lost investment are all potential side effects of entrepreneurship which may be damaging to structures of authority. If this effect is large enough it could will be politically damaging, perhaps even resulting in a change of government, and it is therefore not surprising that governments might often seem to be wary of providing too much encouragement to entrepreneurs.

2.9 Anti-entrepreneurialism and the Tall Poppy Syndrome

Morris (1998, p. 135) asserts that “*government at all levels is inherently anti-entrepreneurial*” and there is some evidence that this is especially true in New Zealand where the word entrepreneur seems to be little used in political discourse.¹⁸ Alternative terminology such as *job creation*, *regional development*, *support for export industries* and recently *capacity building* and *growth and innovation* appear to be more acceptable politically in describing public support for entrepreneurs.

Successful entrepreneurs seem to suffer suspicion within New Zealand culture where egalitarianism is highly valued and the concept of high achievers suffering negative social consequences exists in the kiwi vernacular as *the kiwi clobbering machine* and the *Tall Poppy Syndrome* (TPS) (Kirkwood, 2007). Kirkwood interviewed 40 New Zealand entrepreneurs and found that half of them had experienced TPS. She

¹⁸ The apparent avoidance of the term *entrepreneur* in the 2002 New Zealand Government text *Growing an Innovative New Zealand* is analysed and discussed later in this chapter, see 3.12.

concluded *“the effects of TPS may have significant implications for entrepreneurship in New Zealand. Firstly, TPS may discourage entrepreneurs from starting a business. Secondly, people who have experienced a business failure may be reluctant to establish another business because of the public reaction to their ‘fall’. Finally, entrepreneurs may deliberately limit business growth because they don’t want to attract attention (Kirkwood, 2007, p. 366).”*

There is a commonly held view that New Zealanders *“are relatively uninterested in economic growth (Sautet, 2006, p. 574)”* and that New Zealand entrepreneurs seem happy to progress to only a limited level of personal financial success. The suggestion has been made that once a desirable house, car, bach (holiday home) and boat have been attained, motivation seems to flag (Frederick, 2002), perhaps because further success only brings negative social consequences. However, Sautet doubts that this is an important factor holding back economic growth and points out that he has been told that a similar view was commonly expressed about Irish people before the 1990s (Sautet, 2006, p. 574).

But, if New Zealand’s culture harbours a jealous suspicion towards entrepreneurs it follows that government agencies and organisations that could be offering support and assistance to entrepreneurs may be reluctant to do so because they are staffed by New Zealanders who, as salaried public servants, have chosen the safety of a government salary over the uncertainty of becoming an entrepreneur, and therefore are arguably well qualified to administer TPS. While they may be officially charged with seeking outcomes such as economic growth and job creation they may be incapable of working with entrepreneurs to achieve that because they are what Morris calls *“inherently anti-entrepreneurial (Morris, 1998, p. 135)”*. Sautet supports this view and points out that *“Because government decision making is not guided by profit and loss, government bureaucrats are not entrepreneurs”* and that *“governments are not capable of acting entrepreneurially (Sautet, 2006, p. 585)”*.

This research will therefore ask if there is data that suggests that the organisations viewed entrepreneurs as disruptive or subversive or if there is evidence of negativity or resentment towards the success of individual entrepreneurs in the relationships between entrepreneurs and organisations in this case and examine how any such anti-entrepreneurialism was expressed.

Sub-theme: Was there evidence in the relations between entrepreneurs and organisations of the anti-entrepreneurialism that Morris asserts is inherent in governments? If so, how was it expressed?

2.10 Summary

This sub-theme poses a question that is relevant to the research problem but, may not be easy to answer as it may be difficult to detect or distinguish anti-entrepreneurialism from other factors. Organisations and entrepreneurs may have troubled interactions and relationships for a variety of reasons including poor communication, or a lack of competence or motivation on the part of either or both parties. On the other hand anti-entrepreneurialism, should it exist, can be expected to take subtle forms such as a lack of interest in providing assistance or an unhelpful or inflexible approach to enforcing regulations. Bearing these difficulties in mind, this research will look for any relevant patterns of data that may shine some light on this question.

The chapter that follows will go on to identify further sub-themes that are relevant to the problem of whether the New Zealand government should seek to support entrepreneurship and innovation through the various knowledge-based or regulatory organisations it owns or funds, and if so, how it should go about accomplishing this.

3 Framework for Analysis

3.1 Identifying sub-themes from literature

Before beginning a Hunt, it is wise to ask someone what you are looking for before you begin looking for it.
- Winnie the Pooh (A.A. Milne)

The previous chapter discussed the role of entrepreneurs and identified a first sub-theme of the possibility of anti-entrepreneurialism within government agencies and organisations. This chapter will build on this and identify from the literature a number of further sub-themes and conclude by bringing them together as a framework for analysis. This chapter will begin by introducing the concept of clusters and discuss ideas as to whether or how they should be supported or facilitated by governments. It will go on to examine the New Zealand government's policy in this area along with the recommendations of the Organisation for Economic Cooperation and Development (OECD) and other commentators.

3.2 Cluster-based economic development

There is limited experience in policy toward clusters, which sit in between policies aimed at the general business environment and policies targeted at creating incentives for individual firms. There are literally hundreds of cluster initiatives all over the world today that are pursuing varying approaches to public-private collaboration to improve the business environment.
Michael Porter in a letter to *The Economist* 15 November, 2007.

Harvard Business School professor Michael Porter introduced the concept of clusters as a means of economic development in his book *The Competitive Advantage of Nations* (Porter, 1990). A cluster is based on a geographic concentration of ventures in a particular industry according to Porter who suggests that clusters should also include all the members of an industry's supply chain that are geographically proximate (Porter, 1998). He adds that clusters should also include other organisations, such as universities and economic development agencies that can bring value to the industry.

According to Porter, clusters come to life when the members engage in collaborative problem identification and collaborative problem solving and that collaborating to solve as yet unsolved problems is perhaps the essence of cluster-

based economic development, as this is the mechanism through which clusters can enhance the competitive economic position of their members and bring about economic development for their industry and region. In Porter's view the nature of collaboration and problem solving varies from cluster to cluster in response to the unique competitive challenges facing a particular industry in a particular location at particular point in time.

The idea of stimulating economic development by creating clusters attracted the interest of policy makers all over the world during the early 1990's and Professor Porter was much in demand as an advisor to governments at this time. As a result, as he points out in the quotation above, Porter's concept has spawned hundreds of clusters all over the world. The New Zealand Government of the day seemed to have been caught up in the excitement and invested around \$1.5m in the production of a document known as *The Porter Project* (Easton, 1991).

Cluster-policy thinking is very different from 'industrial-policy' thinking, though many economists lump the two together. Cluster theory is neutral, rather than about picking winners, intervention, protection and subsidies. Clusters are good in any field because they boost productivity and innovation, and cluster policy seeks to reduce constraints and encourage externalities to raise the productivity of competition (Porter, 2007).

Michael Porter, in the above quote, draws a clear distinction between the action of a government in supporting clusters and industrial policy. He sees the two concepts as having different intellectual foundations. According to Porter, industrial policy is based on a view that some industries offer greater growth prospects than others and should therefore be targeted for support. Industrial policy also tends to be something that is laid down at a national level. Cluster theory, on the other hand, *"rests on a broader and dynamic view of competition among firms and locations, based on the growth of productivity. Interconnections and spillovers within a cluster often are more important to productivity growth than is the scale of individual firms (1990, p. 27)"*. So Porter advocates governments should target support to clusters rather than to individual firms and that all existing and emerging clusters deserve attention. A government that identifies at national level a small number of industries to support is practising *industrial policy*, not the sort of support for clusters that Porter advocates.

Later in this chapter this distinction will be applied to the policy approach known as New Zealand's Innovation Framework to establish whether it is a *cluster* or an *industrial policy* approach.

Research into the New Zealand boat-building cluster by Chetty (2004) showed how this cluster evolved and found that it generally conformed to Porter's theory. It was through the process of internationalisation that the boat-building firms started to specialise and differentiate their products and to appreciate the benefits of collaborating with each other as they tried to enter and expand in international markets. In addition, this study confirmed the important role played by entrepreneurial leaders within the industry who acted as catalysts to develop this cluster.

Dana explains that entrepreneurs participating in networks benefit from a reduction of risk because they can call a web of contacts for information, support and assistance. He pinpoints that *"reciprocal preferential treatment reduces transaction costs (Dana, 2007, p. 198)"*

3.3 Facilitating clusters

Cluster facilitation is part of this 'new vision' of policy where governments (supposedly) do not really play an intrusive role, but promote competitiveness, innovation and the quality of infrastructure (Desrochers & Sautet, 2004, p. 242).

While *industrial policy* is something centrally planned or designed, clusters are often referred to as being *facilitated*, a term that suggests a kind of gentle guidance of a naturally occurring phenomenon. Porter suggests a government should facilitate a cluster by removing barriers to innovation, investing in basic human and capital infrastructure and by making sure education and training policies meet the needs of the cluster.

A more hands on approach is proposed by Ffowcs-Williams (2007), a cluster facilitation practitioner, who views groups of clusters as the foundation of a regional economy and advocates government support for clusters, citing evidence that firms located in clusters and strong in their own sector tend to grow faster and be more innovative than isolated firms. He points out that New Zealand lags the world in fostering the development of clusters adding that *"Uganda is more proactive in this*

area (Ffowcs-Williams, 2007, p. 3)". France funds 67 local clusters with a budget of 1.5 billion euros over three years while Sweden has committed to inject one million US dollars a year into supporting clusters over a ten year period and Ffowcs-Williams counts 60 countries with local cluster programmes that are supported either by their national governments or the World Bank.

As already discussed, New Zealand has been found to have apparently high levels of entrepreneurship in GEM studies (Frederick & Monsen, 2006) but, has performed poorly in GDP per capita compared to other OECD nations (Sautet, 2006). Could this simply be because New Zealand fails to make sufficient effort to facilitate clusters? The argument for supporting clusters seems compelling. Government agencies support the growth and development of clusters, clusters create economic growth and the benefits flow back to society in the form of higher standards of living (see Figure 4).

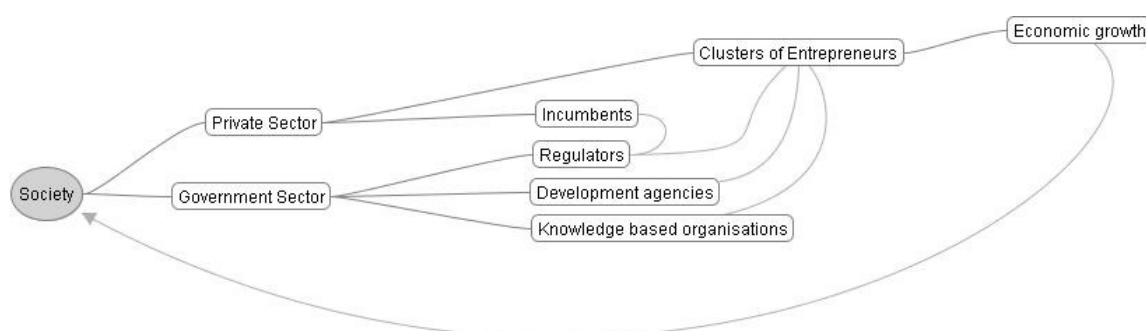


Figure 4. Facilitating clusters to create economic growth.¹⁹

However, the New Zealand Government does not seem to be buying that argument. Pointing to an *"embryonic and now terminated"* programme that offered \$25,000 annually for two years to each local cluster Ffowcs-Williams (2007, p. 3) concludes that New Zealand's national politicians and agencies are reluctant to resource local actors and are drip-feeding support and deliberating in Wellington on projects that are often in dynamic market-led environments. Ffowcs-Williams claims there is no alignment between the support being provided to clusters or individual firms in New Zealand by a *"clutter of public agencies"* and sees the solution to this as a

¹⁹ Source: Developed by the author for this report.

change of behaviour patterns to establish integrated public sector support for clusters. Something that he believes would be helped if the private sector earns a strong position of influence in each cluster.

Ffowcs-Williams suggests the involvement of a professional facilitator, suggests following a 12 step plan (see Table 5) and being alert for what he calls *green lights* and *red lights* that may help or hinder cluster development (see Table 6). A sub-theme in the analysis of this research has been to consider how the attempt to form a Gisborne aquaculture cluster failed and how outcomes might have been different if a cluster had been adequately supported and developed following Ffowcs-Williams' 12 step plan and paying heed to his green and red lights for cluster development.

Table 5. Cluster development in 12 steps.²⁰

Cluster Development in 12 Steps

Step 1: Introducing relevance:

This first step introduces to potential funders, usually the local council/economic development agency, and the relevance of cluster development as a centre-stage strategy for local economic development.

Step 2: Identifying local clusters

Criteria aligned to the region's economic development strategy should be used to shortlist the clusters for development.

Step 3: Initial cluster analysis

The competitive fundamentals of each cluster are starting to be understood, and the cluster's leaders are being identified. The review is a platform for action rather than a major piece of analysis.

Step 4: Leadership Group formation

The facilitator plays a leading role in identifying and then establishing this Group, which may initially be informal.

Step 5: Developing the preferred future

A common reason for the failure of clustering initiatives is lack of consensus on direction. A preferred future, a vision, for the cluster outlines how the cluster might be, assuming all goes well.

Step 6: Identifying the stepping stones

The cluster stakeholder's identify the broad steps that are necessary to deliver on the vision. Establishing these issues through a workshop process is more powerful than having an 'independent review'.

Step 7: Immediate action agenda

A key principle for success is early action, early benefits. The 'low hanging' fruit need to be identified...the relatively easy initiatives that don't require substantial resources and deliver early wins.

Step 8: Launching, formalising the cluster

The launch showcases the committed. Publicity associated with the launch should generate further interest. Most clustering initiatives are started by a public agency, and then move to private-public joint venture. An error is to establish the legal entity too early in the process.

Step 9: In depth analysis, benchmarking

Now a more detailed strategic appraisal is required that draws on information from beyond the cluster's participants. Benchmarking provides a very valuable means of galvanising activity towards a higher level agenda.

Step 10: Upgrading the Strategic Agenda

Now the second generation and more substantial, longer term, higher risk activities can be undertaken.

Step 11: Linking the Clusters

These links are at three levels: with related clusters in the locality; with related clusters within New Zealand; and with related clusters globally.

Step 12: Role of government in Cluster Development

Reviewing the individual initiatives and the overall impact the clustering initiative is making. Is the strategic health of the cluster being upgraded?

²⁰ Source: Adapted by the author for this report from Ffowcs-Williams (2007)

Table 6. Green and red lights in cluster development.²¹

Green Lights in the process of cluster development
On initiating a cluster intervention, move early into action. Establish small scale projects that quickly offer benefits to the clusters stakeholders, rather than yet more analysis and workshops. It is not too difficult through a workshop process to quickly identify some 'low hanging' fruit and engage. Avoid paralysis-by-analysis; SMEs in particular have a low tolerance for delay and will fall away.
Develop a portfolio of projects, spreading the pay-offs and the risks.
Ensure there is a trained cluster facilitator in place, a person who is a comfortable networker, able to build bridges between diverse stakeholders.
Nurture and support the front-line facilitators; bring them together regularly to share their valuable experiences.
Empower the private sector, encourage business to take the lead with short-term, self-destruct task forces; not committees in perpetuity.
Build collaboration on multiple fronts: clusters and supply/value chains, hard & soft networks
Red Lights in the process of cluster development
Expecting short term results; resource for a two year minimum. Ideally 5+ years. Removing clumps (local agglomerations of isolated firms with little trust between them) and addressing clutter (unaligned public agencies / donors, each second guessing the needs of a cluster, working with individual firms in isolation) requires perseverance.
Over analysing published statistics; use surveys to gather the very necessary hard data.
Being parochial over cluster boundaries; the functional region of a cluster may well extend over local political boundaries
Viewing cluster development as a static process; new clusters emerge from the more traditional: Nelson is New Zealand's 'seafood capital'; it is also now a centre for marine engineering and marine lawyers.
The clustering initiative remains 'owned' by the public agency; whilst a public agency often starts a clustering initiative, ensure that it is handed over. Who does the cluster belong to?
The cluster's development agenda is being decided by a few, perhaps an 'old boys network', the 'usual suspects' or a public agency. Ensure that a transparent decision-making process involving the stakeholders from across the cluster is needed.
Having a narrow development agenda. Clustering initiatives resourced by technology agencies tend to be R&D intensive; those resourced by export agencies tend to over focus on internationalisation and supply chain links. Ensure the development agenda is broad enough to cover the scope of the cluster.

The need for a facilitator to work with emerging clusters is supported by Ernesto Sirolli (1999) who advocates a process of *enterprise facilitation* for small communities where a professional facilitator provides support for people that ask for it, are keen to pursue an entrepreneurial venture but, lack the ability to overcome

²¹ Source: Adapted by Ffowcs-Williams from www.competetiveness.org.

obstacles and barriers. Sirotti points to success in a number of small communities where entrepreneurs have been empowered to develop thriving local industries. He also recounts numerous instances where economic aid projects have failed because ideas were imposed from outside the community as evidence that the ideas must come from within the community and the role of the facilitator should be to ease the way in helping people to develop their own initiatives.

The term cluster entrepreneur or *clusterpreneur* is used to describe individuals who provide leadership in cluster initiatives and an alternative term is *cluster engineer*. A clusterpreneur might perform the key role of brokering arrangements between entrepreneurs and organisations. Their leadership of a cluster might take the form of being “...visionary, facilitative, analytical and excelling in networking ...to encourage synergies and build consensus, maintain the balance of achieving short vs. long-term benefits and focus on concrete action plans for specific cluster initiatives (Andersson, Serger, Sörvik, & Hansson, 2004, p. 100).”

Clusterpreneurs differ from external professional cluster facilitators in that they are likely to be locally anchored and thus likely to be accepted by firms in the cluster. “External consultants may serve complementary functions such as formulating the vision and initiating the process, but, the daily work and leadership is most-successfully undertaken by a locally anchored actor (Andersson, Serger, Sörvik, & Hansson, 2004, p. 101).”

3.4 A contrary view on cluster-based economic strategy

However, Porter is not without his critics. Desrochers and Sautet²² (2004, p. 233) argue that “the regional specialisation strategy commonly associated with clusters makes regions more likely to experience economic downturns, prevents the spontaneous creation of inter-industry linkages and hampers the creation of new ideas and businesses”. They agree that clusters are important to economic development and performance but, argue against any intervention by governments who they say have neither the incentives nor the knowledge to develop clusters. They see this as

²² Frederic Sautet was at the time an employee of The New Zealand Treasury.

social engineering and an undesirable interference with markets that should be driven by consumers' preferences.

Perry (2007) points out that *"In contrast to the optimism of cluster advocates such as Porter, the outcomes of public agency efforts to encourage business participation in cluster groups are frequently disappointing (Perry, 2007, p. 161)"*. Reviewing such initiatives in New Zealand, Perry describes three government initiatives beginning with a joint action groups (JAG) programme begun in the early 1990s by then Trade New Zealand (now New Zealand Trade and Enterprise (NZTE)) which encouraged exporters to work together to develop markets. This initiative continued through the 1990s and was augmented from 1994 with the hard network programme copied from a Danish initiative in which small firms formed formal connections to develop their export capacity.

The Cluster Development Programme, launched by Industry New Zealand in 2002 and subsequently transferred to NZTE was *"the main focus of cluster support"* until 2005 (Perry, 2007, p. 173). This programme owed more to the ideas of the Porter Project which had highlighted the possibility of industry clusters being concentrated in a region (Perry, 2007).

Perry notes a number of problems that occurred with these three policies:

- The New Zealand economy may be too small to enjoy the benefits of value chain integration that larger economies can obtain through clustering. Many of our products are exported for further processing.
- Larger firms were often reluctant to co-operate with small firms and would place restrictions on who could join a group so as to exclude smaller competitors.
- Clusters became dependent on facilitators and would often only exist because of the service to cluster members provided by a facilitator. They received services but, failed to develop joint projects or activities.
- Export development initiatives might founder if there was not a larger enterprise that benefited from the resources provided by smaller firms and hence, was motivated to play a leading role in the cluster.
- Clusters tended to occur in regions rather than in important centres of activity such as Auckland which had few clusters.

- Clusters run by national industry groups tended to favour well resourced firms and provide few opportunities for regional development or entrepreneurs.

Perry (2007) makes a case for cluster intervention but, cautions against too much optimism in the contribution that clusters can make to business development and suggests that *“...more attention needs to be paid to the conditions required for effective business cooperation than hitherto has been given (Perry, 2007, p. 162)”*. Perry sees the possibility of industry groups having a greater role in business development arguing that they may be better recipients of government support than smaller regional groupings because New Zealand is such a small country that even broadly-based national industry groups are small by world standards.

Another argument against clustering is that the development of information technology has reached a point where it now challenges the idea that clusters need to be made up of firms in close geographic proximity. Information technology *“...can allow the development of relationships between suppliers, customers and partners that provide the same business and efficiency benefits as geographically-constrained clusters but, allow these to occur in an unconstrained a-spatial or international context ... it raises the question of whether they may cause the end of clusters as an economic development tool (MacGregor & Hodgkinson, 2007, pp. 306-307)”*.

So perhaps the primary question in relation to the facilitation of clusters is to ask if government should have any role in supporting regional clusters at all. Porter's advocacy of cluster based economic strategy is criticised in a paper co-written by Frederic Sautet (Desrochers & Sautet, 2004) when he was employed by The New Zealand Treasury (a fact that might provide a clue as to why the NZTE Cluster Development Programme was terminated). In their conclusions Desrochers and Sautet have this to say about cluster facilitation:

We argue that socially engineering clusters does not achieve the results that promoters of this view are seeking. This new vision of policy is just another variation on the old theme of industrial policy. Surely, promoters of free markets should rejoice, as the old view is not seen as a viable policy development anymore. However, one should be wary of the new alternative and understand its true nature. We view socially engineered clusters as suffering from many drawbacks (Desrochers & Sautet, 2004, p. 242).

One of the drawbacks they refer to is the idea that providing support for clusters distorts the market which they say should be driven by consumer preferences. Miller and Côté (1985) explain that government programmes tend to promote a *technological push* approach – the idea that innovation begins with research, proceeds to development and ends with market introduction and commercialisation. Desrochers and Sautet point to evidence that suggests that most technological innovation has nothing to do with scientific research, and that scientific research is almost never the origin of innovation. The real source of innovation is the realisation that an opportunity can be seized or that a costly problem needs to be solved. The drawback of the *technological push* approach is that it creates “*technologies in search of markets* (2004, p. 238)”.

Another drawback of facilitating clusters is that industry within a region might become less diverse and thus less likely to find and benefit from new *technology combinations* while at the same time leaving the region more vulnerable to an economic downturn affecting the industry on which the cluster is based. Finally, Desrochers and Sautet see government support for clusters as being inevitably a process of “*picking winners*” but, that governments do this poorly and selection should be left to the market. Governments, they say, neither have the knowledge nor the incentives to develop clusters and they conclude “*we take the view that there is no active role for governments in cluster development* (2004, p. 243)”.

New Zealand’s Ministry of Economic Development seemed to have taken these contrary views about the value of cluster facilitation to heart when it announced an “*evaluation*” of the Cluster Development Programme on 12 May 2006. Quoting a 2005 report the announcement stated the programme had been “*generally effective in improving the extent and quality of collaboration within the groups funded, with 70 percent of cluster members surveyed reported access to new networks or contracts as a benefit of collaboration...*” however, it stated that “*...the programme was too small, too thinly spread and its objectives and outcomes were insufficiently defined to support true cluster development* (Ministry of Economic Development, 2005a)”.

3.5 Institutional framework

Whether entrepreneurship is exercised and how it is exercised depends on the institutional conditions for its emergence. In other words, the institutional context influences the existence, magnitude, and nature of opportunities for entrepreneurship (Kirzner & Sautet, 2006, p. 15).

While Desrochers and Sautet conclude that governments should not be actively involved in cluster development, they do see a role for government in establishing the “*institutional framework that defines the outer limits of the market* (2004, p. 243)”.

The word *institution* has multiple dictionary meanings and can be used to refer to a professional association, a university, an investment fund or even a psychiatric hospital. Economic theorists such as Douglass North have used the term to describe the more abstract concept of societal rules that is relevant to this study. To avoid any confusion in meaning this research has used the term *institutions* to describe what North called “*the humanly devised constraints that structure human interaction. They are made up of formal constraints (e.g., rules, laws, constitutions), informal constraints (e.g., norms of behaviour, conventions, self-imposed codes of conduct), and their enforcement characteristics* (North, 1994 p.360)”.

Matthews (1986, p. 905) divides institutions into four categories – property rights, conventions, types of contract and authority – but, adds that a common feature is that the concept of institutions are all sets of rights and obligations that affect people in their economic lives. They can be rights and obligations that are unconditional and do not depend on any contract (these may or may not be inalienable) or they may result from contracts that have been entered into. Contracts can be explicit or based on implicit conventions. Matthews adds that lawyers might define institutions as *a set of rights and obligations in force* while sociologists or anthropologists might refer to them as a *role system* or a *status system*. Economists see institutions firstly, as defining what markets exist (using *market* in its broadest sense to include all voluntary exchanges) and secondly, as defining how economic relations are regulated in areas where markets do not exist.

If we adopt North’s definition the terms *institutional framework* or *institutional environment* simply mean the framework or environment created by all the various humanly devised constraints that structure human interaction. The term

Entrepreneurial Framework Conditions, as used by Frederick and Monsen (2006) and others associated with the GEM literature, is a subset of *institutional framework* and is a framework made up of those elements of the institutional framework that appear to GEM researchers to affect entrepreneurial behaviour. The term *Innovation Framework* is used by the OECD (2007b) and seems to be used by them to mean those parts of the institutional framework of a country that are considered to influence the supply and successful commercialisation of innovation, with perhaps an emphasis those aspects that may be altered by a government (the term *New Zealand's Growth and Innovation Framework* refers to a government policy approach that will be discussed later in this chapter).

Because the word *institutions* will be used to convey the meaning described, this study will avoid also using the same word to describe knowledge-based organisations such as universities or Crown Research Institutes (CRIs) for example. To avoid confusion, these have been referred to as *organisations*.

The definition and framework for understanding institutions provided by North (1990) seems widely accepted and Veciana and Urbano (2001), employed this framework for their study *Institutions and Support Programmes to Entrepreneurship in Catalonia*. North defines institutions as “*the humanly devised constraints that structure human interaction* (North, 1994 p360)”, but, if institutions are by definition constraints, they are also essential to entrepreneurs because they set basic rules that enable transactions and interactions between people to be carried out with the “*confidence that expectations will be met* (Kasper & Streit, 1998, p. 2)”. Entrepreneurs are perhaps likely to have love-hate relationships with institutions that constrain them while at the same time providing them with an enabling environment.

A number of researchers in the entrepreneurship field have studied the relationship between entrepreneurs and institutions. Busenitz *et al* (2000) measured country institutional profiles for entrepreneurship with regulatory, cognitive and normative dimensions and their work promises to allow countries to compare their institutional profiles with those of other more successful economies as a tool for improving their economic performance by improving the environment for entrepreneurship.

Acs and Karlsson (2002) asserted that very little is known about how the institutional framework influences entrepreneurship, the formation of new firms and growth suggesting the importance of exploratory research in this area. They advanced a theory that Sweden has slipped dramatically in the OECD rankings of GDP per capita (from 3rd to 15th place) due to institutional factors that favour large organisations and fail to support entrepreneurship.

Deeds *et al* (2001) theorised that the height of the hurdles that must be overcome by an entrepreneurial venture is determined by institutional factors and that variations in these factors from country to country lead to variations in the rates of entrepreneurship. It follows that favourable institutional factors may have the potential to provide a nation with an important competitive advantage in establishing new entrepreneurial ventures which may translate into higher levels of economic growth for the nation and improved standards of living for its citizens. Deeds *et al* (2001) offered a model for the initiation of a new venture that expressed the notion that the number of entrepreneurs increases through time governed by a process of overcoming hurdles that fall into two categories. The first set of hurdles were generated in the rational decision making process of the potential entrepreneur and the second set of hurdles were produced by the external environment the venture must negotiate during its developmental trajectory. They argued that the height of these hurdles was determined by institutional factors and that variation in the rates of entrepreneurship from country to country resulted from variations in these institutional factors. It seems possible that New Zealand entrepreneurs may tend to encounter low hurdles initially but, meet much higher hurdles later in their developmental trajectory. For example, it may be easy to start a business that serves only the local market while the later step of becoming an exporter may involve high and possibly insurmountable hurdles.

Acs and Karlsson (2002) pointed out that institutions are only a limited part of the overall economic milieu within which entrepreneurship may develop. For example, other non-institutional factors were supply and demand conditions, the degree of competition in the market, infrastructure, labour supply and skill level. It is therefore difficult to establish how much levels of national entrepreneurship are affected by institutional factors.

Entrepreneurs, as we have already discussed, can be a subversive influence on a society's institutions and a driver of institutional change. Equally a government might seek to change institutions to drive changes in the behaviour of entrepreneurs. These changes might take the form of reducing or increasing, or removing or introducing regulatory barriers, incentives, taxation or government funding for research, development, education or training.

Does institutional change hold the key to unlocking the potential for New Zealand's high levels of entrepreneurship to be translated into economic growth? Can growth be created by making New Zealand an easier or otherwise more attractive place to do business? The problem with this idea is that New Zealand's basic institutions seem to already be exceptionally good. The World Bank Doing Business Indicator (The World Bank Group, 2008) ranks 178 countries and ranked New Zealand in second place (behind Singapore) for Ease of Doing Business. This is ahead of the United States (3rd), the United Kingdom (6th), Ireland (8th) and Australia (9th).

However, both Sautet (2006) and Frederick and Monsen (2006) saw flaws in the New Zealand institutional framework and offered suggestions for improving it that can be briefly summarised as follows:

Sautet's view was that the New Zealand Government should act to improve the institutional framework for entrepreneurs in these ways:

- Reduce the size of government by freezing its spending. *'It is impossible to elicit high levels of productive entrepreneurship and at the same time to have the government use up a large amount of the economy's resources (2006, p. 586).'*
- *"Reduce the overall burden of taxation, especially marginal tax rates. Taxation affects entrepreneurial incentives by reducing the size of profit opportunities."*
- *"Continue opening the economy because entrepreneurship, leading to the division of labour and specialization, is enhanced by expanding markets."*
- *"Continue improving the regulatory environment because in some cases it is becoming worse (2006, p. 593)."* ²³

²³ Sautet makes a number of recommendations about labour regulation.

This research is concerned with the relationship between entrepreneurs and organisations and while most of these recommendations fall outside the scope of this, the exception is the call to improve the regulatory environment. How the entrepreneurs experience the regulatory environment in their dealings with organisations is clearly important to that relationship and therefore an interesting sub-theme.

As already noted, Sautet saw no role for government in cluster development. His vision was for government to take a *hands-off* approach and for government to simply to *get out of the way* of entrepreneurs and this differed markedly from the views of cluster facilitation advocates such as Ffowcs-Williams, Sirolli or Porter.

Based on a study of 2005 GEM data, Frederick and Monsen concluded that New Zealand has many entrepreneurs but, that they are not sufficiently focussed on economic growth and, along with employees, have been “mollycoddled” by the government. They suggest a raft of measures, that they admit are counter intuitive, in order to temporarily reduce the amount of entrepreneurship (as measured by the GEM survey) and “let loose factors that could lead to a general economic growth”.

- Increase government intervention. *“Guide entrepreneurial ventures in the direction of economic growth instead of lifestyle ventures that promote independence and satisfaction at the cost of growth and wealth creation.”*
- Raise corporate taxes in the short term. Perhaps selectively to *“generate revenues that can be directed to growth-orientated ventures”*.
- Increase health spending in the short term, but, lower it and other welfare spending in the long term.
- Loosen dependence on agricultural productivity.
- Not to pick winners. Be less selective in providing grant funding (Frederick & Monsen, 2006).

In contrast, to Sautet’s *hands off* proposal, Frederick and Monsen’s approach seems based on active government intervention in rearranging the institutional framework to make life tougher for entrepreneurs, in order to help the productive ones. They propose a kind of *tough love* for entrepreneurs to force them to focus on activities that will result in economic growth.

A weakness in Frederick and Monsen's approach is that the tougher environment might also cause the growth-producing entrepreneurs to also give up. The aquaculture entrepreneurs in this case faced a long initial operating period with no revenue while their livestock grew to a marketable size. During this time they make no profits but, certainly hold the potential to be part of a rapidly growing export industry. Another possible outcome is that growth-producing entrepreneurs will simply relocate to friendlier entrepreneurial environments offshore and New Zealand will lose the benefit of their contribution to economic growth.

New Zealand has a large number of self employed people and Small or Medium Enterprises (SMEs) but, many self employed people and SMEs are not particularly entrepreneurial. They may not be necessity entrepreneurs, but, nor are they high growth ventures. Independence is seen as desirable in New Zealand culture and the preference of Many New Zealanders for the independence of self employment may be an explanation for New Zealand's large number of SMEs and self employed. Other reasons could be the tax advantages enjoyed by self-employed people and New Zealand's relatively easy process for forming companies. If self employment is simply more popular in New Zealand than in other countries, this would explain the phenomenon observed by Frederick and Monsen (2006) - the apparent high number of entrepreneurs in New Zealand and the fact that this high rate of entrepreneurship is not matched by growth in GDP per capita. If this is the case it is hard to see how the tough love approach would help and a different approach to measuring entrepreneurship in New Zealand might present a more accurate picture of New Zealand's levels of entrepreneurship relative to its economic growth and might suggest different solutions.

This concern over how entrepreneurship is measured in the GEM study was raised by Hindle (2006) who points out that GEM is measuring new business creation and presenting new business creation, rather misleadingly, as a measure of entrepreneurship. Frederick conceded this measurement issue in his introduction to the 2005 GEM report:

In this regard, we would like to pay a debt of gratitude to our Australian colleague Prof Kevin Hindle of Swinburne University. The entire GEM project has benefited from his paper 'A Measurement Framework for International Entrepreneurship Policy Research: From Impossible Index to Malleable Matrix', forthcoming in International Journal of Entrepreneurship and Small Business.

Beyond this, extensive changes are being implemented throughout GEM with respect to the use and interpretation of the data. In the past, GEM focused on the study of early-stage entrepreneurial activity, which in the past we (perhaps rashly) labelled 'Total Entrepreneurial Activity' (TEA).

We now are amongst the first to realise that entrepreneurship is an extraordinarily complex and multifaceted phenomenon.

Entrepreneurial activity goes beyond 'early-stage' and encompasses other stages (Frederick & Chittock, 2006, p. 7).

Luke, Verreyne and Kearins (2007) suggest that measures that are being used as a basis to support the association between entrepreneurship and wealth creation at a national level should use *clear financial measures* for entrepreneurship, rather than relying on non-financial surrogates or proxies. In the quote above Frederick concedes that Total Entrepreneurial Activity (TEA) may have been inadequate as a measure of entrepreneurship and this calls into question the main measurement on which the conclusions put forward by Frederick and Monsen (2006) are based.

While their more counterintuitive suggestions will now perhaps have been reconsidered, Frederick and Monsen's view that too many New Zealand entrepreneurs are pursuing lifestyle objectives, lack a focus on growth, and would benefit from a *tough love* approach still seems a worthy sub-theme to include in the framework of analysis for this study because it provides a contrast to the view of Sautet who simply wants government to make the institutional framework friendlier to entrepreneurs by reducing its influence and suggests government should *get out of the way* and allow the market to work.

Both these viewpoints aim to create the best environment or framework for entrepreneurial success but, offer recipes almost diametrically opposed. Later in this chapter further viewpoints on what policy steps should be taken from the OECD and the office of the Prime Minister of New Zealand will be discussed under the heading New Zealand's Innovation Framework.

Sub-themes: To summarise questions relating to cluster facilitation and New Zealand's Institutional Framework:

- Are there patterns of data in this case that suggest better outcomes would have resulted had the cluster been facilitated in the way suggested by Ffowcs-Williams?
- Is there data that supports the idea that the institutional framework needs to be friendlier towards entrepreneurs in the ways suggested by Sautet.
- Is there data that suggests the entrepreneurs are pursuing lifestyle objectives, lack a focus on growth, and would benefit from the tough love approach suggested by Frederick and Monsen?

3.6 How might entrepreneurs be supported by organisations?

A key question that exercises both academics and policy makers is: in pursuing economic development, what should a society do to support its entrepreneurs? Should it intervene, attempt to pick winners, or take a hands-off approach that simply seeks to provide entrepreneurs with a fertile environment?

Peneder (2001) took the latter view and described an enabling policy framework to stimulate entrepreneurship. His approach included: improving the design of regulatory framework conditions; filling institutional gaps; creating complimentary human resources through education spending; raising public awareness of new technologies, triggering pull effects through public procurement. Peneder also argues for the setting of priorities for focussed R&D support schemes, and the implementation of economic cluster based strategies.

McClelland (1965) asserted that it is not enough to simply increase opportunities. The aspirations for achievement of local entrepreneurial leaders must be raised. Research by Westhead and Wright (1999) in the United Kingdom suggested targeting individual entrepreneurs with assistance rather than businesses, especially those habitual entrepreneurs who set up a series of enterprises either in parallel or in sequence. This view was proposed earlier by Casson (1982) who pointed out that

entrepreneurs possess scarce qualities (such as foresight and imagination) and that it is these rare attributes that are the most economically significant.

An interesting finding of Veciana and Urbano's (2001) work is that there was an over diversification of institutions and support programmes, duplications and overlapping of assistance and an absence of coordination among these institutions. They also found that Catalanian entrepreneurs valued non-economic programmes more highly than economic aid and considered them more important to the process of new firm creation. So if a government decides to improve its institutional environment how can it accomplish this in practice? Just adding more institutional support to entrepreneurs will clearly be ineffective if it simply duplicates existing measures or is delivered ineffectively.

Sub-theme: How did organisations deliver support to the entrepreneurs in Gisborne?

Sub-theme: Was there an over-diversification of organisations and support programmes and an absence of co-ordination?

3.7 How might advice be delivered?

Hjalmarsson and Johansson (2003) used participant observation and critical analysis of service encounters to examine the theory and practice of advisory services provided by government organisations to SMEs in Sweden. They pointed out that the provision of public support programmes is justified from a neo-classical economic viewpoint as a rational solution to an economic problem and a remedy for market imperfections however; an unintended side effect is to favour some enterprises over others in selecting which SMEs will receive support. Another unintended effect is to distort or hinder the development of the market for advisory services.

3.7.1 Advice types

Hjalmarsson and Johansson (2003) distinguished between operational and strategic advice and explained that operational advice is characterised by an asymmetric advisor client relationship where the advisor imparts expert knowledge in a solution-oriented way while strategic advice is in their experience most effectively delivered through a complex interplay between the consultants and the entrepreneurs

where the consultant is more of a sounding board than a person delivering solutions. They explained the latter approach as based on a neo-Austrian economic perspective that is concerned with how resources and possibilities are developed by entrepreneurs in contrast, to the neo-classical approach that focuses on optimizing and allocating scarce resources.

In the neo-Austrian approach explained by Kirzner (1973; , 1994; , 1997), Lachmann (1986) and Eliasson (1996) information is seen as context and actor dependent and therefore subjective. Entrepreneurs are seen to be actively experimenting with new products and services in expanding and perhaps unlimited markets and information is viewed as subjective, tacit and dynamic. Following this approach there is no finalised static information that can be provided to entrepreneurs on strategic matters because what entrepreneurs need is ideas that have yet to be thought.

Hjalmarsson and Johansson (2003) suggested there is a conflict between the role of professional helper and the roles of providers of strategic services and found examples of public advisors who made even the strategic concern of the client business a subject for expert operational advice and would modify the business idea of the firm. Other advisors they observed adopted a neo-Austrian approach and established a symmetric relationship where they worked with entrepreneurs in a joint effort to find strategies to improve existing business opportunities and find new ones. The analysis of this research will look for any data that would suggest the extent to which advisory services supplied by organisations were operational or strategic and, if strategic, whether the approach of the advisor is neo-Austrian and symmetric or neo-classical and asymmetric and examine how outcomes for the entrepreneurs are affected.

3.7.2 Client types

Hjalmarsson and Johansson (2003, p. 90) observed the behaviour of entrepreneurs in their dealings with public advisors and categorised them into “*anti-clients*”, “*consultant modifiers*” and “*ideal clients*”. Anti clients are non receivers of consulting services as they view being in need of advice as being inconsistent with their identities as managers. Consultant-modifiers “define and redefine the essence and

meaning of the consulting function” and attempt to make use of the consultant in various ways, perhaps as a sounding board, or as a person to fix things, or to test their own plans. How entrepreneurs respond to advisors is explained as deriving from how they construct their identities, something deeply rooted in their experiences and what gives meaning to their lives as entrepreneurs or managers of small businesses. The ideal client is impressed by the adviser, sees them as a guru and tries to learn from them and implement their ideas in the client business. These categories of anti client, consultant-modifier and ideal client had the potential to be used as a starting point for analysis of the relationship between the entrepreneurs and the representatives of institutional support programmes, or perhaps for considering a different way to categorize entrepreneurs as clients of advisors. The factors that influence the entrepreneurs in determining how they will respond to the advisor and if and how the relationship changes over time will also be of interest.

Sub-theme: How did the organisations deliver advice to entrepreneurs and what theory was driving the delivery of support?

- How symmetric were relations with advisors and clients and did symmetry vary?
- How was *operational* advice delivered? What approach was taken?
- How was *strategic* advice delivered? What approach was taken?

3.7.3 Power relationships

When an organisation provides an entrepreneur with financial support a power relationship is established in which entrepreneurs are “clientified” as needy clients according to Johansson (1999) and Hjalmarsson and Johansson (2003 p92) who cite Foucault’s (1977; , 1978) writings on how power technologies are related to discourse in seeking to explain how entrepreneurs are formed or forced as advice takers. Foucault defined discourse as a historically generated idea that has permeated society, formed through discursive practices (the *serious speech acts* of experts). Hjalmarsson and Johansson note that discursive practices go hand in hand with institutions which are formed by the ideas of experts and that from a Foucaudian perspective truth does not exist independently of power relations. They assert that beliefs in society about

advisory services to small business owners are a discourse that has emerged historically and that their advocacy of a neo-Austrian approach to replace the present neo classical approach is a counter discourse. They pinpoint *the importance of questioning the discourse that underlies current public initiatives towards Small and Medium–Sized Enterprises (SMEs)*.

Foucault's power technologies can be either *objectifying* (Foucault, 1977) or *subjectifying* (Foucault, 1978). An objectifying technology would occur, for example, when entrepreneurs are made the object of advice and restrictions after applying for financial support from an organisation. Objectifying technologies are associated with monitoring and may become *disciplining power technologies* and Foucault associates the use of objectifying power technologies with resistance. In contrast, a subjectifying power technology is typically expressed by confession where clients use power on themselves, for example, if entrepreneurs decide for themselves that they need help they may make themselves into subjects and become captured in the discourse. Hence, this research will be alert for patterns of data that would identify the existence, operation and effects of power technologies in the relationships between the participant group and organisations offering support. Analysis and interpretation will seek to pinpoint discursive practices that have historically shaped organisations involved in providing support for entrepreneurs in New Zealand and it may be appropriate to question that discourse and suggest counter discourse.

Sub-theme: How were the entrepreneurs' relationships with the representatives of organisations affected by the balance of power in the relationship?

3.8 Fostering collaboration

The development of multilateral cooperation between SMEs was the focus of a study by Lechner and Dowling (2003) that used qualitative case study methods to observe how emerging entrepreneurial firms use relations as they develop. It found that both weak and strong ties are important to the firm as they serve different functions. It also observed that the importance of social and relational networks decreased as the firm developed to be replaced by co-opetition networks. Networks amongst emerging firms studied by Varamäki and Vesalainen (2003) are categorised

into four types based on the degree of formalization. They can be *development circles*, *loose co-operative circles*, *project groups*, *joint ventures* and *joint units*.

This research will examine the importance of the relations with organisations, ask if they are weak or strong relations, and what their functions are and the extent to which institutional factors, especially institutional support programmes, influenced the development and formalisation of networking, cooperation and co-opetition (Brandenburger & Nalebuff, 1998).

Requier-Desjardins *et al* (2003, p. 53), who studied the competitive advantages and evolution of food production systems in Latin-America, quote Piore and Sable's (1984) idea of flexible specialisation systems arising from co-operative-competitive relations between SMEs. These systems engage in "*productive capacity and workforce borrowing and develop a generalised reciprocal sub-contracting*" resulting in "*huge productive flexibility*" through a small scale series offering great product variety and able to cater for diversified and dynamically changing demand much more accurately than a large scale Ford-style production system. Requier-Desjardins *et al* also observe that the development of local clusters involves the emergence of "*a set of intertwined local institutions which promote the specific economic activity of the area: local governments, professional organisations, technical education institutes, chambers of commerce, etc.* (Requier-Desjardins, Boucher, & Cerdan, 2003 p53)".

Sub-theme: What relationships existed between the entrepreneurs and organisations in this case and were they strong or weak?

Sub-theme: How did the organisations affect the development of industry clusters and networks in this case?

3.9 Entrepreneur types

Entrepreneurs can be categorised according to their motivation and background. They can be *necessity entrepreneurs* who become self employed because they are unable to find regular employment, or they be *voluntary entrepreneurs* who choose self-employment over employment because they value the freedom and greater opportunity it confers. United Kingdom researchers Glancey and Pettigrew (1997, p. 22) cite Smith (1967) in suggesting differentiation between *craft* and

opportunistic entrepreneurs however, this categorization seems to be primarily a social class distinction as they describe opportunistic entrepreneurs as “characterised by their middle class white collar background, higher level of educational attainment and their professional management style” whereas craft entrepreneurs are “noted by their working-class, blue-collar background, low level of education and paternalistic management styles”. If a distinction of this kind exists within the less socially stratified New Zealand culture it may be influenced by cultural, occupational and educational background. Glancey and Pettigrew describe a craft entrepreneur as motivated by lifestyle and job satisfaction rather than economic factors. Opportunistic entrepreneurs, as the name suggests, are motivated by seeing an opportunity and may have no previous technical experience in the industry they enter. They are described as being more aloof and administrative in their roles and more active in marketing their product strategically. This research will consider whether the entrepreneurs can be best described as necessity or voluntary entrepreneurs and if they are craft or opportunistic types.

3.10 Māori entrepreneurship

Currently Māori are extensively involved in aquaculture activities in Northland at many levels; employees, owners, owner-operators, and shareholders and beneficiaries of larger companies. In the past there have been extensive efforts to assist Māori to use aquaculture to further develop their economic base in Northland. That opportunity continues today, especially as Northland iwi are well placed to receive substantial seafood assets and earnings through the proposed allocation from the Treaty of Waitangi Fisheries Commission. Some of these resources could well be invested in developing the region’s aquaculture. The mechanisms for encouraging this development should follow the more successful examples of economic intervention previously used for Māori aquaculture development in Northland (Jeffs, 2003, p. ii).

Henry (2007, p. 536) describes a number of Kaupapa Māori (by, with and for Māori) entrepreneurial initiatives that “deliver community development opportunities” while nurturing a “sense of self-determination and validating Māori aspirations” and GEM research (Frederick, Virasa, & Chua, 2003) has pinpointed high levels of entrepreneurship amongst Māori, and this research which will include Māori

entrepreneurs and organisations, may present an opportunity to explore and better understand the special character and dimensions of Māori entrepreneurship.

Jeffs (2003) asserts that Māori are key stakeholders in the aquaculture industry in New Zealand and the development of the industry has enormous potential to improve their economic and social well-being. He points out that substantial financial resources from the allocation of fisheries assets from the Treaty of Waitangi fisheries settlement (\$110M in assets, and annual earnings of around \$1.5M) have the potential to be directed toward aquaculture development for Māori.

Subsequently the Māori Commercial Aquaculture Claims Settlement Act 2004 government required 20 percent of all new aquaculture space identified in the coastal marine area to be transferred to iwi, via the Māori Commercial Aquaculture Settlement Trust. In addition the Māori Commercial Aquaculture Settlement Trust is to receive the equivalent of 20 percent of the existing aquaculture space in the coastal marine area that was issued on or after 21 September 1992. Before the trustee could distribute the aquaculture rights, iwi were required to establish aquaculture organisations to receive these settlement assets. This step clearly made the development of New Zealand's aquaculture industry something of vital interest to Māori, especially those Māori organisations that received aquaculture space.

Mulligan (2005) states that the core characteristics of cluster systems are compatible with these core Māori world views:

- Whanaungatanga - networks, connectedness and relationships.
- Rangatiratanga – leadership.
- Kaitiakitanga - care, fostering and diligence.
- Utu - reciprocity, benefits and commitments (Mulligan, 2005, p. 27).

Kirzner and Sautet point out that “culture can shape what an individual perceives as opportunities and thus what he overlooks, as entrepreneurship is always embedded in a cultural context (2006, p. 17)” and seafood holds a very important place in Māori culture that goes beyond economic considerations. *Kai Moana* (seafood) is only not only a traditional food but, also holds a cultural status such that it is often caught especially to be served at important social and events such as *hui* and *tangi*. For cultural reasons alone, aquaculture is therefore a more culturally significant and appropriate opportunity for Māori organisations than, say, dairy farming and

examining how Māori organisations and individuals in this study have approached opportunities in aquaculture may shed light on how Māori culture might influence entrepreneurial behaviour.

Sub-theme: How was the special character and dimensions of Māori entrepreneurship expressed in relations between entrepreneurs and their supporting organisations?

3.11 New Zealand's Innovation Framework

Innovation is not synonymous with entrepreneurship and therefore, while there may be some overlapping, the term *New Zealand's Innovation Framework* holds a somewhat different meaning to the terms *entrepreneurial environment*, the *institutional environment*, the *entrepreneurial framework* and *institutional framework*.²⁴ The word *innovation* can be used to describe scientific or research outputs, inventions or new processes, products or services created by knowledge-based organisations. *Innovation Framework* is therefore a more appropriate term to describe *a framework of government policies and interventions aimed at managing economic growth*. An Innovation Framework can be expected to have an impact on the institutional/entrepreneurial environment and its policies may help or hinder the efforts of individual entrepreneurs.

This section will introduce three different viewpoints of New Zealand's Innovation Framework: firstly, from the Science and Innovation Advisory Council representing the private sector, secondly, from the New Zealand Government and finally, from the Organisation for Economic Cooperation and Development (OECD).

The Science and Innovation Advisory Council, composed of nine appointees and administered by the Ministry of Research Science and Technology (MORST), was established in 2000, begun work in May 2001 and published its final report on February 2002 (SIAC, 2002). According to the MORST website the Council's aims were to:

²⁴ As already discussed the terms *Entrepreneurial Framework Conditions* and *New Zealand's Growth and Innovation Framework* have somewhat different meanings.

- Increase the public status and recognition for scientists and science;
- Promote a long-term, strategic direction for research, science and technology;
- Build private-sector commitment to new science and technology policy directions; and
- Enable co-ordination of Government policies and community activities at the highest level. (The New Zealand Government, 2001)

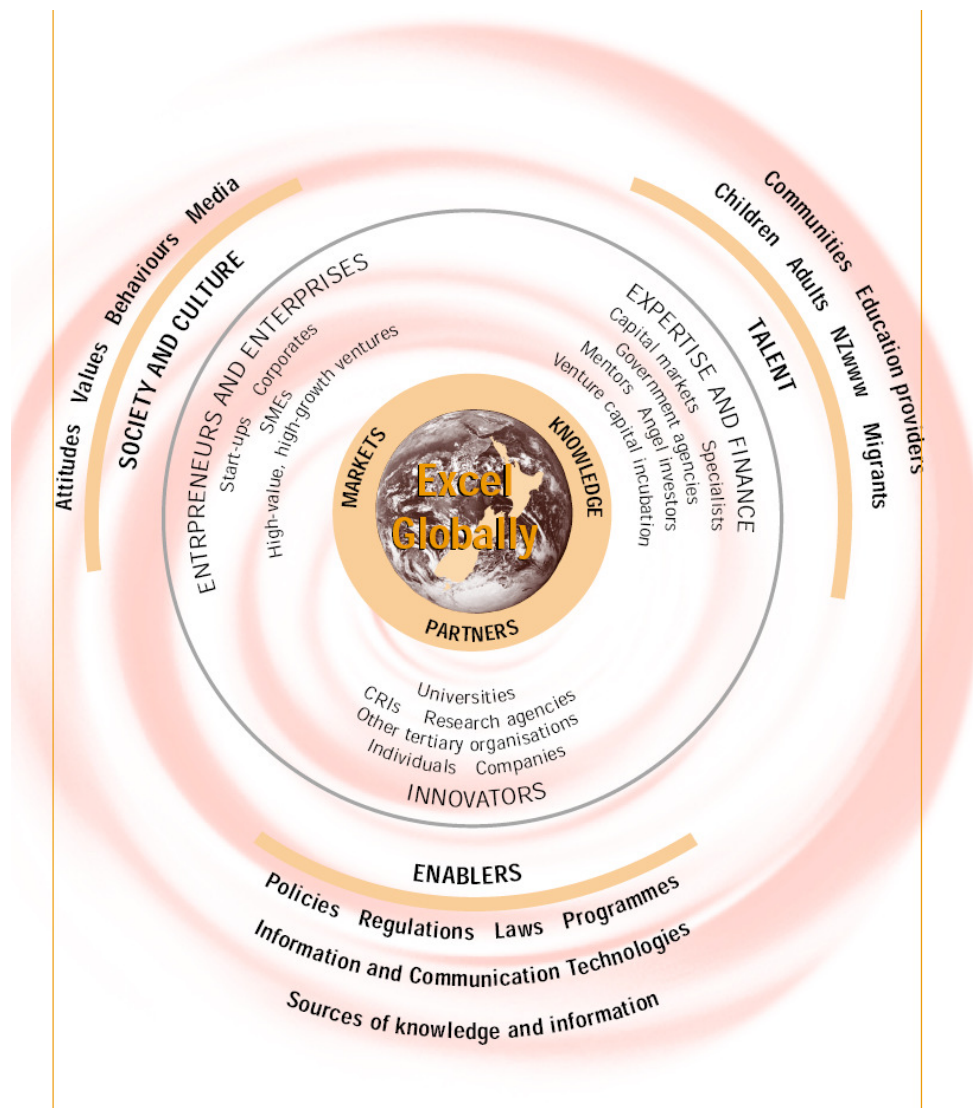


Figure 5. SIAC's diagram of New Zealand's Innovation System which suggests a pivotal role for entrepreneurs²⁵

²⁵ Source: Science and Innovation Advisory Council (SIAC, 2002, p. 18)

SIAC included New Zealand business leaders Stephen Tindall and Sir Angus Warbrick and invited and received submissions from the commercial interests so it is not surprising that the Council's report offered a private sector vision for New Zealand's Innovation Framework. SIAC saw the innovation system needed to allow New Zealand to excel globally as having three aspects:

- Entrepreneurs and enterprises: including start-ups, corporates, small and medium-sized enterprises (SMEs) and high-value, high-growth ventures.
- Expertise and Finance: including capital markets, specialists, government agencies, mentors, angel investors and venture capital incubation.
- Innovators: including universities, Crown Research Institutes (CRIs), research agencies and other tertiary organisations and some individuals and companies.

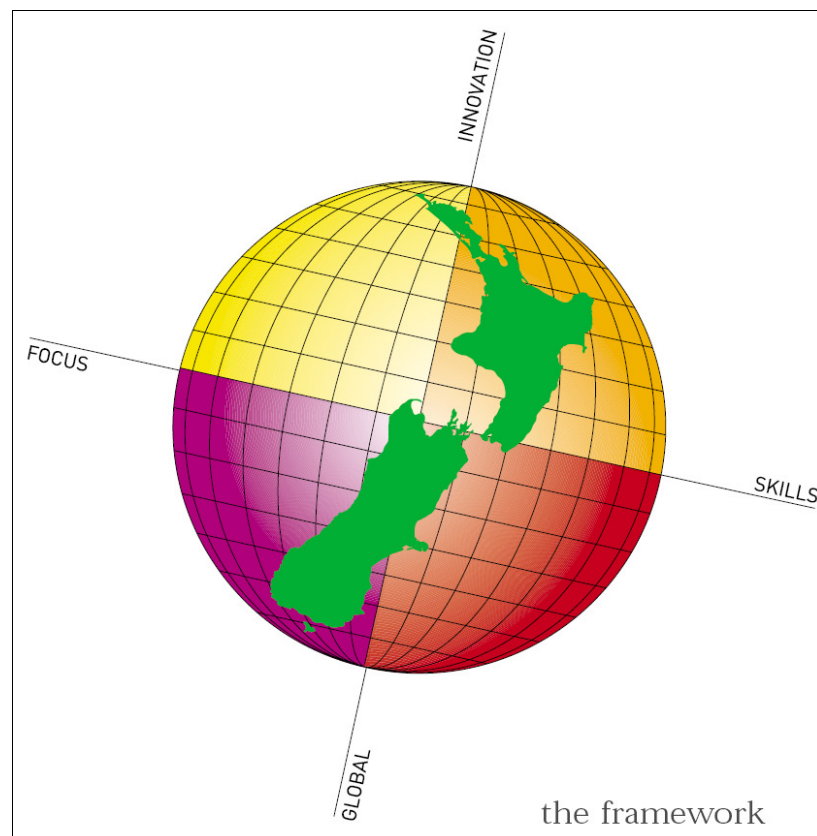


Figure 6. A diagram to illustrate New Zealand's Growth and Innovation Framework²⁶

²⁶ Source: The New Zealand Government (2002, p. 26)

In the same month of February 2002 the Office of the Prime Minister of New Zealand published a 64 page document entitled *Growing an Innovative New Zealand* (The New Zealand Government, 2002) which referred to the SIAC report but, presented a rather different view as to how New Zealand's Innovation Framework should be changed. Writing in its introduction the Prime Minister Helen Clark pointed out that her government had shifted from a passive to a more proactive role towards growth and innovation

Between 1984 and 1999 government economic policy was largely 'passive', aiming to provide an environment in which the private sector could make investment decisions. This approach did not generate sustained growth. This government has therefore taken a more pro-active role in all areas of the economy. For example, in relation to facilitating business growth, government has taken many initiatives ... Examples include the establishment of the Venture Investment Fund, Industry New Zealand's Business Growth Fund and Investment Ready Scheme, and changes to the Securities Act (The New Zealand Government, 2002, p. 5).

This document from the Prime Minister's office went on to propose how New Zealand will return to the top half of the OECD rankings through the development of a *Growth and Innovation Framework* that would support innovation in a number of sectors. It seems to be a rejoinder to the SIAC report and, while both are long and complex documents, it is interesting to compare the discourse relating to entrepreneurship that occurs in these two visions for New Zealand's Innovation Framework.

The 64 page document issued by the Office of the Prime Minister used the word *entrepreneur* only 15 times whereas the 56 page SIAC report used the word 159 times. This variance of an entire order of magnitude suggested the Clark government did not share SIAC's view of the pivotal role of entrepreneurs, evidenced in its diagram of New Zealand's *Innovation System* (see Figure 5). The Government's document offered a quite different diagram (see Figure 6) which makes no mention of

entrepreneurs.²⁷ The SIAC report included sections headed “*Encouraging entrepreneurship*” and “*Support high-value, high-growth ventures*” and Part Two was headed “*Create wealth from ideas and knowledge*”. In contrast, the Government used such headings as “*Enhancing the role of government*” and “*Focussing government resources*”.

The Government introduced the word “*Growth*” and presented a vision of “*New Zealand’s Growth and Innovation Framework*” that was less concerned with entrepreneurs and more concerned with identifying a small number of established industry sectors that were considered worthy of the government’s support. These were biotechnology, information and communications technology (ICT) and creative industries. Each of these favoured sectors was to have a taskforce established which would involve “*both business and employee representatives from the area, representatives from other sectors involved in facilitating development, (e.g. the tertiary education and research sectors), and government officials from a range of departments (The New Zealand Government, 2002, p. 60)*”. The New Zealand Government seemed to favour innovation that would be driven by government agencies, universities, CRIs and employee representatives rather than by entrepreneurs.

The Prime Minister’s Office seemed to be presenting a vision for *government managed innovation* in New Zealand that would avoid providing support to individual entrepreneurs and the owners of SMEs and instead directed that support towards creating growth in established workplaces already employing people who could be involved in the decision making. While this may have been an approach consistent with Labour party ideology, it offered little to the vast majority of New Zealand businesses, overwhelmingly SMEs not involved in the three favoured sectors. In particular the Clark government’s vision for an innovation framework would seem to offer little or nothing to fledgling clusters in small centres, such as the Gisborne

²⁷ In both documents all occurrences were counted including references and footnotes and all variants such as *entrepreneurism*, *entrepreneurial* and *entrepreneurship*.

aquaculture entrepreneurs, no matter how innovative or promising their ventures might be.

Advocating a government policy on entrepreneurship in an opinion piece in The New Zealand Herald, Frederick (2002) commented that *“An innovation uncommercialised remains an innovation wasted. Innovation and entrepreneurship go hand in hand”* and offered this viewpoint on the government’s innovation policy:

The present Government is doing a huge amount to drive up innovation in the economy. But, unless we quickly commercialise those innovations, it's all for naught. We now must expect our Government agencies, private companies, industry associations, Māori and non-governmental organisations, and communities to do their parts to turn the corner towards an entrepreneurship policy. This includes especially the regional economic development agencies, Ministry of Economic Development, Industry New Zealand, Trade New Zealand, Investment New Zealand, Institute for Economic Research, policy ministries, chambers of commerce and the wider public research sector agents. What should we expect if entrepreneurship policy is being taken seriously? We believe that a National Commission on Entrepreneurship - similar in scope to the Science and Innovation Advisory Council - could show policy makers and leaders how to sustain and expand a flourishing entrepreneurial economy, focus public policy on the role of entrepreneurship in the national economy and articulate policies that will foster its growth (Frederick, 2002).

Frederick went on to advocate three types of policy to boost New Zealand’s entrepreneurial activity - cultural policies (such as exposing primary students to entrepreneurship), governmental policies (tax incentives, business support services), and public-private partnerships (start-up financing, mentoring programmes). He seemed to suggest the New Zealand Government was hesitating to support entrepreneurship because *“people view it a risky, dangerous and elitist”* but, stated that that was an ignorant view and that *“without the gutsy contributions that these special people make to commercialise our innovations, New Zealand’s place in the global marketplace is at risk (Frederick, 2002)”*.

While the *Growing an Innovative New Zealand* document refers to supporting clusters, the policy it sets out is clearly *industrial policy* rather than the *cluster-based economic strategy* advocated by Porter or the *cluster facilitation* advocated by Ffowcs-

Williams. In the following quote, Sautet specifically labels the government's Growth and Innovation Framework as *industrial policy* and states it is unfriendly to the entrepreneurial environment.

Other smaller but, still important regulations have changed in a way that is unfriendly to the entrepreneurial environment. Examples include takeover regulations, the Commerce Act, industrial policy (for example, the government's Growth and Innovation Framework), and the Kyoto Accord (Sautet, 2006, p. 591).

Sautet's assertion that governments should not attempt to pick winners seems to be supported by the performance of the New Zealand economy since the announcement of this policy. As the OECD points out "*New Zealand still lags behind in terms of GDP per capita, and growth has been mainly driven by increased labour utilisation (OECD, 2007b, p. 9)*".

3.11.1 Improving the innovation framework

Other OECD members have innovation frameworks that place much more emphasis on developing regional clusters (Ffowcs-Williams, 2007) and the OECD (2007a) reports a policy swing away from the type of top-down single-sector support programmes implemented by The New Zealand Government.

National and EU level programmes to support clusters and regional specialisation originate from one of three main policy families: regional policy, science and technology (S&T) policy or industrial/enterprise policy. All three policy areas have undergone changes in policy orientation away from a top-down and single-sector approach towards policies that favour co-operative, multi-actor and often more place-based approaches. These trends have supported increased policy interest in programmes to develop or strengthen regional specialisation and cluster development with an ultimate goal of improving competitiveness and innovation capacity (OECD, 2007a, p. 14).

The New Zealand Government's approach is not single sector but, it confines support for industry to three sectors. This is in contrast, to the support lavished on small local clusters in many other countries and detailed in the earlier discussion of clusters (Ffowcs-Williams, 2007). While Ffowcs-Williams presents a coherent argument for professionally facilitating local clusters it is difficult to prove the extent to

which countries adopting this policy have benefited. Storey (1998, p. 34) notes that *“most policy initiatives in OECD countries are merely monitored, rather than evaluated”* and that there is evidence that the more closely initiatives are evaluated the weaker the apparent impact of the policy seems to be. The OECD admits that it *“lacks robust tools to measure whether a policy or programme was successful”* but, confidently asserts that much has been learnt about programme design and cluster practices that can improve the likelihood of success. These can be summarised as follows:

- Cluster programmes must be appropriate, realistic and flexible.
- There has to be policy coherence within and across levels of government.
- The private sector also needs to be involved as it can react quickly to market changes, and needs to continue to act after the programme ends.

3.11.2 OECD recommendations

The OECD (2007b) refers simply to *New Zealand’s Innovation Framework* and while it may be possible that the government is expressing a somewhat different meaning by adding the word *growth*, in the context of this study, where the participants are involved in innovation of new industry systems rather than the growth of existing industry systems, the OECD term has been adopted in this study rather than the government’s. Especially as the patterns of data that emerge from this study will be compared and contrasted with the OECD recommendations relating to New Zealand’s Innovation Framework as a framework for analysis.

The 2007 OECD review of innovation policy in New Zealand (OECD, 2007b) provided a number of clear recommendations as how New Zealand’s Innovation Framework could be improved and it seemed possible that this research would produce patterns of data that would be relevant to these specific OECD recommendations for New Zealand.

An impediment to innovation pinpointed by the review was what the report described as *a mismatch between supply and demand for complementary technical services, training and advice to help small and medium-sized enterprises (SMEs) to articulate and satisfy their needs* (OECD, 2007b, p. 13).

In a 2005 report New Zealand’s Ministry of Economic Development stated that it then defined SMEs as enterprises with 19 or fewer employees and expressed an

interest in arriving at a different definition (Ministry of Economic Development, 2005b). The Ministry reviewed international definitions and noted that the generally accepted characteristics of SMEs are that they are independent businesses mostly managed by their owners or part-owners, and normally have a small market share and not dominant in their field of operation.

The OECD also suggested that Crown Research Institutes (CRI) should exploit their research results by licensing them to existing business firms rather than trying to create a business themselves. New Zealand has nine CRIs as follows:

- Industrial Research Ltd.
- New Zealand Forest Research Institute Ltd.
- AgResearch Ltd.
- Institute of Geological and Nuclear Sciences Ltd.
- Landcare Research New Zealand Ltd.
- Institute of Environmental Science and Research Ltd.
- New Zealand Institute for Crop and Food Research Ltd.
- Horticulture and Food Research Institute of New Zealand Ltd.
- National Institute of Water and Atmospheric Research Ltd. (NIWA).

CRIs derive their funding in part from commercial activities and receive a similar amount of government funding. In the year to 30 June 2007 the nine CRIs received \$303.6 million in government funding for the year and earned \$279.1 million in sales (Bascand, 2007). These figures suggest there is a strong focus on earning sales revenue within CRIs and tend to support the OECD suggestion that CRIs may be attempting to commercialise their research themselves and are avoiding the option of collaboration with existing businesses in the relevant field who might be better able to exploit the opportunity.

Examining whether the entrepreneurs considered that they had access to, or could otherwise benefit from, any government funded research in their field promised to shed light on this question. Was NIWA for example, considered to be a closed shop that preferred to keep control of the commercialisation of its research, or a practitioner of more open forms of innovation involving collaboration and licensing? The issue of CRIs' approach to commercialisation was an important part of a larger

question as to the extent to which the entrepreneurs had access to useful research and knowledge.

The OECD review also noted shortcomings in physical and virtual infrastructure and in particular the quality of broadband infrastructure which it asserts has a major impact on the ability of geographically remote New Zealand businesses to develop and maintain the international connectivity needed to support innovation.

The OECD noted that New Zealand's investment in business enterprise R&D as a proportion of GDP is only a third of the OECD average and, while this could, in fact, be an indicator that more open forms of innovation (Chesbrough, 2006) are being practiced in place of formal in-house R&D, the OECD review pinpointed a lack of external funding at some stages of the innovation process, a lack of sufficient public support to innovation-related investment and fiscal incentives for R&D.

The OECD also noted that the customer-contractor principle is strictly applied to the public funding of R&D and pointed out that the customer (government agencies) might not be best placed to say what societal, business or even government needs might be and that this approach created time consuming vertical relationships at the expense of horizontal co-ordination.

In short, the recommendations contained in the 2007 OECD report seemed to offer a useful addition to the framework for analysis to be used in this study to apply to data relating to New Zealand's Innovation Framework. Examining whether (and if so the extent to which) the voices of the entrepreneurs supported those recommendations and by examining what changes the entrepreneurs believed should occur may provide a useful contribution to the debate raised by the OECD.

Sub-themes: To summarise questions relating to New Zealand's Innovation Framework that arose from the OECD report:

- Did the SMEs receive enough training and advice to articulate and satisfy their needs?
- Did CRIs exploit their research results through licensing to existing firms?
- Were there shortcomings in virtual and physical infrastructure?
- Was the customer-contractor principle too strictly applied to public

These sub-themes have been incorporated into the framework for analysis for this research which is expanded on and summarised at the end of the next chapter.

3.12 The Aquaculture Industry

A variety of literature from the seafood industry was examined to establish if any material had been published that would be relevant to this research. A report assessing the potential for aquaculture in Northland (Jeffs, 2003) and a report on innovation in the seafood industry by Nemec (2006) were considered relevant.

Nemec studied relationships between research providers and seafood industry players, found evidence of weak relationships and made a number of recommendations for improving relationships between organisations and entrepreneurs (summarised below). While Nemec's research also used qualitative methods to study relationships in the seafood industry, this research takes a different approach in the following important ways.

Firstly, this study is of early stage entrepreneurs and focuses on the individual entrepreneurs whereas Nemec's study was of larger and more established firms that could be expected to have rather more mature and developed relationships with research providers and knowledge based organisations.

Secondly, this study focuses on small scale paua farming ventures while Nemec's spans a diverse range of fishery and aquaculture ventures. While the large scale paua farm OceaNZ Blue was included, none of the subject firms were small scale paua farms.

It's not an industry, but, made up of little sub-industries. Even aquaculture is different with different issues, such as the nature of the species they're growing. We actually have a whole range of separate industries which is very difficult to lump together.

- One of Nemec's research provider subjects (Nemec, 2006, p. 24).

Thirdly this study is confined to the Gisborne geographical area whereas Nemec's study included ventures at a number of locations around New Zealand, and none in Gisborne. NIWA is located next door to the OceaNZ Blue paua farm at the Bream Bay Aquaculture Park (BBAP) and it seems reasonable to suspect that the relationship between these close neighbours will be rather different that between

NIWA and a much smaller operation in a remote and distant location such as Ahuahu or Wharekauri. By confining this study to the Gisborne area it is possible to view the innovation framework at a point where its lines of communication are most stretched.

Finally, this study does not set out to be an industry study. Instead it seeks to employ ethnographic methods to build theory about aspects of New Zealand's Innovation Framework. The information gathered from entrepreneurs relating to the business of farming paua in recirculating systems is reported as a by product and knowledge derived from the case study that seemed too useful to be simply discarded. This study could equally well have chosen any small emerging cluster of entrepreneurs seeking to develop a new product or service for export. Nemec's work in contrast, seems very specific to, and carried out for the benefit of, the seafood industry.

Having dealt with the differences in approach, Nemec's work provides findings for a number of issues that have also emerged in this study and these, along with the OECD findings, have been usefully compared and contrasted with the patterns of data that emerged from this study in the *Analysis and conclusions* chapter.

3.12.1 Nemec's recommendations

Those of Nemec's recommendations that seem relevant to this research can be summarised as follows:

- **Improve research provider-industry relationships.**
 - Research providers should attempt to make research more accessible to their audience, improve channels for communicating added value research to industry and engage companies more effectively when developing research proposals.
 - Build research capacity within small and medium sized seafood companies that need more experience with planning, commissioning and using research.
 - Foster researcher mobility and staff exchanges and promote networking.
 - Develop agreements to guide relationship building. The formation of IP or collaborative agreements, or memorandum of understanding (MOU), provides the opportunity for relationship building. The process enables each partner's contributions to be acknowledged and valued.

- **Create clusters.**
 - There are many small firms in the seafood industry that face the same innovation issues. There should be strategies that allow them to form clusters to jointly fund research and share the risks and rewards. The barriers to be overcome are lack of trust and low levels of information sharing (this has already been identified as a question).

Sub-theme: To summarise questions that arose from the Nemec report:

Were relations between research providers and industry weak?

- Should they make their research more accessible?
- Should they engage more effectively in developing research proposals?
- Should they build the research capacity in small industry firms?
- Should they promote networking, staff exchanges, and researcher mobility?
- Should they form IP or collaborative agreements and build relationships?

3.12.2 Jeffs' report

NIWA scientist, Andrew Jeffs, was commissioned to prepare a report assessing the potential for aquaculture development in Northland (Jeffs, 2003). This 258 page document discusses the advantages and disadvantages of the Northland region for many forms of aquaculture and contains much that is also relevant to the Gisborne area. Paua is discussed as one of a long list of aquaculture species that could be farmed and Jeffs sets out a view of the opportunities and threats. This report is an excellent starting point for considering the strengths, weakness, opportunities and threats (SWOT) for paua farming in Gisborne. Jeffs also advocates professional facilitation to support the development of an aquaculture cluster in Northland.

The aquaculture industry in Northland has a large number of small operators, and a few larger operators. For this reason the industry has tended to be fragmented and poorly organised as a group. If the aquaculture industry is to develop more quickly in Northland it needs to develop a regional identity, promote its common interests and

develop a future vision. To achieve this the industry needs to recognise and provide for some professional coordination assistance (Jeffs, 2003, p. iv).

In his conclusions regarding paua, Jeffs pinpoints that the economics of paua farming are poorly understood and dependent on the relationship between production costs and market prices.

The economic feasibility of any proposed paua farming operation would need to be examined carefully, in terms of the farming method, production costs and product prices. The cost and sources of paua food would be particularly important considerations in any such commercial feasibility assessment. In developing a commercial farm close attention would need to be paid to the management of water temperatures, especially in late summer (Jeffs, 2003, p. 88).

In compiling a SWOT analysis for paua farming in Gisborne based on the experiences of small scale paua farmers in Gisborne over the four years since Jeffs' report was published, this research has been able to shed some light on the main issues that determine the economic feasibility of farming paua. Jeffs' report also comments on the supportive approach that was in 2003 being taken by his employer, NIWA, to the development of aquaculture and these aspects of his report are discussed in the *Conversations and observations* chapter (see 6.2).

Sub-theme: What are the strengths, weaknesses opportunities and threats for the future of paua farming in Gisborne?

3.13 Setting out the framework

The various sub-themes that have been identified from literature can be grouped into the three themes of *Organisations*, *Innovation* and *Industry* that were used to guide the literature review (see Figure 7). The *Organisations* theme contains sub-themes relevant to how organisations relate to entrepreneurs while the *Innovation* theme is made up of sub-themes concerned with how well New Zealand's Innovation Framework supports entrepreneurship. The *Industry* theme encompasses sub-themes relevant to the aquaculture industry in New Zealand and in particular recirculating aquaculture in Gisborne.

These three themes and their sub-themes form the basis of a framework of analysis that will be used to organise and inform the findings and conclusion of this research. It is also expected that there will be unanticipated patterns of data that will emerge during the fieldwork and that these patterns will be classified into one of those themes and dealt with within the context of the questions that have emerged from literature.

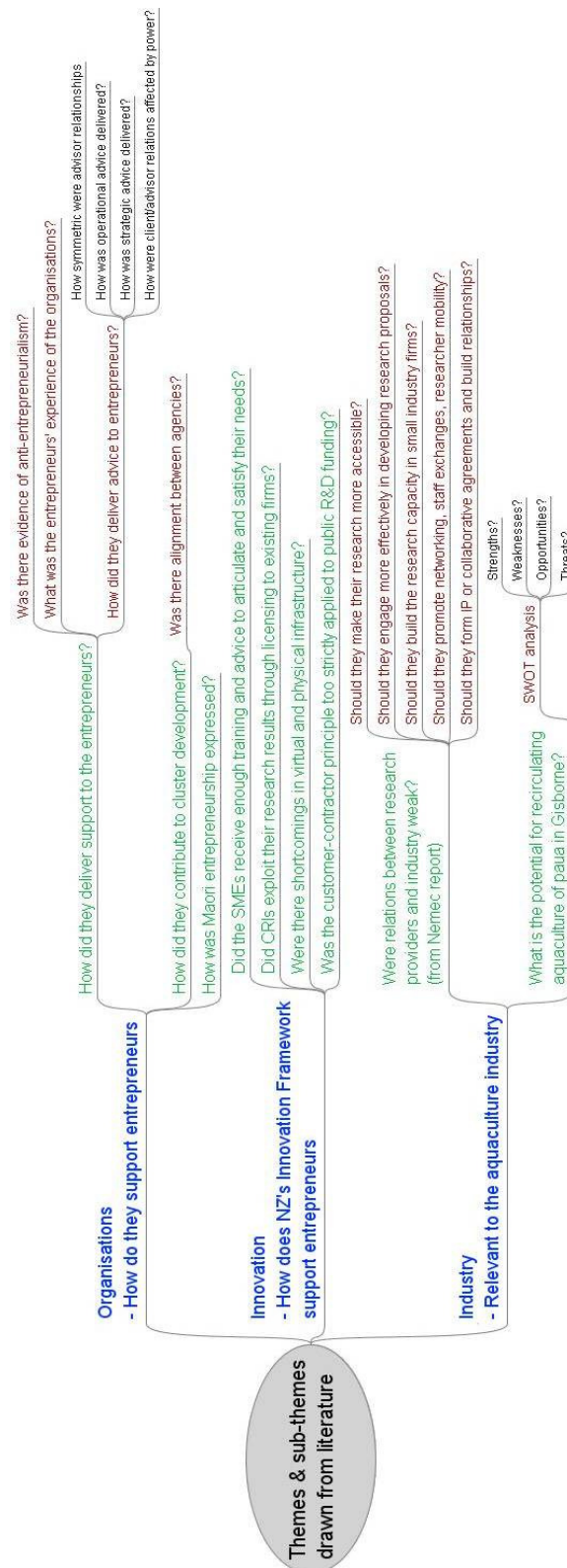


Figure 7. A framework for analysis: Themes and sub-themes from literature²⁸

²⁸ Source: Developed by the author for this report.

The framework for analysis that has emerged from the review of literature is illustrated in Figure 7 and set out more fully below in the form of a structured list of sub-theme questions that emerged from following the research themes that guided the literature review. This list organises these sub-themes under five main headings and placed into a hierarchy to indicate where questions are part of more general questions.

The purpose of assembling this framework for analysis is firstly, to inform the direction to be taken in approaching fieldwork and gathering data. The sub-themes that make up this framework will also be returned to during the process of carrying out analysis on the data that are gathered. In this way findings and conclusions can be developed that are informed both by the patterns of data that emerge and the sub-themes drawn from the literature.

Sub-themes relating to the organisations:

- How did they deliver support to the entrepreneurs?
 - Was there evidence of anti-entrepreneurialism?
 - What was the entrepreneurs' experience of the organisations?
 - How did they deliver advice to entrepreneurs?
 - How symmetric were advisor relationships
 - How was operational advice delivered?
 - How was strategic advice delivered?
 - How were client/advisor relations affected by power?
- How did they contribute to cluster development?
 - Was there alignment between agencies?
- How was Māori entrepreneurship expressed?

Sub-themes relating to cluster facilitation:

- Are there patterns of data in this case that suggest better outcomes would have resulted had the cluster been facilitated in the way suggested by Ffowcs-Williams?
- Are there data that point to a lack of co-ordination between the organisations?

Sub-themes relating to New Zealand's institutional framework:

- Are there data that support the idea that the institutional framework needs to be friendlier towards entrepreneurs in the ways suggested by Sautet.
- Are there data that suggest the entrepreneurs are pursuing lifestyle objectives, lack a focus on growth, and would benefit from the tough love approach suggested by Frederick and Monsen?

Sub-themes relating to OECD's view of New Zealand's Innovation Framework:

- Did the SMEs receive enough training and advice to articulate and satisfy their needs?
- Did CRIs exploit their research results through licensing to existing firms?
- Were there shortcomings in virtual and physical infrastructure?
- Was the customer-contractor principle too strictly applied to public R&D funding?

Sub-themes relating to the industry:

- Were relations between research providers and industry weak?
 - Should they make their research more accessible?
 - Should they engage more effectively in developing research proposals?
 - Should they build the research capacity in small industry firms?
 - Should they promote networking, staff exchanges and researcher mobility?
 - Should they form IP or collaborative agreements and build relationships?
- What are the strengths, weaknesses opportunities and threats for the future of paua farming in Gisborne?

3.14 Summary

Due to the decision to adopt of ethnographic methods, this framework for analysis was not seen as complete and final as it was expected that additional or different sub-themes would emerge during the course of cycles of fieldwork through which the scope of the research would be refined. It was also expected sub-themes may be discarded due to a lack of relevant data or that additional sub-themes or patterns of data might arise during the analysis and interpretation of ethnographic data. The use of ethnographic methods in the design of this study is set out in more detail in Chapter 5 and prior to that, in Chapter 4, the general use of ethnographic methods in entrepreneurship research is introduced.

4 Ethnographic methods in entrepreneurship research²⁹

4.1 Introduction

For over three decades, a quiet methodological revolution has been taking place in the social sciences. A blurring of disciplinary boundaries has occurred. The social sciences and humanities have drawn closer together in a mutual focus on an interpretive, qualitative approach to research and theory (Denzin & Lincoln, 2003 page vii).

This chapter is an invitation to consider the potential an ethnographic research strategy holds to provide fresh insights in the entrepreneurship field. It aims to introduce ethnography and discuss how ethnographic methods may be applied to the study of entrepreneurship as part of a handbook that will guide researchers in this field as they join what Denzin and Lincoln (2003, p. vii) describe as the “*qualitative revolution*” in which fundamental changes in the way researchers attempt to understand the world have been sweeping through the social sciences and related professional fields.

Ethnography as a research strategy usually eschews the widely used linear step-by-step approach to research design in favour of a cyclical approach and this chapter will begin by discussing the origins and definitions of ethnography. It will continue by describing this cyclical approach and the other aspects of research design that set ethnographic methods apart. Further, it will discuss the strengths and weaknesses of ethnography as a research strategy.

There are many excellent texts on the subject of ethnography and it is therefore not the purpose of this chapter to exhaustively describe and justify the theoretical basis for ethnographic methods but, rather to focus on how the methods of ethnography may be applied and justified in the study of entrepreneurship.

This chapter will also deal with practical aspects of data collection and touch on the issues raised by participant observation in emerging ventures, issues of ethics and

²⁹ This chapter has been previously published as Johnstone, Bruce A., (2006) *Ethnographic Methods in Entrepreneurship Research*, **Handbook of Qualitative Research Methods in Entrepreneurship**, Neergaard, H & Ulhøi, J (eds.), Edward Elgar, Cheltenham, UK.

reflexivity and the need for what Denscombe (1998, pp. 68-69) calls the “*public account of the self that describes the researcher’s self*”. It will also introduce the analysis and interpretation of ethnographic data and conclude by summarising how ethnographic methods may contribute to the study of entrepreneurship.

4.2 Defining ethnography

In normal usage the word ethnography refers to the research method used in cultural anthropology and also to a written text used to report that research. Indeed ethnography is often equated with cultural anthropology and qualitative researchers such as David Silverman (2000) describe it simply as observational research in particular settings, but, ethnography entails much more than mere observation, notably a level of participation in daily activities.

Denscombe (1998, pp. 68-69), however, defines ethnography as the description of peoples and cultures and “*understanding things from the point of view of those involved rather than explaining things from the outsider’s point of view*” and Brewer (2000) offers the following more comprehensive definition.

Ethnography is the study of people in naturally occurring settings or ‘fields’ by methods of data collection which capture their social meanings and ordinary activities, involving the researcher participating directly in the setting, if not also in the activities, in order to collect data in a systematic manner but, without meaning being imposed on them externally (Brewer, 2000, p. 6).

Burgess (1982) provides the further explanation that ethnography involves unstructured fieldwork or field research.

Field research involves the study of real-life situations. Field researchers therefore observe people in the settings in which they live, and participate in their day to day activities. The methods that can be used in these studies are unstructured, flexible and open-ended (Burgess, 1982, p. 15).

Definitions of ethnography provide a general context and describe an approach to data collection and choice of focus or unit of analysis. For example, Hammersley (1990) suggests the following five features as identifying field research as ethnographic:

1. Behaviour is studied in everyday contexts, there are no unnatural or experimental circumstances imposed by the researcher.
2. Observation is the primary means of data collection, although various other techniques are also used.
3. Data collection is flexible and unstructured to avoid pre-fixed arrangements that impose categories on what people say and do.
4. The focus is normally on a single setting or group and is small scale.
5. The data are analysed by attributing meanings to the human actions described and explained (Hammersley, 1990, pp. 1-2).

Hammersley's first point relates to context, his second and third to data collection and his third and fourth to the focus or unit of analysis so these three aspects of the definition are used to outline the remainder of this section.

4.3 Context

Ethnographic observation is distinguished from detached scientific observation by the flexible and unstructured approach of ethnographers who seek to understand meaning from the viewpoint of the subjects, and Malinowski (1922) stresses the need for an ethnographic work to *"deal with the totality of all social, cultural and psychological aspects of the community because they are so interwoven that not one can be understood without taking into account all the others (Malinowski, 1922, p. xvi)"*. This suggests that ethnographers need to take a broad view of a community at least initially and should not begin with too narrow a focus on just one aspect or issue.

Further, Ethnography is a research method characterised by extensive fieldwork where the researcher is often immersed as an observer, and sometimes as a participant observer. Researchers often remain immersed for an extended period and usually produce a quite detailed account of their exploration of a social environment or culture

Ethnographers relate to how situations, lives and meanings are lived rather than just observing and reporting what occurs. In understanding their subjects' viewpoints, ethnographers, who may be initially motivated by curiosity towards, or a lack of understanding of, their subjects often develop empathy towards the people

they are studying however, Malinowski (1944) cautions that *“In dealing with people of a different culture, it is always dangerous to use the short-circuiting of “empathy” which usually amounts to guessing as to what the other person might have thought or felt (Malinowski, 1944, p. 23).”*

4.4 Data collection

Ethnographic research designs adopt cyclical patterns of investigation that accommodate ethnography’s flexible approach to data gathering in contrast, to linear design that follows a predetermined path and requires a much more structured approach to gathering data.

This tendency for ethnographic research to follow a cyclical pattern of investigation rather than the more normal linear design is perhaps a key element in distinguishing ethnography as a research strategy. Spradley (1980) describes an example of a linear research design as following a clearly defined set of steps beginning with the definition of a research problem, the formulation of hypotheses and the making of operational definitions. This linear approach goes on in clear steps to design a research instrument, gather data, analyse the data, draw conclusions and finally report the results. Spradley pinpoints that *“ethnography seldom fits this linear model (Spradley, 1980, p. 28)”* and instead follows a cyclical pattern that is repeated over and over. Figure 8 shows how a study can be designed using a cyclical ethnographic model.

Spradley explains that the ethnographic research cycle begins with the selection of an ethnographic project at which time the scope of the investigation is considered. Ethnographers then begin a cycle of asking ethnographic questions, (general research questions that will be a focus for observation or from which a set of more specific interview questions or conversation starters may be derived), collecting ethnographic data, making an ethnographic record and analysing ethnographic data. At this point they return to the asking of more ethnographic questions, although having analysed data they can, and should, divert from the cycle to begin or continue the process of writing an ethnographic account. The focus of the research is refined as the cycles continue and this process can be viewed as a method of developing grounded theory. He further notes that *“Ethnographers can only plan ahead of time*

the course of their investigation in the most general sense (Spradley, 1980, p. 35)“ and warns that researchers confront unnecessary problems and will end with a mountain of unanalysed data if they “*confuse ethnography with the more typical linear pattern of research* (ibid p.35).” As the ethnographic research cycle continues researchers discover both questions and answers within the social situation they are investigating and gain alternative or multiple perspectives that can help them to think and inscribe in more complex and sophisticated ways about the phenomena and provoke insights into situations that are new and useful.

Longitudinal, real time study of samples of emerging business activity, using the venture itself as the level of analysis, holds the potential to address the very central questions of entrepreneurship according to Davidsson (2003, p. 55) who also notes “*entrepreneurship is about emergence*” and that this kind of research is in short supply. Entrepreneurial emergence, like art, is a dynamic process. By its very nature it is a process of innovation and change and it is surely difficult to understand such a disruptive and dynamic process using only cross sectional techniques that work best when used to document a state of relative equilibrium. It is perhaps like trying to understand a dance by viewing snapshots of the action when you really need to be an observer of the whole process, or better still one of the dancers, to experience and understand the whole performance.

Davidsson (2003, p. 55) suggests it is the longitudinal information-gathering techniques that follow the emerging venture’s progress over time that have the best potential to allow new insights and understanding and perhaps the depth and detail of ethnography holds the potential to offer those new insights by enabling researchers to follow the action as it unfolds over time, to see the viewpoints and hear the voices of insiders and to document, interpret and gain a greater understanding of the processes of venture emergence.

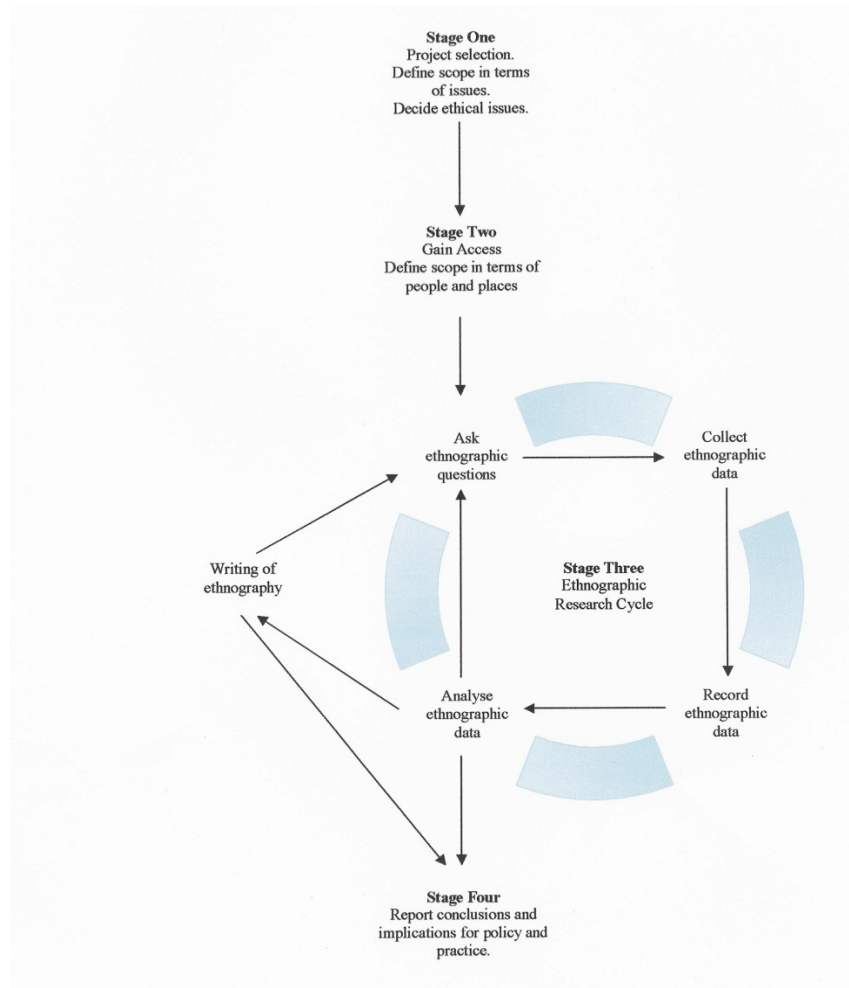


Figure 8. Typical cyclical design for an ethnographic study.³⁰

4.5 Unit of analysis

In discussing the selection of a project and the definition of its scope, Spradley (1980) describes how the social situations studied by ethnography are bounded by three elements: actors, activities and place. Although a particular place is seen as a key element of a social situation, he also acknowledges the possibility of studying clusters and networks of social situations occurring in a number of places. Barth (1969) sees social boundaries as defining groups although those social boundaries may have territorial counterparts (ibid p.15). Marcus (1998) takes the place aspect of scope further by describing multi-sited ethnography where sites are linked together in a way that “*defines the argument of the ethnography* (Marcus, 1998, p. 90).” To summarise,

³⁰ Source: Adapted by the author for this chapter from Spradley (1980)

by listing Marcus' headings, multi-sited designs can be constructed by following the people, the thing, the metaphor, the plot story or allegory, the life or biography or the conflict. This multi-sited approach seems likely to be useful in entrepreneurship research by allowing the flexibility to pursue answers to questions using research designs that link different actors, activities and places.

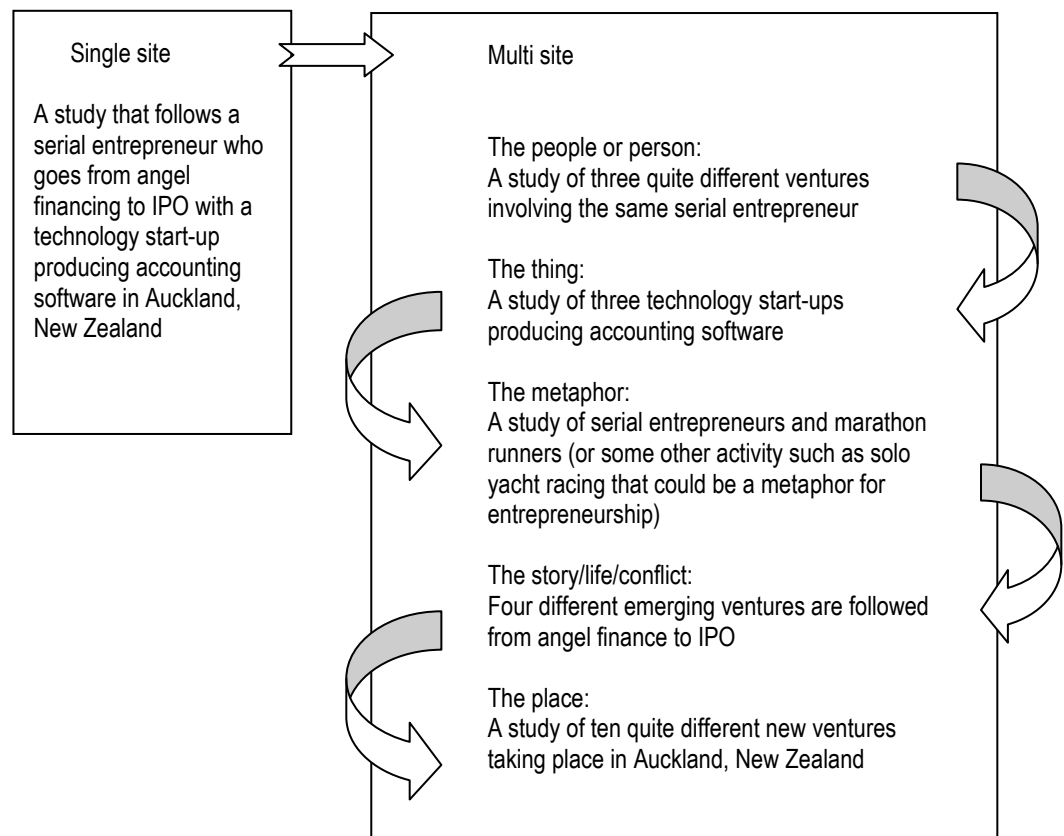


Figure 9. Examples of how a single site study could be extended to become a variety of multi site studies.³¹

By being capable of being multi-sited, ethnography is therefore not limited to case studies of individual enterprises and it is possible to use ethnographic methods as more than just a data gathering technique for case studies of individual entrepreneurs or ventures. As a research strategy, ethnography's cyclical and flexible approach to design and ability to link multiple sites makes it a methodology capable of accommodating complexity, detecting nuances and uncovering explanations within the social world.

³¹ Source: Developed by the author for this chapter (Johnstone, 2006)

Perhaps the disadvantages of choosing ethnography as a research strategy are that researchers begin without the benefit of a clear linear path and the certainty of a conclusion and must deal with complexity and make design choices as their research progresses.

4.6 Origins and evolution

Ethnography began as a way to study primitive cultures. Anthropologists such as Malinowski (1922) found that, to really understand a group of people, they needed to engage in an extended period of observation and would often immerse themselves in a culture for a period of years, learn the language and participate in social events with the people of that culture. This approach was also used in the study of people in western societies, too. Schwartzman (1993) notes that ethnography began to be used in the USA to provide valuable insights into organisations some 65 years ago.

Hence, there is nothing new or revolutionary about the use of classic ethnographic methods as this approach dates back to around 1900. While an objective, positivist and rather ethnocentric approach was the norm at the dawn of the twentieth century, ethnography has since then evolved its range of possible approaches across the spectrum of epistemologies and the objective and subjective divide. Ethnographers can now choose from a diverse menu of approaches depending on the political and philosophical stance of the researcher, the issues and questions to be addressed and the people and environment to be studied. It is also possible to mix perspectives and take the role of what Denzin and Lincoln call a *“researcher-as-bricoleur-theorist”* who *“works between and within competing and overlapping perspectives and paradigms”* (Denzin & Lincoln, 2003, p. 9)."

The different paradigms process and value the data gathered through ethnographic methods differently. Denzin and Lincoln (ibid p.33) define a paradigm as an interpretive framework and *“a net that contains the researcher’s epistemological, ontological and methodological premises”* and suggest there are four major interpretive paradigms in qualitative research: positivist and postpositivist, constructivist-interpretive, critical and feminist-poststructural, each with their own *“concrete specific interpretive communities”*. Although researchers cannot perhaps move easily between paradigms, Denzin and Lincoln assert that researchers can move

between perspectives as these are less well developed systems. The paradigms and perspectives associated with ethnography have evolved over the last century and Denzin and Lincoln (ibid p.3) categorise the development of qualitative research into seven phases or “historical moments” as follows:

- Traditional from 1900 to 1950.
- Modernist or Golden Age from 1950 to 1970.
- Blurred genres from 1970 to 1986.
- Crisis of representation from 1986 to 1990.
- Post-modern – a period of new and experimental ethnographies from 1990 to 1995.
- Post experimental inquiry from 1995 to 2000.
- The Future from 2000 onwards.

Brewer (2000) takes a somewhat different view and suggests four basic epistemological approaches to ethnography: positivist, humanist, post-modern and post post-modern, the latter being an approach that has evolved in response to the challenges of postmodernism. He asserts that the post post-modern approach is characterised by being less naïve in its beliefs about what is real and perhaps being concerned with the relevance of research outputs rather than claiming validity or reliability. It is an approach that reclaims at least in part the idea that ethnographic research can produce truth and could perhaps be allied to the critical realism view that knowledge may relate to how things really are but, accepts that a truth may be partial and may need to be revised as knowledge is developed.

Perhaps the range of epistemological approaches to ethnography have expanded and become more subjective over the last century in order to keep pace with an increasing willingness by researchers to take a critical approach to society and challenge the status quo. In Western societies where the dominant form of earning a living is to be employed by someone else, many emerging entrepreneurs are motivated by a desire for individual freedom and empowerment, or in other words a desire to escape from forms of domination and subjugation and there may therefore be a useful role for critical theory to explore these issues in entrepreneurship research. Kincheloe and McLaren (2003, p. 433) caution that critical theory produces

“...undeniably dangerous knowledge, the kind of information and insight that upsets institutions and threatens to overturn sovereign regimes of truth.”

4.7 Subjective or objective approach

Of all the oppositions that artificially divide social science, the most fundamental, and the most ruinous, is the one that is set up between subjectivism and objectivism (Bourdieu, 1990, p. 25).

Ethnographic researchers can position themselves on either side of the objective - subjective divide and this choice is perhaps less like to be ruinous if careful consideration is given to the advantages and disadvantages of each approach. Smith, Gannon and Sapienza (1989) offer a framework for selecting either a subjective or an objective methodology and suggest the use of a subjective approach when the focus is on strategic intentions rather than behaviour. They point out that, for various reasons, entrepreneurs may not accurately describe their organisations' strategies to external researchers and propose a subjective approach to overcome this.

Extending this thinking, the selection of a subjective approach may allow researchers to go further and discover not only the strategic intentions of entrepreneurs but, also deeper meanings of those intentions, things that are never talked about and the tacit rules that are taken for granted by a group. Ethnographers often seek to understand the boundaries of what is taken for granted in a social setting and what is open to argument. Bourdieu (1977, p. 169) explains how dominated classes seek to push back the limits of doxa (the undisputed) while those that dominate seek to defend it, or failing that to establish orthodoxy in its place to counter the heterodoxy or heresy that threatens the established order.

The choice of an epistemological approach is likely to be influenced by the background, discipline and ontology of the researchers involved according to Perrin and Ram (2004) who discuss the strengths and weaknesses of the objective and subjective approaches in the context of case studies of entrepreneurs. They point out that objective and positivist approaches offer the advantages that complexity may be reduced and causal connections more easily made. Disadvantages, however, are that the conclusions may be too simplistic or ignore nuances or explanations that lie outside of the conceptual framework being employed. The more subjective approaches allow the complexities of the social world to be explored but, have the

disadvantage that they may result in research that concludes without clear findings or contributions to practice or policy.

Table 7. The strengths and weaknesses of objective and subjective approaches.³²

	Objective approach	Subjective approach
Strengths	Complexity is reduced Causal connections are more easily made Suited to the study of behaviour rather than strategic intentions	Complexities of the social world can be explored Deeper meanings may be uncovered Reluctance of entrepreneurs to report may be overcome. May uncover the deeper meanings of strategic intentions.
Weaknesses	Conclusions may be simplistic Nuances or explanations outside conceptual framework may be ignored Not suited to finding the deeper meanings of strategic intentions	Research may conclude without any clear findings or contribution to practice or policy

4.8 Data gathering techniques

This section discusses the various systematic data gathering techniques used in ethnography and examines how they can be applied in practice and contribute to the achievement of research objectives, how the information collected may be processed and the implications of the choice of ethnographic techniques for the ultimate relevance and legitimization of the conclusions.

A list of ethnographic data gathering methods would include the following:

- I. Observation, including various forms of participant observation.
- II. Journal keeping by the researcher. These can take the form of text, audio, video or perhaps a web log.
- III. Interviews, these are likely to be semi-structured or even unstructured or conversational.

³² Source: Developed by the author for this chapter (Johnstone, 2006)

- IV. Studying the accounts of others such as a journal, diary or testimonio in written, audio or video form, or communications, such as e-mails, videos, audio recordings, news items, reports, memos, letters or speeches.

4.8.1 Participant observation

By choosing participant observation as a research method, researchers become the research instruments and their behaviour becomes a vital element of the research design. Researchers must balance their role as an outsider with their role as a participant. As a participant they must be able to interact with the subject group, share lives and activities and understand their language. At the same time they must maintain their position and integrity as a researcher and their ability to reflect critically on what they are observing. They must be both involved and detached. Spradley suggests how participant observation can be used as a strategy to focus ethnographic research.

Participant observation begins with wide-focused descriptive observations, although these continue until the end of the research project ... the emphasis shifts first to focused observations and later to selective observations (Spradley, 1980, p. 34).

Brewer (2000) draws a distinction between a participant observer and an observant participant. The former takes up the participant role in order to observe, the latter is already a participant and takes on the role of observer. In both cases the observer can be overt or covert, or observation can take place under the disguise of activities such as questionnaire research. An observant participant has the advantage of already fitting in to the group and the role but, there may still be issues of access to data, for example, observant participants may not be in a position to ask searching questions or access all activities of the group. They may also be too close to the action and be hampered by existing relationships so the suitability of the participant role must be carefully consider.

Distinguishing further between participants that are identified and those that are not creates the following five potential researcher roles:

- Non-participant. No observation or participation.

- Complete observer. A researcher who only observes with little or no interaction and is not identified as researcher.
- Observer as participant. A researcher who interacts and is clearly identified by members.
- Participant as observer. A researcher involved in the field. Identified at least by the informant.
- Complete participant. A researcher fully involved in the field and not identified. (Zorn, 2001c)

Table 8. Participation and identification for observers.³³

	Identified	Not identified
Non-Participant	Non-participant	Complete observer
Participant	Participant as observer/ or observer as participant	Complete participant

Clifford notes that *“Insiders studying their own cultures offer new angles of vision and depths of understanding and their accounts are empowered and restricted in unique ways (Clifford, 1986, p. 9).”* An insider studying an entrepreneurial venture would have the advantage of beginning with a rich knowledge of the protagonists, the background and history of the venture, its culture and the social situation. Insider participants are also likely to have personal experiences and attributes that will help them gain acceptance and access however, as involved participants they face the challenge of adopting the more detached viewpoint of an observer and accounting for their own roles as participants.

It is also possible to introduce subtle variations into how roles as participants are adopted and, or existing roles adapted, to enable observation. For example, researchers may already be one kind of insider, but, change their role for the purposes

³³ Source: Developed by the author for this chapter (Johnstone, 2006)

of observation. If teachers of entrepreneurship overtly or covertly observe the behaviour of entrepreneurial students they are making use of an existing role but, changing from instructor to observer. If bank lending managers take on the roles of entrepreneurs and apply for loans they are adopting a different opposing insider role in order to observe behaviour from the other side of the process.

Participant or non-participant observation is typically relatively long-term. Kondo (1990, p. 23) writes that *“The final months of fieldwork are generally the best and most productive: the months of laying groundwork pay off in the increasing intimacy and comfort in your relationships and the depth of the insights you are able to reach.”*

Participant or non-participant observation also typically involves the observer being immersed in organisational life and the extensive use of field notes. The writing of ethnographic field notes is discussed at length by Emerson *et al* (1995) who stress the value of immersion and note that that no researcher can be a neutral detached fly on the wall. Because the researcher must interact with the subjects there is bound to be consequential presence and reactive effects where the researcher’s participation effects how members of the group talk and behave. They suggest this should not be seen as contaminating what is learned and observed but, rather these unavoidable effects should be studied for what they reveal.

Through participation the field researcher sees first-hand and up close how people grapple with uncertainty and confusion, how meanings emerge through talk and collective action, how understandings and interpretations change over time. In all these ways the field worker’s closeness to others’ daily lives and activities heightens sensitivity to social life as process. (Emerson, 1995, p. 4)

4.8.2 Journal keeping

Practical suggestions for field work provided by Zorn (2001c) include keeping a journal of field notes, refinements, expansions and hunches. In preparation for field work observers are advised to plan how they will lay out their notes and how and when they will take them and plan the abbreviations and codes they will use. Field notes should map and describe the physical setting and leave space for expansion and comments. He suggests written field notes begin by listing the time and place of the observation and describing the setting, then drawing a vertical line down the page and

using one side to record descriptions and direct observations of what is said and done. Verbatim comments should be placed in quotation marks so they can be distinguished later from general descriptions of what was said. The other side of the page should be used for the researcher's inferences, their reactions, questions, hunches and thoughts. Keeping descriptions separate from inferences will greatly facilitate interpretation of the data. If events take place more quickly than they can be recorded, space should be left to fill in observations immediately afterwards, when an end time to the observation is noted.

Observers who have identified questions to guide their observations will be able to focus on a subset of the phenomena. Zorn (2001c) suggests posing questions such as: What are the issues on which there is conflict or different points of view? How are the differences or conflicts handled? How do individuals influence each other and attempt to make decisions and/or build consensus within the group? He suggests inferences, reactions and comments made during or after the observation be clearly tied to direct observations so that they are explained by actions that have been observed and recorded. In this way the analysis and interpretation of data is taking place at the same time as data is being gathered. By reviewing field notes on a regular basis, perhaps by typing them up, researchers can review and reflect and may discern patterns of data or become aware of issues.

Brewer (2000) makes the point that participant observation is neither quick nor easy. There is time needed to re-socialize the observer into the practices and values of the group and win acceptance for the role, but, especially time is needed to experience the full range of the events and activities of the setting. He also points out that participant observation certainly has its limitations as a research method. An observer is bound to be selective and present a partial account and this may be skewed towards observations of abnormal, exceptional or aberrant behaviour or may be a personal viewpoint that is not representative. Brewer concludes that participant observation should therefore never stand alone as a research method.

4.8.3 Interviewing

Simply put, an interview is a series of questions by an interviewer and a series of responses from a subject. Interviews can range from structured to semi-structured to unstructured and the level of structure is an important design choice. The structured interview is favoured by positivist and quantitative researchers as data can be collected systematically and put into numerical form. A highly structured interview has the advantage of allowing many people to be interviewed quickly over a wide geographical area using a number of interviewers who do not have to be very highly trained.

However, ethnographers, searching for thick description, nuance and meaning rather than numerical data, generally favour semi-structured or unstructured interviews. These can be more like conversations with perhaps just an initial general focus or direction imposed by the interviewer. Ethnographers also elicit life stories and testimonio and elicit and compile narratives and in doing so often gather data through quite unstructured interviews or interactions with subjects.

Ethnographers, or any researchers, who employ the semi structured interview need to pay attention to their interviewing techniques. Problems with any interviews can be categorised as problems with questions and problems with answers. Looking first at questions, are they understood by the subject and do all subjects understand their meaning the same? Second are the questions being asked reliable indicators of the subject or purpose of the research and will the answers be useful? Is the subject seeking social approval by providing socially acceptable answers? If there is an imbalance in the relationship between the interviewer and subject in terms of status, class, education, age, ethnicity or gender this will influence the response, perhaps by making the subject reluctant to admit to an attitude or belief. By standardising questions and designing a formal or structured interview these problems can be minimised, however, in the ethnographic semi- or unstructured interview there is much more reliance on the ability of the researcher to communicate with and elicit and record the views of the subject.

Zorn (2001b) offers nine suggestions for semi-structured interviewing:

1. Plan the interview and write topics and questions in advance and consider different ways of arranging them.
2. In the first interview with a subject, explain your purpose and how you will use the interview data, how you will protect confidentiality and anonymity. Also discuss and obtain permission for tape recording or note taking.
3. In the first interview with a subject, ask general background questions first. These provide necessary information and warm up the subject by allowing them to answer easy questions.
4. Questions on the topic of interest should be broad and open ended, for example, "Tell me the story of ..."
5. Try not to ask leading questions. If following up on an observed behaviour you might ask "What did you mean when you said ...?" but, not "When you said ... did you mean ...?"
6. Use probes carefully to get more in-depth answers. For example, ask "Can you give me an example of that?"
7. Simply being silent can encourage the subject to continue.
8. Give thought to how you will end the interview, perhaps by asking "Is there anything further you would like to tell me?"
9. Check your recording of the interview, complete any gaps in notes and record your impressions. (Zorn, 2001b)

The semi-structured interview described above should offer topics and questions to subjects and elicit their ideas and opinions. Interviewers should avoid leading subjects towards preconceived choices but, questions can certainly be used tactically to focus and organise information. Questions can be aimed at eliciting descriptive data or to examine how meanings are structured or connected together or how they are contrasted as separate. Contrast questions can be dyadic, triadic or may ask the subject to rate or rank a number of things and are suggested by Spradley (1980) as techniques to understand differences. The following table provides examples of how these different types of question might be used to elicit meaning.

Table 9. Examples of different question types.³⁴

Question Type	Example
Descriptive	When you consult your accountant about a new venture, what would you typically say to each other?
Structural	You used the words “going it alone” and you also talked about “a sense of achievement”. Is a sense of achievement something that comes from going it alone?
Contrast – Dyadic	What is the difference between borrowing from a family member and from an angel investor?
Contrast - Triadic	Thinking about borrowing from family or from an angel investor or from a bank, which two of these three sources of finance seem most similar? (or which seems most different?)
Contrast – Rating	Thinking about borrowing from family or from an angel investor or from a bank, which seem the most difficult and which the least difficult?

4.8.4 Accounts and communications

There are a variety of data gathering techniques that can be used within the realm of observation and interview and a number of other data gathering methods that fall outside and are additional tools for ethnographers, for example, researchers can study personal documents, biographies or histories for the tales they can tell. Techniques such written journals or perhaps audio or video diaries can be used by researchers to record observations and they can also ask insiders to maintain such journals in their own voices and to tell their tales of the inside.

Tales can be categorised as realist, confessional, impressionist or critical (Zorn, 2001a). The realist tale is a traditional form of ethnography describing a culture or cultural phenomenon that is assumed to be integrated and capable of being objectively reported. There is usually little self-reflection and the author is absent from the account. The problem with a realist tale is that the culture may not be as

³⁴ Source: Developed by the author for this chapter (Johnstone, 2006)

static and integrated as it is depicted. This is especially likely in a dynamic entrepreneurial environment. A realist account purports to discover a culture whereas perhaps it is rather too shaped by disciplinary conventions, intellectual climate and personal beliefs.

A confessional tale aims to “...demystify fieldwork by showing how it is practised (Zorn, 2001a).” There is recognition of the researchers’ biases and emphasis for researchers’ points of view. Research is not assumed to be objective and culture not assumed to be unified and there is empathy with the group being studied rather than focus on their differences.

An impressionist tale takes a more dramatic approach often presenting information in fragments and memorable glimpses. The teller of an impressionist tale assumes cultures to be fragmented and, as there is no big picture, offers glimpses of insight. Finally, critical tales are likely to be rather activist. Groups are selected for study for what they may reveal about political or economic issues. Tellers of a critical tales may examine structures of domination and control and aim to free people from these structures. They may also examine institutional constraints that restrict the emergence of new ventures and advocate change.

4.9 Reflexivity

When researchers adopt a subjective epistemological approach they need to critically examine how their research has been carried out and understand its limitations. Long-term, involved, immersed and empathetic relationships between ethnographic researchers and the people they are studying will certainly impact on the data that are gathered and how that data is interpreted and represented, and examining this relationship is vital to the legitimization of findings or outputs. Brewer (2000) asserts that reflexivity should be bound up with interpretation and be an integral part of the writing process as researchers’ selves and identities will affect the meaning they attribute to the data. Researchers taking a positivist or humanistic approach are likely to believe that adopting good research practice will ensure the objectivity of their observation and their interpretation will not be coloured by their personal values and beliefs. Those taking a postmodern or post postmodern approach will accept that they are themselves very much a part of the social world they are

studying, that it is therefore futile to try to eliminate the effects of themselves as researchers, and that reflexivity is the process through which they will seek to understand these effects. This approach accepts that there are many different competing versions of reality, that any account can only be a partial account and that reflexivity, by providing accounts of researchers' personal backgrounds, biases, preconceptions and research activities, will reveal that partial nature and importantly "improve legitimation of the data (Brewer, 2000, p. 130)." In ethnographic research the most important aspect of conducting good research is perhaps the role of the researcher.

4.10 Role of the researcher

The process of being reflexive begins with description of the processes of research. Perhaps beginning with a description of how, when and where field work was carried out and how, when and where notes, journals or records were kept and organised. How was the social environment stratified in terms of age, race, ethnicity, gender, social class, occupation or education, and how did the researcher fit within this social environment? How was the data processed and interpreted, for example, what methods of filing, coding were used and how did these evolve? What was difficult or problematic in the research process? In answering these questions researchers are seeking to account for their own role.

At a deeper analytical level researchers need to engage in reflection and Brewer (2000 p.131) suggests they should *"...ask themselves questions about the theoretical framework and methodology they are working within, the broader values, commitments and preconceptions they bring to their work, the ontological assumptions they have about the nature of society and social reality"*. In describing and analysing one self as a researcher it may be useful to take another step back and produce what Denscombe (1998 p.68-69) calls the *"public account of the self that describes the researcher's self"*. This accounting for the self that accounts for the self is perhaps particularly important for researchers who are involved as participants or practitioners. Kondo (1990) provides an excellent example of this accounting for self as she examines in detail the social complexities of her role as a participant observer in

Japanese workplaces. These complexities are influenced by her gender, age, status as a student, and her plight as a Japanese American adapting to Japanese society.

Reflexive analysis legitimates research by establishing a vantage point for critically assessing the researchers themselves, their integrity, their decisions on questions of research design, strategy, methods and theoretical framework and the data that result.

4.11 Analysis and interpretation

This is the role of the ethnographer according to Geertz (1973 p.19). To write or inscribe social discourse. By using the word inscribe he is recognising that an ethnography need not be a written account and may take the form of photographs, drawings, diagrams, tables, video, audio or a museum display. But, he stresses that in writing or inscribing ethnographers must bring clarity.

“The claim to attention of an ethnographic account does not rest on the author’s ability to capture primitive facts in faraway places and carry them home like a mask or a carving, but, on the degree to which he is able to clarify what goes on in such places, to reduce the puzzlement – what manner of men are these? (Geertz, 1973, p. 16)”

He goes on to pinpoint that the value of an ethnographic account lies in its attention to detail and nuance *“Whether it sorts winks from twitches and real winks from mimicked ones (Geertz, 1973, p. 16).”*

The need for ethnographic writing to have a thesis is advanced by Spradley who suggests a thesis may emerge from major themes of the research, from the goals of the research or be a set of recipes or tacit rules for behaviour that emerge from the research. To communicate with your audience you need to have something to say. All too often, ethnographic descriptions appear to be like meandering conversations without a destination. Although of interest to the ethnographer and a few colleagues, such writing will not hold the attention of many more. A thesis is the central message, the point you want to make (Spradley, 1980, p. 169).

Spradley also urges researchers to start writing early noting that the act of writing is best seen as part of the ethnographic research cycle rather than something to be done after fieldwork is complete. New questions will arise from the data during

the writing process that need to be asked in the field and if fieldwork is complete those questions will be left unanswered and result in gaps.

Zorn (2001a) suggests thematic analysis of ethnographic data as a means of interpreting the discourse participants use in conceptualising their current, ongoing relational episodes. A theme is described as a patterned issue or locus of concern around which interaction centres (Owen, 1984) and are prominent patterns of participants' meanings, actions or responses to situations. Zorn suggests questioning why these themes have emerged, when and under what conditions, look for sub-themes and super-themes, and observe how the themes have manifested themselves and what is not present that might be expected. Researchers can play back interpretations to participants to affirm, refine and build authority. Researchers should seek to place their interpretations within a theoretical framework and question the social and political influences.

Emerson *et al* (1995) suggest field notes are re-read to develop themes and open coding used to ask questions of the notes, for example: What are they doing? What are their goals? How do they do it? How do they describe it? Researchers are advised to write analytic memos, explore rich excerpts, and select core themes based on relevance to theory or the research questions or based on the frequency they occur or their salience. Field notes and memos should be sorted around themes and focused coding should be carried out – a line-by-line analysis based on major issues, themes, connections and theory. Researchers should then write integrative memos to clarify and link themes and categories.

Any classification is superior to chaos and even a classification at the level of sensible properties is a step towards rational ordering. It is legitimate, in classifying fruits into relatively heavy and relatively light, to begin by separating the apples from the pears even though the shape, colour and taste are unconnected with weight and volume. This is because the larger apples are easier to distinguish from the smaller if the apples are not still mixed with fruit of different features. (Lévi-Strauss, 1966, p. 15)

There is also a range of software available to assist in classifying the fruit of ethnographic research including Ethnograph, ATLAS.ti, WinMAX, NUD*IST and NVivo®. Taking NVivo® as an example, this application clearly makes it possible to carry out very complex coding of texts into categories of meanings or nodes and to show, shape,

filter, assay, slice and dice the data in various ways. This process can, of course, be done manually, traditionally using highlighter pens of different colours, however, ethnographic researchers can find themselves interpreting literally hundreds of thousands of words and software allows researchers to process and make sense of the data much more quickly and easily. Search tools in the software also greatly facilitate this process and in NVivo® these are more sophisticated than the search function in a word processor and, for example, make it possible to search for combinations of words in proximity to each other. This is important because these searches are for meanings rather than words, and meanings can be expressed with a variety of words. It can also be valuable to identify words that are used by one group of people but, not by another.

NVivo® allows a single comment to be coded in a number of ways – something which is difficult to do with highlighter pens. Researchers can insert comments into the text being analysed in italics which will be ignored by the software. Text elements can be coded by a simple drag-and-drop process and NVivo® also offers an electronic means of building node trees and expressing relationships between nodes that can be displayed as diagrams and exported as bitmap files. This graphic method of interpreting relationships seems a powerful tool to focus research, uncover a thesis for ethnographic writing and facilitate the development of grounded theory.

4.12 Ethical considerations

The use of observation, especially if covert and/or coupled with participation raises ethical questions that researchers must carefully address and, although a full discussion of those questions is beyond the scope of this chapter, it is perhaps worth noting that it is possible to take two quite different approaches to the ethical questions of ethnographic entrepreneurial research, ethical absolutism and ethical relativism (de Laine, 2000). The latter approach is based on an interpretive or critical paradigm and assumes that the world is socially constructed and open to various interpretations. In the case of the critical paradigm, it may also be assumed that there are powerful groups in society that may seek to restrict or distort knowledge for their own ends. De Laine notes that in ethical relativism, actors are granted the liberty to exercise individual conscience in ethical matters. In this she includes the issue of

consent. A critical ethical relativist may choose to weigh the right to consent against the need to combat exploitation or the actions of those with power seeking to protect their interests. For example, if a person is acting in an official role researchers may decide that they must covertly study the behaviour of that person. The justification for this may be that if they were to obtain consent, the very behaviour they wish to study may change and they may further justify covert study on the basis that the performance of a role laid down by public policy makes that role a public one that, in a democracy, should be open to public scrutiny.

It is also possible to justify observing people in public places without their permission or knowledge. Spradley observes that *“anyone has the right to observe what others are doing in public and to make cultural inferences about patterns of behaviour (Spradley, 1980, p. 23).”* However, Spradley is in no doubt that researchers have an ethical responsibility towards the people they study and should protect their welfare, dignity and privacy and therefore a justification for covert research that revealed personal information would need to be one in which the potential harm to the people being covertly studied was obviously, or could be shown to be, either negligible or minor and outweighed by the benefits of the research.

In practice researchers involved in studying entrepreneurs are likely to obtain informed consent from their main subjects but, also may use a justification of lack of harm to allow the covert observation of people who are incidental or peripheral to a subject entrepreneur.

4.13 Conclusions

Researchers in the field of entrepreneurship aim to discover knowledge that will help entrepreneurs be more successful, support the teaching of people to be better entrepreneurs and inform policy and practice for people and organisations that seek to support and facilitate the activities of entrepreneurs within settings such as organisations, communities or regional or national economies.

In this they are no different from other fields where social research using ethnographic methods aims to support practice. Ethnography is a tried and tested tool for generating knowledge in fields such as education and nursing and undoubtedly results in many advances in the quality of teaching and health care. Further, urban,

street or subculture ethnographies are used to inform public policy, lawmaking and social work, work-based or occupational ethnographies inform managers into the workings of social organisations within the workplace and hold the potential to produce knowledge that can be used to make workplaces happier and more productive. It surely follows that ethnographic methods have the potential to contribute to entrepreneurship research and education.

However, examples of the use of ethnographic methods are rarely found in the mainstream journals of entrepreneurship research which mainly publish studies using quantitative methods. When Paula Kyrö and Juha Kansikas carried out a study of the methodology used in a sample of 337 refereed articles published in a selection of entrepreneurship journals in 1999-2000, only one was classified by the authors as ethnography (Kyrö and Kansikas 2004). They reported that only 38 (or 11 percent) of the articles used qualitative methods. Discursive methods were used in 26 of them, eight were case studies, two were narratives, one was a history and (as already noted) just one was classified as an ethnography.

Why are ethnographic techniques so little used by researchers in entrepreneurship? It surely cannot be because the dominant quantitative approach is providing all the answers. Jay Barney (Barney, 2003) recently pointed out that the field of entrepreneurship research has yet to produce answers to central questions, such as why some firms make more money than others, and that entrepreneurship research has yet to make a contribution back to its parent disciplines. Many quantitative data sets are compiled and complex statistical analysis is carried out yet it seems the central questions remain largely unanswered and furthermore there is little ability to reliably predict the future. Bygrave (2004) observes that entrepreneurship scholars, despite the fact that many intensively study venture capital, were in recent years unable to accurately predict either the dotcom bubble or the subsequent dotcom crash.

Ethnographic methods have certainly been adopted by a subgroup of entrepreneurship researchers although they tend to publish in books or non-entrepreneurship journals. A number of researchers have put ethnographic methods to good use in the study of a diverse range of entrepreneurship issues. For example, Down and Reveley (2004) studied how entrepreneurial identity is shaped by generational encounters and Taylor *et al* (2002) examined managerial legitimacy in

small firms. Ram's work (Boon & Ram, 1998; Perren & Ram, 2004; Ram, 1999, , 2000a, , 2000b, , 2001; Ram, Abbas, Sanghera, & Hillin, 2000; Ram & Holliday, 1993; Ram, Sanghera, Abbas, & Barlow, 2000) includes studies of entrepreneurs in family and community settings and Holliday (Holliday, 1995; Ram & Holliday, 1993) has studied employment relations in small firms. Kondo's work (Kondo, 1990) touches on how entrepreneurs and artisans craft their identities in Japan where white collar careers with large companies are highly valued. Examples of doctoral research using ethnographic methods to study entrepreneurship include the work of Down (2002) and Fletcher (1997) and the methodology used in the latter's thesis is discussed by Perrin and Ram (2004). Perrin and Ram (2004) point to the use of ethnographic methods in case study research into small business and entrepreneurs and cite the work of Fletcher (1997) and Holliday (1995) as ethnographic examples that consider methodological issues at length.

Indeed, Kondo's work (Kondo 1990) offers rich insights into the behaviour and values of Japanese people. In describing how her subjects crafted their identities her tales from the workplace made an important contribution to the understanding by outsiders of Japanese culture and society.

Ethnographic studies of entrepreneurship could reveal understandings about a society and its values that cannot be easily expressed or interpreted in numerical form and that therefore cannot be pursued with the statistical tools of science and physics but, instead require the different and challenging tools of narrative and art. In his book, *The Ethnographic Imagination*, Willis writes that,

Art as an elegant and compressed practice of meaning making is a defining and irreducible quality at the heart of everyday human practices and interactions (Willis, 2000, p. 3).

If life and work can be viewed as forms of art, then entrepreneurship can also undoubtedly be viewed as an art form. The world is their canvas and entrepreneurs, just like painters or poets, create works of beauty and value by combining resources in new and more attractive forms. In using ethnographic methods to capture the social meanings of entrepreneurs researchers are observing a dynamic process of meanings in the making, rather than static meaning, and can trace the evolution of new meanings as new ventures emerge.

Ethnography is well accepted as an appropriate approach to qualitative research in the social sciences and therefore should also be seen by researchers in the field of entrepreneurship as a valuable tool with which to study the process of entrepreneurship from the viewpoint of the people involved. In addition to a role in exploratory research and hypothesis development, ethnographic methods can contribute grounded theory and produce rich narratives that hold relevance for practice, teaching and policy.

Ethnographic methods uncover nuances in social settings and offer insights into underlying cultural trends and shifts in meaning. They therefore surely have the potential to uncover greater understanding of entrepreneurial behaviour, new insights into how entrepreneurial ventures emerge and grow and explain the cultural and institutional factors that surround and either constrain or enable the emergence of a venture.

Finally, because entrepreneurs have a creative role in the bridging transactions that form the values of a society, the study of entrepreneurs using ethnographic methods may offer wider insights into societies and cultures.

5 Methods used in this study

5.1 Introduction

Entrepreneurship is a societal force: it changes our daily practices and the way we live; it invents futures in populating histories of the present, here and now. In such processes, entrepreneurial processes, the present and the future is organised in stories and conversations, the primary form for knowledge used in everyday practices (Hjorth & Steyaert, 2004, pp. 3-4).

While the previous chapter discussed the use of ethnographic methods in entrepreneurship research in general terms, this chapter explains how those methods were applied to this specific research project. It explains the research design, reviews the range of epistemological approaches available and explains the one chosen, deals with how fieldwork was conducted, the use of narrative and the *stories and conversations* referred to in the above quotation, the approach taken to ethical issues and the coding and analysis of the data.

5.2 Design of the study

This research uses qualitative methods to explore how key stakeholder organisations affected the emergence, existence and collapse of a loosely linked cluster of entrepreneurial ventures in the emerging, innovative and troubled industry of land based aquaculture in the Gisborne Region (pop. 45,000). It follows three entrepreneurs who each established or bought into apparently promised paua farming operations in Gisborne that ended in failure. A fourth abandoned a half-built building that was to house a paua farm and was, at the end of this study, involved in establishing a new aquaculture venture in North Carolina in the USA. A fifth entrepreneur remains successfully in the business of farming the much less troublesome species of goldfish while two other people were included as subjects because of their role in providing aquaculture training to over 100 people in Gisborne, conducting research and developing a commercial paua hatchery.

Of interest to this study were any organisations that were engaged in relevant training or research, were actively seeking to develop the industry or that supported, contributed to or regulated some aspect of the lives of the entrepreneurs involved in the industry. These organisations form part of the institutional framework within

which the ventures operate and can also be viewed as part of *New Zealand's Innovation Framework*. This study focuses on the interactions, transactions and relationships that the entrepreneurs had with these organisations and examined the performance of the organisations and the innovation framework from the point of view of the entrepreneurs.

This study set out to employ ethnographic methods including participant observation and semi-structured interviews. Data analysis and interpretation would be carried out with the aid of NVivo[®] software that would facilitate the analysis and interpretation of the large texts that would be assembled and in the development of grounded theory.

As exploratory qualitative research, this study deliberately did not set out to test a hypothesis or process data in numerical form. The research questions identified in the literature review as a framework for analysis were to serve as a starting point and it was expected that the emphasis might need to change as the field work evolved. The collection and evaluation of data were expected to evolve together, rather than occur in distinct stages, and it was not intended that any grounded theory that would be developed from this research would be accorded the status of scientific truth from a positivist perspective. Instead this research would adopt the perspective of *critical realism* – which sees truth as partial and subject to change – and that the outputs would be the meaning contained in the ethnographic narrative, theory development based on patterns of data, identification of opportunities for future research and relevant findings and observations.

As ethnographic methods are not well represented in published research in the field of entrepreneurship, an important outcome of this research would be to contribute to the use of ethnographic methods in this field. This could be achieved by serving as an example of a suggested approach to the use of ethnographic methods to study emerging ventures, attempts at cluster facilitation and the operation of clusters and how the innovation frameworks of different countries affect entrepreneurial emergence and entrepreneurial success.

5.3 Epistemological approach

Ethnographic methods can be applied to entrepreneurship within a range of philosophical paradigms that require quite different approaches to data gathering and analysis and these were introduced in 4.6. This section discusses the four basic epistemological approaches to ethnography, or “*critiques*”, suggested by Brewer (2000) which are *positivist*, *humanist*, *post-modern* and *critical realism* and explains the selection of critical realism for this research.

5.3.1 The positivist approach

Positivism is the idea that social sciences should be modelled on the natural sciences, that social sciences address similar problems to the natural sciences, that social factors can explain human activity and that deductive explanation can be found for human behaviour. This positivist approach is associated with classic ethnography and dominated Denzin and Lincoln’s traditional moment, the 1900 to 1950 period. A typical example of classic ethnography would be a Western white male studying a primitive tribe, taking a patriarchal approach that assumes the world view of the observer is true and therefore sees no need for reflection, or to include the observer in the account. Empathy may certainly exist between the positivist researcher and the people being studied but, while positivist researchers may make an effort to understand the culture of the people from their viewpoint, they remain aloof, detached, unreported and retain their preconceived world view. Positivists argue that their approach is scientific, objective and avoids individual biases. Their critics respond that an objective observation cannot exist as all observations are “*socially situated in the worlds of – and between – the observer and the observed* (Denzin & Lincoln, 2003, p. 31)”.

5.3.2 The humanistic approach

Humanist ethnographers take the approach that people are active, creative and knowledgeable and endow meaning to their social worlds from the inside, and seek to explore this ability. Allied to interpretive sociology, phenomenology and ethnomethodology, humanist ethnography is not concerned with scientific models but, rather seeks to disclose people’s reality-constituting interpretive practices. Brewer’s (2000) description of the *humanist* approach can be equated to Denzin and Lincoln’s

(2003) *Modernist or Golden Age* from 1950 to 1970 and the *Blurred Genres* phase that ran from 1970 to 1986 in which qualitative researchers were cultural romantics who “valorised villains and outsiders as heroes of mainstream society (Denzin & Lincoln, 2003, p. 23)”. Humanist ethnographers tend to look for causal relationships, still believe the truth is out there to be discovered and often search for it with rigorous standardised approaches to the analysis of data from participant observation or semi-structured interviews. Legitimation of humanist ethnographic research comes from a careful approach to data processing.

Geertz’s *The Interpretation of Culture* (1973), according to Denzin and Lincoln, marked the beginning of the blurring of genres with the suggestion that all anthropological writings are interpretations of interpretations and calling for observers to recognise they have no privileged voice in the interpretation and to focus on making *thick descriptions*.

5.3.3 The post-modern approach

While the humanistic approach rejects the scientific or positivist approach, the postmodern approach transcends it by rejecting the idea that knowledge can be objective and truthful. Jean-François Lyotard (Lyotard, 1984; Rivkin & Ryan, 2004, p. 355) first used the term in 1979 to describe a social condition of advanced capitalist society characterised by the realisation that the idea of progress and liberation is a myth and denying the existence of absolute truth in scientific knowledge. While Denzin and Lincoln (2003) see the crisis of representation phase as preceding postmodernism, Brewer (2000) describes the impact of postmodern thinking on ethnography as producing a dual crisis, a crisis of representation and a crisis of legitimation, he writes:

... postmodernism denies the existence of all universal truth statements that are replaced by variety, contingency and ambivalence, and plurality in culture, tradition, ideology and knowledge. Everything solid melts into air, every structure dissolves and every truth statement is contingent and relative; we are left merely with rhetoric, discourse and language games about knowledge and truth (Brewer, 2000, p. 24).

Denzin and Lincoln explain that with acceptance of a postmodern approach, it becomes impossible to directly capture lived experience as any such experience is

“created in the social text written by the researcher (Denzin & Lincoln, 2003 p28)”. This is referred to as the representation crisis.

A postmodern approach accepts that all accounts are constructions and ethnography cannot hope to produce knowledge that is universally valid. Post-modern ethnographers aim to produce what Van Maanen (1988) calls *“tales of the field”* but, do not assert certainties or realism in their accounts. Postmodern ethnography lurches towards journalism or even fiction because of that lack of certainty or legitimacy. If we can no longer apply traditional criteria, how can we value and interpret qualitative research? This is what is generally referred to as the legitimization crisis.

5.3.4 A critical realism approach

Brewer labels the approaches that have evolved in response to the challenges of postmodernism as a *post postmodern* approach, an approach characterised by being less naïve in its beliefs about what is real and perhaps being concerned with the *relevance* of research outputs rather than claiming validity or reliability. It is essentially an approach that reclaims at least in part the idea that ethnographic research can produce truth. Critical realism is the view that knowledge may relate to how things really are but, accepts that this truth may be partial and may need to be revised as knowledge is developed.

In choosing an appropriate approach to the use of ethnographic methods in this research, a critical realism approach seems to be the most appropriate and useful in pursuing the aims of this research. It is not intended to assert that this research will generate absolute and universally valid truths but, it will attempt to produce knowledge that is relevant. The tales, descriptions and data gathered will inevitably be a partial account or partial truths but, can be legitimated as relevant by using multiple methods for data gathering such as semi-structured interviews, conversations, participant observation, journal keeping and text analysis to achieve triangulation together with a reflexive approach to interpretation which also describes and accounts for the interpretive role of the researcher.

5.4 Data gathering techniques

As discussed in 4.8, ethnographic data gathering methods include various types of observation, journal keeping, interviews and studying the accounts of others. This research primarily used participant observation, semi-structured interviews and journal keeping but, included the analysis of many texts related to aquaculture or that seemed relevant to the relations between entrepreneurs and organisations such as brochures, manuals, web sites and other documents that promoted or explained support programmes. Employing multiple methods created triangulation and journal keeping and note taking, in addition to recording participant observation, facilitated accounting for the role of the researcher.

The writing of ethnographic field notes is discussed at length by Emerson *et al* (1995) who stress the value of immersion and note that that no researcher can be a neutral detached fly on the wall. Because the researcher must interact with the subjects there is bound to be consequential presence and reactive effects where the researcher's participation effects how members of the group talk and behave. Emerson *et al* suggest this should not be seen as contaminating what is learned and observed, but, rather these unavoidable effects should be studied for what they reveal.

Through participation the field researcher sees first-hand and up close how people grapple with uncertainty and confusion, how meanings emerge through talk and collective action, how understandings and interpretations change over time. In all these ways the field worker's closeness to others' daily lives and activities heightens sensitivity to social life as process (Emerson, 1995, p. 4).

Brewer (2000) writes that participant observation is neither quick nor easy. There is time needed to re-socialize the observer into the practices and values of the group and win acceptance for the role, but, especially time is needed to experience the full range of the events and activities of the setting. Brewer also points out that participant observation certainly has its limitations as a research method. An observer is bound to be selective and present a partial account and this may be skewed towards observations of abnormal, exceptional or aberrant behaviour or may be a personal viewpoint that is not representative and concludes that participant observation should therefore never stand alone as a research method. Hence, if we are to study

entrepreneurs using participant observation, we would certainly be wise to triangulate our findings by using additional methods.

In this study the data gathered through semi-structured interviews have balanced, and probably outweighed, the data gathered through observation. The narrative section includes an accounting for the extent and character of participation and the conscious decision made early in the fieldwork to limit that participation in the interests of the research.

Fieldwork was primarily based in the Gisborne/East Coast region and Interviews were conducted in Gisborne, Wharekauri and Ahuahu either at the researcher's Gisborne office, a local café or, more usually, at the home or workplace of the entrepreneur. All the entrepreneurs were visited at their workplaces multiple times with the exception of the home workplace of entrepreneur Ned Davy who preferred to meet in a local café or the researcher's office. The researcher attended the meetings of the Gisborne Aquaculture Society at a variety of Gisborne venues and travelled to New Plymouth and Auckland for training sessions and conferences in aquaculture.

5.5 Positionality and reflexive stance

The position adopted by a researcher in the field affects every phase of the research process, from the way the research question/problem is initially constructed, designed and conducted to the ways in which reports and publications arising from the study are presented
(Borbasi, Jackson, & Wilkes, 2005, p. 494).

While the need for reflexivity in ethnographic research has already been discussed in general terms in the previous chapter (see 4.9), in this chapter it is necessary to explain and account for the position adopted by the research in carrying out field work for this particular study. There are two aspects to the question of positionality. Firstly, there is the question of how the entrepreneurs viewed the researcher and how that might have influenced their response to him. Secondly, there is the question of how the researcher's viewing position influenced the reality he constructed in his interpretive role.

The researcher entered the field as a participant observer in his real life role as a doctoral student who was also a recognised figure in the local Gisborne business community. While it is somewhat difficult to assess or quantify the extent to which

the researcher's business and personal reputation would have preceded him, this seems certain to have occurred at least to some extent due to the small size of the Gisborne community and the researcher's prior involvement in the following activities in Gisborne:

- Founding Gisborne's first FM radio station, Gisborne's 89FM, beginning with short term summer broadcasts in 1987 and 1989 and establishing the station as a full time operation in 1990.
- Founding a weekly community newspaper, The Eastland Sun, and operating it as managing editor from 1987 to 1995.
- Being elected to the Gisborne District Council in 1989 and resigning after two years.
- Presenter of local radio news for many years during the 1990s.
- Presenter of a regular weekend radio programme for many years during the 1990s.
- Purchasing the former Masonic Hotel Building in Gisborne in 1991 and refurbishing it into seven commercial premises and 15 apartments.
- Launching a second FM radio station in 1995.
- Winning seven New Zealand Radio Awards including Provincial Station of the Year and Best Community Contribution.
- Launching two additional network services into Gisborne in 2002, ZM and Radio Hauraki.
- Bringing up three children in Gisborne including involvement in educational and sporting activities.

At the time of entering the field in 2003, the researcher still had ownership of the local media firm, Gisborne Media Ltd., as well as the Masonic Hotel Building. The company was sold to the multinational firm CanWest MediaWorks (now MediaWorks) in early 2005 after which the researcher relocated his main home from Gisborne to Auckland while retaining a secondary home near Gisborne at Makorori Beach. So while the researcher presented himself to entrepreneurs and others as a doctoral student with an interest in studying the development of the emerging aquaculture industry in Gisborne, it seems certain that he would have been recognised by most as a

local business person, investor and entrepreneur. This may have smoothed the researcher's entry to the field as entrepreneurs seem to have taken the researcher seriously and related to him as an equal. During interviews a number of entrepreneurs referred to what they saw as a shared background of experience with the researcher of doing business in Gisborne and of working hard and overcoming difficulties as entrepreneurs. It seems likely that another doctoral student without the benefit of a local business reputation may have found it more difficult to gain entry to the group and secure interviews with the entrepreneurs.

It is also certain that the researcher's process of gathering and interpreting data has inevitably been informed and influenced by his background. As already noted the important thing is that researchers should account for their self in the field and make what Denscombe (1998 p.68-69) calls the *"public account of the self that describes the researcher's self"*. Accordingly the narrative chapter that follows this one explains and accounts further for the background, position and reflexive stance of the researcher in some detail.

5.6 Cycles of fieldwork

As discussed in the previous chapter, it is the use of a cyclical research design that perhaps most distinguishes ethnographic methods from other methods of qualitative research (Spradley, 1980). Each cycle is marked by the creation of ethnographic accounts and the scope of the research is refined in each cycle as patterns of data begin to be discerned and grounded theory is developed. This research began with a preliminary stage of gaining entry and went on to gather data in three main cycles as follows:

5.6.1 Cycle One: Observing, listening and Gathering Texts

Occurring over 2003 and 2004, this was a long initial cycle of participant observation at meetings, conferences, training sessions and workplaces. During this time there were many visits to workplaces, informal conversations with entrepreneurs and texts were gathered in the form of documents, press cuttings, notes, videos and photographs. These activities are described in detail in the narrative section that follows this chapter. This cycle considerably refined the scope of the study by

identifying the organisations with which the entrepreneurs interacted and establishing which of them were key stakeholders.

5.6.2 Cycle two: Interviewing

During June 2005 a series of in depth interviews were conducted with the six original entrepreneurs (see Table 10 for dates). While still conversational and only semi-structured, these interviews were much more formal than the conversations of the previous cycle in that they were recorded and all entrepreneurs were provided with Information Sheets and signed agreements to participate (see appendix). All interviews were transcribed; the text of those interviews (approximately 50,000 words) was imported into NVivo[®] and coded.

At this time the scope of the research was refined further as patterns of data began to emerge. It became apparent that some of those patterns of data had not been anticipated in the framework for analysis. At the same time there were some sub-themes for which little or no data had emerged. This shifting of scope is documented in the Analysis and Conclusions chapter.

Table 10. Dates for Semi-structured Interviews with entrepreneurs.³⁵

Dates for semi-structured Interviews with entrepreneurs			
Entrepreneur ³⁶	Description	Interview Dates	
		Cycle 2	Cycle 3
Darby Ryan	A former fisherman and farmer and the original owner of the Ahuahu paua farm which he built using NIWA as consultants.	16/06/2005	
Joe Warbrick	A former NIWA employee and the second owner of the Ahuahu paua farm after buying it in April 2006.		2/11/2007
John Taiaroa	A Gisborne shearing contractor who began the construction of a commercial paua farm in Gisborne but, is now involved in establishing a recirculating aquaculture facility in the USA.	15/06/2005	30/10/2007
William Millton	Owner of the Wharekauri paua farm	15/06/2005	14/11/2007
Ned Davy	Owner of Auric Aquaculture - primarily farming goldfish.	27/06/2005	2/11/2007
Harry Roberts	A scientist and trainer at Turanga Ararau also involved in building a commercial paua hatchery at Turanga Ararau.	23/06/2005	29/10/2007
Meg Matangi	A trainer at Turanga Ararau and the organiser of the Gisborne Aquaculture Society. No longer employed by Turanga Ararau in 2007.	23/06/2005	

5.6.3 Cycle three: Returning for outcomes

This cycle took place in late 2007 and involved returning to the entrepreneurs for another full round of interviews. Two of the original six entrepreneurs had departed from their roles. Meg Matangi was no longer employed by Turanga Ararau and Darby Ryan had sold the Ahuahu Paua Farm. The new owner of the Ahuahu Paua Farm, Joe Warbrick, was introduced as a new entrepreneur at this point which meant that five entrepreneurs would be interviewed in the third cycle and bringing the total number of entrepreneurs interviewed in all cycles to seven. The delay in completing this third cycle, due to a number of reasons that are detailed in the narrative, proved fortuitous as these interviews provided interesting new data including a post-mortem

³⁵ Source: Developed by the author for this report.

³⁶ Pseudonyms are used.

for ventures that had either failed, were at the point of failing or had radically changed strategy.

5.7 Interviewing methods

Interviews can range from structured to semi-structured to unstructured and the level of structure is an important design choice. A highly structured interview has the advantage of allowing many people to be interviewed quickly over a wide geographical area using a number of interviewers who do not have to be very highly trained. The structured interview is favoured by positivist and quantitative researchers as data can be collected systematically and put into numerical form. However, in this research the objective was to elicit meaning and create an ethnographic account rather than numerical data and therefore this study employed semi-structured interviews. In practice these interviews were conversational and employed opening questions and brief prompts to guide the conversation in what at the time seemed an appropriate general direction.

5.8 Methods of analysis and interpretation

This research aimed to use techniques of *grounded theory*, a process that Blaikie (2000) describes as one of ongoing data collection, data analysis and theory construction that can be aided by software. After being exposed to the field researchers begin to develop categories that seem to fit the data and then gather further instances of those categories. As data are gathered they are coded by being broken down into categories and subcategories, called open coding. Researchers then try to formulate the categories more generally and look for connections between categories and begin to develop hypotheses about the conditions that pertain to these connections. Axial coding is finding relationships between categories and putting the data together in different ways. The theoretical framework that emerges can then be compared to existing theories (in the case of this research the framework for analysis) and the validity of connections between categories can be examined and perhaps tested (Blaikie, 2000).

Zorn (2001) suggests thematic analysis of ethnographic data as a means of interpreting *“the discourse participants use in conceptualising their current, ongoing relational episode”*. A theme is described as a *“patterned issue or locus of concern*

around which interaction centres (Owen, 1984)” and themes are prominent patterns of participants’ meanings, actions or responses to situations. Zorn suggests we question why these themes have emerged, when and under what conditions, look for sub-themes and super-themes, and observe how the themes have manifested themselves and what is not present that might be expected. Researchers can play back interpretations to participants to affirm, refine and build authority. Researchers should seek to place their interpretations within a theoretical framework and question the social and political influences that may impact the analysis and interpretation.

This study made use of computer assisted analysis using the software application NVivo® in the coding of data from interview transcripts. Analysis involved an iterative approach of identifying ideas and concepts as they responded to the framework for analysis (inductive analysis) and then capturing the un-anticipated emerging themes (deductive analysis). All these patterns have been used to support analysis and interpretation of the data within the critical realism approach adopted and with an effort to account for the influence of the researcher’s position on that analysis and interpretation.

5.8.1 Computer assisted analysis

While a range of software is available to assist in the content analysis of text, NVivo® is highly regarded and well supported, was already licensed and available at the researcher’s university and the researcher had the benefit of training in its use conducted by QSR International at Swinburne University, Melbourne.

NVivo® makes it possible to carry out very complex coding of numerous large texts into categories of meanings or nodes and to show, shape, filter, assay, slice and dice the data in various ways. NVivo® allows a single comment to be coded in a number of ways – something difficult to do with highlighter pens. Researchers can use italics to insert comments into the text being analysed and this italic text will be ignored by the software. Text elements can be coded by a simple drag-and-drop process and NVivo® also offers an electronic means of building node trees and expressing relationships between nodes that can be displayed as diagrams and exported as bitmap files. This graphic method of interpreting relationships is a powerful tool to facilitate the development of grounded theory.

Search tools in the software also greatly facilitate interpretation and in NVivo® these are more sophisticated than the search function in a word processor and, for example, would search for combinations of words in proximity to each other. This is important because in searching for meanings, not simply for words as meanings can be expressed with a variety of words. It would also be possible to identify words that are used by one group of people but, not by another.

This coding process can, of course, be done manually, traditionally using highlighter pens of different colours, however, this research was to gather around hundred thousand words of interview text and a similar amount of other texts and clearly the use of NVivo® software would considerably simplify and speed up this process.

The process of coding in this research was driven by the data rather than by the framework for analysis as it was considered desirable for sub-themes (or *nodes* as they are called in NVivo®) to be suggested by the entrepreneurs. The researcher's role in coding was to observe the emergence of those nodes, give them suitable labels, and code interview text to those nodes when appropriate. Also with the use of semi-structured questioning there was no attempt to directly address the sub-themes in the framework for analysis with a questionnaire approach. This resulted in the emergence of patterns of data not anticipated in the framework for analysis. Where there was data that did address the issues in the framework it emerged because the entrepreneur talked about it of their own volition or in response to minimal prompting.

To summarise, the use of ethnographic methods planned for this research, data gathering methods would include a combination of participant observation, semi-structured interviews and analysis other texts. The researcher would maintain a journal to record participant observations, and as a means of reflexivity. A large amount of data would be gathered over the course of the fieldwork in the form of digital audio recordings of interviews, field notes and a personal journal, photographs and texts such as newspaper and magazine articles, meeting agenda and minutes, letters and e-mails.

Many of the 2005 interviews were transcribed from audio recordings by a professional transcription service. While the aim of this was to save time it proved

necessary to work through each of the recordings and extensively correct the transcribed text as the transcription service was often unable to correctly pick up technical words, Māori words and proper nouns with the result that the text would sometimes appear to contain meanings that were quite different than what was intended. For this reason the researcher transcribed the 2007 interviews personally and, while this was a somewhat arduous process, the process of analysis benefited from the time spent working closely with the transcripts.

5.9 Cultural and ethical issues in Gisborne

Auckland University of Technology Ethics Committee (AUTEC) approved this project on 18 May, 2005 (reference number 04/227) and their approval letter was submitted to the Postgraduate Office. This application to AUTEC covered procedures relating to participant observation, cultural issues and Māori issues and this application was revised and resubmitted after discussion with an AUTEC representative. AUTEC also advised on and approved the content and design of a Participant Information Sheet (Appendix 1) and a Consent Form (Appendix 2). All entrepreneurs were provided with an information sheet and signed a consent form prior to their first interview and the signed consent forms are held on file. This process was not considered necessary for people who were not interviewed and whose actions were observed in public or in their work role.

Out of the seven entrepreneurs participating in this research, five were members of, or connected with, the Gisborne Aquaculture Society, a group that had at its core a cohort of recent graduates of local training in aquaculture carried out by Turanga Ararau, the training arm of Te Runanga O Turanganui A Kiwa. There were three entrepreneurs who operated established aquaculture ventures and one who was in the process of building a paua farm. Two entrepreneurs were employees of Turanga Ararau and involved in providing aquaculture training, undertaking research, and working to develop both their own commercial paua hatchery operation and a local aquaculture cluster. It followed that a number of the individual entrepreneurs and organisations studied in this research were Māori and care was taken to take Treaty of Waitangi, *Te Reo* and cultural issues into account both in the approach to research ethics and the collection and interpretation of data.

Potential ethical problems associated with covert participant observation were avoided by adopting an overt participant observer role as a researcher. Informed consent was obtained from all entrepreneurs who signed a *“Consent to Participate in Research”*³⁷ form after being provided with a *“Participant Information Sheet”*³⁸. Entrepreneurs were informed that they had the opportunity to withdraw at any time before fieldwork was completed. Where the narrative or interview data includes information about people that were not interviewed, such as spouses, relatives, employees or industry figures, these data are incidental and confined to information of a public nature that relates to their profession or work and care has been taken to ensure this research did not infringe on their personal privacy.

5.10 Use of pseudonyms

As data were analysed the decision was taken to minimise risk to the entrepreneurs by using pseudonyms in place of the entrepreneurs’ real names and making other appropriate changes to protect their identities. This was done to minimise any risk of the entrepreneurs suffering negative consequences as a result of the publication of their comments. Pseudonyms were selected from lists of New Zealand’s first representative rugby and netball players (see Table 11). Two locations in the Gisborne area were renamed after New Zealand offshore islands as *“Wharekaui”* (the Māori name for the Chatham Islands) and *“Ahuahu”* (the Māori name for Mercury Island).

³⁷ See Appendix 1.

³⁸ See Appendix 2.

Table 11. Pseudonyms used for people and places.³⁹

Pseudonyms used for people and places	
Pseudonym	Description
People	
Darby Ryan	A former fisherman and farmer and the original owner of the Ahuahu paua farm which he built using NIWA as consultants.
Joe Warbrick	A former NIWA employee and the second owner of the Ahuahu paua farm after buying it in April 2006.
John Taiaroa	A Gisborne shearing contractor who began the construction of a commercial paua farm in Gisborne but, is now involved in establishing a recirculating aquaculture facility in the USA.
William Millton	Owner of the Wharekauri paua farm.
Ned Davy	Owner of Auric Aquaculture - primarily farming goldfish.
Harry Roberts	A scientist and trainer at Turanga Ararau also involved in building a commercial paua hatchery at Turanga Ararau.
Meg Matangi	A trainer at Turanga Ararau and the organiser of the Gisborne Aquaculture Society. No longer employed by Turanga Ararau in 2007.
George Helmore	A trainer at Turanga Ararau whose employment ended in 2005. Now resident in the USA. Not an interview participant.
Places	
Wharekauri	A small rural community near Gisborne.
Ahuahu	A small rural community near Gisborne.

5.11 The role of narrative in this research

William Gartner describes what narrative approaches do as “*they involve analysing the stories that people tell* (Gartner, 2007, p. 615)” and adds that entrepreneurial narrative promises to contribute knowledge about how ideas originate – a science of the imagination.

The label, ‘science of the imagination’ is suggested as another promise for what entrepreneurship (and specifically, entrepreneurial narrative) might offer as a contribution to scholarship. The narrative of entrepreneurship is the generation of hypotheses about how the world might be: how the future might look and act (Gartner, 2007, p. 614).

Gartner points out that stories are never complete and are told in the context of other larger stories and ideas or “*larger voices*” that readers or listeners bring with

³⁹ Source: Developed by the author for this report.

them (2007, p. 614). He asserts that calling on these larger voices has value analytically and in this research the larger voices are the ideas and issues summarised in the theoretical framework brought to the case by the interviewer/observer.

Gartner also points out that “*narrative approaches come with their own epistemology, theories, and methods that must be met on their own terms* (2007, p. 614)”. Because stories are never complete the unknown parts of the story, where facts have not been given, may have to be bridged and there may be an allowance for fiction. Gartner comments as follows.

There might be a fear that narrative approaches might lead to taking normative paradigmatic scholarship down the rabbit hole of treating all knowledge as ‘fiction’. This is not actually the case, and rather than setting up a struggle of either/or between paradigmatic approaches and narrative approaches, their inherent similarities are recognised as ways in which knowledge is gained through the application of skill (Gartner, 2007, p. 614).

Hosking and Hjorth (2004, p. 265) suggest a more detailed description of what narrative approaches do as follows.

- *Story construction is a process of creating reality*
- *In which self/story teller is clearly part of the story.*
- *Narratives are relational realities, socially constructed, not individual subjective realities.*
- *Narratives are situated—they are con-textualised in relation to multiple local—cultural—historical acts/text.*
- *Inquiry may articulate multiple narrative and relations.*
- *Change-work works with multiple realities and power relations, for example.*
- *To facilitate ways of relating that are open to possibilities.*

Much about the use of narrative, including the need for narrative to account for the role of the researcher, and to record detail and nuance, has already been discussed in the previous chapter but, it is important to examine the role narrative takes in this research. While much research using ethnographic methods takes a largely (or even an entirely) narrative form, this research has sandwiched narrative between introductory chapters that establish a framework for analysis and discuss the methodology and concluding chapters that offer analysis and conclusions made after the data were gathered and examined and discuss implications and contributions.

Much of the analysis of the data occurred at the time it was being gathered and recorded. It is therefore important to restate that the purpose of the narratives in this research is not only to set out the data for later analysis but, also to create a research output as much of the meaning of this study can be found within the detail of the narrative itself. This idea is expressed well in the following quote.

Unlike quantitative work, which can be interpreted through its tables and plot summaries, qualitative work carries its meaning in its entire text. Just as a piece of literature is not equivalent to its 'plot summary', qualitative research is not contained in its abstracts. Qualitative research has to be read, not scanned; its meaning is in the reading (Richardson, 2000, p. 924).

Writing this narrative has been an important element process of developing theory as it has required decisions over what observations and conversations should be included and what should be left out. The narrative goes further towards developing theory and conclusions as it discusses and muses over some issues that arise while others go un-remarked. In some cases the exact words of the entrepreneur are presented while other viewpoints are filtered by being described or paraphrased. The act of writing the narrative has therefore been a conscious and perhaps also subconscious process of moving the work in directions that seemed important to the writer and his understanding of the voices of the entrepreneurs and the larger voices of the framework for analysis. The narrative that follows is therefore more than just a description or presentation of data and should be seen as a meaningful research process.

5.12 Summary

Chapters 4 and 5 have discussed the methods used in this research and the following three chapters describe the process of conducting fieldwork in some detail, mostly in the form of a narrative.

6 Conversations and observations

6.1 Introduction

This narrative is an ethnographic account that follows the three cycles of research outlined in the previous chapter. The first cycle of this narrative has been based on handwritten notes made during and after making workplace visits, attending a training session in recirculating aquaculture and an aquaculture conference, conducting meetings with individual entrepreneurs and other aquaculturalists and attending and participating in the meetings of the Gisborne Aquaculture Society. The approximate times spent at the various participant observation locations are listed in Table 12.

All of the narrative has been informed by a collection of texts relevant to aquaculture which included government press releases and reports, newspaper articles and editorials, e-mails and the circulated agendas and minutes from meetings of the Gisborne Aquaculture Society. It is a reflexive narrative and its purpose not only to describe the entrepreneurs but, also to account for the researcher's own role as a participant observer, interviewer and PhD student, and detail the methods followed and the insights and patterns of data that that were found along the way.

Table 12. Locations and duration of participant observation.⁴⁰

Participant Observation	
Situation	Approximate Time
Meetings of Gisborne Aquaculture Society	18.00
Inaugural Dinner of Gisborne Aquaculture Society	5.00
Training Course in Recirculating Aquaculture	16.00
Aquaculture Conference – Auckland	20.00
Meetings with entrepreneurs and others	7.00
Workplace visits	17.00
Total	83.00

⁴⁰ Source: Developed by the author for this report.

The narratives that deal with the second and third cycles have been based on close to 11 hours of semi-structured interviews conducted with entrepreneurs, along with notes relating to the observations and conversations made during and after the workplace visits associated with those interviews. These interviews were digitally recorded and those recordings were transcribed into a series of documents totalling close to 90,000 words.

Table 13. Durations and word counts of interviews with entrepreneurs.⁴¹

Interviews with Entrepreneurs			
Pseudonym	Date of Interview	Recording Duration	Words Transcribed
Darby Ryan	16/06/2005	1:16:17	13013
Joe Warbrick	2/11/2007	1:07:13	9218
John Taiaroa	15/06/2005	0:55:33	8492
	30/10/2007	0:57:03	7717
William Millton	15/06/2005	1:04:02	9410
	14/11/2007	0:34:58	5143
Ned Davy	27/06/2005	0:57:18	7784
	2/11/2007	0:57:24	6787
Harry Roberts and Meg Matangi	23/06/2005	1:46:51	11175
Harry Roberts	29/10/2007	1:22:03	11252
Totals		10:58:42	89991

This narrative is also an account of the researcher's progress as a doctoral student during the years 2003 to 2007. Writing it began in 2003, it began to take shape during 2005 and it was sporadically added to and finally completed before the end of 2007. Events in the researcher's business and family life impacted on the research during this time and, in accounting for these impacts, this has also become a somewhat personal narrative. It is therefore appropriate at this point in this doctoral thesis to leave behind the conventions of academic writing by adopting the first person and making more use of the active voice.

⁴¹ Source: Developed by the author for this report.

6.2 Cycle One: Observing, listening and Gathering Texts

For you it is the will of heaven and destiny that ye shall return here with the fleece; but, meanwhile both going and returning, countless trials await you. (Apollonius, 3rd century BC translated 1912)

My first contact with recirculating aquaculture, and the entrepreneurs I came to think of as *aquanauts*, came in 2002 when I visited William Millton's farm near Wharekauri. William owns a large fishing boat and takes tourists on big game fishing expeditions off the coast of Gisborne during the summer. At the time I was training a newly hired sales representative at my commercial radio business, Gisborne Media Ltd., and was accompanying her on a visit to William's farm to help her negotiate the sale of some local radio advertising to promote William's boat charter business.

Wharekauri is a small township in the Gisborne region. To get there you pass through the Poverty Bay flats, rich horticultural land that grows chardonnay grapes, sweet corn and citrus fruit. At Wharekauri the roadside landscape starts to become hilly farmland for sheep with pockets of forestry on the more erosion prone slopes.

William's farm marks him out as an entrepreneur, perhaps also a *bricoleur*⁴² and certainly an ingenious and practical individual who is constantly involved in new ventures and innovations. There was plentiful evidence at William's property of a number of enterprises going on at the same time. In addition to the farm and the charter fishing boat, which sits there on a trailer, there is a trucking business in operation at the farm which I later learn is William's main source of income. There are a variety of trucks, some of which appear to be under repair in a large farm building, and the property is strewn with a wide variety of machinery. There is a large pile of steel frames which I later learn are used to contain pine saplings as they are picked up off one of William's trucks and delivered to forestry workers by helicopter. William designed these steel frames himself and they strike me as an example of what New Zealanders like to refer to as *kiwi ingenuity* – the ability to solve any practical problem around the farm by fashioning something out of number eight fencing wire. In New

⁴² Levi-Strauss (1966, p. 16) describes a *bricoleur* as a person who "works with his hands and uses devious means compared to those of a craftsman". Not being an expert in a particular occupation, a *bricoleur* picks from techniques, methods and the materials at hand to work at any number of projects and creations.

Zealand the term *number eight* is used to refer to this particular brand of ingenuity. No doubt evolved from pioneering farmers working far from civilisation, kiwi ingenuity is a much respected traditional skill and attitude within New Zealand culture.

“William is working in the paua farm at the moment”, I was told by a middle aged woman at a desk when we stepped inside a small cluttered office. This turned out to be a low building about the size of a house built on a concrete slab floor out of recycled cool store panels, sheets of expanded foam polystyrene sandwiched between sheets of steel. Inside it was wet dark and damp and William took me on a tour around the racks of tanks and pipes with obvious enthusiasm, reaching into the salt water to lift out tiny paua to show me.

William’s enthusiasm for his paua farm was contagious. I found myself becoming immediately fascinated by the possibilities of this venture. Imagine, I thought, a business where money simply grows in tanks within a simple building that could be located almost anywhere. Where you produce livestock that might sell for one hundred dollars a kilogram or more, and grow that livestock from *spat*⁴³ which hatch in their hundreds of thousands from a single breeding pair of mature paua. Where your inputs are only to establish and maintain a simulated marine environment and provide food for the animals. It seemed too good to be true.

I contrasted William’s paua farm in my mind to my own business at the time, the operation of a small group of commercial radio stations based in the small provincial centre of Gisborne. My rather stressful work as owner and manager involved constantly recruiting new sales and broadcasting staff and then training and motivating them to perform the various tasks of writing and producing local news, programming music and creating entertaining radio shows, running promotions for the station and its advertising clients, writing and producing creative commercials, running an efficient office and advertising traffic and billing systems and most of all constantly selling advertising time to local businesses.

The local radio advertising market was a small one, but, had become highly competitive and every month was a battle to boost sales and achieve the sales targets

⁴³ Paua in its larval stage when it settles to the bottom and begins to develop a shell.

needed to keep the business profitable. So to me, as a harried owner/manager, the idea of simply setting up a paua farm and watching money grow in tanks seemed a wonderfully simple and desirable business.

6.3 Meeting the paua

Dark, secretive and slimy-looking, this is the abalone, the most expensive and endangered seafood in the world. Ormeau to the French, paua to the Māori and takabushi to the Japanese - is a delicacy which drives Asian, and especially Chinese, gourmets wild. In Japan and Korea, they are mythical beings, and considered to be an unfailingly effective male aphrodisiac (Lichfield, 2005).

Paua (*haliotis iris*) is New Zealand's black footed variety of abalone and has a special place in New Zealand culture as indigenous seafood prized by Māori and Pakeha⁴⁴ alike. As a child growing up in Wellington during the 1960s, eating outside the home for me consisted of school lunches, eating at a relative's home, the occasional picnic and visiting one of our local fish and chip shops which were then our only option for takeaway foods. The paua fritter was always listed as a menu choice on the blackboard of those fish and chip shops. These days wild paua is a protected seafood resource and something of a rare delicacy.

Paua is also much poached and smuggled, often by well organised gangs who supply a ready market for abalone that exists in most Asian countries. NZ Customs have recently begun to use special dogs trained to detect people, often in large tour groups, at airports who are trying to illegally take paua out of New Zealand. Shipping quantities of illegal paua in international courier bags has also been popular. You need to own the rights to catch a government administered quota in order to fish commercially for wild paua in New Zealand waters and can only take animals larger than 125mm. Recreational divers are allowed to take limited quantities for their own use but, if they exceed their limit are subject to draconian penalties. In addition to being fined, their diving gear, boat and vehicle can be confiscated. Despite all the efforts of police and fisheries inspectors poaching paua seems to remain a thriving business.

⁴⁴ The Māori word for a New Zealander of European origin.

To me this spoke of a large unsatisfied demand in Asia for New Zealand paua. What is more there was, of course, no quota or size restriction associated with *farmed* paua. A paua farmer could offer a completely new product, *Baby Paua*, just 65 to 75mm in size, a size that could be reached within two or three years because paua in recirculation systems can grow to this size at twice the rate of growth of wild paua.

As an investor in commercial property, I saw the possibilities of buying otherwise useless old buildings, such as old dairy factories, on cheap land in remote rural locations and making them useful, and hence valuable, again by using them to house paua farms. I also wondered if a large dark, damp and empty basement in a Gisborne building I owned could become a paua farm.

At the time, in 2002, I was casting around for a topic for my PhD. I had already decided to carry out qualitative research on a group of entrepreneurs and was looking for an interesting case to study. In 2001 I had completed a doctoral qualifying course for MBA graduates at Waikato University and earned a post graduate certificate in business research. This course exposed me to both quantitative and qualitative research methods and had opened my eyes to new ways of studying the world. I had learned about epistemology and ontology, been introduced to modernism, post modernism and post-post-modernism. I had been taught the basics of inferential statistics and the use of SPSS but, had also been exposed to action research, practitioner research, discourse and text analysis and ethnography and these qualitative approaches appealed to me as a communications professional. I had also used case study methods in my MBA dissertation and saw ethnography as a natural progression that I should take along the qualitative research path. By contrast the dry numerical work of quantitative research reminded me of the school mathematics classes which had never inspired me.

I also wanted the case I selected to be centred in Gisborne as I realised I would have to spend most of my time there as long as I owned Gisborne Media Ltd. And also I thought my local knowledge and the fact that I was quite well known in the community would be helpful. As an investor and entrepreneur myself, I wanted to study a case that would provide me with useful knowledge of a promising new industry and recirculating aquaculture in Gisborne certainly seemed to fill the bill. Finally, I wanted to study a case that would allow me to make a contribution to the Gisborne

community and perhaps to New Zealand. In idealistic moments I would imagine that my work might contribute to a better cultural environment or institutional framework to be created within which entrepreneurship and innovation could flourish. This, I thought (perhaps rather grandiosely), would result in the creation of new sources of wealth, and opportunities for employment that would raise standards of living in communities such as Gisborne.

Recirculating aquaculture seemed an industry where government support and encouragement for entrepreneurs could help create a new export industry for New Zealand and at the same time boost economic and social development in a remote rural region historically subject to high unemployment. It seemed environmentally friendly and sustainable and promised to provide employment and profits for owner operators and investors.

I expected that for these reasons paua farming would attract some level of government help and support and I was keen to study how this support was delivered from the point of view of the entrepreneurs who were working to develop this emerging industry. I also noted that there was an organisation at the point of being formed around which a cluster of local aquaculture entrepreneurs could develop, the Gisborne Aquaculture Society.

6.4 The Gisborne Aquaculture Society

The formation of the Gisborne Aquaculture Society convinced me that I had discovered an excellent case for my PhD research. My entrepreneurs would be conveniently linked together, periodically assembled for ease of access, and I could hope to observe not only the individual entrepreneurs but also, the emergence and development of a cluster. My Auckland University of Technology D1 form, *Application for Provisional Admission to an AUT Doctoral Programme and Thesis Proposal*, was submitted on 1 September 2002 and my provisional enrolment as a PhD student began at the start of 2003.

As I finish the writing of this account five years later, I pause and reflect on why I embarked on PhD research in the first place and how the experience has matched my expectations. My return to study in mid life has been a Don Quixote style quest to complete the education I abandoned in my teens. I began again in 1998, aged 42, by

enrolling for an executive degree course in broadcast communications which I studied by distance learning from the NZ Broadcasting School at Christchurch Polytechnic Institute of Technology (CPIT). My broadcasting business was going well as a small locally based enterprise and my commercial and residential property investments were growing in value and this allowed me the time to step back and consider what the next step in my career as an entrepreneur would be. Just six months into the broadcasting course I signed on as a distance learning student for the Henley MBA, which was at that time supported in New Zealand by Auckland University of Technology. I finished work on both courses at the end of 2000.

During those years business did not stand still and in 1999 I found myself working in Rotorua rebuilding an independent commercial radio station which had failed under its previous management and closed, allowing me to buy its assets at a bargain basement price. My wife, Janet, and I rented a house in that city and I worked intensely to build the systems, motivate the people and sell the advertising that would return the station to profit. In the evenings I would study and on most Saturdays I would rise before dawn to either make a three hour trip to Auckland to attend a Saturday class or Janet and I would make the four hour drive back to our home in Gisborne for a weekend usually occupied by concerns with our Gisborne investments and business.

Selling the Rotorua business as a successful going concern in 2000 brought the respite that enabled me to complete the final research project for my Bachelor of Broadcast Communications (BBc) degree and the dissertation for the MBA. During this year Janet and I also took time off to travel, I made a 14 day coast to coast walk across the north of England, a trek into the Grand Canyon in Nevada and cycled around the beautiful East Cape of New Zealand from Opotiki to Gisborne. It was a wonderful year; especially as in June 2000 our first grandchild was born to our daughter and her husband who were living in London. I completed a lot of work on my BBc and MBA degrees while camping idyllically for several weeks by a beach near St. Tropez in France.

Suddenly, at the end of 2000, the almost daily study that had consumed my life for the past three years had come to sudden halt leaving me with the sense that something was missing in my life. In early 2001 I acted at the last minute to apply for

enrolment in the Waikato Course that promised to qualify me for PhD study, and was nearly rejected. The tough markers at Henley had only given me a B grade and I was only admitted to the Waikato Course on the condition that I would have to obtain at least a B+ to be allowed to go on to PhD study. The prospect of ignominious failure focussed my mind with the result that I achieved an A+ in both papers. Attending weekend classes in Hamilton involved six hour drives from Gisborne and weekend stays in a Hamilton motel.

The beginning of 2002 found me casting about for the combination of a research topic that would interest me and a supervisor. Discussions with academics at Waikato had reached an impasse as they all seemed busy with their own research and not that keen on taking on a mid life PhD candidate who had only a vague idea of what he wanted to study. I cast my net wider to Auckland University of Technology (AUT), where I had attended tutorials while studying for my Henley MBA. AUT was a new university which seemed more welcoming and keen to supervise PhD students. I contacted the university administration by e-mail explaining my interest in a PhD and was referred to Dr. Chris Batstone as a potential supervisor. After a meeting with Dr. Batstone and Professor Simon Milne I was encouraged to submit an Initial Research Proposal and, guided by Dr. Batstone, I submitted a proposal for this research in September 2002. This was accepted and I was enrolled from the beginning of 2003 as a provisional candidate.

6.5 Naming the aquanauts

Aquaculture entrepreneurs seemed a cumbersome description to use in a narrative so I cast around for a term or perhaps neologism that would describe them more succinctly and coined the word *aquanaut*. Argonauts are merchant adventurers of antiquity and one of the fathers of ethnography, Bronislaw Malinowski used that term to describe his research subjects, Trobrian Islanders, in perhaps his most famous work published in 1922 titled *Argonauts of the Western Pacific* (Malinowski, 1922). It occurred to me that my entrepreneurs could perhaps be described as *Aquanauts of the Southern Pacific*, so *aquanauts* they have become in this narrative section.

Malinowski spent the years 1914 to 1920 as the only European living amongst a tribe of people on the Trobriand Islands off the coast of New Guinea – isolated from

contact with civilisation while the Great War came and went in Europe. In twisting Malinowski's famous title, I certainly am not suggesting that my work as a humble student can be compared his. Malinowski was an important pioneer who pointed out that cultural anthropology is the study of the institutions that are organised to satisfy human biological needs. He describes his book *Argonauts of the Western Pacific* as an account of native enterprise and adventure. This book is of particular interest to me because it focuses on the economic institutions, which in this case involved magic spells and sorcerers that controlled the Argonauts in every step of economic activity.

In his preface to the book Sir James G. Frazer wrote ...

... in the minds of the natives the performance of magical rites and the utterance of magical words are indispensable for the success of the enterprise in all its phases, from the felling of the trees out of which the canoes are to be hollowed, down to the moment when, the expedition successfully accomplished, the argosy with its precious cargo is about to start on its homeward voyage. In short, magic is believed to be an absolutely essential adjunct of every industrial undertaking.

Just as Malinowski's argonauts were controlled by sorcerers and magical spells, the aquanauts of Gisborne were controlled by modern institutions. The modern day sorcerers are fisheries inspectors, council officials, regulators, bureaucrats in government departments, scientists funded by government, and especially the agencies interested in regional development and growing exports which make up New Zealand's Innovation Framework. I set out to try to understand how this framework of organisations supported the emerging aquaculture entrepreneurs and observe it from the viewpoint of the aquanauts themselves.

In need of a research question I decided this research should address the problem of: *Should the New Zealand government seek to support entrepreneurship and innovation through the various knowledge-based or regulatory organisations it owns or funds? If so how?* My approach to this should be to ask: *How does the New Zealand government's support for entrepreneurship and innovation appear to be delivered to entrepreneurs in an innovative emerging industry in a small New Zealand centre, from the point of view of those entrepreneurs?*

6.6 Background to Gisborne

It has been convenient for me to base this research in Gisborne because it has been my home for some twenty years and is still my second home. The first city in the world to see the sun each day, Gisborne is located on the sunny East Coast of the North Island. The Māori name for the district is Tairāwhiti which means *the coast upon which the sun shines across the water*. Kaiti Beach, near the city, was where the Māori immigrational waka⁴⁵, Horouta, landed; and is also the first European landing place in New Zealand. Captain Cook first set foot here in 1769. The Gisborne district generally has warm summers and mild winters. Gisborne is one of the sunniest places in New Zealand with average yearly sunshine of around 2,200 hours. It has great long un-spoilt beaches that offer excellent surfing conditions.

If you have seen the movie *Whalerider*, you will know what this part of New Zealand looks like. The Poverty Bay plains contain 20,000 hectares of rich, alluvial river flats which, combined with mild temperatures, make this district an ideal area for the growing of maize, kiwifruit, citrus and subtropical fruits. Gisborne is New Zealand's second largest grape-growing district and has the self-appointed title Chardonnay Capital of New Zealand. The district is mainly hill-country, well-suited to grazing. Sheep, cattle, deer and goats are farmed. *Pinus radiata* forests have been planted throughout the region. Forestry has taken over from farming on the erosion prone hillsides in recent years and become a major land use. The district also attracts a range of investment from light manufacturing, food processing and innovative enterprises to wood processing. Tourism related industries are also growing and attracting investment.

While Gisborne is serviced by sea and air and its port is a major exporter of logs however, the cost of getting goods in and out of this rather isolated region is a negative factor. Gisborne is still a small remote region of higher than normal unemployment and benefit dependency and one would expect it to be a target for government regional development efforts.

⁴⁵ Waka is the Māori word for canoe. The ancestors of Māori were among the greatest of canoe builders, navigators and mariners (Te Ara - the Encyclopedia of New Zealand, 2008).

Aquaculture, as an emerging export industry, could surely also expect to be encouraged. So when I selected this case, I expected to find plenty of government assistance flowing to the aquanauts through the various organisations that make up New Zealand's Innovation Framework.

6.7 A society is formed

The Gisborne Aquaculture Society was founded in late 2003 and I attended its inaugural dinner and meeting at the Rocks restaurant in Gisborne with my wife Janet. Drinks were followed by dinner and wine giving me the chance to mix and mingle with the group in a pleasant social setting. The formation of the Gisborne Aquaculture Society, I soon realised, was an initiative of Turanga Ararau the training and development arm of the local Iwi (Māori tribal organisation) Turanganui a Kiwa. Membership of the organisation could be classified into two groups. Firstly, a small nucleus of serious entrepreneurs, or would-be entrepreneurs, who had started, or were about to start work on a fish farming venture of some kind, and secondly, people who were kicking the tires – thinking about the possibility of one day starting such a venture, or working in one. This second category was made up largely of current and former students of the various aquaculture courses conducted at Turanga Ararau. Amongst the active entrepreneurs, only John and Leonora Taiaroa had trained at Turanga Ararau and their venture was then still very much at the planning stage.

In a category of his own was George Helmore, a tutor of recirculating aquaculture at Turanga Ararau who resided in New Plymouth and had been commuting to Gisborne for the past year to teach a certificate course in aquaculture. George was then a revered senior figure in the group and one of the first pieces of business conducted by the newly formed Gisborne Aquaculture Society was to name him as an honorary life member. Talking to George it was obvious that he had a huge enthusiasm for recirculating aquaculture as well as an apparently encyclopaedic knowledge of his specialist field. I was to learn that George is an enthusiastic practitioner and, while he undoubtedly understood much of the science and business side of his specialist subject, he primarily approached aquaculture from his practical engineering background.

Enthusiasm for the future of recirculating aquaculture in Gisborne permeated the inaugural meeting of the Gisborne Aquaculture Society however, the formal meeting stage of the evening foundered for the lack of any sort of competent chairmanship and only a sketchy *ad hoc* agenda. Unfortunately this lack of organisation was to set the pattern for all future meetings of the Gisborne Aquaculture Society. As a regular participant in the generally tightly chaired and well run meetings of organisations such as the Radio Broadcasters Association's Executive Committee and as a business person meeting daily to deal with issues in a focussed way, I found the vague and random meetings of the Gisborne Aquaculture Society rather irritating. Perhaps they offended my sense of how things should be done. I found myself wanting to step in and take charge of proceedings but, held back as this would, I felt, hardly be compatible with my role as an observer, even a participant observer.

Nevertheless, the inaugural meeting concluded with a sense that something worthwhile had been achieved. John Taiaroa, who seemed highly regarded by everyone, had been appointed president and William Millton had taken on the role of treasurer. George Helmore had been duly made an honorary life member and had taken the opportunity to exhort his students to get on with finishing their last assignment for his course.

6.8 Avoiding a conflict

I was to meet again with George Helmore within a few weeks. During my conversation with him I had mentioned that I owned a Gisborne building with a large basement and wondered if it would be suitable for a paua farm. George volunteered to take a look and we spent some hours examining the basement and discussing how it could be set up. There were problems with access, especially for large tanks and pieces of equipment, and concerns as to what effect the salt water environment would have on the building above. After thinking it through over several months and obtaining further opinions and visits to the site from first William Millton and later William Osler (a Marlborough based aquaculture employee with family links to Gisborne) I decided not to take the basement fish farm idea any further for what seemed to me to be two very good reasons.

Firstly, I thought the site presented too many problems and secondly, I thought an active involvement in an aquaculture project at this time would compromise my role as a researcher. It could hamper access to entrepreneurs and raise ethical problems.

6.9 Consorting with scholars and reading literature

Travelling to the United States in June 2003 to attend a doctoral consortium and conference at Babson College near Boston was a pivotal experience in my development as a researcher. I discovered an international community of scholars focussed on understanding entrepreneurship and began to understand the extent of my ignorance of the literature. My fellow students at the doctoral consortium seemed to have an encyclopaedic command of that literature. One student from Stanford told me she had over three thousand texts listed in her literature database, all of which she had read. I returned home inspired to put more effort into understanding the literature and it was this that dominated my study for the next 12 months and resulted in the literature review associated with my full Research Proposal which cited the mere 47 references I had managed to read. This full Research Proposal and Application for Confirmation of Candidature was submitted in August 2004 and by October 2004 I had been confirmed as a candidate.

During this period I also wrote a chapter titled *Changing the Game: Entrepreneurs bring Networks to Small Markets* for a media studies textbook titled *The Great Radio Experiment: New Zealand Radio After Deregulation* (Johnstone, 2005) and found myself perusing another 43 books and articles related to ethnographic methods in writing a chapter for a handbook of qualitative methods in Entrepreneurship Research.

6.10 Writing for a handbook

I was sorting through the large pile of paper that I had brought home with me from Babson College when I came across a flyer seeking contributors to a *Handbook of Qualitative Methods in Entrepreneurship Research* that was to be edited in Denmark by Helle Neergaard and John Ulhøi of the Aarhus Business School and published by Edward Elgar in Cheltenham, UK. I saw this as a remote possibility of finding an

audience for my methodology chapter and e-mailed a synopsis for a proposed chapter on ethnographic methods. To my surprise I was invited to contribute a chapter of no more than 10,000 words and began what turned out to be a long and drawn out writing project in which I produced several revisions at the request of two anonymous but, knowledgeable reviewers who pulled no punches in pointing out my ignorance of my chosen subject and who, after reading my first draft, sent me back to the literature to gain sufficient understanding to write what was a basic introduction to the use of ethnography in entrepreneurship research⁴⁶.

This process began in late 2003 and I worked intensively on it for spells during the first half of 2004 and, to accommodate this work, requested extra time in submitting my D9 Research Proposal to AUT. This university document, originally due at the start of 2004 was finally submitted 18 June 2004. The handbook chapter came back for more work in 2005, this time the request was for more fine-tuning on a long list of points including a request for better tables and diagrams. Another year passed before the document was sent to me in June 2006 in print ready form for final minor corrections and by 2007 the book had been printed.

In hindsight, the arduous process of writing this handbook chapter taught me much about not only the use of ethnographic methods but, also given me an insight into the trials and tribulations of academic work. I feel proud to have contributed to what I am sure is an important reference text for other qualitative researchers in entrepreneurship and to have finally passed muster with the reviewers and editors and made a contribution to discussion and debate in this field.

6.11 Meetings with the aquanauts

Meanwhile, armed with a notepad, and my newly printed AUT business cards, I attended every meeting of the Gisborne Aquaculture Society with the exception of one or two that coincided with unavoidable out of town travel. Wherever possible I arranged my travel to be in Gisborne for the Gisborne Aquaculture Society meetings. In the beginning they were monthly events but, as time passed and enthusiasm waned they were convened less frequently and attendance levels fell.

⁴⁶ Reproduced here as Chapter 4.

I presented myself at these meetings as a researcher with an interest in the industry and that seemed to satisfy everybody. I was careful to avoid any leadership role at the meetings and confined myself to asking a few questions or venturing an occasional suggestion when I felt I could assist.

Of course I cannot be sure how much my reputation may have influenced how I was received. Since moving to Gisborne with my family in 1985 I have held a number of high profile roles in the community. I founded Gisborne's first FM radio service in 1987 and launched a rather feisty weekly community newspaper in the same year. This publication, The Eastland Sun, battled the 100 year old Gisborne Herald for the town's limited print advertising market for seven years until I decided to close it in 1994. By then the radio operation had become a well established and profitable market leader and I began to resent the management time and effort I had to pour into the struggling newspaper operation for little return. I had been buying printing out of town and the economics of the operation suffered from expensive printing, trucking and distribution costs. In the case of FM radio, I owned the means of production and distribution of this electronic medium was effectively free. Variable costs are low in radio consisting mainly of sales commission and, once fixed costs for wages and facilities have been overcome, profitability becomes very good indeed. I hated not to win a commercial battle but, in the end decided I would never force my competitor the Gisborne Herald to close and so reluctantly closed down my newspaper and set about persuading its advertisers to switch their spending to radio advertising. In hindsight the decision was a good one as I was able to add another three radio services in Gisborne (two of them franchised national network products) and use digital networking technology to add satellite operations in Wairoa and Rotorua.

For many years I functioned as a journalist and editor of The Eastland Sun and as a presenter of local news on the radio. I also served a short stint as a member of the Gisborne District Council and came to the attention of the public when I purchased the abandoned and derelict landmark Masonic Hotel Building in the early nineties and progressively refurbished its upper floors as 15 character apartments and its ground floor as seven commercial premises.

It is therefore certainly possible that the aquanauts treated me rather differently than they would another researcher without a profile as a local business

and media identity. I suspect that I was treated with a respect that would perhaps not normally be accorded to a student. It is also possible the aquanauts may have seen my interest in their industry as potentially beneficial but, I was careful not to give an impression that I would get involved, assist or invest in any of their ventures.

6.12A conference with the aquanauts

I also attended the Conference of the Asian Pacific Chapter (APC) of World Aquaculture Society (WAS) which was titled New Zealand Aquaculture for the 21st Century and held in the Sheraton Hotel, Auckland on 12 March 2004. My invitation to attend came from George Helmore, at the time a board member of the APC and the conference organiser.

This one day conference was addressed by the then opposition leader, Don Brash, who promised that a future National Party led government would support aquaculture however, ministers of the incumbent Labour party led government were notable by their absence and much of the discourse at the conference related to the frustration being felt by New Zealand aquaculturalists at the inaction of central government. At the time there was a moratorium on sea based aquaculture which had been in place since 2002 and a looming political stoush with Māori over the ownership of New Zealand's foreshore and seabed. Aquaculture rights could be allocated to iwi and were possibly seen by some in government as an important bargaining chip in negotiating with Māori who were claiming ownership of New Zealand's foreshore and seabed. Ultimately the Aquaculture Reform Bill was passed and gifted to Māori 20 percent of the marine farming that had been allocated since 1992 along with 20 percent of any future new space. The regulatory environment for New Zealand aquaculturalists, especially in terms of Resource Management Act (RMA) was another source of difficulty for aquaculturalists. NZ Aquaculture Council Chairman, Callum McCallum, complained loudly of the local industry's treatment by government to an international audience that included delegates from Australia, Asia and French Polynesia.

The rest of the presentations to the conference were technical. I noted that the only member of my aquanauts to attend were John Taiaroa although a number of

other Gisborne Aquaculture Society members who were aquaculture students had made the trip.

6.13 Training as an aquanaut

I also accepted an invitation from George Helmore to sign up for an Aquaculture Recirculation Technology Workshop that he was conducting in New Plymouth on 17 and 18 June 2004. George then operated his Western Institute of Aquaculture from an industrial unit in New Plymouth. Inside it was equipped with a recirculating paua *grow out* system that George explained that he had built together with John Taiaroa. It was stocked with paua that had been purchased from the Rainbow Paua Farm, a New Plymouth operation which had recently closed down after the death of one of its owners, who had been the key operations person. I was to learn later that both the plant and the stock belonged to John for whom George was working as an employee. A large percentage of the stock purchased from Rainbow had died as George and John struggled to get the operation working properly.

The Western Institute of Aquaculture was George's operation but, did not seem to be a commercial success as a training establishment. The course I attended only attracted four attendees and it was not to be long before the institute closed and George took up a teaching position with the local polytechnic. There is no doubt that George is an excellent and enthusiastic teacher of the practical aspects of recirculating aquaculture and I enjoyed and benefited from the course. I came away with an understanding of how a plant operated that the problems faced by operators. It became clear to me that it was not simply a matter of building a plant, stocking it with small cheap animals, and putting ones feet up as a passive investor while they turned into big valuable animals. In fact, it was a full on job for which one would be on call 24 hours a day and seven days a week. A simple mechanical failure, if not quickly corrected, could quickly wipe out the farm's entire paua population.

6.14 Ethics approval

My submission to the AUT Ethics Committee was considered at their meeting of 6 December 2004. The result was a list of unexpected criticisms and questions. I was asked to list the questions I would ask. This seemed a difficult task in the context of ethnographic research involving participant observation and semi-structured

interviews. I felt that, while it is possible to identify the ethnographic questions that will guide the beginning of a semi-structured interview, the direction that the conversation will take and the further questions that will follow could not be identified in advance. Another unexpected objection was that I had failed to address issues surround the Treaty of Waitangi in my application.

With Chris Batstone's encouragement I crafted a response and changed the wording of the information and agreement documents to address the concerns of the committee without unduly compromising the ethnographic methods I planned to use. My response was accepted and I had clearance from the AUT Ethics Committee by June 2005. By then I had been observing the aquanauts for nearly two years. I had visited various facilities, attended a conference and a training course, held long conversations with many of the aquanauts and attended nearly all of the meetings of the Gisborne Aquaculture Society and taken copious notes. The approval of my ethics application would finally, give me the green light to proceed to interview the aquanauts, record those interviews, transcribe them to text and analyse that text using NVivo®

7 Cycle Two: Interviewing

7.1 Conversations with the aquanauts

The process of formally interviewing the aquanauts at last became possible in June 2005 once the concerns of the AUT Ethics Committee had been addressed and information sheets and consent forms approved. I already had a good relationship with the aquanauts and all seemed happy to read the information sheet, sign the consent form and sit down for recorded interviews that would last for several hours. These interviews were formal in the sense that they were spoken of as interviews that were being carried out for my research and were conducted as interviews rather than casual conversation. However, they were certainly conversational interviews and only loosely structured. I deliberately had no list of written questions and tried to build a rapport with the entrepreneur and ask brief open questions that would allow the participant to convey information about their interactions and relationships with organisations.

All interviews were recorded using an electronic voice recorder capable of making a long digital recording that could be transferred to my PC as an audio file. At first these files were sent by e-mail to a transcription service in Auckland after the manager of that service signed the typist's confidentiality form required by the AUT Ethics Committee. There were problems with transcription, for example, the word *aquaculture* was usually rendered as *agriculture* and the many proper nouns, technical terms and Māori words were usually transcribed incorrectly. In most cases I was able to correct these errors. In the case of the interview with Meg and Harry at Turanga Ararau, the recording quality was very poor due to background noise from pump machinery. Because of this a number of untranscribable words are represented by bracketed time references in the transcript.

7.2 Meg Matangi and Harry Roberts of Turanga Ararau

Turanga Ararau is the tertiary training provider arm of the main Gisborne iwi, Te Runanga o Turanganui a Kiwa. Turanga Ararau's board has adopted aquaculture as a key element in its strategic plan because it believes it is an ideal means of developing sustainable iwi economic enterprise in the Tairāwhiti (Gisborne) region. Turanga

Ararau is also contracted and the lead provider in the region for the Industry NZ funded Biz programme which, amongst other things, has funded Turanga Ararau to offer a number of introductory aquaculture courses. By mid 2004 some 60 people had attended such courses and a New Zealand Trade and Enterprise publication quoted Turanga Ararau training manager Sharon Maynard as saying:

Great interest has been generated in the economic potential of land-based marine farming, in particular the farming of koura (fresh water crayfish) and paua. Many people already in business see this industry as a viable way of diversifying their existing businesses, or starting new enterprises (New Zealand Trade and Enterprise, 2003, p. 23).

Sharon Maynard is also reported as saying that land-based marine farming may provide a possible investment opportunity for iwi and hapu receiving financial compensation through possible Treaty claims, and the allocation of fishing assets held by Te Ohu Kai Moana.

In addition to funding from the Biz programme the Community Employment Group also supported aquaculture in Gisborne and was reported in the same article as funding an “aquaculture key worker position and supporting the promotion of aquaculture”. This person was understood to be Meg Matangi.

Turanga Ararau provides two full time training courses that have been approved by the New Zealand Qualifications Authority (NZQA). These are the National Certificate in Aquaculture (abalone farming) and the National Certificate in Seafood (aquaculture strand). These are taught at NZQA levels 3 and 4 and in 2003 there were 33 people undergoing training at the two levels. (New Zealand Trade and Enterprise, 2003)

Turanga Ararau occupies a collection of buildings on industrial land located on the edge of the city in Gisborne which was formerly a government department works facility. Old concrete garage buildings have been converted to house a model salt water recirculating system fish farm to support the training courses. Some of the workshop vehicle inspection pits are now used as water tanks while other tanks have been specially constructed.

Many of the Gisborne Aquaculture Society meetings were held at Turanga Ararau and the early meetings were characterised by beginning with warm and

friendly social greetings by many including kisses and hongi (a traditional Māori greeting involving touching noses together). These meetings gave me the chance to view the facilities at Turanga Ararau including classrooms, meeting rooms and the model fish farming operation. It was at the first of these Gisborne Aquaculture Society meetings at Turanga Ararau that I met Meg Matangi and Harry Roberts. Unlike the other aquanauts in this study, Meg Matangi and Harry Roberts are not entrepreneurs in the normal commercial sense of the word. They are however, certainly social entrepreneurs in that they see themselves as working to create good social and community outcomes. They do not merely view themselves as workers at Turanga Ararau but, as part of something larger for which they hold a deep enthusiasm and passion which seemed to match the enthusiasm and passion of the self-employed aquanauts.

Meg had been retired for three years when she was asked to return to the workforce in 2001 and use her skills as an administrator to set up the unit standards for the Runanga's new aquaculture courses. She became bitten by the aquaculture bug and ended up completing the courses herself. Meg has a vision of a strong local industry emerging and Gisborne becoming the home of abalone aquaculture in New Zealand. She sees iwi funds that have been derived from the government in treaty settlements related to fisheries being invested and local Māori people being trained and employed.

Harry Roberts is part Māori and feels at home at Turanga Ararau. He grew up in Gisborne and studied for a bachelor's degree in marine science at Otago University. On graduating he discovered there were few interesting jobs for a marine scientist without an advanced degree so went overseas for a while working mainly as a carpenter but, also gaining experience in air conditioning work that stands him in good stead when it comes to handling the practical plumbing and electrical work associated with recirculating aquaculture.

Harry explains his passion for aquaculture as being driven by a desire to improve the environment and feed the world's fast growing population with the quality protein it needs.

*The simple mathematics is that the world's population keeps growing.
Therefore we are going to need more protein, fish protein, you know*

a lot of people are living by the ocean, so fish protein is one answer and I mean our fish stocks are only being depleted ... so aquaculture for me was a form of conservation.

I have also been out in the workforce and found that conservation doesn't pay, therefore aquaculture is a form of conservation as well as you know has that commercial side to it. It seemed like a perfect option.

Recirculating aquaculture he sees as the most environmentally friendly form of fish farming and an alternative to drift netting. However, he mentions that amongst the marine scientists he encountered at Otago University, aquaculturalists are considered not much better than drift netters and he was one of only a couple of students there with any interest in aquaculture.

Returning to New Zealand, Harry completed his Masters degree and had two years experience working at a (now defunct) paua farm and hatchery in the South Island before becoming the senior tutor of aquaculture at Turanga Ararau. When I interviewed him he was still quite new in the job. He had just returned from a NZ Abalone Farmers conference and was busy constructing a new paua hatchery, using the new plate technology, which would be both a training and research tool and a source of revenue for Turanga Ararau. Spat (juvenile abalone a few millimetres in size) produced in the hatchery could be sold to paua farmers but, could also be used to re-seed the paua beds along the coastline around Gisborne. Beds that had been fished out by poachers or wiped out by an environmental event could become a fishery resource again. At present the local paua fishery was completely closed and the nearest legal fishing of paua was on the Wairarapa coastline. When I spoke to him, Harry was awaiting the outcome of an application for a FoRST research grant that would fund the reseedling experiment. This application was made in association with AUT but, I had no previous knowledge of it from my admittedly limited connection with the AUT.

Meg explained that the iwi began training in aquaculture in 1991 when Turanga Ararau became formally established as a Private Training Establishment (PTE). Prior to that the iwi had been running various training schemes since 1986 under the old MACCESS system of funding for occupational training. She explained that since 1991 the Iwi had identified aquaculture as an opportunity for the development of its people.

The focus of our programmes was the needs and aspirations of Iwi, but not excluding anyone else that might have been interested, so aquaculture was identified as a realistic option for the development for our people at that time.

In moving into aquaculture, the runanga was particularly keen on investigating the use of land based forms of marine farming because of the fact that Gisborne discharges its sewage, micro screened but, otherwise untreated, directly into the waters of Poverty Bay. It would have been culturally unacceptable for Māori to consider raising seafood in Poverty Bay under these circumstances. Of course beautifully clean coastal waters exist just a short distance up the East Coast, but, this is coastline associated with a different iwi, Te Runanga o Ngati Porou. Thus the promotion of land based aquaculture became a strategy born of the resource base (both present and anticipated), environmental factors and the cultural constraints of the iwi.

Asked about the number of students enrolled in aquaculture training, Meg and Harry stated that 12 were enrolled in the 2005 year and previous years the numbers had varied between eight and 33. Not wishing to be impolite or perhaps strike a sensitive nerve I did not directly ask how many former students had found employment in aquaculture as I was aware from talking to the aquanauts that the answer was very few. Instead I asked how they felt about the outcomes from the courses.

“A lot of our students are doing studies, a lot for personal reasons, believing that they can help their Iwi, you know, there are a lot of Iwi around the country that have an interest in aquaculture and so a lot of our students are doing that, they are doing it with the idea of family creating aquaculture”, said Meg. Harry added that the money that would soon flow to Māori through the Treaty of Waitangi fisheries claim would create many Māori aquaculture ventures and many of the students were there to be up-skilled in aquaculture in order to take advantage of the future potential of the industry.

However, Harry volunteered that graduates of the course so far were poorly equipped to find employment in current aquaculture ventures other than as labourers, something he put down to the lack of facilities for hands on training at Turanga Ararau

which he said was being corrected by the current construction of the new paua hatchery operation. Students would be trained in the real world skills of operating a hatchery on a day to day basis. A hatchery operation for paua is much cheaper to build than a system to grow out paua, which Harry estimated would cost perhaps \$2 million. It is also perhaps rather more challenging for students to manage a hatchery and would provide a valuable commercial output in the form of paua spat which can readily be sold to paua farmers.

Meg explained that the Runanga was interested in the idea of producing spat of the local variety of paua in order to reseed the local paua fishery however, this idea faced regulatory obstacles. Firstly, nobody was allowed to take the local paua for commercial use. Māori could take paua for cultural purposes but, this did not include taking a breeding pair to start a hatchery. Turanga Ararau could source a breeding pair from the Wairarapa coast but, these paua, said Meg, could be slightly genetically different from the local animals. The absence of a local fishery also meant there were no local paua fishermen who would purchase spat to restock local waters. If the Runanga were to do this restocking itself it would be as an environmental rather than an economic initiative. Meg gave me the impression that this restocking of the local fishery was something the Runanga would like to do – even if there was no immediate commercial motive. This seemed to me to express the role adopted by many Māori of being a people who are close to, and the guardians of, the natural environment and especially the sea and foreshore.

Meg's frustration with being unable to breed local paua was the first of a number of stories about what I came to think of as The Innovators Curse where a new activity is stymied by a set of rules designed to deal with the status quo. The efforts of these social and commercial entrepreneurs were hampered by rules established for different circumstances. While one government organisation was providing support in funding Turanga Ararau's training programme, another was expected to provide a research grant, the Ministry of Fisheries was refusing to allow Turanga Ararau to take a breeding pair of paua from local waters for commercial use and frustrating it in this attempt to adopt a guardianship role over its local fishery. "We are in the too hard basket. We are in an area of development that nobody has got to yet", said Meg.

Another frustration with the regulatory framework was to emerge when the conversation turned to the licensing of fish farms. Meg told me that a goldfish farm did not need a fish farming license but, a paua farm did. The license costs \$3500 if the application is perfect however, if there are any issues associated with the application the Ministry charges applicants another \$500 an hour to deal with them. Meg pointed out there was much more risk of a fresh water goldfish escaping into streams and lakes than one of her paua. Paua need salt water to survive.

Turanga Ararau operates under a system of dual licenses. One license is educational and strictly non-commercial, the other is a conventional commercial license. Using the former, Turanga Ararau can take a breeding pair of adult paua from local waters and hatch thousands of spat however, these animals can never be sold. Under the commercial license the breeding pair cannot be taken in the Gisborne region as it is closed to commercial paua fishing. They would need to come from an open fishery however, this poses two problems. Firstly, the animals may be genetically different. Nobody knew this at the time of my interview as genetic testing had not been carried out. Secondly, the breeding paua from outside Gisborne would belong to another iwi which would be likely to object to commercial exploitation by Turanganui-a-kiwa.

However, both Meg and Harry conceded that this regulatory problem, while an annoyance, was not a show-stopper. Reseeding could still be carried out and there were no local commercial paua fishing operations that would purchase spat for reseeded in any case.

Harry told me that many overseas countries have government programmes to reseed abalone beds. In Japan there are government-run hatcheries that supply millions of spat for release into the wild. Harry and Meg recently attended an aquaculture convention in Australia and were amazed at the different approach to their industry in that country. State governments are keen to attract aquaculture entrepreneurs to set up fish farming operations and offer a range of incentives including help finding finance and dealing with regulatory issues. Harry referred to New Zealand's Resource Management Act (RMA) process as a major impediment faced by New Zealand fish farmers and suggested that entrepreneurs will be put off marine fish farming in New Zealand because of the big up-front investment required to

overcome regulatory hurdles. Any individual would find themselves owning just a tiny percentage of a venture that cost \$20m to get off the ground and thus there is little incentive for typical entrepreneurial kiwis to get involved.

Talking about the economics and prospects of recirculating aquaculture, Harry preached the importance of economies of scale. He calculated that an animal raised in a 140 tonne paua farm, such as OceanNZ Blue, would cost half as much as one that was raised in a 6 to 10 tonne plant such as Darby Ryan's at Ahuahu. He also points out that small plants cannot hope to supply the volumes demanded by export markets. I asked him how small plants such as those emerging in Gisborne could hope to overcome these problems and survive and he suggested that the Gisborne Aquaculture Society was the only solution. The small local farms would need to cluster together and build an industry. Both Harry and Meg were also very keen on the idea of a large 140 tonne plant being established locally and acting as a kind of strong nucleus.

Meg thinks more in people terms than in economic terms and spoke of the employment a big plant would provide. Especially for people who had been trained by Turanga Ararau. She mentioned that many of the trainees were not business orientated and were shy about business. I was left with the impression that she saw the Runanga as the owner of a large grow out paua farm and establishing the hatchery and training courses were necessary preliminary steps of capacity building towards that ultimate objective. This would explain how her stated goal of Gisborne leading New Zealand in abalone aquaculture would be achieved and also explain her lack of concern at the fact that few trainees from Turanga Ararau had so far found employment in aquaculture.

7.3 William Millton of Marine Investments

William Millton started his paua farm on his Wharekauri property in 2002 after attending a few introductory evening courses at Turanga Ararau that were run by George Helmore. However, William doesn't credit Turanga Ararau for getting him involved in the industry as he insists he had been thinking about starting a paua farm for two years previously. He does concede that the Turanga Ararau evening course did serve as a catalyst to get him started, this and the fact that he delivered tanker loads of sea water to Turanga Ararau's training facility and was inspired by seeing the various

marine animals such as paua and crayfish (New Zealand rock lobster) living in an artificial marine environment. William is a pragmatic can-do kind of guy who certainly does not suffer from analysis paralysis. He is the sort of person who likes to quickly sort out a solution to a practical problem and then get on with the job of implementing it. On my visits to his farm I could see the simple practical solutions that had been used. For example, the building that housed the paua farm was constructed of used cool store panels attached to a simple frame built on a concrete slab floor. Inside the building the framework supporting the racks of fibreglass trays which housed the paua were constructed out of heavy PVC pipe fixed together with glued pipe joints. Not as compact and elegant as galvanised steel or timber but, capable of simple and quick assembly and immune from rust or rot in the salty environment. William had another system of smaller diameter PVC pipes to deliver freshly treated water to the paua trays and water flowed from those trays into more large PVC pipes that circled the concrete floor and returned the water to a sump ready for recycling through the treatment plant. Only about a third of the interior space in the building was occupied by the racks of tanks leaving plenty of space for expansion as the paua grew in size or William added stock.

William is justifiably proud of his treatment plant which features many of his own ideas about how water should be filtered, treated, de-gassed, stored and pumped. I was also shown a small hatchery operation.

William thinks highly of Darby Ryan and his larger plant at Ahuahu but, believes he has built a system at Wharekauri which is superior in many ways at a fraction of the price. William claims that he rarely has to add sea water to his system where as the Ahuahu plant requires the addition of 5000 litres of fresh seawater every day. Where Darby Ryan used the services NIWA quite extensively as consultants, William has established his plant with little or no outside help.

However, William's operation is not without its problems. An alarmingly large number of his animals simply die for no discernable reason. William would love to be able to send these paua to a laboratory for an autopsy and for someone to tell him what they had died of, what he was doing wrong, but, he has been unable to find any help. He has tried using NIWA and received uncertain results in exchange for what

seems to him to be an inordinately large fee. “They don’t seem to know any more than me”, he says.

In fact, William is scathing about NIWA and resents what he sees as the arrogant attitude of its staff, the way NIWA’s experts see themselves as the creators of the concept of farming paua in recirculating systems and their dismissive attitude towards small operators such as him. “NIWA is a commercial operation”, explains William who suggests that NIWA knows small operators cannot afford their fees and therefore contends that small farms are simply uneconomic and only much larger farms, those capable of paying for NIWA advice, can be viable.

William seems to be not only cut off from NIWA support but, also unable to source government funding for the research projects he would like to carry out. He has had several applications to Technology New Zealand turned down and says he does not understand why they failed.

He is also dismissive of the Biz scheme after being the subject of a Biz Business Health Check by stealth. William attended an evening presentation by a representative from OceanZ Blue in Auckland, a new large paua farm. The evening was put on by the Biz scheme and William received a phone call afterwards where he was asked a list of questions about his business. At the end of the conversation he learned he had just undergone a Business Health Check, a requirement for all those attending Biz funded events. William was less than impressed and saw the health check as a waste of his time and a mechanism for Turanga Ararau to be paid by the government for providing a service to small business that was actually of no use in his case. He did readily concede that other less experienced entrepreneurs could benefit from a Business Health Check if it meant that they were directed to other courses or forms of assistance they were found to need.

William began his paua farm in the way that many small business people begin new ventures. He used his personal resources to construct the building, which of course was on land he already owned, and had paid for and installed most of the plant before his funds began to run low. He took out what he calls a “small loan” to finish off the plant and has since repaid this out of revenue from his trucking business. That business has also funded the costs of running the plant and stocking it with paua.

At the time I spoke to him in mid 2005, William admitted he was running low on financial resources at a time when he felt he really needed to inject a further \$100,000 into the paua farm to add more stock and further capacity in the form of more racks of tanks.

Any prospect of revenue from selling paua was at least a year or more away there were signs that the price a producer would achieve for farmed paua was falling. Meanwhile the costs of running the operation were absorbing much of the surplus William derived from his trucking business and meant he had to work very hard running two businesses for little return. One business produced money, but, the other took it all away.

But, in talking with William there was no suggestion he was considering giving up and, in fact, I had the strong sense that it had become vitally important to him that the venture should survive. That he was being motivated not by the prospect of profits, which were likely to be a long time coming and perhaps less than expected, but, by a dogged determination not to be identified as a failure. I do not think William was unduly concerned about what others may have thought but, rather that he sought an identity for himself as a successful industry pioneer and was prepared to continue to invest all his resources of money, time and effort to achieve that.

7.4 Ned Davy of Auric Aquaculture

I first met Ned Davy on my first visit to William Millton's paua farm at Wharekauri in early 2003. William introduced Ned to me as someone who had experience in aquaculture and who had been raising goldfish commercially for years, and was still doing so. At the time William seemed pleased to have Ned's expertise and the two men seemed to get along well but, within a year they had parted ways and Ned was working at Tumu Timber. Ned also sold his goldfish farming operation to two people on the East Coast on the proviso that he would retain the right to sell the fish and keep one third of the sale price. Out of this he would pay the cost of sales and the new owners would operate the farm and pay the costs of feed for the goldfish. The goldfish farm consisted of 100 circular tanks each four metres in diameter and 600mm deep. They were located outside on farm land but, covered by bird netting supported on frames. Unlike paua, that are highly sensitive to water quality and die

off inexplicably even under the most careful care, the goldfish grew happily in fresh water that was green with algae. Goldfish can be left to their own devices much more than paua and require only the sort of minimal care required to maintain a home aquarium, but, of course on a larger scale.

In addition to this much greater operational simplicity, there are many advantages in raising goldfish over raising paua according to Ned. Firstly, the lead time as a new goldfish farm can begin to harvest and sell within three months and the time taken to grow fish to a premium size, just 18 months or so, is perhaps half that of a paua farm. Investment in a goldfish farm is much smaller than for a paua operation. There is nothing to pay for buildings, much less plant is required and energy costs for a goldfish farm are also much smaller.

Ned saw the problems in producing paua in Gisborne as the lack of a local export packing facility and the lack of a decent sized grow out plant, although he considered that this might in time be established by Te Runanga o Turanganui a Kiwa. He noted that the hatchery planned by Turanga Ararau had yet to be “sorted out”. On the positive side he readily conceded that Gisborne did have relatively low labour costs and a supply of clean seawater however, he was concerned by the region’s power supply. He pointed out that being at “the end of the line” made Gisborne subject to higher energy costs and a greater risk of outages.

But, Ned mainly prefers goldfish because it is a well established industry with well established markets. He has no problem raising and selling goldfish which are easily delivered to New Zealand customers. In contrast, paua farmers are industry pioneers who have to solve problems at every step.

At the time I interviewed him, Ned had been running his gold fish wholesaling business, Auric Aquaculture, for a year and was exciting at the prospect of developing a number of new species and, by adding 20 to 30 additional ponds, more than doubling the current farm capacity to bring stock levels from the 50,000 fish held at present up to 120,000.

Ned was also excited about his plans to develop a new type of food for goldfish and king fish. Currently much of this feed is imported into New Zealand and Ned hoped that his locally developed feed would replace many of these imports and in turn

be exported to Australia. He told me it would be made from something which is a by product of another industry.

Ned had come to an arrangement with an Auckland-based consultant, Ian Grey, a former manager with Technology NZ, to prepare his grant application. Grey charges 7 percent of the first \$100,000 that is raised as a success fee and a negotiable fee on larger amounts. Obviously some effort and expertise was going into the proposal and Ned mentioned a number of educational organisations that he said would be connected to the application and a number of aquaculture firms that would provide letters of support and agree to be involved in trials of the new feedstock.

Ned is also a former student of Turanga Ararau and completed a part time aquaculture course over two years. In his study he specialised in goldfish and, while his tutors were expert in paua, he told me he learned a lot of useful things and gained an appreciation of the importance of following correct protocols in the operation of a fish farm. His studies at Turanga Ararau cost him nothing and he puts this down to the fact that his wife, who co-owns the business, is Māori.

Ned had attended a number of evening courses run under the Biz programme. Like William, he volunteered that he had filled out the form requesting follow-up and only ever received one phone call. The Biz programme courses included a number at Turanga Ararau and also some at Biz provider, McCullochs (a Gisborne accounting firm), including the *Investment Ready* course which is run over two evenings.

Ned also had received some assistance from Phil Gaukrodger and Fiona Munroe, two employees of the Gisborne District Council. They put the new business through a business health check and Ned found it difficult to answer many of the questions. Auric Aquaculture was not a business which had begun with a carefully worked out plan and financing in place. It was a typical New Zealand family SME which existed to support the desire of the founder to carry out a certain type of work and in the process to be their own boss. Unlike William who had a lifetime of self employment behind him, Ned's only previous experience of business was being half of a two man trucking firm for a few years during his early twenties - and in this venture Ned was the half of the partnership who drove the trucks and not the person responsible for the accounting or administration.

Despite his lack of business experience, Ned gave the impression he is learning about business fast and his enthusiasm, awareness of his own lack of knowledge in some areas and his willingness to learn are standing him in good stead. Ned commented that it is probably time he hired a part time person to keep track of paperwork for him and he had had a conversation with someone at McCullochs about that firm taking over his accounting work, currently in the hands of Graham and Dobson. Graham and Dobson has a reputation as a more traditional and less pro-active Gisborne accounting firm in comparison with McCullochs which seems much more keen to work with new businesses and provide business advice in addition to the production of annual accounts.

The significant differences between Ned's Auric Aquaculture business and that of the other aquanauts is firstly, that Ned had avoided the big investment in plant and facilities and also avoided the need to employ labour by setting up a simple partnership arrangement with people who would both own and work the farm. This was possible because of the second major difference, the fact that Ned worked with goldfish rather than paua.

Ned had much less business experience than the other self employed aquanauts but, seemed much more ready to seek outside assistance and to collaborate with others.

7.5 John Taiaroa of Taiaroa Shearing

I first met John Taiaroa and his wife the evening that the Gisborne Aquaculture Society was formed in late 2003. My wife and I chatted to them over dinner and found them a charming and interesting couple. Together they run Taiaroa Shearing, a successful shearing contracting business based in Gisborne, and it is no surprise to me that they do well at this work. John is a tall, fit man with the relaxed air of a natural leader and his wife is outgoing and sociable.

By the time I interviewed John in his combination garage and office in 2005 I had got to know the couple quite well though conversation and observation at Gisborne Aquaculture Society meetings and the 2004 aquaculture conference in Auckland. Both are enthusiastic and knowledgeable about aquaculture after completing a 14 month part time aquaculture course at Turanga Ararau which involved

them both attending some five evening classes each month and hitting the books at home after work to complete assignments for their tutor, George Helmore.

This course, run By Turanga Ararau as an addition to their normal full time training courses, had just come to an end as the Gisborne Aquaculture Society was being formed and it seemed clear to everyone that John was the obvious choice as president of the new society. He was confirmed in the position immediately without any suggestion that anyone else might be considered. John did not demonstrate great meeting chairmanship skills, but then nobody else seemed to be concerned at this and I was to find that even though the Gisborne Aquaculture Society was an incorporated society, its meetings always had the character of a loose group of acquaintances sitting around and having a casual discussion. There was rarely any agenda or formal meeting procedures normally associated with the running of an incorporated society such as dealing with inwards and outwards correspondence, the passing of motions, voting or the presentation of reports by officers such as the treasurer or secretary.

At the time I met them, John and his wife already had firm plans to build a recirculating paua farm on their Gisborne property and when I interviewed John formally, two years later in 2005, work was about to begin on digging the foundations and footings for the building and was being delayed by bad weather.

John explained that he first became interested in aquaculture through being a recreational diver. While he enjoyed diving for and eating kina more than paua, he became fascinated with the idea of having his own paua farm and visited one that had been established on Stewart Island. However, the idea seemed out of reach and something that would cost millions of dollars.

When the chance came up to study paua farming at Turanga Ararau, John was very keen. There were a total of 12 people on the course and John and Leonora had their tuition fees partially subsidised by the government. The course was taught by George Helmore who regularly made the long drive from New Plymouth to Gisborne to teach classes at Turanga Ararau. Once John began the course he realised just how complex and frightening an undertaking the starting and running of a farm would be. But, the couple remained enthusiastic and were not put off by this. They also went on a fact finding trip to China with a number of the local paua farmers and students.

John and his wife were about to start building a 14m by 23m structure to house their new paua farm which would be positioned just 15 metres away from their newly built house on a 2 hectare block of residential-zoned land on the edge of the Gisborne suburb of Kaiti. The building would contain all the equipment, no tanks or plant would be located outside, and would include a double height section to house treatment plant and elevated water storage tanks into which water could be pumped before being gravity fed back into the growing trays. John began by designed the plant as compactly as possible and then designed the building to fit around it. The plant would be of modular design, each module capable of producing 2 tonnes of paua per year. Each module would be self contained so that, once the plant contained five modules, any catastrophic equipment failure could only effect 20 percent of the plant. The five modules would provide a capacity of 10 tonnes, but initially only two modules would be installed. John explained that the first modules and building was costing \$250,000 and additional modules would cost about \$100,000 each. These would be needed as the stock of animals grew in numbers and in size.

One of the factors motivating John and his wife was the prospect of owning a business that would be a more dependable and less risky source of income than shearing contracting. John had been shearing for 20 years and contracting for the last eight of those years however, he was conscious that he depended on a small number of customers and each year there was a risk he could lose one, or even all, of his sources of income to a lower bidder. Also shearing is tough demanding work and John told me it was getting harder to find young men prepared to train as shearers or for that matter as fencers, shepherds, farm hands or any of those sorts of jobs.

To John it seemed that young men entering the workforce would now rather take the soft option and work behind bars, make lattes in a cafe or work as bouncers. However, he pointed out that “we can’t all move to Auckland” and “New Zealand would shut down without farming”.

John was well aware that a number of paua farms around New Zealand have failed but, told me he was completely confident that his will be a success. He also stated that the technology and methods taught by George Helmore that he would use would be superior to those of either of the existing local paua farmers, Darby Ryan and William Millton, and he seemed to be looking forward to proving these methods in

practice. He believed that many of William's problems stem from a design flaw that prevents William from easily cleaning out his big 25,000 litre water storage tank. John's design will have two storage tanks and filtration systems side by side so that one can be taken out of action easily for regular cleaning as he believes otherwise they become breeding grounds for bacteria which migrates back into the system and contributes to the high stock mortality rate that William experiences.

John had worked closely with his former tutor, George Helmore, to design and build the plant that was destined to be installed in his new building. He had spent a month in New Plymouth working with George on the plant and during that time unexpectedly had the opportunity to purchase stock at a knock down price from Rainbow Abalone, a paua farm that had recently closed down in New Plymouth. While John's new plant was all set up and being tested in an industrial unit rented by George Helmore it was not quite as ready as it needed to be and about 40 percent of the purchased animals died before various problems with the system could be sorted out. John also purchased hatchery plant from the Rainbow fire sale. This plant had been in operation at the time I attended George Helmore's training course in New Plymouth in June 2004. John was paying George Helmore to look after the paua from Rainbow at that time. Later the paua were sold to another abalone farm, John's new plant was packed up and George Helmore gave up the lease on the industrial unit that had been home for his Western Institute of Aquaculture and took up a teaching job at the local New Plymouth polytechnic.

John has also attended the various courses related to aquaculture run by Turanga Ararau under the Biz programme but, he had not sought or received any advice or assistance for his business from the Biz programme. At one time he considered applying for funding from a Māori organisation the name of which he cannot remember however, he only got as far as a preliminary interview before giving up on this idea. The organisation would have wanted very detailed financial information that John would not have felt comfortable supplying. There was also a sense that John felt too proud to go cap-in-hand asking for assistance and had perhaps been self employed as a shearing gang boss for too long to be prepared to report to, to answer to, grant administrators and account to them for his own actions and performance.

John was concerned that the government seemed to be funding the training of dozens of aquaculture workers at Turanga Ararau but, that none of these people were finding work in the industry because, he said, the government was doing nothing to assist people who were setting up farms. Providing consultants or subsidising the wages of trainee employees for example.

He told me that sooner or later the government was going to wake up to the fact that many people were being trained for a local industry that did not exist yet and that the government would then act and cut off funding to the courses. The Runanga, he said, needed to push ahead with its unannounced plans for a big paua farm that would be able to employ many of the Turanga Ararau trainees.

John was also critical of NIWA which he said was another organisation “paid for by taxpayers at the end of the day” but, which failed to deliver any support to the local industry except at very high hourly rates that seemed unaffordable to small businesses such as his.

He believed that NIWA management was simply not interested in having small paua farmers as customers. That their preferred customers were large scale abalone farms such as OceanNZ Blue which at the time had just been established in premises next door to NIWA’s in Northland at a cost of around \$7m. John pointed out that a farm on that scale can afford NIWA’s charges and also, because of the size of the investment being made, really cannot afford not to have the services of the best available scientists.

John gave the impression that conserving financial resources was vital to the success of his venture. He would need to pay for feed, labour and power for at least three years before he could expect a return from selling paua. Along the way he would have to invest further in adding more of the \$100,000 modules needed to expand the plant. Shearing would have to pay the bills for a while yet.

Saying goodbye to John in his garage office I began the drive to the rural township of Ahuahu to meet a farmer who had been going three years and, by his own admission, almost completely run out of money.

7.6 Darby Ryan at the Ahuahu Paua Farm

Darby Ryan's Ahuahu paua Farm is the largest and most established in the Gisborne area and was set up in early 2002 with the involvement of NIWA. He is therefore an important figure amongst the Gisborne aquanauts. Darby took me on a complete tour of his plant during my visit to interview him in mid 2005 and also introduced me to his daughter, a recent science graduate, and her husband who worked in the business. On the day of my visit a shipment of new paua spat had just arrived from OceaNZ Blue and Darby's daughter, son-in-law and other workers were engaged in the painstaking work of transferring them into the grow-out tanks.

The Ahuahu Paua Farm is an impressive facility. It is a collection of modern buildings in a fenced compound located not far from the Ahuahu roundabout on the main road from Gisborne. The farm offers tours for groups of visitors and has a small gift shop supplying all manner of paua items. Ahuahu is a tiny centre with only a few houses, a run down looking grocery store, a fish and chip shop and a garage.

Darby was polite and welcoming and seemed happy to talk to me in detail about his business. About my age (in his early fifties) he had begun his working life by training to be an A-grade mechanic and worked at that trade for many years before becoming a fisherman in the mid 1970s. Darby owned his own boat and fished for crayfish off the coast of Mahia for 17 years until the quota scheme was introduced to manage the fishery. Like many fishermen at the time, Darby took the opportunity to sell the quota he had been allocated and found a buyer in the local iwi. The quota money was used to buy a farm property which initially ran sheep and beef. Darby decided to specialise in bull beef and did well at this until the market for bull beef suddenly collapsed. The farm was reinvented again, this time as a dairy operation which proved very successful and was sold for a good price in time for 2000.

While Darby and Marilyn could have put their feet up at this point, Darby, then around 50, considered he was too young to retire and cast around for a venture that could make use of his skills, background and expertise as a mechanic, a fisherman and farmer. Darby spent 12 months thinking about it and the idea of starting a paua farm seemed to tick all the boxes.

Darby visited a number of existing paua farms around New Zealand and noticed none seemed to be doing very well. He put this down to a belief that these other

farms were achieving poor growth rates and that he could do better. He also spoke to NIWA staff who had been involved in studies for other possible paua farming sites at Mahia, a project that had not gone ahead, and one NIWA employee who had done some work with small recirculating systems for research purposes. After talking to him, Darby said he decided to go ahead adding “rightly or wrongly”.

“Would you do it again now if you knew then what you know now?” I asked. Darby thought that he probably would not although he added quickly that he thought he was really too old to be taking on this sort of challenge. Darby is a fit and healthy looking 54 year old so I formed the impression he was not physically challenged by the work but, perhaps felt he was at a time of life where he should be enjoying his wealth and the fruits of his labours rather than throwing them all back into a high risk venture, a kind of roll of the dice on which he was staking his life’s savings and taking a chance with the standard of living he would enjoy when he did retire.

He also told me that he now thought farmed paua may be an industry that could take ten years to become established, not the three or four years he had originally thought. It was an isolated industry, not really connected to another established industry and not yet served by a network of suppliers or part of an established supply chain or industry system. Darby now knows his original assumptions about the market for his product were naïve however, he says he could not really have done useful market research before starting the farm because the product he is about to offer the market is so different from the feral paua he would have had to base this market research on.

Feral paua must be 125mm in size to be legally taken however, farmed paua can be as small as you like. Growth is rapid up to around 50mm before slowing down dramatically so the 50-60mm size, which farmed paua can reach in three years, seemed the best product to market. These smaller animals are described as *cocktail paua*, effectively a new product. Darby’s farmed paua also differ markedly in appearance from their wild cousins. Firstly, their outer shells are a clear luminous blue, an appearance only found on the inside of wild paua shells. The outside shells of wild paua are incrustated an unattractive silty grey colour. Another important difference is the colour of the meat. Because of the feed they are given and the system in which they are raised, Darby’s paua, while they retain the black foot typical of paua, actually

has a white mantle. This is likely to make them more desirable in Asia where paua meat is often bleached to make it resemble the more valuable white-footed abalone variety.

Another difference, which Darby did not mention, may render the farmed paua less desirable. Farmed paua taste quite different from wild paua. Taste is obviously a subjective issue and I had not tried a taste comparison myself but, I had heard the comment that farmed paua simply does not taste as good as wild paua.

However, Darby now has a serious problem finding export markets for his paua for a number of reasons. Firstly, his product is different in both size and variety to the abalone that Asians are used to consuming. He must educate buyers about the product and persuade them to buy it, ideally as a premium product however, he lacks the volume to consistently supply even a small scale distributor in Asian. Darby travelled to China recently with a New Zealand Trade and Enterprise visit, tagging along with a representative of the much larger OceaNZ Blue operation. He found that even a restaurant operation would want enough for 40 restaurants. Size is also a problem as the Asian market is used to larger animals. The 50-60mm cocktail size is an oddity for which there seems to be little enthusiasm.

Darby said there was a small New Zealand market for cocktail paua but, far too small to absorb his output. While there is a huge Asian market, Darby's output is too small to supply it consistently and successfully and he needs to grow paua to 80mm in size.

In time other larger growers will reach the point where they have product ready to export. OceaNZ Blue for example. Darby will then be able to send his paua off as a part of larger shipments. However, when I spoke to him Darby and Marilyn had been living off their savings while paying all the costs of operating the plant for two and a half years without any significant revenue. Darby estimated that he had invested \$1.5m so far and would have put in close to \$2m by the time the plant was in full production. Money, he told me, had run out and some income from selling paua was sorely needed.

Darby contrasts his experience in setting up a paua farm with his previous experience in setting up a dairy farm and the difference was one of information. Setting up the dairy farm was a simple planning exercise because it was something that

many people had done many times before. Costs could be accurately calculated along with output and revenue.

By comparison his predictions of output from the paua farm proved wildly inaccurate. The farm was designed to produce 10 tonnes of paua but, Darby had discovered it is really only capable of 6 tonnes at the most. This was a big blow to projected profitability. The error was caused by a lack of knowledge about how the animals would behave as they grew and began to fill up the space available and they simply cannot be packed into a space in the density required and still grow. Darby blames NIWA, his consultants at the time, for this blunder but, concedes that part of the issue is the fact that he now realises he needs to grow paua to 80mm and that these heavier and larger animals need more space than the 50-60mm animals on which the calculations were based.

So while Darby told me he probably would not do it again, with the knowledge he has gained he believes he could now establish a very much improved plant for very much less money. However, despite the disappointment over the capacity and the possibilities for improvement he can now see, Darby is justifiably proud of the Ahuahu plant and assets that it is one of the best of its type in New Zealand and much better than most other smaller paua farms.

Unlike the other aquanauts, Darby and Marilyn have had success in obtaining grant funding for research projects. In each case, however, NIWA have been involved in the grant application process and the research work. The first of these was a Start Smart grant from Trade and Enterprise for a small amount, just around \$5,000 Darby recalled, to find a solution to a sediment problem within the system. The grant covered half the cost of the research.

Darby obtained a second grant to help pay to have the trays that held the growing paua redesigned. The animals were migrating with water flow, a common problem in recirculating systems, and Darby invested \$100,000 in research to seek a solution. The grant funding covered a third of this cost and the money was spent with NIWA and a firm called Aqueous Consultants in Gisborne.

In addition to this research, Darby paid NIWA about \$50,000 to consult on the establishment of the plant and this money was all from his own funds.

Asked about NIWA, Darby was generally happy with his relationship with the scientists and the services they provided. The only bone of contention was their miscalculation of capacity. Darby commented that this one error changes the economics of the operation so much that it could yet render the plant uneconomic in its present form.

He volunteered to me that his house, his shirt, everything was on the line here. He still believed the business would ultimately be a success however, it would, he said, be touch and go.

Darby had not bothered to remonstrate with NIWA over the error. Under the terms of their contract with Darby, NIWA's liability to compensate him for any mistakes was limited to the amount they were paid for their services and Darby felt they were quite capable of using his small consulting assignments as experiments to build their own knowledge while leaving him to carry the can for any problems that resulted.

While there were problems in supplying the Asian markets, Darby was exploring other opportunities including an up-market restaurant chain in California and even contemplating supplying parties of Korean tourists with packages of paua to take with them as baggage when they leave New Zealand.

The export market problems had arisen only after Darby had finally won a battle against bureaucracy that threatened to completely prevent any export of Darby's produce. Darby had learned that there was no packing facility licensed to pack farmed paua for export. There was a suitable facility in Tauranga already licensed for the export of New Zealand rock lobster and using this facility allowed paua to piggy back on the existing arrangements for moving live lobster from Mahia through the Tauranga holding facility and off to export markets through Auckland airport. However, Darby was told the Tauranga holding and packing facility was only licensed for rock lobster and not allowed to handle farmed paua without a long and expensive licensing process that would require the commissioning of a quasi scientific study, a risk management plan. Darby estimated this process could easily cost \$50,000.

Darby's battle against bureaucracy, to try to circumvent what he saw as an entirely unnecessary expense, involved dealing with the New Zealand Food Safety Authority and the separate Food Safety Verification Authority. The former thought

that the packing company could simply amend resubmit its existing risk management plan for rock lobster to include paua as well however, the verification authority inspector disagreed.

Darby enlisted the aid of the New Zealand Seafood Industry Council and spend long hours on the telephone to various officials trying to resolve the impasse. Because no farmed paua had been exported from New Zealand there was no precedent to follow. Finally, the license was granted but, Darby's paua cannot be stored in the same tanks used for rock lobster and a special, paua only, tank has had to be installed in the Tauranga export packing plant.

Darby talked to me at length about his problems with bureaucracy and a pattern seemed to emerge in which Darby business has had difficulties with bureaucracy because it was an innovative venture. For example, farmers receive a special exemption under the Land Transport Act that allows them to operate a truck within a 50 kilometre radius of their farms without the need for a Transport Operators License.

*So I applied to the Land Transport and asked them for an exemption.
They said 'No, you can't have an exemption'. And I said 'Why not?'
They said 'Because you're not a farmer'.*

I got the impression that Darby's annoyance, almost distress, with this ruling went further than just a sense that he was being treated unfairly. Darby was being told that the industry he was working to develop and into which he had poured his personal resources and years of hard work was not a legitimate farming activity. This official ruling really challenged how he had constructed his identity and his sense of self worth. New Zealand's history since its colonisation by settlers from the British Isles has been based on forestry and farming and to this day its economy is based on the export of primary produce – the range of animal products based on sheep and cattle. These animals are grass fed in New Zealand and our image of farming is something that occurs on land rather than inside buildings. It is perhaps not surprising that the officials at Land Transport rejected the suggestion that Darby's truck could be treated as a farm truck because Darby's farm was inside a building and grew meat in water rather than on land.

Another cause of annoyance verging on distress for Darby was his recent experience with a staff member who had, Darby believed, abandoned his job for a better life as a beneficiary. This person had been a good worker but, had complained of chest pains and been absent for six weeks producing a series of medical certificates. Darby visited the man and found him in apparently fine health mowing the lawn of the home he shared with his partner and seven children. The couple, said Darby, were not married and thus claimed individual benefits for either sickness or unemployment and the man's partner received additional benefits for the children. The family was better off without the labouring job Darby had to offer. Darby understood the logic and did not blame the individual. He saw the problem as systemic and it rankled with him that a doctor should be involved in what he saw as a deceit which had caused him to keep the man's unwanted job available for six weeks. Worse was the problem of replacing the staff member in a community where there was apparently little incentive to be employed.

Darby has also experienced problems in delivering supplies of paua within New Zealand using a courier firm. At the time I interviewed him he had lost a shipment because it had been delivered to the wrong address on a Saturday morning. The customer had simply assumed the good had not been sent and did not report their non-arrival and when the paua were finally, re-delivered to the correct address the following Monday they were dead. Darby is dismayed at what he sees as carelessness by the courier driver and the refusal of the courier company to take any responsibility for the loss of the shipment. It seems the courier firm contracts out of their legal responsibility under the Carriage of Goods Act in the fine print of their customer agreement. Transporting live paua to restaurants is a particularly time sensitive activity as the paua must arrive at their destination alive. Darby's confidence in his ability to supply restaurants using courier deliveries had been shaken.

At the time I spoke to him Darby had decided not to bother attending any further meetings of the Gisborne Aquaculture Society. The un-business-like meetings and had not impressed him but, the biggest problem was that, after speaking to them, Darby did not see himself gaining much from associating with the attendees and seemed to view the group as irrelevant to his operation.

I can't say that I was impressed with the people that I talked to so we took a step back from there and carried on our own down here. And yeah, the couple of meetings that I went to I wasn't impressed with at all.

Darby stressed that he would welcome visits from Harry Roberts and his Turanga Ararau trainees and I wondered later if he was a little embarrassed by the tension that had apparently occurred during the previous visit and was seeking to dispel it or even send a message through me. Harry Roberts was to tell me later he and his group trainees had been asked to leave by Darby's wife during their last visit after she had taken exception to some questions Harry had asked. I also wondered later if cultural, attitudinal or personality differences between the Darby and his wife, two pakeha business people, and the people associated with Turanga Ararau were hampering the development of social capital and thus the prospect of developing a Gisborne aquaculture cluster that would include the Ryans.

7.7 Asking further questions

I had little contact with the aquanauts during 2006 and the first part of 2007. During this time the meetings of the Gisborne Aquaculture Society had ceased and I reasoned that the aquanauts must have had many more interactions with organisations and there must have been interesting developments in the industry. For example, had William proceeded with more investment? Was John Taiaroa's plant in operation? How had John got on with his grant applications to research new forms of fish food? Had Turanga Ararau secured their grant for hatchery and reseeding research and had the Runanga moved closer to investing in a big paua grow-out operation? Was Darby's Ahuahu plant supplying export markets and were there any indications that it would become profitable?

Embarking on my 2007 update I was to find that my promising cluster had effectively collapsed. That three of my entrepreneurs (Darby Ryan, Joe Warbrick and William Millton) had suffered serious financial loss, three entrepreneurs (Darby Ryan, William Millton and Meg Matangi) had left the industry, one entrepreneur (John Taiaroa) had stopped work on a local paua farm and was instead involved in setting up an aquaculture facility in the USA. So I had a wealth of new and interesting information to process.

8 Cycle three: Returning for outcomes

8.1 Returning to Turanga Ararau

When I returned to Turanga Ararau in late 2007 I found there had been changes but, little progress towards the goal of establishing a commercial hatchery. Meg Matangi had left Turanga Ararau however; Harry Roberts was welcoming and happy to be interviewed again. Meg's departure seems to have coincided with the disappearance of the Gisborne Aquaculture Society and I reflected that really she had been the prime mover at Turanga Ararau and had been assigned the task of creating a local aquaculture cluster. Harry Roberts had only attended some of the meetings and I wondered if his less enthusiastic approach stemmed from his belief that small recirculating paua farms would not be economically successful. Or was he simply more focussed on his research and teaching at Turanga Ararau and preferred to leave Meg to pursue the Gisborne Aquaculture Society initiative?

Nothing had changed in that Turanga Ararau was still teaching the same level 3 and level 4 courses with much the same numbers of students and had not yet established the planned paua hatchery. Harry began by telling me he had had major setbacks and complained of the difficulties of dealing with contractors and suppliers from outside Gisborne.

"Anything coming across those ranges is going to take an extra couple of months and costs you an arm and a leg," he told me. Turanga Ararau needed a non slip surface applied to the concrete floors in the old workshop being converted to house the hatchery. Floors are always wet in aquaculture facilities and this was an important safety feature for the many students and visitors that would walk around in the building. Harry told me the contractor had applied a coating which Harry said he couldn't walk on without slipping and this problem alone had taken eight months to sort out. The labourers employed by the out of town contractor had failed to add enough sand to the coating. The tanks for the paua hatchery had all been installed in the building before it occurred to Harry to test the slipperiness of the floor with a bucket of water and a gumboot and discovered the fault. The tanks and pipes had then needed to be disassembled and removed from the building so the coating could

be reapplied and at the time I visited the tanks had been moved back in but, had yet to be reinstalled.

Harry also spoke of the work that went into updating teaching material as the aquaculture industry changed but, I wondered later if it was a change in the industry which had slowed progress on the hatchery. Local paua farms were now closed or closing and there was no longer any talk of a large new local paua farm that would purchase the spat produced by the hatchery.

Harry confirmed that William Millton had closed his operation in Wharekauri early in 2007. He added that Joe Warbrick, the new owner of the Ahuahu Paua Farm, was also talking about closing down. John Taiaroa was not going ahead with his Gisborne farm and was instead investing in a new aquaculture venture with George Helmore in North Carolina. On the Gisborne aquaculture scene only Ned Davy appeared to be doing well and he was farming goldfish in ponds.

Harry seemed impressed by Ned Davy's success and mentioned he had raised the possibility that Turanga Ararau should become involved with goldfish some years ago and that it would have been a good move. I wondered later if Turanga Ararau was enthusiastic about paua farming because the animal is an indigenous species and a traditional food for Māori. Raising goldfish might offer greater potential employment and profit but, would not be such a good cultural fit for a Māori iwi organisation.

Harry had a view on the causes of failure of the Ahuahu operation. The isolation, Gisborne was bad enough and Ahuahu even more so. This translated into high energy costs. Electricity prices of 24-27 cents per kWh compared to 14 cents in Napier. Isolation also meant problems undertaking even a simple plumbing job as parts would have to come from Gisborne or Napier. The design of the plant itself, which was thought to be excellent several years ago, was now seen to be too labour intensive. The Ahuahu farm featured tanks with extra panels to provide greater surface area for the paua however, the drawback of this design is that these tanks would take all day to clean. Self cleaning tanks are now widely used as they not only save labour but, also promote better animal growth as the paua are not disturbed by cleaning and even the lights can be left switched off.

Talking about how knowledge of paua aquaculture has progressed since the Ahuahu plant was designed in 2003, Harry asserted that "we are now growing paua

twice as big in half the time". He then qualified that by saying that it still takes three and a half years to grow a paua to market size but, that market size is now 100mm rather than the 50 to 70mm previously possible in that time. The idea of so called *cocktail paua* of 50 or 70 mm has met with little enthusiasm from customers so the paua simply had to be grown to the bigger size. Harry said that the idea of cocktail paua only came about because it used to take four years to grow paua to that size.

Harry told me that even the better designed and much larger OceaNZ Blue paua farm struggles to contain costs. It may have the ability to produce paua worth \$8m a year but, costs had to be maintained at less than that and that included labour, energy and especially feed which is an expensive commodity and much of which is wasted when it is added to the water but, not consumed by the animals. Harry told me that OceaNZ Blue recently hired Rodney Roberts, a scientist expert in running paua hatcheries, and was reaching the point where sales revenue was beginning to balance with expenditure. This was interesting because Harry seemed to have a rather negative view of the economics of paua farming, and there is certainly evidence to support that negative view. He held the view that small operations could never succeed in the long term because their costs would be too high without any advantages of scale. These small operations would also not produce sufficient quantity to be able to consistently supply international customers. Even if they do manage to sell paua into the local market as soon as a larger farm started to supply that market the price would fall and the small operator would be unable to compete.

Harry told me he even harboured doubts about the economics of a larger operation such as OceaNZ Blue. While he stressed that he had not seen the books and could not really comment he told me a colleague of his was adamant that the economics of even this larger 140 tonne plant were suspect.

I wanted to ask Harry about what I was later to call the Turanga Ararau Issue. Why have they trained so many people to work in aquaculture? Only a few of their trainees have gone on to find employment in aquaculture, none of them locally and now the few local employers have failed to start up, closed down or are about to close down? Now that the Gisborne Aquaculture Society initiative seems to have failed to result in work opportunities for trainees (and positive training outcomes for Turanga

Ararau) will Turanga Ararau be able to continue to justify its role as a training provider in the future?

I began by asking Harry how many students he was teaching. There were 15 of them, all full time. Four were on the New Zealand Qualifications Authority (NZQA) Level Four and 11 on Level Three. Harry commented that when he studied at Otago University he was one of only two students with an interest in the field, out of 30,000 students. I later asked what the 15 people currently being trained would do with their qualification. After some hesitation Harry said:

I can tell you what past students have done. They have just gone straight into the aquaculture industry where they are working on a range of farms. We do mainly land based here although we touch on the mussel industry, especially when you are doing a range of best practice and the legislative stuff and that, they are all pretty much the same. Um, but yeah biology wise we do all sorts, we do touch on sea farming, they also get diving through us.

When I probed on this point Harry mentioned one of his former trainees, who I had met, who was working in the Marlborough Sounds on a Salmon farm. Harry also pointed to John Taiaroa who had gone on to self employment. Harry readily agreed with me when I pointed out that employment prospects locally were non existent but, he mentioned that two of his current students were there on behalf of their iwi organisations, one from Mahia and the other from near Muriwai. This training would be of benefit to those iwi organisations if they were to consider investing in aquaculture.

I was left with the impression that there may be some truth in William's accusations about Turanga Ararau. That, while there were a few exceptions, most of the trainees had no serious intention of seeking employment in the aquaculture industry and some may have been undertaking training as a less demanding alternative to regular work. They would enjoy some scuba diving and enjoy social interaction within the more familiar and less demanding cultural environment of Turanga Ararau. Of course William has been brought up with a strong work ethic and is scathing towards those who do not seem to share his commitment to employment. From the viewpoint of many of the trainees the choice may have been seen quite differently and possibly as a choice between undergoing training, which at least holds some promise

for a better future, or taking a job in say forestry and working long hours in the bush at hard and dangerous work only to be laid off as soon as the price of logs falls. A choice between having a sense of being exploited by forestry owners or being in a supportive environment such as Turanga Ararau that perhaps provides a sense of cultural identity along with the sense of accomplishment that flows from the training.

But, I wondered how Harry felt about training people for a job they would never do and how it might affect his motivation and job satisfaction. What do people do if they realise the work they are doing is not bearing fruit? Do they defend it publicly but, privately harbour doubts about the validity of their work, or perhaps hold subconscious doubts that they do not even admit to themselves?

Harry believes that small paua farms in Gisborne cannot succeed and therefore seems to hold no interest in continuing the efforts to create a cluster. Perhaps he may now doubt that Turanga Ararau will be able to make a commercial success of a hatchery and so the work of building one proceeds without a sense of urgency and suffers many delays. However, Harry does seem to enjoy teaching and seems unconcerned that he is training people in aquaculture when, with few exceptions, they will not go on to work in the industry. I sometimes worry that my work is pointless but, seem to carry on somehow and perhaps Harry is no different. Or perhaps Harry works happily towards his own non financial goals as a scientist and educator and is able to work towards a professional goal of making sure that Turanga Ararau provides the training work expected of it, and for which it is funded, without being concerned that few of this trainees will ever put that training to use in a commercial workplace.

Harry is certainly quite passionate about his work and in this quote is talking excitedly about the prospect of working with diatoms to making huge improvements in hatchery productivity:

You know the diatoms are often referred to as the grass for the abalone – so what we are going to try is different stains – different combinations of feed for the juveniles. Also a different technique – we are going to try the Chinese style of rearing – so basically what they have found in Australia is changing the diatom species is – because you have got certain diatoms for settlement and certain diatoms for nutrients – for example, you will have a diatom that is good for eating in the tank and you will get a very poor settlement because the larvae are pelagic and will drop down to the surface and

if they like it they will settle if it has the right cues and after that they will start to eat and will metamorphose when they start to feed – if you don't have the right settlement cues or the right diatoms – the right combination of diatoms in there and bacteria we think - they will not settle. So if there is a low settlement when you put all your larvae in a low settlement can be from 0 to 10 percent. So you might get none settling. But what they have found in Australia is that with the manipulation of the right type of diatom you can – I think they increased – this is on a commercial scale too so not just in a little farm or in a little experimental system at uni – they have increased their settling numbers to 40 percent And it used to be 0 to 10 percent. Which is huge – because they were doing alright on 0 to 10 percent so 40 percent is just out of control – so why not try it here? The Chinese do theirs totally differently so we will try that as well.

Harry had just received new funding for this work although he would not say what organisation was funding it as this was apparently somewhat commercially sensitive. After our interview he took me on another tour of Turanga Ararau's aquaculture facilities talking animatedly about each piece of plant and equipment.

I reflect later that as a scientist and a teacher Harry's cultural viewpoint is obviously different from that of the struggling entrepreneurs, such as Darby Ryan, William Millton and Joe Warbrick, none of whom had the luxury of continuing with a project that was not proving to be an economic success. Goals for them had to be focussed very much on the financial success of the activity whereas Harry had the luxury of working towards his own professional and academic goals and was much more detached from commercial objectives.

John Taiaroa and Ned Davy were two Turanga Ararau trainees who went on to work in aquaculture in Gisborne. While Harry points to them as successes for Turanga Ararau they were part of the group taught by George Helmore who commuted from his home in Taranaki to teach aquaculture for Turanga Ararau during 2002 and early 2003, around the time when Harry joined Turanga Ararau. However, Harry harbours doubts about George Helmore's professional ability and told me that Turanga Ararau eventually fired Helmore and had him "taken off the books" of the Seafood Training Organisation (SITO).

After an attempt to launch his own training organisation in Taranaki apparently fizzled out, Helmore (who holds United States citizenship) moved to the United States to farm tilapia, a venture that also failed. He is now working with North Carolina (NC)

State University to establish a new recirculating aquaculture plant in Burlington, NC. This venture also involves John Taiaroa who is related to Helmore's defacto wife, and I will report more about this development in due course when I review John's progress.

Harry attributes to George Helmore the idea (that Harry now believes to be flawed) that a cluster of small paua farms in Gisborne could be successful and has doubts about Helmore's professional abilities. He points to Helmore's claim that Turanga Ararau could produce 10 tonne of paua a year saying it was simply mathematically impossible to fit them in. Helmore had, he told me, no real experience in growing animals, had just "read a couple of books" and had "rubbed people up the wrong way". Harry recalled that he had once attended an international conference where George Helmore was to have presented a talk ostensibly about a plant of his own in New Zealand however, Helmore "left and did not give those talks when he saw us there". Harry says he did catch part of the first one and this talk was based on work done at Turanga Ararau before Helmore's arrival. Harry made various other comments in this vein but, seems relaxed that his friend John is continuing to work with George Helmore in the USA because the plant is being designed by people at NC State University rather than by Helmore.

To summarise, the changes at Turanga Ararau they all seem to relate to the end of the great expectations for the industry that I observed in 2003-2005. Harry Roberts no longer believes that a cluster of small paua farms can succeed in Gisborne. This belief seems to have left Turanga Ararau as well and this change of vision may have coincided with the departure of Meg Matangi. Certainly this vision was evident in 2003-5 and was the *raison d'être* of the Gisborne Aquaculture Society. Harry was dismissive of William's operation saying that paua farming is not a business that can be run in a garden shed.

There are a lot of people out there who were going to make a lot of money out of paua farming – got a couple of articles off the internet and go hard – get into it – spend all their money.

Harry also implied that William had a low opinion of scientists who he regarded as not knowing anything and that William had failed to take advice from Harry's friend who had gone to work for him for a while. That Harry's friend was "clued up" but that

William would not listen or thought he “knew better” (William provided an opposing view of that situation when I interviewed him later).

As well as discounting the potential for small local paua farms Harry seems to be hesitant about the prospects for establishing a large plant in Gisborne on the scale of OceaNZ Blue. This desire for a large plant to be established locally was articulated as a clear part of the vision during my 2005 interviews at Turanga Ararau but, Harry now harbours doubts about the success of OceaNZ Blue and the fact that any Gisborne plant would lack the competitive advantages that OceaNZ Blue enjoys such as proximity to NIWA expertise.

In discussion of the Ahuahu plant Harry pointed to the high power costs and the other problems associated with isolation and also has doubts as to the viability of the industry, predicting that small plants supplying the local market will see the value of their production reduced as soon as larger producers come on stream with a greater volume of product at a lower price. Citing the problems at Ahuahu as an example of poor fundamental design, Harry is adamant that a recirculating plant must have the ability to draw water directly from the sea via a pipeline so that it can quickly replace its water and to solve water treatment and animal health problems. He favours a design where the water, while being treated and recirculated, can be completely changed three times a day if necessary and said “there is nothing like being able to turn on a tap and save your animals”. The Ahuahu farm relies on a tanker to transport seawater and can only change 30 percent of its water daily.

Harry is also disenchanted with the way offshore aquaculture has failed to develop in the Gisborne region and nationally in New Zealand, and sees the process for development as gamble for commercial interests that must stake a lot of money and time in a bid to create an Aquaculture Management Area (AMA) they might never win.

No one is getting anywhere. It's just too complicated actually getting an AMA. So we are okay because we are land based but anyone wanting to do aquaculture at sea – everyone is just too confused. The local council, the regional councils, the onus is on them now – how to do it – where to do it – and they don't have any ideas. To do aquaculture in the sea – aquaculture has to be within an AMA – an aquaculture management area – and none have set up and they are a long way off. Just the process to go through to set one up – it doesn't matter if you are doing a private plan change or a council

initiated one – the process is still long and costly. It would cost one arm and one leg and the councils don't want to know – they don't want ratepayers to pay for it – unless you are in an area like the Marlborough sounds where all the ratepayers would probably say – yeah – let's go for it – this is paying all our wages.

If it is a private plan change the company or industry that has applied for it does not necessarily get to do what they want in that AMA. So someone else could come along. If you did that you would want to keep it. Twenty percent straight away goes to Māori – but [the remaining] 80 percent isn't necessarily yours.

Harry is perhaps a realist in an industry now peopled with disappointed optimists. While he gives the impression of being an upbeat and positive individual, he shows signs of being frustrated that he is training people for an industry being held back by policies that fail to facilitate aquaculture offshore and attempts to develop an industry on land that have gone down the blind alleys of uneconomic scale and flawed design.

8.2 Changes and impending closure at the Ahuahu Paua Farm

I took the advice of Harry Roberts and wasted no time contacting the new owner of the Ahuahu Paua Farm, Joe Warbrick, to arrange for an interview and drove to Ahuahu to meet with him. Joe was friendly, welcoming and happy to talk to me but, carried the unmistakeable air of a man beset with problems. Joe had bought the farm from Darby Ryan in April 06 for \$500,000. This transaction crystallised Darby's losses at around \$1.5m, after investing around \$2m in setting up and running the plant. Joe had the benefit of a decade working as a scientist at NIWA. From 1996 (when he joined the Ministry of Fisheries, later being absorbed into NIWA) through to his departure in 2006 he had been in charge of first a snapper enhancement programme and then a scallop enhancement programme and he investigated how these populations could be boosted by being reseeded. He then worked on rearing turbot and towards the end of his time with NIWA often visited lobster holding facilities to train the operators of these recirculating systems on how to test their water, understand what was going on in their systems and how to "manage their systems so the animals don't die". There can be no doubt as to his expertise in operating recirculating aquaculture systems however, Joe was plagued with two serious problems. The most immediate was that his animals were suffering an inexplicable

illness and the most serious was that the business he had purchased for \$500,000, and invested another \$500,000 into over 18 months, was clearly destined for failure, at least in its present form, and Joe was contemplating a \$1m loss.

Joe had been involved in what he called “some of the number crunching” when Ahuahu had been established. He had calculated water flows, bio-filter size and the like as that was his area of expertise. He wondered how things were going at the farm and asked his boss, Phil, to make a phone call. Phil came in and said that Darby had put the place on the market and that he wants out and Joe immediately saw an opportunity to get out of research and into a more practical role. To do something that could put him on the road to financial freedom. But, in hindsight Joe’s purchase of the Ahuahu farm had been unduly rushed. Darby had had the place on the market for three months and, conscious that every day was costing him money, set a deadline to sell the farm as a going concern. If he had not sold by that date he planned to sell the stock to another farm, switch off the power and close the operation down. When Joe rang Darby on the Thursday before Easter, Darby told him he had only until Wednesday the following week to make up his mind. Joe thought about it over Easter but, had little opportunity to get professional or financial advice. To complicate things further Joe and his wife were booked to fly to the USA that Sunday to attend their son’s graduation. They made what Joe described as a “call in the dark” and decided to purchase the farm without reviewing financial information, growth data or mortality data.

On taking over the plant Joe found the animals had a very poor growth rate and suffered high mortality, something that Darby had given no inkling of in the pre-sale telephone conversations between the two men. When I interviewed him in 2007, Joe told me that after 18 months of operation he now realised that the farm was simply not viable in its present form. The only aspect of it that worked was the tourist side of the business consisting of a small shop and the farm tours. This brought in perhaps \$120,000 a year in sales revenue and Joe planned to try to sell this part of the business to a going concern. However, the main paua farming business was just not viable in its present form and beyond salvation in Joe’s opinion.

To make things worse for most of 2007 the animals had been suffering from a mystery illness. Joe had been able to improve growth and reduce mortalities when he

took over but, the mystery illness had put him back to square one. Worse the design of the plant meant that he could not simply replace the water to solve the problem. Water could only be added by the tanker load and only 30 percent could be replaced in a day. If he had been able to pump in seawater the problem could be much more easily managed however, Joe only option was to try ozone treatment and to send samples off to overseas colleagues for analysis.

Joe summarised his problems as follows:

As a paua farm it has no redeeming features that could make it work here. The other kind of leg that has been supporting us over the past 18 months has been the shop and paua farm tours or the aquaculture tours. And that business in itself would work as a stand alone kind of business. It needs a bit more promotion and it needs a bit more money spend restructuring the place – putting in more ablution blocks – maybe putting in a café here – that would work. But, as an aquaculture venture – no it won't. It is the wrong location – it needs to be by the sea where you can pump seawater if you need to. The principle of running a recirc system is not wrong – it is when things go wrong and you don't have access to the sea water to flush – you know – it is an age old saying that 'dilution is the solution'. When you have got a toxin the best thing is to flush it out.

With no solution in sight for the mystery illness Joe felt unable to offer the plant for sale as a going concern, or even to offer the livestock for sale to another farm. To do so he felt would be immoral.

The plant was in the wrong location not only because it was too far from the sea but, also because due to its remote location it suffered from extraordinarily high energy costs. Trustpower charge 30 cents/kWh for power in Ahuahu and Genesis supply the farm at around 24 cents/kWh, compared to around 14 cents/kWh in Napier or Gisborne. The farm is a high user of power and consumes the same amount constantly 24 hours a day and seven days a week. Energy costs are around \$200 a day and represent a big slice of the estimated \$1000 per day running cost for the operation. The other major items are feed and labour.

Joe also found other basic flaws in the design of the plant. Firstly, the long trays make the plant labour intensive as they have to be constantly cleaned and this cleaning disturbs the animals and requires lights to be kept on resulting in stress and a poor growing environment. The plant design makes it almost impossible to reduce

energy costs as water must be pumped into the degassing tower in order to feed by through the system by gravity and this arrangement increases frictional losses. The main problem is keeping the water cool and a good way to do this is to use natural ventilation. To draw cool air through the building at night and by day even the movement of warm air would have a cooling effect by causing evaporation. Unfortunately the building was not set up to take advantage of forced ventilation cooling and Joe has no option but, to run electric heat pumps to cool the water.

The lack of self cleaning tipper trays also means that labour costs are high. Ahuahu is a 5 tonne plant which requires a staff of three to operate it but, Joe estimates that a 100 tonne plant using the self cleaning tipper trays could be run with a staff of just seven people. The result is that labour costs are too high because the scale of the plant is wrong.

Joe is in a unique position to comment on NIWA's role in consulting on the design of the plant and while he believes that NIWA is to blame for the design problems he blames the system for funding NIWA which he says is a product of government policy which forces NIWI to pursue profit from intellectual property.

They are under-funded they will do anything to get money. They have to make a profit. Their motivation is not to assist people their motivation is to make a profit. They work under rules and regulation imposed by the government. I think the whole science direction is wrong. When you look at successful countries overseas where there is a good R & D framework, say the States or the UK or somewhere like that, the government puts up the money the scientists do the research and then publish their results. They are there to do research, they are not there to make money, they are not entrepreneurs they are scientists. So they publish their results and then they leave the entrepreneurs to take the risk. Currently the framework we have in New Zealand is that crown research organisations have to make a profit therefore they tie up the IP so a lot of stuff is not published it is tied up with IP inside the organisation.

Joe claims this policy results in NIWA being cut off from vital knowledge from other organisations while at the same time needing to sell its services commercially. This he says results in NIWA becoming involved in misguided ventures such as the development of a poorly designed paua farm in Ahuahu.

Somebody like Darby comes along who wants to take a punt then they don't have the morals to say no you are silly. They say okay we will use you as a test of the idea that we think might work, not having tested it themselves. And because there is competition for the research dollar NIWA doesn't talk to Cawthron which is also working in the paua field and doesn't talk to Dunedin University and doesn't talk to Auckland University. And all of those institutions have knowledge that could have prevented this thing from going the way it has. But, because none of that work is published or available or because NIWA does not talk to these people then so in my mind the framework is wrong.

Joe believes the solution is to provide more public funding for basic research to support the development of emerging industries such as aquaculture. Once these industries become established they can then begin to fund research on a commercial basis.

The government should be looking to foster an environment where research is ... like in the example of a car wheel ... somebody had to invent the wheel and put it on a car and work out how the wheel works. The actual tread pattern that goes onto those tyres can be paid for by the tire manufacturers but, initially somebody has to do the development work that enables the car to be built. So once you have got to that point then you can go to pay for research that works out how many wires you have got to put in so it doesn't get punctures and all that kind of stuff.

At the stage that the aquaculture industry is in we are a long way from being able to fund research – we just don't have the revenue ourselves because you have got a five year start up cost you have got to meet anyway. And you know there is a high tax burden even over that period. You are not making any money but, you still have to pay wages which means you have got to pay PAYE and then there are a whole lot of other compliance costs. I was just looking at our insurance costs – half of our insurance bill is fire service levy and earthquake and war commission and they are all taxes.

Joe is frustrated because he believes that if the system only worked better he could now be running a viable business. Worse NIWA is not providing entrepreneurs with access to the results of its research and the country misses out on tax revenue that could be flowing from successful businesses based on that research.

We find ourselves in a position where potentially we have a business which could earn a lot of money for the country if it was set up in the right place with the right research backing it but, because of the way the government fund research it doesn't allow that to happen. And so if you look at overseas jurisdictions where the core research is done and then published then entrepreneurs take the risk and set up businesses which ultimately become successful and then pay tax which then funds ongoing research to me it seems like a better system. At the moment even the public good funding which is going into NIWA and all the other crown research institutes, they own the IP that comes out of those things so a lots of things are not published that should be published.

Joe made the point that most of what is known about farming abalone has come from work done in Australia where the industry is becoming more and more successful. He sees the OceaNZ Blue operation as being much more likely to be successful due to its scale and especially that fact that it will have the production to be able to supply export markets.

We had an inquiry from Canada up in Toronto and they wanted two tonnes of product a month. Well you know we can put out a few hundred kilos a month. And to go to that sort of scale for export then you have got to put in your own processing plants and then your own distribution network and all that costs money so you really need the scale. There is no Fonterra to take our paua away from the gate so we have got to do all our own marketing. And you have got to have scale to do that. If you want to get into an export market you have got to pay someone to be over there promoting your product. And you have got to get market intelligence. What is other stuff selling for? How does ours compare? Can we promote it on the fact that it is clean, green? And that all costs money.

This then is the final problem. Not only are costs too high, plant design and location wrong but, the scale of the operation is not big enough to provide access to lucrative export markets. Joe believes the system of funding caused NIWA to rush in to research without consideration for the economics of the industry and forming a basic strategy.

The problem is that the drivers for research in New Zealand are based on the research provider needing to get funding so they will do whatever they need to do to get funding. Whether that means telling the truth or not they will do it to get funding. When you are looking at the aquaculture industry the drivers should be okay let's sit down and work out what species are going to work. What are the economics around the production of those species? Where are the major costs? Okay how can we reduce those major costs? If labour is a major cost okay how do we reduce the labour cost? If energy is a major cost okay how do we reduce that? Or food or feed or whatever. How do we succeed in pulling those costs down or improving growth rates or whatever? But, that was never done.

While Joe realises the Ahuahu farm cannot succeed he believes that a larger scale farm that is better designed and better located can be a winner. His problem will be financing the move which will mean convincing lenders - something that will take time and effort. He has begun by looking closely at the economics of a paua farm.

When you do the economics on it if you say that you want a two person operation one of those persons is going to be on call 24 hours a day, seven days a week, so you have got to pay them a decent sort of salary so they may be wanting \$60-70,000 for that. And then you have got a labourer so that is \$30,000 so that is \$100,000. Then you have got your ACC levy and Kiwisaver and all that kind of thing chucked in on the top so you know you might be talking about \$115,000 that you need in revenue just to pay wages. Wages make up 20 percent of your operating cost so you have got to turn over \$550-600,000. The price of paua at the moment is about \$50 a kilogram so what does that work out at 12,000 kilos. That gives you the scale. And then you have got to grow those animals for five years so you have got to have 5 years production in mind. You have got to have a building that matches the capability of that and you have got to have the water flow that will allow you to do that and you have got to pay the pumping costs.

Joe's simple calculations illustrate the extent of the problem. The Ahuahu farm has a capacity of just 5,000 kilos and Joe would need to increase this to 12,000 kilos just to have a hope of breaking even once full production is reached.

To make things worse, Joe realises that there is much that remains unknown about farming paua. What makes them grow? Why do some do so much better than others? Joe had heard NIWA was doing some work on brood stock but, suspects that the results will not be readily available to the industry and that NIWA may seek high prices for the seed it produces.

Joe was also concerned that while people in the industry are cut off from access to research the researchers are cut off from the imperatives facing the industry.

I guess it is one of the fundamentally wrong things about government research is that the researchers have no vested interest so they don't care. And they tend to have a huge amount of funding whereas people like us we have to try to do things on the cheap so you have to find the shortcuts.

While he was aware of the closure of the Wharekauri farm, Joe believed the approach taken by William was a good one. Putting a little bit of money in and trying it to see if it is going to work. He believed this was probably a smarter approach than the one he took.

Turanga Ararau he saw as neither a help nor a hindrance to the Ahuahu farm. He benefited from talking to Harry and bouncing ideas and also had some of Turanga Ararau's trainees at Ahuahu during 2006. He commented that some of them were "really into it" and "loved the aquaculture course" while other were "there because they had to do a course so they could get the benefit".

Joe says he would advise against a local iwi setting up a big paua farm in the area. The \$20m investment would be better put into a reliable earner such as dairy farming where returns would be secure. He pointed out that there are great support systems for agriculture and horticulture in New Zealand. There are vets and farm advisors with the expertise and this is lacking in aquaculture.

The government would say there is no industry so why put anything into it but, it is a chicken and egg thing. Those of us who are trying to make it work flounder along because there is no support. But, you know we are philosophical about it. It is just the way it is. You are not going to change it. The New Zealand government has long almost had a negative bias towards aquaculture. It is hard to know why but, they have certainly not been supportive. And even with their latest aquaculture statement that has come out it is pretty much saying the status quo actually. You look in there and there is nothing very new.

Joe puts the government's lack of enthusiasm for aquaculture down to concern for the environment. Aquaculture has received bad press in Asia after mangroves were bulldozed to create prawn farms that had all sorts of disease issues. Joe points

out that the current Labour government has a strong leaning towards green issues. Joe came from a staunch Labour family that named him Michael Joseph after New Zealand's first Labour Prime Minister, Michael Joseph Savage, but, has now adopted the viewpoint typical of the other entrepreneurs such as William and John.

I come from a working background where the best you could hope for would be to pay off your mortgage and get the pension you know – that is what you hope for in life. But, having gone into my own business now and you see that business is people like us who take a risk with their money who create wealth for the country – who create the tax base that allows government to provide the social services that it wants to.

With my son having studied in the States – and he went over a complete left wing – and he had his eyes opened. People there know there is no state support to back them up so they work their butts off to try to get ahead and none of them at university or anywhere – none of them wanted to be employees – they wanted to be employers – they all wanted to start their own businesses because they knew that was the only way to get ahead. And so it creates an entrepreneurial environment and sure there are going to be losers in that system - but, there are losers in every system - but, you look at the American economy – there is a huge amount of wealth. I don't want to go into politics too much – if somebody had the answer the world would be a lot better place but, I think it would be nice in schools and it is happening now isn't it – that they are taught that wealth is created by people taking risks and starting new ventures and they need to be rewarded if they are successful because all that money flows back.

I had an argument the other day with a friend of mine who works for Corrections and I said as a business I have got to – to create a position for somebody to work – I have got to earn that money so I can pay him to work in that position. And he said no the employee earns that money. And I said no – I have got to create a business that brings in enough revenue so that I can employ that person.

With the demands of constant tank cleaning, trucking water and trying to turn around a troubled business, Joe works long hours and has come to see his time a precious resource. When he contacted Trade and Enterprise and “various other institutions” for help he was referred to information on their websites.

As somebody who is working 16 or 18 hours a day the last thing you feel like doing when you get home is to sit down and sift through a whole lot of mumbo jumbo language on a website that has been put together by policy analysts and policy advisors. It would be more helpful I think if somebody from those organisations came out and spent a bit of time.

This seemed to support the comment made in the in the OECD review that there was a “*mismatch between supply and demand for complementary technical services, training and advice to help small and medium-sized enterprises (SMEs) to articulate and satisfy their needs* (OECD, 2007b, p. 13)”.

The only support Joe received was a six month training allowance for one staff member from Work and Income. The business had to fund the other half of the person’s wage and Joe says in hindsight he now has more debt as a result.

Joe has also suffered a running a battle with bureaucracy over the simple process of collecting seawater in the farm’s tanker truck. The truck only travels a short distance between the farm and collection point but, requires a driver with a Road Users License and a Goods Service License. Joe had neither of these licenses when he took over the operation and, while he set about studying for them, felt he had no option but, to drive the truck in the meantime. Hiring a qualified driver in Ahuahu for just one hour a day was simply not possible - especially as the single hour of work would be different every day in order to collect water at high tide.

Joe wrote to the Ministry of Transport seeking a temporary exemption from holding the license but, was turned down. He wrote back and appealed and was told that the Ministry would not change its mind but, that he was free to take his case to the High Court.

Well I was asking for an exemption and they do have the ability within their statute to give exemptions. But, he wasn’t prepared to take the risk because it was his bum on the line. So that was an immense frustration so I just had to disobey the law and hope I didn’t get stopped. And I did get stopped once by a traffic officer and he told me I needed a class four license and I told him I knew that and had applied for an exemption and had it declined. But, I said that under the 1992 Animal Welfare Act I also had to look after my stock and at the moment that was more important than the 1999 Transport Act.

By not having a Class Four license Joe was risking up to a \$10,000 personal fine and a \$100,000 fine for his company. He told the officer that he was just two weeks away from taking the test and was grateful to have been let off with a warning.

However, the whole issue has been an unwelcome distraction at a time when he was trying to come to grips with the serious problems at the paua farm. With the exception of the officer who let him off with a warning he found the officials unhelpful and unyielding and was especially annoyed by one who telephoned him about a number of minor problems with the truck that he had had to fix when it went for a Certificate of Fitness check. The official had made the call just to remind him of his responsibility to maintain the vehicle in safe working order at all times.

None of those things are going to cause an accident. I was so annoyed to think that my tax was being used to pay for somebody to go through certificates of fitness and hassle me about it. I said to him – when you got up in the morning how did you get to work? He said I drove my car. I said did you check the clutch fluid level and the brake fluid level on your car before you drove it? Did you check the tread on your tyres?

Joe also found the process of seeking assistance from New Zealand Trade and Enterprise to fund research to be a daunting and difficult one. He realised that he could put a lot of time and effort into an application and be turned down due to his lack of knowledge of the system.

They are basically saying there is money here – go on the website and read through all the different criteria and put an application in. But, I said to the guy – look I know the funding process because as a scientist I have got to write scientific applications and basically you have got to know all the right buzzwords that will tickle the ears of the people who are handing out the funding. And I said you guys know what the words are, you know how things should be phrased, why don't you provide that service? You are there to facilitate the development of businesses in New Zealand. You know what the people who are reading these applications want to hear. Come and have a look at my business, tell me what funds I should be applying for, write the application and then let's get on with it. If the government has got money to hand out, let's make it a hell of a lot easier.

Joe considered applying for a Trade and Enterprise subsidy to find customers for his paua in California but, found that the help available was both too big and too small. Too big because the minimum grant was \$40,000 (and he would have had to put in \$40,000 to match that) and too small because it would cover only air fares to the USA and not any of the internal travel costs he would incur once he got there. In the end Joe decided to shelve all applications for funding until he had found a cure for the mystery illness. It seemed to him to be easier to call the bank and borrow more money.

Joe also had a low opinion of his former employers when it comes to seeking assistance for a paua farm. He believed paua farmers would be better off seeking advice from other paua farmers or from people who are selling equipment as they have a vested interest in keeping the paua farm going.

My experience with NIWA is that most of the scientists there have no idea anyway and they are only regurgitating what they have read in scientific papers or books. They have never done the research themselves which is a kind of sad indictment on them. Their goal is to make money. They got a large amount of funding from the foundation a number of years ago and it was for fast tracking aquaculture species or something like that but, they will say whatever tickles the ears of the people who are handing out the money to get the funding.

When I spoke to Joe in October 2007 he told me he expected to be gone from Ahuahu by the end of January 2008. There was the possibility of re-establishing a larger farm somewhere else but, I got the impression that there was only a slim chance of financing this. Joe and his wife were philosophical about the financial loss and there was no sign of bitterness.

We got married nearly 30 years ago and we had nothing when we got married so if we have nothing now so what? We will try something else. It is not the end of civilisation as we know it. There are plenty of other opportunities out there and I still believe that New Zealand can make a place with paua farming. Look at the world wide demand for abalone and all the wild fisheries are in collapse or in a state of collapse. New Zealand is no different, we are heading down that line.

I felt they would bounce back and move on with their lives successfully and had learned a lot about running a small business. Including, I would expect, the

importance of carrying out due diligence on a purchase. Certainly Joe was now a lot wiser about the economics of paua farming and in the process of battling the mystery illness has found out who his friends are.

I must say that during this time and with all the drama we have been having – the most helpful people have been from private organisations. We have not had a single – NIWA have shown no interest – the best help we have had has been from the Cawthron Institute which is a private organisation – they know that we don't have the money to pay for research but, they are happy to try to foster a long term relationship with us. They are doing a lot of work for us at the moment to try to identify what is causing the problem and what we can do to fix it.

OceaNZ Blue has been incredibly helpful. They have sent their staff to come down here and work with us at no cost to us.

And Ozone Technologies who are the people who are helping us with the ozone stuff have provided us with equipment and time for nothing to try and help us get over the problem. It has kind of restored my faith in the fact that where people have a vested interest they are more likely to be helpful.

People who work in government departments don't have a vested interest – they are going to get paid regardless of whether they help you out or not.

Soon afterwards the farm was advertised for sale at \$280,000 plus GST and stock at valuation. This price included land and buildings in Ahuahu.

8.3 Mothballed plant at Wharekauri

When I returned to William Millton's Wharekauri farm in October 2007 it was a warm spring afternoon and the trees bordering the road that wound up the hill to William's property were bathed in golden sunshine creating a picturesque pastoral scene. However, I already knew that inside the outbuilding made of recycled freezer panels, William had given up on his dream of turning paua into gold.

William was the same energetic figure I remembered and seemed only slightly subdued at the prospect of discussing a failed venture. Labour difficulties were his first explanation and he blamed both a lack of quality and quantity. He also blamed society and people's attitudes to work. Of all the aquanauts, William was the most vocal about what I came to call the Turanga Ararau Factor, the belief that most people who do the aquaculture courses at Turanga Ararau have no intention of working in the industry.

Labour - that was our first issue. We couldn't get skilled staff even though all these people have been through the polytech courses in town. It is just a lot of bullshit. They go, they sit on the course for two years or three years or whatever and then they go and sit on another course for two years or three years. They have absolutely no intention of ever working. And so out of the 100 or so people in Gisborne who are fully qualified to Level Three Aquaculture, when we were advertising for staff we would not get one single reply. That says to me that the system that is supposed to be training these people is haywire.

You have trouble getting mechanics, you have trouble getting drivers and you have trouble getting staff generally. That was the first thing. And the expectation of these people, when you do get staff, they expect to see things happen. They are expecting to see pauas going in and pauas going out. They don't kind of... Look, it is a long term thing. It is four years from start to when you first start to dribble your first pauas out the door and they don't get that. People don't understand that in this day and age. That it is four years. And there is a lot of stuff that has got to happen over that four year period and they turn up there.

We had four different staff in four years. Every single time that we had an issue, a death issue or a stock issue or a... You know we had mass mortalities... It came directly back to the staff. And that was really disappointing and you know we went through that four times and I wasn't prepared to go through that again. It is not worth it. And you cannot get skilled staff. You cannot get people who are experienced. You cannot get unskilled staff and if you can they want \$16 or \$18 an hour. And then they want you to do all the work for them.

William's experience in hiring staff had been a series of disappointments. He would hire a staff member, train them, and things would go well for a while. But, then, he said, the staff member would become lazy, or careless, or decide the regular tests and checks were unnecessary, and fail to follow William's procedures. The result would be mass death of paua, sometimes quite catastrophic in scale. According to William this pattern was repeated even with a university trained staff member - an experience that caused William to question the value of a university education.

At one stage we had a guy come here out of university and he had done a thesis on abalone - whatever - but, that is what he focussed on abalone. The funny thing was that Harry Roberts went to the same university and he did his thesis on paua growth rates and food - which food gives paua the best growth rates and blah, blah, blah.

And obviously over the four or five years he was at university did lots of different stuff and went out and worked at a couple of different paua farms – put all his data together and finished it and came up with the ideal mix of food to feed New Zealand abalone and make them grow fastest. And that is all quite interesting sort of stuff – but, then what happened was I had this guy who rang up and wanted to come work here, and he did but, only for a month before I fired him, and he had been to the same university, had done the same degree, studied the same as Harry had done, feed for New Zealand abalone. And I thought that is funny that two guys about the same age should come out of the same university with the same subject and had done exactly the same work to get their degree. And the more I thought about it, and I actually heard from someone else I heard about one more person who had done this, and I didn't know them personally but, apparently they had worked in Hawkes Bay at the seahorse farm, who had done the same thing. And all their papers had been presented and they had gone off to the scientific community. And I thought am I just being stupid or is it possible that these people doing this biology degree know there is a degree there if they follow this format. Here is a subject; here is how you do it. These guys did it a couple of years ago, same methodology, there is your degree.

I wondered if William was simply harbouring a healthy scepticism towards educational and scientific organisations or was he something of a conspiracy theorist? Was the fact that he was self taught in all aspects of aquaculture colouring his view of those with formal qualifications? Did he need to diminish those qualifications in his own mind in order not to feel insecure about his lack of formal training? Harry Roberts seemed to have held quite a high opinion of the skills possessed by his mate who had gone to work for William but, as William continues the story, it became obvious there was a clash of personalities in this relationship.

And so his practical skills were zero, his people skills were zero the message on his answer phone – if he answered at all was 'What do you want [expletive deleted]?' That is the calibre of this guy and he was just hopeless – absolutely hopeless – he was just totally on a different planet. And I had Harry come out here at one stage and I said to Harry look can you just give me a bit of a once over with this guy and just run through things because he doesn't seem to get stuff. He doesn't understand some of this basic stuff. And this guy is busy telling you don't need to test your water, you don't need to do this and that and Harry is saying hang on you do have to do these things have to happen – you have to do these things every day. 'No it is fine!' That was enough. He was down the road. He was only here for a

month. In that time we had about eight thousand paua die. He went home one night, left some valves turned off, some tanks that he had been buggarising around with, and I came in Sunday and the paua were all dead. Absolutely toes up! Went home one other night, did not set the alarm, we had a power cut, the power went off, more dead paua the next day.

William bounced back from these losses and set out to hire a replacement worker. For a while things went well.

Then we got a guy that had actually been through the Turanga Ararau course. And he knew a little bit – but, he didn't know how to work – he had been unemployed all his life – so you know he didn't really understand the work scenario – but, he had learned a couple of things and we thought he was going to be really good. But, after 5 months he just got slower and slower and couldn't be bothered and things were not getting done because – again I mean it is an instant society where if you want to talk to somebody you ring them on a cell phone – if you want food you buy it at a fast food place – nobody has to do anything for four years any more and so these people do not understand that it takes a long time.

Does William have unrealistically high expectations? He is clearly a hard worker himself running multiple businesses. He told me that for many years while himself an employee he took on extra shearing and fencing work on the weekends to supplement his income and try to get ahead.

The cost of energy came in a close second in explaining why he had closed the paua farm down. In four years William has seen power charges rise by a factor of 2.5 from 12 cents to 30 cents per kW/hr. The third major cost of a paua farm, food, had not been a factor. William said he had been happy with that. While the closure could be laid clearly at the door of labour and energy costs, the technical difficulty of farming paua soon entered our conversation. The lack of access to knowledge or research, of any scientific support was also something William saw as a third reason for closing his plant and this was something he was vocal about. He saw two problems with NIWA. Firstly, that he believed they had little useful expertise that they could contribute and secondly, that, even if the NIWA scientists could help him, he could not afford to hire them.

We couldn't get anything out of the NIWA people without paying for it. And so they simply looked at our operation as a gravy train. Every time we rang them or wanted stuff it was like pay, pay, pay, pay, pay. And again, I have probably told you before, a lot of their stuff, their published data, is wrong! Is absolutely wrong! We didn't so much use their information, their data, to really help us here. I know that Darby at Ahuahu he did and he was totally reliant on their science. And their science was wrong. It was totally wrong. It was alright in a laboratory, or in a bucket, but, it was not right in a farm.

Despite his low opinion of NIWA Bernhard believes the NIWA-designed plant in Ahuahu is a good one and concludes that the problems in Ahuahu relate not to the plant but, to the fact that the knowledge of how to overcome high mortality rates does not exist because the research has not been done.

NIWA haven't done a lot on mortality – but, mortality is huge – absolutely huge – and that is what he is finding and you know you send them off to NIWA and pathology, histology and ask 'Why are these animals dying?' and the best answer you are going to get is that they are stressed.

William has always had the problem of high mortality and thought that the mystery illness at Ahuahu was probably bacterial rather than a virus. A bacterial build up in the animals because they are living in conditions that are not clean enough and that causes them to become stressed. I asked William if the problem could not simply be solved by designing a plant with a pipeline into the ocean and the ability to quickly replace its water but, William leapt to the defence of a fully recirculating design.

Recirculation is nothing new – and they are doing overseas – they are doing it on a huge scale – but, the inputs and the support is there to make these things work. Look we tried to get some funding here – we tried to get some funding to do growth trials – we tried to get funding to build some alternative water filtration gear that we didn't have and isn't available anywhere on the planet – so I built it – with no funding – and we just come up against a brick wall all the time. Anyway so I funded my own trip to Virginia to a recirculation conference and discovered those guys are doing it – mostly with fresh water – they are not doing a lot with salt water – but, it's not really a lot different – they have just got huge, huge, huge support. The universities go into people's farm situations and they just throw people and science and laboratory stuff and they throw out systems and put other systems in and they experiment with it on a massive scale. And they take these people that were having some issues with whatever their tilapia might not have been growing or might have

been dying or something and they come in and they sort it out – and away they go – and they move on to the next project. And so the government support to make it successful is huge. Huge! And we get nothing!

So William blamed New Zealand's Innovation Framework and a lack of access to knowledge and support and to funding for his own research. He echoed the views of Joe Warbrick in criticising a system that charges high prices for any support but, seems to offer little that is of practical value to aquaculture entrepreneurs facing problems that they lack the scientific or technological expertise to solve by themselves.

We get nothing at all. We get milked. Milked! We get milked by a second hand science outfit in bloody Wellington that have spent 30 years studying it and still can't get it right. And they will swear black and blue that their science is good but, it is not. Darby found early on that it wasn't – they pretty much designed his plant – how successful is it now? It is coming up five years and still struggling – really struggling. And I think that is actually a good plant – I think it is a very good plant.

I found it interesting that William seems to approve of NIWA's work on the plant design at Ahuahu but, is scathing of NIWA's role since the plant was established. He contrasts it with the OceanNZ Blue operation which he points out has a number of advantages. Firstly, that it is able to share the water supply of the Marsden Point refinery, secondly, that it can buy power at eight cents a unit and finally, that it receives "huge NIWA support" because it is part of the same complex. At the same time William remains dubious of the value of NIWA support and believes the grass is greener in the USA and he would do better to study how people are doing aquaculture overseas where there is both more industry experience and more support for the industry – a better innovation framework.

You can't really go and talk to NIWA about recirculation systems because they haven't done it. They have got no experience – they have got no commercial experience in that field. And so the only way to find out what is going on is to go out and find out what other outfits are doing – find out why and how they are making it successful and that is why – because they have got their country behind them. And there are just some amazing things out there – absolutely amazing.

William recounted his frustrating interactions with NIWA and described specifically the support he would have liked but, could not obtain from them.

We had NIWA come here earlier on because we had some issues which we thought might have been carbon dioxide in the water and from several phone conversations they turned up here – they had something else at Ahuahu and they came here – and spent 15 minutes and tested my water and they had already told me over the phone that it was my problem – blah, blah, blah. Well they turned up and tested my water and were kind of scratching their heads because the water quality was fine and they charged me \$2000 for that. You know for 15 minutes and dipping their probe in the water. And we sent off animals to have histology done and they charged me \$1500 for that and same thing – the result came back and I was told I had stressed animals. So I just gave up. There are lots of thing I would have liked to have done. I would have liked to have sent some food samples away and had them analysed but, at \$1500 - \$2000 a pop it is prohibitive. You could be getting histology done on your pauas – you could be sending animals away once a fortnight and having them sampled so you can get some idea of what build up – what is actually going on – why are these things actually dying. Instead of that all we can afford to do is wheelbarrow the things out the back and tip them in a hole. And that is where Joe is at – and that's where Darby was at as well.

But, William's own applications for research funding to both the Gisborne District Council's Economic Development Unit and TradeNZ were declined, or in William's words "come up blank".

William saw the irony in the fact that Darby had sold the Ahuahu plant to Joe, a NIWA scientist, who had been unable to make the plant a success and, while sympathising with Joe, saw this as evidence of the poor state of NIWA's knowledge of and ability to support the farming of paua in recirculating systems. William has also learned the hard way that paua are a difficult animal to farm and recounts incidents when a mistake by a staff member has resulted in thousands of mortalities overnight. Farming beef, for example, also involves growing animals for three or four years but, is much less risky for the farmer.

I asked William about Turanga Ararau and pointed out that back in 2005 this organisation at least had appeared to want to provide support for aquaculture in

Gisborne, had instigated the Gisborne Aquaculture Society, attempted to create a cluster and be of assistance to people like him, Darby and John. However, William was just as dismissive of Turanga Ararau as he had been of NIWA.

Turanga Ararau is all about sucking people into the training system. Turanga Ararau survives because of the government money they get for training people. Again they don't need to get a positive result beyond getting that bum on the seat. So that is what they have churned all these people through the course. Some of the – in the later 18 month two year period – some of the people they have had there to present stuff – they have run a seminar – so they get someone in to run a seminar – and they get people in there so they are paid to run the seminar – there is their cash cow – the seminars are absolutely and totally abysmal in terms of real hard core information. They are very glossed over – very non-descript – unhelpful general knowledge type things. A general talk about aquaculture which doesn't help anybody. It is about them putting a course on to get the bucks.

But, William was full of praise for Harry Roberts who he described as probably one of the most knowledgeable guys he had come across but, said that the skills that he had needed most were not the general aquaculture science skills possessed by Harry but, rather that he could have used a biologist to study the dead animals. He also saw Turanga Ararau as not being in the real world because they were government funded as a training organisation and would be able to spawn and hatch paua in their system, grow them to juvenile size and then sell them to another government organisation for reseedling. This was a government gravy train, according to William, where Turanga Ararau could not lose and did not need to be efficient as long as they stayed one step ahead and kept applying for funding and grants.

William took a general gloomy view of the future for small business people in New Zealand and blamed social and cultural factors as well as the entrepreneurial environment. His experience had brought him to believe that people generally have poor attitudes to work and that it is simply not possible for him to hire good reliable workers at Wharekauri. He reminded me that 3000 New Zealanders were migrating to Australia every week. I will leave him with the last word.

Business is depressing – talk to anybody in New Zealand – that is still in business and still going – most of them will say they haven't made any money since 1991 and that is a fact. We haven't made any money since 1991 and it is just getting tougher and tougher – this bloody government makes new rules and it really does – dealing with inexperienced staff all the time – the quality of people that you can get to do anything now is just – just - you know - really dodgy. No accountability – it is all your fault – you are supposed to hand them everything on a plate – I get a bit bloody depressed about the whole thing.

8.4 The greener grass of North Carolina

When I arrived at John Taiaroa's home, on a large block at the end of a quiet Kaiti *cul de sac* on the edge of Gisborne, the rusty steel frame of his unfinished paua farm building stood as mute testimony to the major change of plans I had come to find out about. As John welcomed me into his home it was clear that his enthusiasm for aquaculture and confidence in the industry was very much still there. It had just taken a different direction.

John explained that he was now involved with his friend and former aquaculture tutor, George Helmore, in developing a new aquaculture facility in Burlington, North Carolina. Spread on the table was a map of the United States and John pointed out the location and used the map to explain what he saw as a major competitive advantage of the location. The abalone farms were nearly all located on the west coast but, there were thousands of Asian restaurants east of the Rockies none of which had abalone on the menu for lack of a good supply. John had recently returned from a month of working on this project and had telephoned many Asian restaurants and studied their menus online to establish this. They had told him that they could not add abalone to their menus as firstly, they were unable to obtain a consistent supply and secondly, when it could be obtained it would cost US\$30 a pound to buy and a further US\$37 per pound to have shipped from the west coast.

John investigated this further by ordering abalone himself and told me it had been poorly packaged with too much ice and the animals had arrived dead as a result. "The restaurants want them live. They have probably experienced this in the past. They were getting frozen product, not live product", he told me. John was convinced by this that an abalone farm in North Carolina would have both a big market and a big

competitive advantage. Towards the end of his stay he located only one east coast abalone farm, in Daytona, Florida, and found that most aquaculture in that part of the USA was raising fresh water species. He had decided the species his new plant would raise would be the American red abalone.

While George Helmore had lived much of his life in New Zealand, he was a US citizen by birth and had readily relocated to North Carolina. John was likely to need a Green Card to work in the US but, said that he had a good chance of this and “our lawyers over there are working on that”. However, John and George did not see themselves being long term residents of the state. Once the farm was up and running a manager would be put in place and George and John would go on to develop aquaculture farms around the world.

We look for people who are interested in the concept and then we go through all the pros and cons of the business and then from there if you are still interested we will sell you a little plant – something that you can get used to - a hands on sort of thing – and we will give you a bit of teaching as well so you know what you are dealing with and then play around with that for six months or 12 months and then come back to us and say right – I do want one – or no I thought it was for me but, it is not for me. So we don't want them to invest x amount say \$1.5m and then find out down the road that this was the wrong move.

The plants would be franchise operations or would be sold to owner operators who would continue to make use of George and John's expertise as consultants. The plant being built in North Carolina was to be a prototype of a design which could be sold over and over again.

John explained that, in addition to the market opportunity, there were a number of sound reasons for locating in Burlington. Running costs would be much less than in New Zealand. Power would cost just 3 cents (US) for a kWh compared to up to 27 cents in Gisborne. He estimated the Burlington plant would use US\$5,000 per year of power while the same plant in Gisborne would spend \$45,000 a year.

Feed would also be “much cheaper” he said. Labour would be “a lot cheaper” with the advantage of greater workplace flexibility (the ability to hire and fire readily) and a supply of university students who would work for free.

The labour was definitely a lot cheaper. You are looking at the minimum was over there is \$5 at the moment. Experienced labour will be an issue there but, in saying that we are quite happy to train them. And work with North Carolina State University – because they are quite happy – because it is a marine farm – not a fresh water farm – they are quite happy to come on board with us and give us students.

John and George had already developed a relationship with North Carolina State University and John showed me the business card of Professor Thomas Losordo, the Extension Aquaculture Specialist and Department Extension Leader for the Department of Biological and Agricultural Engineering at NC State. Professor Losordo and his students had already produced an impressive set of CAD drawings of for a six module aquaculture plant remarkably similar to the one George and John had been operating in New Plymouth in 2004. I asked how much it would cost to build and John said US\$1.5m. I then asked how it would be funded.

Me and George – we are going to fund the whole thing. We you know there are ways – we can get grants – which we know that we can get – it is just a matter of doing all the paperwork but, we know they are there.

John explained that he and George would be writing grant applications with the support of NC State and would be applying for funding from a US\$15m per year regional R&D fund. I asked him if he thought research funding would be more accessible in Burlington than in Gisborne.

It is – it is! Because you are not competing with NIWA and Cawthron – those institutes. Because if we come here and do research we are all looking to the same lending institute or grant institute as Cawthron and NIWA – they will look at them more because they are more established and such and such – which is fair enough – but, where I really struggled with that is – they do the research I have no problem with NIWA and Cawthron to doing the research – but, when it comes to handing that research on to a person that wants to develop a farm or asks for consultancy or things like that – they turn around and charge you. They get paid twice. And first and foremost that money that is sitting there is actually taxpayers money. And so we have already paid for it once in a sense and then we swing around and we have to pay for it again when they give us consultancies and things like that.

John was already experiencing better support for his venture in North Carolina in the form of free drafting services from NC State, which he told me the university had valued at US\$40,000, and he was anticipating much better access to knowledge, research and development funding. He repeated his belief that NIWA or Cawthron would win any battle for research funding in New Zealand because they are “already out there and have got all the biologists and so on”. NC State was keen to try out a design for a waste processing facility that already worked with fresh water but, had yet to be tried on salt water. With this system the new plant would not discharge any waste.

John kept returning to how much less everything cost in North Carolina. Land had been purchased at a cost of US\$47,000 for 11 acres just 5 miles from Burlington. Building costs, concrete, surveyors, all this would be cheaper there he told me.

NC State was not the only source of expertise. Florida-based firm Aquatech supplies equipment to aquaculture facilities all over the USA and the world. John showed me the business card of his contact at Aquatech, Stewart McDaniel, a biologist and system design engineer.

Aquatech was down in Florida and we shot down to them and we met an awesome guy down there – Stewart – and he has been working in salt water all his life – and he has just been with Aquatech for the last two years. He was just blown away by these designs – he just couldn't get over it. He is going to be quite a key guy in what we are trying to achieve over there.

Harry Roberts had already shown me Aquatech's thick catalogue of aquaculture equipment and pointed out how much cheaper such items as PVC pipe fittings and valves were in the USA.

John also pointed to the cost of salt as a significant factor. He expected to pay 3 cents to make a litre of salt water in North Carolina and says it would probably cost 30 cents to make that litre in New Zealand. This makes it viable to locate a plant in Burlington, well out of reach of the ocean. My online search confirmed that salt can be bought for US\$60 per ton in the US. The use of salt water was critical to John and George's plans because it represented a new industry for North Carolina and as such would attract research resources and funding.

This is another area why we picked this side of the States because it is all fresh water fish. They only deal in fresh water – they don't deal in salt water – so that was another reason why we went there because it was a new industry.

It is labour and pricing and everything – and technology and the market – the support from the state – even tax laws – even that played a big part in why we went to this particular county. Because it was a poor county and they welcome industries into the county – so they give a lot of tax savings just to that county – so like for everything. For example, our company has got a swipe card and every time we walk into a shop to buy material or whatever for the company we just run the swipe card through and it just takes the tax off straight away.

John was impressed by this tangible evidence of support for his venture. The fact that he does not even have to claim back state tax, and go through the process of completing a tax return to do so. He simply produces a card and does not pay the tax in the first place.

The design of the Burlington plant also lends itself to gaining research and development support because it employs six separate modules and can therefore be used to raise six different species. In addition to the American red abalone, John and George are considering lobster, sea horses, sea cucumber, kina and flounder. According to John, the researchers at NC State have a new interest in salt water species and are already working on spawning flounder. With six identical water treatment modules, the only parts of the plant that need to be changed to suit the species are the trays. John and George are convinced that self cleaning trays should not be used because the cleaning process means the animals and the systems are being regularly inspected and monitored. You have to touch abalone to see if they are dead or alive, if you brush over them while cleaning and they move it means they are dead.

John told me that if only abalone was being raised the Burling plant would be capable of producing at least 18 tonne per year, and possibly 20 tonne or more. He points to the advantages of a fully recirculated system using artificial sea water. Firstly, it cannot suffer from polluted water. A system that draws seawater through a pipe would be at risk, for example, if an oil tanker should run aground in the area. Secondly, he also points to the costs of pumping in and cooling seawater. Because the

Burlington plant has access to cheap salt it has no need for the risky and costly business of putting a pipe into the ocean. Recirculation, asserts John, is the future of aquaculture; although he concedes that a plant such as OceanNZ Blue needs that pipe into the ocean so that it can call on water whenever it wants to deal with water quality and associated livestock health problems. This potential problem is mitigated in the design of the Burlington plant where a water quality problem should only occur in one self contained module, one sixth of the system.

From his Gisborne home John holds regular conferences with George using Skype. Currently their big concern is to find a way to protect the intellectual property in their designs before they go any further. They have both attended a course on this and are talking to lawyers. The two men share a passion for aquaculture and John talks about their “vision” to build plants all over the world.

John explains the process they will use to establish farms will start by selling low cost experimental plants to people who show an interest in the industry.

We are actually building them. Me and George – we have already got a design and we know – we will just build them one of those – we will sell it to them at US\$12,000 – we will show them how to run it and they will play around with that – get to know the animal and understand it and so on – and then if they are willing to go to the next level – which is this level here – then we will start. We will fly them to America – whoever is the manager will train them on the farm that is ours in America – for eight weeks – so when we build your one it is identical to the one you have been working on.

The small scale farms will be like large aquariums and hold some 200kg of abalone. The larger plants can be any number of standard modules. John and George plan to run presentations and act as consultants to bring people into the industry. John sees New Zealand as one place where a plant might be built but, is aware it will not be easy because the local market price does not seem to be enough to cover the rising costs. He saw this lack of profitability as the problem that had caused the closure of William’s Ahuahu farm.

Well you know he had no problem – and Joe down in Ahuahu – they had no problem selling – but, it is getting the right price for it because when you weigh up the cost to producing the kilo to selling the kilo. For example, it might cost them \$50 to grow that kilo of abalone and only probably selling it for \$60 or maybe less. They need to get \$90. And they were only getting \$60.

John sees the best solution to this to be a switch from New Zealand's black abalone to the white abalone favoured by Asian restaurants and that sells for perhaps \$300 a kilo. This species, he says, is already being farmed in Hawaii and while he concedes it could be a long difficult process getting permission to farm this exotic species in New Zealand, the result would be "small farms all over the place and that 18 tonne or even six tonne farm will become viable". John also thinks local growers should seek higher prices offshore, although he was well aware that small farms may not have the production capacity to supply the more lucrative export markets.

They could struggle at the start – that is why it would be good to have a cluster of farms to work together at the start. The one up at Bream Bay – Whangarei – they have 120 tonnes in their paua farm and theirs is all export. It is a hard question to ask that one. Whether you go local market or go off shore. To me that is why I hope with us being in America that we can find out more about the market and look at bringing stuff in from New Zealand.

This is more than just a problem of plant size according to John because paua need to grow consistently in the farm in order that the desired quantity reach saleable size each month and can be supplied to a restaurant. He pointed out that restaurants need to be assured of a consistent supply if they are going to add abalone to their menus.

I suppose a real key is setting up relationships with clients – you know – the restaurants. And straight away the restaurant will say okay I want abalone – how much can you supply to me each week. That is the number one call you have got to make. Otherwise that restaurant will not deal with you because it cannot put it on its menu and say well we have got it this week – but, haven't got it the next four weeks.

And first to get that you have got to get it right here in this plant. So you can get that consistency of growth. I know Joe was struggling with his growth and so on – things are happening down there in regards to not getting this and that right. One minute he is getting good growth for one month and next he is not getting good growth.

So at the end of it he might be selling one month but, in the next month he might not be selling any. So for your client – to say it is all good for the next four weeks and then in the next four weeks he is going 'well where is the product?' So that is the real key of this and it is a real hard industry ... And then you have got the wild catch – everyone is sort of diving and they get \$45 a kilo.

John talked about the need for small farms to work together to ensure they could produce enough and I reminded John that this had been an aim of the Gisborne Aquaculture Society but, the society seemed to have now fallen apart. He readily agreed. Things now looked bad for Joe at Ahuahu and John commented that some form of support should be provided to Joe, although he did not know from where. Starting new industries, being an entrepreneur, is difficult.

In North Carolina we are more or less writing up the manual if you know what I mean. It is good – me and George don't mind – it is a lot of paperwork for George – but, in saying that people who want to get into the industry that say who do we come to – is it just you? And me and George say well yes – there is the first one right there – because it is all new.

While George writes the manual and protects the IP in North Carolina, John takes time off from his shearing business to plan how he will market his and George's plant designs and consulting services in New Zealand and beyond. He has secured a small \$2000 grant from Te Puni Kokiri, money all spent on employing a consultant at the local Gisborne office of accounting firm BDO Spicers (formerly McCullochs) to help John put together a marketing plan. John says he could also use some help from NIWA and finds it frustrating that he is cut off from access to knowledge that he believes NIWA has obtained using taxpayers money.

I would like NIWA to help us but, in the seeding programme in the hatchery side – and then I was talking to Harry Roberts who is down at Turanga Ararau at the moment and I said how do we get help and he said first you have got to pay for it – they are not going to give it to you for nothing. That is what I struggle with – that there – to help the industry you have got to swing around and pay \$120 an hour for something that should be for public notice – but, from them to hand it over or give consultancy on it – you have got to pay for it.

John told me that since his return from the States he had had interest from a senior Ngati Porou person who had told his wife she was very keen to talk to him about the iwi setting a paua farm. I asked him if he thought a big local paua farm, an investment of perhaps \$10m, would be a good idea and he commented that a plant like that would have to be a flow-through system – partially recirculating but, capable of pumping in water from the ocean and therefore quite different from his planned fully recirculating plant using manufactured salt water. The high cost of salt in New Zealand made it too expensive to consider manufacturing salt water on that scale. That was a challenging question for John who has a huge enthusiasm for aquaculture and wants to be involved in making it work in New Zealand. At the same time he is well aware that local costs are high and based on the prices being achieved the prospects for profits for investors or owner operators seem uncertain – even for a larger plant that would enjoy economies of scale.

Before leaving I asked John about his plans for the unfinished paua farm building on land adjoining his home. When I interviewed in 2005 he had been pushing ahead with construction but, in late 2007 it was still only a concrete floor with steel beams in place. John seemed relaxed about the building. He would eventually have it finished off and it would become a kind of showroom for the small scale abalone farms he would sell to the would-be owners of paua farms. In the meantime the grass was greener in North Carolina and John was making preparations to head south towards Wairoa where his gang of shearers were at work.

8.5 Aqua-alchemy – making gold from fish

Ned Davy was last on my list of entrepreneurs to interview and, while he shares the enthusiasm for aquaculture I found in all the aquanauts, he rather stands apart from the others in a category of his own. Firstly, because he primarily farms the humble goldfish, a much less troublesome species than paua, and secondly, because he seems to make a nice living from it.

His business, formerly trading as a partnership with his wife, was now a company, Aquagold Ltd. and continues to work in partnership with farm owners on the East Coast to raise goldfish in large ponds that require no building to house them, just a cover of bird mesh. Aquagold sells 50-60,000 goldfish a year to the pet market along

with smaller quantities of a variety of other species such as paradise fish, mountain minnows, leopard fish, frogs and tadpoles. Guppies have been successfully acclimated to colder conditions and Ned is investigating fresh water crayfish or koura and Ned would like to selectively breed the blue tinged ones for the pet market. He is also interested in moving into aquatic plants and believes the demand for aquarium plants could grow to match the demand for goldfish. He mentioned that Japan takes 30,000 frogs each year.

Ned raises algae and daphnia as feed for his goldfish and operating costs are minimal compared to those of the paua farmers while the goldfish command quite a high price per kilo.

To give you an idea we had a fisherman come to us two months ago to have a look at the farm and he said 'Man I am making good money now – I am making \$65 a kilo for crayfish, eh' and I said oh yeah and just left it at that but, put it this way, our minimum price for goldfish would be \$130 a kilo and that is for our reject stock – we sell little fish to feed to other fish.

Premium goldfish might fetch over \$200 per kilo, around \$4 per fish, and retail for three times that in a pet shop. So while things are going well for Ned he is aware that other forms of aquaculture are struggling.

Ned's perspective on aquaculture in Gisborne is interesting because he looks at a bigger picture than the other aquanauts and organisations that he sees as rather fixated on paua and on using recirculating systems. He also says there had been a lack of government willingness to "get behind and help stimulate the aquaculture industry" and a "lack of government foresight – not being able to get a cohesive group together". He pointed out that there has been local interest in the industry for the last five or six years but, that currently nothing was happening and an opportunity had been squandered.

What happens when maybe this thing doesn't work? Do we have to go through another learning curve, a maturity to get back to the same situation again? And meanwhile the industry is tainted – we have just lost hundreds of millions of dollars.

Ned, who completed the Turanga Ararau course and worked at William's Wharekauri paua farm, believes abalone are very difficult to farm because of biological

limitations that make them too fragile to maintain through a long three year growth cycle. He explained that the limitation is that the mollusc easily becomes stressed and begins to use both its lungs which quickly depletes its blood sugars resulting in death and that abalone are poorly equipped to deal with environmental stress because they lack the ability to go into a shut down mode to preserve their vital organs. As far as Ned is concerned they are simply too risky to farm.

It can be farmed but, are you willing to risk a three year growth period – or say even a two year growth period? Too long as far as I am concerned. I am talking from a pure investor's point of view – as a business person – but, then also as a farmer I would want something that is relatively strong, sturdy, and fairly stable in its pricing structure. Goldfish may not have the aura of being abalone but, it brings in a good dollar return.

In addition to the risk of the livestock dying, Ned sees a market risk and an exchange rate risk. At the end of the long growing time will the farmer receive a high enough price to make a profit?

The process of paua coming into vogue, recirculation coming into vogue and then moving back out of vogue after Ahuahu showing that hey – this is quite tough. The industry going through a bit of a struggle with the dollar going up. With commodity price problems that we have with overseas markets and with being in an international money market – all issues that any business faces when it exports.

Ned admires OceanNZ Blue which he sees as having had the scale and the investment to succeed. He also admires the abalone industry in Australia which he says shares knowledge well and gets more government support.

One thing that Australia has really got is a Fish Farmers Association – guess what I am a fish farmer – you are a fish farmer – I don't charge you for information – you don't charge me for information – we share the information – the industry grows – we are all making money.

Ned was applying for a ForST research grant when I spoke to him in 2005 and at that time seemed confident of success. He did not receive the grant but, went ahead and carried out some research that he published on the internet – believing that by placing it in the public domain at least nobody else could patent it and it could be available to help people growing food in developing nations. He would like to do

more research on growing daphnia for its oil content, either as a source of food or a source of bio-fuel. He hopes an oil company might fund this research and has made approaches to representatives who he says are interested.

The research that I am more interested in is the fact that we hopefully become a little more aware of natural cycles – that we start utilising waste within our environment – that we have a greater understand of what natural ecosystems - how they work – and so hopefully we have a greater respect for them. Plus with the greater understanding of what algal types actually process nutrients for the greatest amount of lipid production – which is the greatest amount of oil production – we can hopefully turn a nutrient waste into a food product. Not just oil.

Ned also has a view that New Zealand should avoid trying to compete in commodity markets because it cannot produce new products in great volume. It should be looking for niche markets for its unique flora and fauna. Why, for example, don't we farm and export tuataras?

Tuataras. Why can't we be farming tuataras and selling them overseas? They sell for very, very, very good money and we have got an excess of them in New Zealand – which the Conservation Department don't want to tell us about. The reptile industry is huge.

I asked how he thought New Zealanders would react to the idea of exporting tuataras.

The problem is that it is too familiar and too New Zealand – we don't want to share New Zealand with anyone else. But, if you have got a great garden don't you want to share it with your friends and have them over for a barbeque in your garden – well guess what I see it as the same. Can we not produce something that is uniquely New Zealand and celebrate this unique thing that we have with the rest of the world and in the process learn more about that product but, also have something that the rest of the world desires – that is on the high desire list. Where the product value is high.

I asked if he thought people living in New York could successfully keep a pet tuatara in an apartment.

Exactly – they are easy to look after – you have a small cage in your apartment. You feed it insects that you buy from the local pet shop. Insects are another commodity that we could be selling. To think that the New Zealand stick insect or some of our centipedes would be worth good money.

Ned also sees soft corals from our oceans, fresh water cockabullies, blue fresh water crayfish and albino eels as native species that could be exported but, is well aware of the hurdles he would face if he attempted to establish niche export markets for native species.

Lower hanging fruit for Ned's business is simply to breed high value exotic ornamental fish such as one highly prized black and white striped variety of Brazilian catfish that can sell on EBay for over US\$1000 each.

One of the things we have been trying to do is bring in those cat fish from Brazil that I was talking about. We were looking at trying to get in 30 of them. We had basically \$100,000 worth of investment money from different people that wanted to get involved and we just couldn't get past the fact that it was in the too hard basket for a government agency.

This species require water heated to 28 degrees and could not survive in the wild in New Zealand and thus posed little environmental risk. Despite this Ned found he would have to spend around \$20,000 to get permission to bring them into New Zealand but, doing this would make it possible for anyone else to bring them in. MAF is following Australia's lead and tightening up on the varieties that can be imported. Currently around 1000 species can be brought in and Ned says this number used to be 5000 and in future it was likely to be reduced further to 300.

Ned is a believer in potential of clusters of small businesses and, in partnering with land owners that operate the growing ponds, this is very much the model on which his business is based. He says New Zealanders have a number eight wire mentality that enables them to find innovative and practical solutions to problems. Some have what he calls "fishy hands".

Because I know people that have fishy hands and can grow fish – literally. And they are hobbyists – they don't do it to make money they do it because they love growing fish – it is a hobby and a challenge to them. So what ends up happening when you get people like that they say look I don't want to make a huge business out of this. Someone says okay that work you have done on that species - can I buy if off you – can I pay you and you show me how to develop an industry.

To summarise, Ned sees NIWA and Turanga Ararau as having promoted a monoculture of paua that has failed locally due to lack of support, lack of scale in the local operations and the fact that the species chosen is so difficult and risky to farm. In contrast, to this he takes a wide view of aquaculture and believes it should be viewed as polyculture with multiple species being farmed together in imitation of a natural ecosystem. This approach allows the growing of fish food along with the fish and finding uses for by products and waste products. In this vision small businesses can collaborate to exploit niche opportunities based on native or imported species.

8.6 Conclusion

In saying goodbye to Ned I concluded my conversations and involvement with the aquanauts and my fieldwork for this research project. All were co-operative research participants in that they communicated freely and openly with me and I felt empathy with all of them as genuine people who all had a passionate enthusiasm for their goals.

On completing the last of these interviews in late 2007 I began the long task of transcribing them into text documents so that my NVivo® analysis, begun in 2005, could be completed and I could, over the New Zealand summer months of November and December, 2007 and from January through to May 2008, continue to work on the *Analysis and Conclusions* chapter that follows.

9 Analysis and conclusions

9.1 Introduction

While the preceding narrative recorded attempts to make sense of the process while still in it, what Bourdieu (1977) would call *modus operandi*, this chapter records a process of *opus operatum* – sense making about the process after it is over.

This chapter goes further than the narrative that precedes it as it also takes into account the patterns of data that emerged from the NVivo® analysis of all the interviews and texts. It examines the data for patterns relevant to the themes and sub-themes that make up the framework of analysis and it also reports patterns that fall outside that framework and discusses the theory about the relationships between entrepreneurs and organisations that can be built on those patterns.

This research set out to study the relationships between the entrepreneurs and the key organisations with which they interacted. While it was not intended to be an attempt to foretell the future of the aquaculture industry, it has gathered many opinions and viewpoints from the entrepreneurs about the potential for recirculating system aquaculture of pua to develop as a successful industry, both in Gisborne and in New Zealand. In order to provide a sense of completeness to the issues raised relating to recirculating aquaculture, those patterns of data that relate to the future and potential of the industry are also reported using a Strengths, Weakness, Opportunities and Threats (SWOT) framework. This chapter also summarises the conclusions of the entrepreneurs where there seems to be a clear consensus and reports where there seem to be conflicting views.

9.2 Analysis using the framework

9.2.1 Cluster formation and facilitation

A sub-theme that emerged from literature relating to clusters was the view put forward by Ffowcs-Williams that clusters should be established with the aid of a professional facilitator, that there are clearly defined steps that must be followed (see Table 5) and that a number of factors that are known to influence success or failure which Ffowcs-Williams refers to as *green lights* or *red lights* for cluster development (see Table 6) (Ffowcs-Williams, 2007). Sirolli also stresses the importance of

facilitation in regional economic development and advocates the involvement of a professional facilitator to provide support to smooth the path for new industries as they emerge in regions (Sirolli, 1999). Andersson *et al* (2004) go further and suggest there is also the need for the leadership a locally anchored *clusterpreneur* who will be accepted by firms in the cluster.

External consultants may serve complementary functions such as formulating the vision and initiating the process, but, the daily work and leadership is most-successfully undertaken by a locally anchored actor (Andersson, Serger, Sörvik, & Hansson, 2004, p. 101).

So in reviewing the data gathered it was important to consider if there was an effort made at professional facilitation, if there was a clusterpreneur and if there were patterns of data in this case that suggest better outcomes would have resulted had the cluster been facilitated in the way suggested by Ffowcs-Williams or Sirolli, or led by a clusterpreneur in the fashion proposed by Andersson *et al*.

The Community Employment Group funded an aquaculture key worker position (New Zealand Trade and Enterprise, 2003) and this person was identified by the researcher as Meg Matangi. While Matangi worked to form the Gisborne Aquaculture Society, had an active role within Turanga Ararau and talked about the establishment of a local aquaculture cluster, she appeared to perform few of the tasks that are associated in the literature with either the roles of cluster facilitator (Ffowcs-Williams, 2007) or clusterpreneur (Andersson, Serger, Sörvik, & Hansson, 2004). In fairness it is not clear if functioning in either of these roles to any extent was expected of her by either the Community Employment Group or her employers, Turanga Ararau. Her role was as a key worker rather than a facilitator and neither the Gisborne Aquaculture Society nor Turanga Ararau are listed as having been funded under the NZTE Cluster Development Programme (CDP). The CDP did fund a Māori Aquaculture Cluster which was a nationwide cluster of 10 Māori aquaculture organisations. The facilitator of this cluster was one of the founders of Turanga Ararau, Ian Ruru (New Zealand Seafood Industry Council Ltd., 2003, p. 22).

Reviewing Ffowcs-Williams' 12 steps for cluster development (see Table 5) and green and red lights in cluster development (see Table 6) there is no evidence that any of those suggested practices were followed other than the attempt to establish a

group which the formation of the Gisborne Aquaculture Society represents. It was also clear that here was nobody who can be considered to have acted in the role of a “... *locally anchored clusterpreneur...coupling firms with firms, firms with universities, government agencies with cluster initiative members on a continuous basis* (Andersson, Serger, Sörvik, & Hansson, 2004, p. 101)”.

If the cluster had been facilitated professionally using the 12 step process advocated by Ffowcs-Williams (see Table 5) it would have begun with a discussion with the Economic Development Unit of the Gisborne District Council and other potential funders such as NZTE (step 1). There would have been an effort to establish if the formation of a local aquaculture cluster fitted into the region’s economic development strategy (step 2) and there would have been an analysis of the competitive fundamentals of the local industry and the potential leaders and key players would have been identified (step 3). None of those first three steps seem to have been taken prior to the formation of the Gisborne Aquaculture Society. The informal formation of such a group would have been the fourth step in the 12 step process.

The fifth step of developing a preferred future was not well addressed by the members of the Gisborne Aquaculture Society. The view that was frequently expressed and commonly held at the time the society formed was that a number of small paua farms would be established and that they would work together to achieve some economies of scale in operations and in particular in marketing when they eventually began to send their product to market. At the time it was formed in 2003 there was widespread confidence within the society that small operators would be able establish and operate recirculating paua farms and they would prove successful and profitable ventures. The entrepreneurs at Turanga Ararau, Harry Roberts and Meg Matangi, also expressed a hope that someone would start a recirculating paua farm in Gisborne on a larger scale, a similar operation to OceaNZ Blue. This would firmly establish Gisborne as a centre for aquaculture and provide employment for Turanga Ararau trainees.

This vision for a preferred future was an attractive one for the Turanga Ararau entrepreneurs as it would strengthen its position as a training provider. The Gisborne Aquaculture Society provided a means by which Turanga Ararau could support and foster the development of a cluster of small, or perhaps medium sized, aquaculture

ventures and the Turanga Ararau entrepreneurs were keen to provide help and support to local aquaculture start-ups.

Unfortunately this vision of a preferred future does not appear to have been discussed with other organisations that could have been expected to be key stakeholders in such a cluster. There was no evidence of any interest or involvement on the part of the Economic Development Agency of the Gisborne District Council or, more importantly, the CRI NIWA. NIWA in particular seems to have held a quite different vision of a preferred future for aquaculture in Gisborne. This pattern of data is discussed under the heading Double Visions.

The fact that the Gisborne Aquaculture Society failed to attract the involvement of stakeholder organisations outside of Turanga Ararau meant that there was not a meaningful discussion of a preferred future or the workshop process to identify stepping stones for industry development and an immediate action agenda that Ffowcs-Williams (2007) advocates should occur as steps six and seven.

Ffowcs-Williams suggests that it is a mistake to formalise and launch the cluster as a legal entity too early in the process however, this seems to have occurred. A search of the register of incorporated societies shows that the Gisborne Aquaculture Society Incorporated (registration number 1383760) was formed soon after its first meeting on the 26 August, 2003. No officers are listed on the registration and the address given is that of Turanga Ararau (the record also shows that the society was struck off on 19 February 2008).

The final four of Ffowcs-Williams' 12 steps did not occur as the society never reached the point of making detailed strategic appraisals, benchmarking, upgrading the strategy agenda, linking with other clusters and reviewing the overall impact of the clustering initiative. There is no doubt that the society provided a valuable forum for its members to share information, network amongst themselves and to some extent with other aquaculture organisations. The key failing of Turanga Ararau's cluster forming effort was in effectively going it alone, without the involvement and support of other potential key stakeholders.

In hindsight the early involvement or advice of a professional facilitator external to Turanga Ararau, and with an understanding of the process more likely to lead to success, could have resulted in a much more successful cluster organisation

being formed and brought a more professional approach to forming and operating the Gisborne Aquaculture Society. A facilitator is likely to have guided the society to forge links with national industry bodies, government agencies (including local government) and knowledge-based organisations (such as NIWA and the Cawthron Institute) and promoted networking within the society and externally by organising visiting speakers, field trips, conference attendances and the like.

With the exception of William Millton, nearly all members of the Gisborne Aquaculture Society were people associated with Turanga Ararau through being current or former trainees or staff. This focus on Turanga Ararau seems to have limited the potential of the Gisborne Aquaculture Society. For example, the society did not secure the involvement of Darby Ryan who, at the time it was formed, operated the Ahuahu Paua Farm, the largest local aquaculture facility. Ryan attended one early meeting and saw no value in any further involvement. Another notable feature of the society was the apparent absence of any contact with NIWA.

A more widely-based group could have included a representative from the Gisborne District Council Economic Development office, the Gisborne Chamber of Commerce, perhaps also from local training providers and accounting firm BDO Spicers (formerly McCullochs). Crucially this more inclusive approach could have brought Darby Ryan and later Joe Warbrick into the group and attracted the involvement of NIWA, the Cawthron Institute and universities with an involvement in aquaculture such as Auckland University of Technology. This larger group would have been much more likely to deliver the benefits that Ffowcs-Williams states accrue to clustered firms such as access to specific skills (specialised suppliers of inputs and services – possibly including professionals such as lawyers and accountants with knowledge of the cluster) and access to knowledge both from each other and from the movement of people and information between firms and universities and CRIs.

Darby Ryan, Joe Warbrick and William Millton all faced technical problems in operating their paua farms that resulted in stressed livestock that ceased to grow at best and, at worst, in large numbers of dead paua. Their links and networks with people and organisations that could have helped them varied between the individuals but, in all cases seemed inadequate. Joe Warbrick had the benefit of links formed during a ten year career at NIWA however, Darby Ryan and William Millton had quite

limited networks. Competent facilitation of the Gisborne cluster could have improved this situation and a facilitator might have helped secure the assistance needed.

A sub-theme identified in the literature was the finding of Veciana and Urbano's (2001) research in Catalonia where there was found to be an over diversification of institutions and support programmes, duplications and overlapping of assistance and an absence of coordination among organisations.

A lack of co-ordination between NIWA and Turanga Ararau was certainly evident and was coded as the theme *Double Visions*. This pattern of data will be discussed under that heading later in this chapter. There was also little evidence of co-ordination between organisations in regulating or supporting aquaculture in Gisborne. The only formal link between organisations found was the joint application for research funding made by Turanga Ararau and AUT (although there may well have been links not evident from the data gathered).

Veciana and Urbano (2001) also found that Catalanian entrepreneurs valued non-economic programmes more highly than economic aid and considered them more important to the process of new firm creation. The Gisborne entrepreneurs in this study seemed to echo this view and expressed a need for practical assistance and advice in overcoming barriers. In discussing economic aid Joe Warbrick stated that he needed practical help in understanding the application process, Darby Ryan struggled with barriers to export and both these entrepreneurs, along with William Millton would have appreciated practical assistance in finding solutions to their technical problems. This suggests that the services of a cluster facilitator in connecting the entrepreneurs with these types of assistance would have been highly valued.

9.2.2 New Zealand's institutional framework

As already noted, Sautet (2006) sees no role for government in cluster development. His vision is for government to take a *hands-off* approach and for government to simply to *get out of the way* of entrepreneurs and this differs markedly from the views of cluster facilitation advocates such as Ffowcs-Williams, Sirolli or Porter. Sautet's view is that the New Zealand Government should act to improve the institutional framework for entrepreneurs "...because in some cases it is becoming worse (2006, p. 593)."

All the entrepreneurs expressed concern at some aspect of New Zealand's institutional framework. Lack of incentives to work caused by welfare policies was a common theme amongst the four entrepreneurs that employed staff. William Millton was a vocal critic of the entrepreneurial environment. Lack of staff motivation caused by the welfare system was his main complaint. Something he blamed for his inability to hire and retain reliable employees at Wharekauri. He also referred to what he saw as a general trend in which the government was progressively making life more difficult for entrepreneurs in numerous ways. This was echoed by Darby Ryan who had had the experience of a staff member leaving his employment because he apparently decided not to return to work after an illness and opted simply to continue to receive a benefit.

Joe Warbrick was annoyed by the regulations that treated his water cartage activity as a trucking operation but, reserved his harshest criticism for the system for funding the research activities of CRIs which he felt required NIWA to operate as a business and pursue revenue from all its activities. Joe Warbrick felt government funding should be used to support the development of new export industries and allow them to get on their feet. A client-supplier model could then be applied to the sort of research and development that would make individual ventures more profitable. John Taiaroa echoed this view in different words when he said that research created using taxpayer funds should be made freely available to taxpayers. If NIWA used government research funding to create knowledge and then charged him for that knowledge, under a client-supplier model, John felt he was paying for that knowledge twice, first as a taxpayer and again as a client. Obviously in this view the government expenditure on research is seen by Taiaroa as a public good rather than an investment on which a return must be made. Both William Millton and Harry Roberts complained bitterly about the high price of hiring NIWA scientists or seeking advice or services from NIWA.

Looking at Sautet's specific recommendations for improving the institutional framework the proposal to improve the regulatory environment with respect to labour was the most strongly supported. There was certainly support for Sautet's proposal to reduce government spending. This was concentrated on reducing spending in the area of welfare and also in the area of providing training for people who do not really plan

to use that training but, are simply in training to postpone or avoid employment or in order to continue to receive a benefit.

Harry Roberts voiced unhappiness with the regulatory environment with respect to developing offshore aquaculture. There were also a number of various regulatory issues discussed in more detail later in this chapter under the heading *Innovator's Curse*.

Taxation itself was not something the entrepreneurs complained about however, they may have well felt that as self employed people they were better off than employees as they had more opportunity to avoid tax. It is also likely that none of the businesses were making significant profits and incurring any major tax liability.

There were no opinions noted either for or against the proposal by Sautet to continue the opening of the economy (Sautet, 2006, pp. 592-593).

The interview transcripts were examined for any data that would suggest the entrepreneurs were pursuing lifestyle objectives, lack a focus on growth, and would benefit from the tough love approach suggested by Frederick and Monsen (2006). There was an element of lifestyle motivation for all the entrepreneurs and all seemed to enjoy the benefits of being self-employed such as being able to pursue their own goals and objectives. However, there was also no evidence that any of them were dilettantes or not focussed on the need for a profit outcome.

There was quite some evidence of the "mollycoddling" that Frederick and Monsen refer to in the data related to hiring and retaining staff. This was a significant pattern of data with 24 references to staffing problems occurring in six interviews. References associated with Turanga Ararau numbered 54 and occurred in nine interviews and the belief that many trainees were avoiding work was the main theme. This suggests a conclusion that many New Zealand's entrepreneurs may be held back from achieving economic growth to some extent by the difficulties they face in hiring and retaining employees. The entrepreneurs generally appreciated the value and

importance of social policy but, argued that it should be adjusted to ensure enough incentives existed in the labour market.⁴⁷

9.2.3 Relationships with organisations

In examining if, and if so how, the organisations delivered support to entrepreneurs it is important to note that the relationships between the entrepreneurs and organisations in this case were often weak and informal and not all entrepreneurs had interactions with the key organisations. Interviewing was not structured to identify all relationships with a checklist approach so the data gathered includes relationships that seemed worthy of discussion by the entrepreneur when asked general open questions about their relationships with organisations. The data may also have been influenced by prompting questions asked by the interviewer or the direction in which the conversation was taken by both researcher and entrepreneur.

Figure 10 maps the main relationships observed or described by entrepreneurs which are as follows:

Relationships with knowledge providers

Advisor relationships

NIWA advisory relationships:

- Integrally involved in establishing the Ahuahu Paua farm and provided design and consulting services to Darby Ryan. Ryan both praised and criticised NIWA, valuing their knowledge but, blaming them for design flaws in the farm and a lack of ongoing interest.
- Connected to Joe Warbrick as a former employee but, no formal provision of advice but, some networking with personal contacts. Warbrick was critical of NIWA support for aquaculture blaming the business model imposed on them by government.

⁴⁷ This study reports only the views of entrepreneurs and therefore does not give voice to other viewpoints on this issue that may be equally valid. See Limitations of this Study 8.6.

- Provided *ad hoc* advice and services to William Millton at a time when his farm had unexplained mortalities. Millton was critical of NIWA services he received.

Equipment Suppliers Ozone Technology's advice:

- Joe Warbrick received advice and support from Ozone Technologies which he valued highly.
- William Millton also received advice from Ozone Technologies.

Cawthron Institute advisory relationships:

- Joe Warbrick valued advice provided to him free by Cawthron. This seems to have been a completely informal relationship based on personal connections.

Turanga Ararau advisory relationships:

- William Millton received advice from Harry Roberts at Turanga Ararau that he valued highly. He had strongly held negative opinions about how Turanga Ararau was funded and operated as a training provider although this was directed at the system rather than the people involved

George Helmore's advisory relationships:

- John Taiaroa was advised by George Helmore in a close, ongoing working relationship.
- Ned Davy sought advice from George Helmore but, was disappointed.

Research relationships

NIWA research relationships:

- NIWA collaborated with Darby Ryan on a research project after the plant had been established. Ryan seemed happy with the project.

AUT research relationships:

- AUT worked with Turanga Ararau on a research proposal that did not succeed. Turanga Ararau has both training and commercial roles so is both a providers and a consumer of knowledge. In this relationship it was a potential consumer.

Training relationships

Turanga Ararau training relationships:

- George Helmore was employed by Turanga Ararau as a trainer but, Harry Roberts now disassociates the organisation from him and has doubts about his skills.
- John Taiaroa received training from Turanga Ararau that was delivered by George Helmore. He values the training highly and has a continued business relationship with George Helmore.
- Ned Davy received training from Turanga Ararau that was delivered by George Helmore. He views the training positively but, has some doubts about George Helmore's ability to advise his business.
- William Millton has hired people trained by Turanga Ararau. He seems happy with the quality of the training Turanga Ararau delivers but, has a generally low view of the capability and level of commitment of the individuals he employed for long term employment in aquaculture. He is convinced that few Turanga Ararau trainees are genuinely seeking employment and quite vocal on this issue.
- Darby Ryan initially allowed visits by Turanga Ararau trainees but, seems to have seen little value to his operation and severed the connection.

Financial relationships

Trade and Enterprise relationships:

- Darby Ryan received Trade and Enterprise funding.
- Joe Warbrick was referred to the website and put the idea in the too hard basket. He is critical of the lack of facilitation and the approach to funding travel that covers only airfares to the foreign country.

Work and Income relationships:

- Darby Ryan had a worker subsidised. He was critical of what he sees as a lack of incentive to work, rather than receive a benefit, that he

believed resulted in a staff member failing to return to work after becoming ill.

- Joe Warbrick had a worker subsidised by Work and Income for three months and was generally happy but, could not afford to continue the employment.

Regulator relationships

Gisborne District Council relationships:

- No adverse reports from any of the entrepreneurs. Darby Ryan, John Taiaroa and William Millton reported no problems in Council compliance arrangements for their farms.

Ministry of Fisheries relationships:

- No difficulties were experienced by any entrepreneurs in obtaining licenses.
- Turanga Ararau expressed concern at being restricted by the distinction between commercial and non-commercial licenses it holds. Local paua caught under the non-commercial licence could not be used for breeding and no commercial catch of paua is allowed in the Gisborne area.

Land Transport relationships:

- Vehicle and driver compliance in trucking seawater was a thorn in the side for first Darby Ryan and then Joe Warbrick at the Ahuahu Paua Farm.

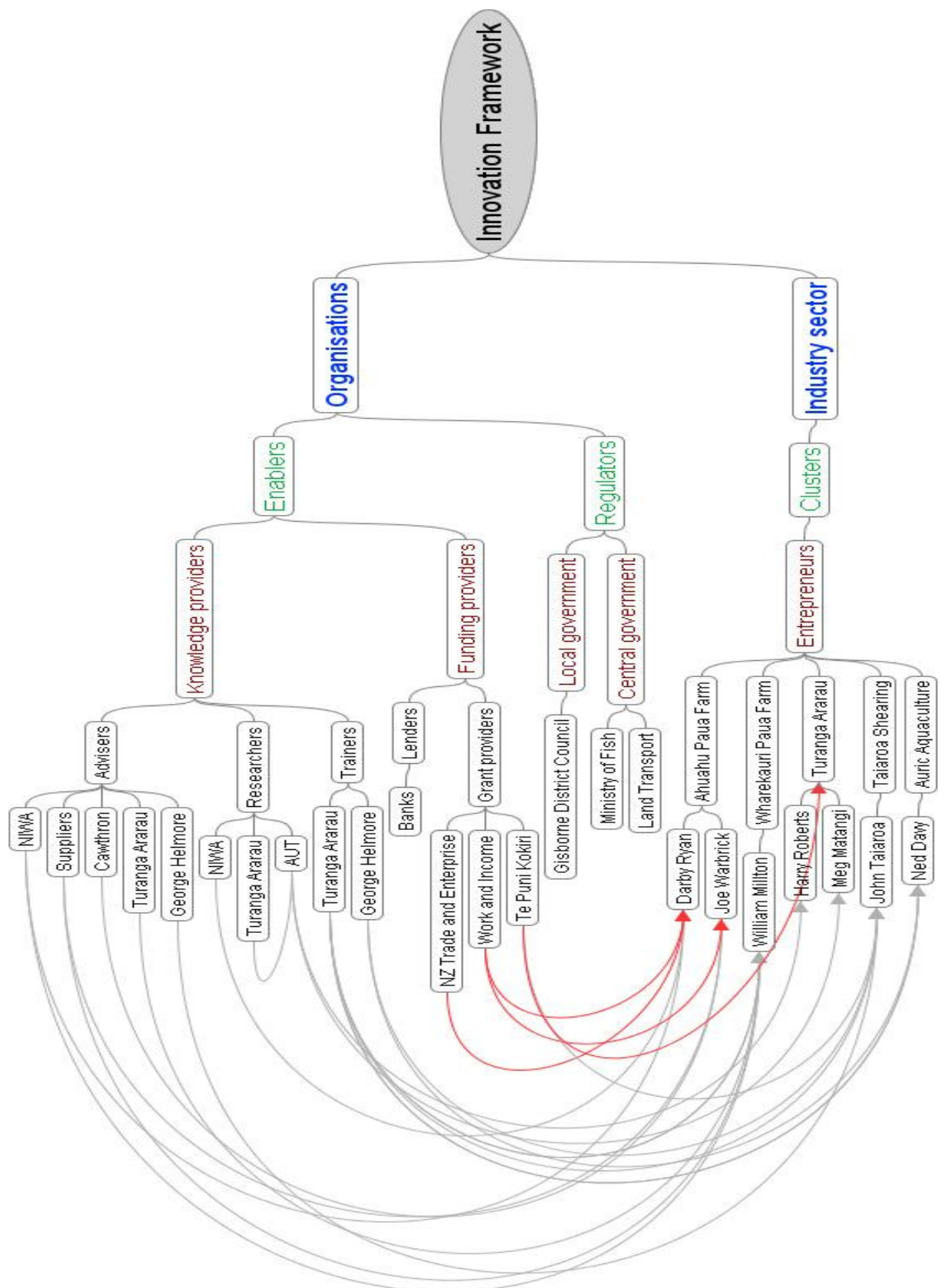


Figure 10. Map of relationships identified by entrepreneurs during interviews.⁴⁸

⁴⁸ Source: Developed by the author for this report.

A sub-theme identified from literature is the idea that governments are “*inherently anti-entrepreneurial at all levels* (Morris, 1998, p. 135)” and it has also been noted that this is evidenced by the fact that word *entrepreneur* is little used in an important government text dealing with policy on economic growth (The New Zealand Government, 2002) where the words *growth and innovation* appear to be more acceptable politically in proposing public support for ventures. There is also evidence of anti-entrepreneurialism within New Zealand society expressed as the *Tall Poppy Syndrome* (Kirkwood, 2007). The subversive role of entrepreneurs in society has been explored as an explanation for this anti-entrepreneurial sentiment.

Analysis of interview transcripts produced patterns of data relating to this issue that ranged from the general to the specific. Many specific instances of conflict between entrepreneurs and organisations have been categorised into a theme *The Innovators Curse* discussed later in this chapter. The more general issue relates to the view expressed by Ffowcs-Williams that government agencies are failing to adequately support regional cluster development in New Zealand.

The attempt by Turanga Ararau to spark the formation of a cluster by forming the Gisborne Aquaculture Society failed to establish a successful cluster. As already noted it does not seem to have either sought or received any support from other organisations and clearly did not follow the 12 step process recommended by Ffowcs-Williams (2007). The absence of a more organised approach to developing the Gisborne Aquaculture Cluster suggests the possibility of poor execution by Turanga Ararau in not seeking wider support or that the opportunity to develop an Aquaculture Cluster in Gisborne was simply not supported by organisations that might have reasonably been expected to have taken an interest such as the Economic Development unit of the Gisborne District Council or NIWA.

This lack of interest or co-ordination by these organisations in supporting the facilitation of a cluster suggests they follow the apparent Labour government philosophy in which it is seen as much preferable for innovation to originate from CRIs and universities and be commercialised in established workplaces in order to maintain and improve the lot of employees, a model that is inherently anti-entrepreneurial.

An organisation that held an entrepreneurial philosophy would recognise that innovation works best, and results in economic growth, when it is *pulled* by

entrepreneurs exploiting opportunities or solving problems and does not work when organisations create innovations for which there is no market demand and then seek to *push* those ideas into the market. An entrepreneurially orientated organisation would build links and partnerships with emerging entrepreneurs and would be keen to see new ventures and clusters emerge.

If the organisations have never considered that they might have any role in cluster facilitation because the idea of working with entrepreneurs has never been considered, or if they took a policy decision not to seek a role in cluster facilitation because they have decided not to work with entrepreneurs, then their lack of involvement can be put down to a preference for a model that prefers not to involve entrepreneurs in innovation, which is at least tacit and perhaps active anti-entrepreneurialism.

9.2.4 Delivery of advice

The following sub-themes were identified from literature as a framework for analysis of how advice was delivered:

- How symmetric were advisor relationships?
- How was operational advice delivered?
- How was strategic advice delivered?
- How were client/advisor relations affected by power?

As these are rather intertwined questions they are best discussed together (rather than under separate headings) to avoid repetition.

William Millton was frustrated in seeking the operational advice of a biologist from NIWA. He seems to have resented the imbalance of power between him and the NIWA scientists, initially thinking that they were talking down to him and being deliberately unhelpful but, soon forming the conclusion that NIWA's scientists were not capable of helping him. William reported that the NIWA scientists seem to have formed the opinion that his problems all stemmed from poor water quality - that he was not capable of maintaining water quality. This suggests that they assumed William simply lacked the necessary skills and knowledge. When they tested the water at William's Wharekauri farm, and saw for themselves that water quality was adequate, they offered a stress explanation that William found unhelpful. In terms of the

classifications from Hjalmarsson and Johansson (2003) William can be classified as initially a consultant modifier and later an anti client for operational advice from NIWA.

Harry Roberts of Turanga Ararau provided free advice on an informal basis to William Millton, something William appreciated. This seems to have begun as a symmetric power relationship with mutual respect although it was strained after William first hired and then fired one of Harry's friends. William was a consultant modifier for Harry's advice which was only operational and not strategic. For strategic advice, William was an anti-client and this is evidenced by his negative reaction to the business health check carried out on him by Turanga Ararau.

Darby Ryan appears to have received no significant advice of any kind from Turanga Ararau but, was comprehensively advised by NIWA when it designed the paua farm and sporadically sought NIWA advice during the time he operated the plant. In terms of the classifications of Hjalmarsson and Johansson (2003), Darby was an ideal client for operational advice he received from NIWA. There is no evidence that he received specific strategic advice from NIWA but, he is likely to have seen NIWA's apparent enthusiasm for his project as tacit support for his strategy.

Darby Ryan reported being initially talked down to by NIWA scientists and having to win them over and convince them that he possessed some knowledge of aquaculture. This suggests that the relationship between NIWA and Darby Ryan was not symmetric initially but, may have become more symmetric as time went by. As already reported, the other advisor relationships in this case were generally ad-hoc, informal or of poor quality. As a result this research has found little other detail about the symmetry of advisor relationships.

9.2.5 The expression of Māori entrepreneurship

The entrepreneurs at Turanga Ararau and John Taiaroa had an enthusiasm for aquaculture that seems to have been derived at least to some extent from the close connection felt by many Māori to seafood and the coastal environment. Meg Matangi's stated goal of creating a hatchery that could become involved in reseeding to rebuild the local wild paua population is an example of a Māori style of entrepreneurship that pursues iwi objectives.

John Taiaroa's enthusiasm for aquaculture seems to have begun as a love of diving for seafood, and seems strongly based in his identity as a Māori and much the same can be said for Harry Roberts.

The possibility that one or both of the local iwi might invest in a large land based recirculating paua farm was raised by four of the entrepreneurs. If this comes about it would indeed be an expression of Māori entrepreneurship and certainly would not be just a passive investment as paua farming clearly remains a novel activity at the riskier end of the investment spectrum – even though the iwi would be able to establish a larger scale farm to those in this study and would enjoy economies of scale, better access to export markets, better access to knowledge and could employ more developed technology in plant design.

9.2.6 New Zealand's Innovation Framework

A sub-theme with the OECD review of New Zealand's innovation policy (OECD, 2007b) was the suggestion that New Zealand's SMEs do not receive enough training and advice to articulate and satisfy their needs.

Darby Ryan, Joe Warbrick and William Millton all expressed frustration at what they saw as the difficult process of applying for research grants or funding for developing export opportunities. Joe Warbrick in particular clearly stated that it was not enough to refer him to information on a website when he was already working long hours trying to keep the business afloat. He stated that he needed somebody who understood the government assistance available and who could tell him what he qualified for and help him with this application. Without this assistance he felt his valuable time would be wasted on misguided applications that stood no chance of success while perhaps missing out on opportunities to secure assistance for which he would have qualified. All the entrepreneurs would have welcomed the support of a facilitator for the cluster, had there been one, in articulating and satisfying their needs. Advice from a person was much preferable to training and had they been offered a training course in *Articulating and Satisfying Needs* they would probably not have considered this a good use of their time. This pattern of data is discussed later in this chapter under the heading *Disconnections – being cut off from access to knowledge*.

The OECD also urged CRIs to exploit their research results through licensing to existing firms rather than seek to form their own start-up ventures. NIWA has considerable expertise in paua aquaculture but, apparently did not seek to establish any sort of licensing or commercialisation relationship with any of the entrepreneurs. The business practices of NIWA seemed to have resulted in customer-contractor relationships rather than partnering through licensing agreements or memoranda of understanding. Had Darby Ryan, Joe Warbrick and William Millton been offered access to knowledge and support services under a licensing arrangement it is possible that problems facing the Ahuahu and Wharekauri paua farms might have been overcome and the farms might still be in operation.

Another OECD observation on New Zealand's Innovation Framework was that there were shortcomings in virtual and physical infrastructure? All entrepreneurs reported concern at what they saw as excessively high energy costs. The energy system was considered adequate in terms of reliability, just too expensive, especially in the rural locations of Ahuahu and Wharekauri. There were no reports of problems with the adequacy of road or air transportation in and out of Gisborne or New Zealand although Darby Ryan reported problems in using a courier delivery service to deliver to an Auckland restaurant on a Saturday morning. Harry Roberts reported difficulties in obtaining services (specialised floor coatings) from outside of Gisborne but, these were related to communications rather than physical infrastructure.

All the entrepreneurs had reasonable access to telecommunications and the internet and the capacity to communicate and network nationally and internationally with other aquaculturalists, knowledge-based organisations, suppliers and customers. They seem to have done little to network at local, national or international level. For example, when Harry Roberts was interviewed in October 2007 he had just found out about a conference of the New Zealand Aquaculture Association that was to take place the following week. Neither John Taiaroa, Joe Warbrick nor William Millton knew about this event. Again the presence of a facilitator for the cluster would have been of great benefit in establishing and maintaining links and networks.

The OECD (2007b) also noted that the customer-contractor principle is strictly applied to the public funding of R&D in New Zealand and pointed out that the customer (government agencies) might not be best placed to say what societal,

business or even government needs might be and that this approach created time consuming vertical relationships at the expense of horizontal co-ordination.

In a report on the New Zealand biotechnology industry, Randall (2001) urged a shift in emphasis from development being driven by government funding to being driven in part by the demand for technologies with commercial potential. He called for an industry environment with a strong entrepreneurial base that has unencumbered access to such technological ideas as well as the appropriate incentives to bring them to market. This seems to suggest that CRIs such as NIWA may be focussed on research that attracts grant funding and have few incentives to respond to the needs of entrepreneurs engaged in the development of industries.

John Taiaroa, William Millton and Joe Warbrick all strongly advocated for a more pragmatic government policy for funding basic research that would benefit the New Zealand economy and a more open publication, sharing and distribution to industry of that knowledge. Taiaroa believed the public should have free access to any knowledge created using public funds. Joe Warbrick spoke passionately about this from the viewpoint of a former insider. He believes basic research to establish worthwhile industries should be public funded which he called “inventing the wheel”. The more specialised work of “designing better tyres” could be done on a commercial basis.

9.2.7 The Aquaculture Industry

9.2.7.1 Relations between research providers and industry

As already noted, Nemec (2006) found evidence of weak relationships between research providers and seafood industry players, and this research found only a few examples of reasonably strong relationships between research providers and entrepreneurs.

Turanga Ararau seems to have enjoyed a strong partnering relationship with AUT in preparing the failed application for FoRST funding of a joint research project. Darby Ryan seems to have enjoyed a reasonably strong relationship with NIWA during the original design and commissioning of his Ahuahu paua farm and the subsequent joint research project. However, this relationship was not well sustained afterwards

and a licensing arrangement or memorandum of understanding might have enabled strong links to be maintained.

But, these were certainly not the strong ongoing relationships based on licensing or memoranda of understanding that Nemec advocates. It is possible to speculate that Darby Ryan's relationship with NIWA could have formed the basis for this style of relationship had either party pursued it at the time. Had a cluster facilitator conscious of the need for such ongoing relationships been involved she may have been able to broker such an arrangement and this in turn could have been a model for William Millton to adopt.

There was certainly greater evidence of weak and unproductive relationships and all the other relationships that were found to exist between research providers and entrepreneurs, such as that between NIWA and both William Millton and Joe Warbrick and between Turanga Ararau and both William Millton and Joe Warbrick, can be characterised as informal, ad hoc, unproductive and weak.

Nemec (2006) made the following recommendations for improving relationships between entrepreneurs and organisations in the industry:

- Research providers should attempt to make research more accessible to their audience, improve channels for communicating added value research to industry and engage companies more effectively when developing research proposals.
- Build research capacity within small and medium sized seafood companies that need more experience with planning, commissioning and using research.
- Foster researcher mobility and staff exchanges and promote networking.
- Develop agreements to guide relationship building. The formation of IP or collaborative agreements, or memorandum of understanding (MOU), provides the opportunity for relationship building. The process enables each partner's contributions to be acknowledged and valued.

The entrepreneurs in this case certainly found it difficult to access research and the barriers they faced included the high cost of work done by NIWA and difficult in applying for funding. The lack of access the entrepreneurs had to knowledge is a

pattern of the data discussed later in this chapter under the heading *Disconnections – being cut off from access to knowledge*.

Entrepreneurs Ned Davy and William Millton attempted unsuccessfully to develop research proposals without the involvement of a research providing organisation. Harry Roberts worked on a research proposal with AUT and came close to success and this seems to have been an effective and potentially successful relationship.

Darby Ryan successfully obtained two research grants in conjunction with NIWA at the time his Ahuahu paua farm was newly established however, this research relationship could not be continued as Ryan had to fund half the cost of the research and this was beyond the reach of his small business which faced a three year wait for its first sales revenue.

Darby Ryan, Joe Warbrick, William Millton, Harry Roberts and John Taiaroa all expressed dismay at what they saw as the prohibitive cost of engaging NIWA scientists to conduct research. An alternative model where the research-based organisation partners with the entrepreneur to conduct and commercialise research, and receives licensing income on the use of the technology, may overcome this barrier for both parties (see Figure 11).

The inability of the entrepreneurs to afford the services of NIWA meant that Ryan, and none of the other entrepreneurs, were directly engaged in ongoing research collaborations aimed at industry development and there seems to have been little incentive for NIWA to maintain a research relationship with any of the Gisborne entrepreneurs.

A highlight of NIWA's work in developing recirculating aquaculture has been its collaboration with OceaNZ Blue and this may have provided indirect benefits to the entrepreneurs as knowledge filtered out to them through informal networking within the industry. However, the Gisborne entrepreneurs, perhaps because of their small size and remote location, seemed left on the outside and looking in, sidelined and excluded from industry development.

An important role of a cluster facilitator would be to facilitate useful research collaborations and ongoing communication of knowledge between research organisations and members of the cluster. There may be research issues of vital

interest to the whole cluster where resources could be pooled by cluster members while in other cases the research collaboration could be between a provider and a single cluster member. A pattern that emerged from the data was that the entrepreneurs lack the skills to prepare applications for research funding and the fact that none of the applications for research funding prepared by William Millton or Ned Davy succeeded may be due to a lack of sophistication in those applications, in particular a lack of involvement by research providers with appropriate scientific or academic credentials. Again this is discussed further later in this chapter under the *Disconnections* heading.

Research providers have much to gain in partnering with the operators of paua farms. They may be able to carry out research without the need to build their own experimental farm. The operator can be expected to monitor experiments and record data at no cost to the research provider. By extending the research partnership into a partnership for commercialisation, that same operator may then become a customer for the technology they have helped to create. All the entrepreneurs were keen to undertake research that would solve their problems but, generally lacked the capacity to undertake the type of research that would have been useful. Darby Ryan, Joe Warbrick and William Millton were or had been baffled by mortality issues that they felt sure a good biologist could assist them to solve.

None of the entrepreneurs were involved in staff exchanges or researcher mobility but, there was certainly evidence of informal networking. Harry Roberts and Joe Warbrick both made comments suggesting they highly valued personal contacts at knowledge based organisations or other industry players. Joe Warbrick mentioned the assistance he had received from colleagues at the Cawthron Institute and at OceaNZ Blue. Harry Roberts mentioned OceaNZ Blue and AUT. This suggests that opportunities to engage in networking, staff exchanges and researcher mobility would be valued by entrepreneurs and that this may be an important means by which relationships between knowledge-based organisations and entrepreneurs could be enhanced.

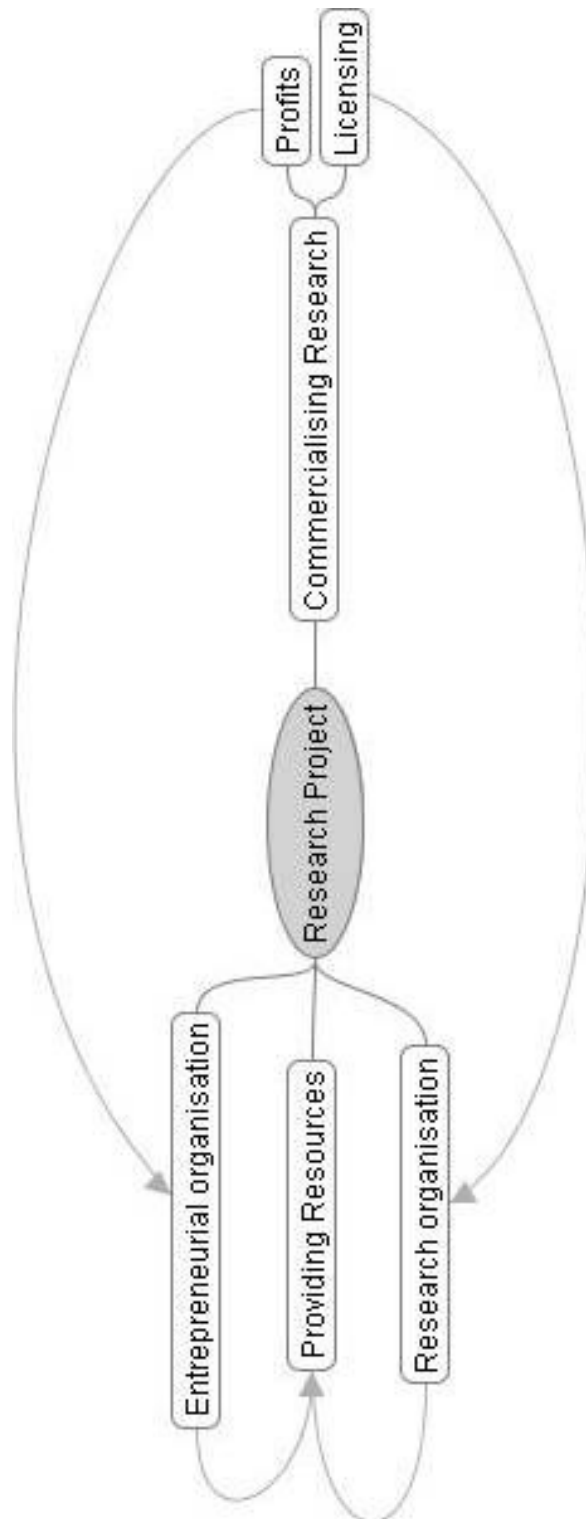


Figure 11. A model for research collaboration.⁴⁹

⁴⁹ Source: Developed by the author for this report.

9.2.7.2 Strengths, weaknesses, opportunities and threats

Porter (1990) offers a diamond model of for assessing competitive strengths and weaknesses of a country or region:

- Factor conditions such as a specialised labour pool or infrastructure.
- Home demand or demanding local customers who push companies to innovate.
- Related and supporting industries such as highly competitive suppliers that spur innovation.
- Industry strategy, structure and rivalry. A local culture of rivalry that fuels innovation.

Applying this diamond model to aquaculture in Gisborne it is apparent that there are certainly factor conditions present. These include the presence of Turanga Ararau as an established training provider for the aquaculture industry and the fact that Gisborne is a coastal location that has strong and active Māori iwi organisations and a high proportion of Māori in its population. This is a factor because a portion of offshore aquaculture resources in New Zealand are to be placed in Māori ownership.

Healthy home demand for seafood exists in New Zealand and paua in particular is popular in Māori, European and Asian cuisine. Competition between restaurants in the New Zealand home market may well stimulate innovation.

Related industries certainly exist and in the case of aquaculture a potential related industry is tourism because a paua farm, for example, has the potential to double as a tourist attraction. If offshore aquaculture becomes established it is possible that this will drive the development of onshore recirculating aquaculture facilities to serve as hatcheries.

There is the potential for rivalry between Māori iwi to be a factor in stimulating innovation in the aquaculture industry. There is the possibility of innovation being driven by rival approaches using different species and farming methods.

However, this diamond model analysis of strengths alone ignores weaknesses, opportunities and threats that also apply to the potential for recirculating aquaculture in Gisborne. The SWOT model (an acronym for strengths, weaknesses, opportunities

and threats) is a widely used strategic management approach to establishing a fit between an organisation's strengths and weaknesses and the opportunities and threats in its external environment. The model is not limited to firms and can just as easily be applied to an individual, or as in this case, to an emerging cluster.

Strengths and weaknesses are internal factors such as competences and resources the organisation possesses or lacks and are under its control. Strengths are most valuable when they improve performance in achieving a key success factor. Strengths and weaknesses are relative and judged in comparison to competitor's competences or industry standards. Opportunities and threats are the external factors that lie outside the control of the organisation.

The SWOT model is generally considered a useful tool for focussing on key drivers of success and failure and understanding the potential of an organisation and therefore it should not include very detailed information that distracts from that purpose. Based on the conversations with the entrepreneurs and participant observation, the following is a summary of the strengths, weaknesses, opportunities and threats that confront an emerging recirculating aquaculture cluster in Gisborne:

Strengths

- Knowledgeable and passionate individuals such as the entrepreneurs.
- A supply of trainees from the functioning training facility at Turanga Ararau.
- Potential for collaboration by member firms to develop:
 - Technical expertise.
 - Marketing a local brand and reputation.
 - Niche national and international markets.
- Potential for the establishment of a large paua farm in Gisborne, possibly by a Māori iwi, that would strengthen the cluster.

Weaknesses

- Lack of a common vision for the development of the industry in Gisborne and different visions held by key organisations.

- Lack of professional facilitation for a cluster.
- Lack of access to knowledge.
- Lack of strategic marketing.
- Past lack of collaboration between farmers and between farmers and organisations.
- Small size of farms established to date.

Opportunities

- A supply of spat from a functioning paua nursery at Turanga Ararau.
- Strong interest in industry development from local Māori iwi including Te Runanga o Turanganui a kiwa and Ngati Porou.
- The suitability of this industry for iwi investment.
- Māori enthusiasm for, and ownership stake in, aquaculture.
- Availability of clean sea water.
- Availability and relatively low cost of coastal land.
- Availability and relatively low cost of labour.
- Use of alternative energy available locally including solar, hydroelectric, geothermal, biogas, recycled vegetable oil and natural gas.

Threats

- High energy costs, especially in rural locations.
- Disincentives to take up employment by workers.
- Disincentives for employers to employ workers.
- The possibility of international competition from larger producers depressing prices.
- The actions of competitors in other regions in possibly engaging in price cutting or damaging markets by producing and perhaps exporting product of inferior quality.
- Competition from plants with newer technology or greater scale that makes them more economic to operate.
- Diseases effecting livestock.

9.3 Patterns of data that emerged

As interview data were coded using the NVivo® application a number of patterns or themes emerged that had not been anticipated in the Framework for Analysis. These patterns or themes (referred to as *nodes* in NVivo®) were assigned names and descriptions as follows:

- Double visions – key stakeholders had opposing models for development.
- Disconnections – being cut off from access to knowledge.
- The Innovator’s Curse – suffering at the hands of bureaucrats.
- Post Mortems – explanations for what went wrong with paua farming.
- Greener Pastures – one entrepreneur’s reasons for relocating to North Carolina.
- New Horizons – views on the future potential for aquaculture in Gisborne

The node Post Mortems was created as a collective node to include data coded into the sub-nodes of *Current Problems*, *Past Problems*, *NIWA Issues*, *Turanga Ararau Issues*, *Marketing Problems*, *Human Resources Issues* and *Cost of Energy Problem* as references to the problems faced by the entrepreneurs that were coded to these nodes were descriptions of what had gone wrong.

Table 14 shows the number of words and paragraphs that were coded to each node along with the number of *references* and the number of *sources*. References are a continuous segment of transcript text that has been coded to the node. Sources are interviews. Four entrepreneurs were interviewed twice; three were interviewed once resulting in a total of 11 interviews.

It should be noted that a number of references have been coded to multiple nodes. For example, a single reference might well be coded to Double Visions, Past Problems and NIWA Issues. It is therefore not intended that the numerical information in Table 14 holds any significance other than to indicate the existence of the patterns.

Table 14. NVivo® Node Summary Report showing patterns of data.⁵⁰

Node Summary Report				
Project: Entrepreneurs and Organisations				
Node	Coded Words	Paragraphs	References	Sources
Double Visions	4,409	138	40	6
Disconnections	7,416	178	48	10
The Innovator's Curse	4,613	41	30	4
Post Mortems				
Current Problems	8,085	128	86	9
Past Problems	10,090	124	66	8
NIWA Issues	7,880	124	59	9
Turanga Ararau Issues	6,315	184	54	9
Marketing Problems	5,381	85	46	8
Human Resources Issues	3,379	32	24	6
Cost of Energy Problem	917	26	14	5
Greener Pastures	3,160	97	34	3
New Horizons	2,819	92	38	4

9.3.1.1 Double visions

Two models for industry development

The study found that there were two main organisations involved in advising Gisborne's aquaculture entrepreneurs on the technical aspects of aquaculture; the National Institute of Water & Atmospheric Research (NIWA) and the Māori iwi based training provider Turanga Ararau. These organisations have very different processes, people and cultures and not surprisingly were found to have dramatically different visions for the development of the emerging recirculating aquaculture industry, and dramatically different approaches to the delivery of advice to entrepreneurs. The analysis compared and contrasted the experiences of one entrepreneur who had worked closely with NIWA in establishing and developing a plant with those that were closely associated with Turanga Ararau to pinpoint the strengths and weaknesses of the alternative industry development models.

⁵⁰ Source: Prepared by the author for this report based on a node summary report generated in NVivo®.

NIWA's tacit vision for the development industry appeared to be for an immediate leap to establishing quite large scale operations and, due to the high cost of NIWA's consultancy services, Gisborne's small operators were effectively cut off from the expertise that flows from the government funded research carried out by NIWA. The entrepreneur who had engaged the services of NIWA reported that he had been encouraged to see the advisory services purchased from NIWA as providing the knowledge to build and operate a recirculating paua farm, something that was a valuable piece of intellectual property that could later be resold to other operators entering the industry. This entrepreneur was thus encouraged to see industry knowledge as a valuable trade secret and not something to be freely shared with other operators. One weakness with NIWA's approach is that it did not support the development of small operations that could not afford NIWA's fees and this could have been overcome with a licensing arrangement or a partnering model using a memorandum of understanding. A second weakness of NIWA's approach is that it discouraged the free sharing of knowledge within networks or clusters of operators.

In contrast, to this approach Turanga Ararau provided training courses in aquaculture and freely provided advice and support to not only their trainees but, also other local operators who they viewed as potential future employers of their trainees. Accordingly it favoured a community-based and collaborative model in which operators worked together to achieve mutual benefits and overcome technical and other obstacles by freely sharing information rather than from formal commercial advisory arrangements. Turanga Ararau formed the Gisborne Aquaculture Society as part of this vision to support the growth of the industry from a grass roots cluster of numerous small operators.

However, a key weakness of the Turanga Ararau approach is that the small operators would lack access to the best available technological and scientific knowledge if this knowledge was held by NIWA. It follows that this emerging export industry could falter or fail for the lack of a common vision as to how it should develop and intervention and facilitation of a dialog between these two government funded organisations is needed to align these visions and approaches and allow small operators better access to the knowledge that flows from government funded research. Another weakness of Turanga Ararau's approach was in its execution. The

Gisborne Aquaculture Society failed to create much in the way of linking or collaboration and nor did it attract the involvement of key players due perhaps to a lack of facilitation expertise and/or resources.

9.3.2 Disconnections

Being cut off from access to knowledge

With the exception of one entrepreneur who successfully obtained two research grants (with the support of NIWA who carried out the research) the entrepreneurs reported no success in obtaining any form of government funding for research and development projects. One entrepreneur, William Millton, expressed frustration and bewilderment after submitting a series of unsuccessful applications for research funding. Without the support of an institution such as NIWA the entrepreneurs seemed poorly equipped to understand and meet the criteria for research funding and to prepare grant applications of a quality standard that would stand a good chance of succeeding. An implication for policy would be to consider how entrepreneurs can be involved in the research process together with knowledge-based organisations in a way that would provide benefits to both the organisation and the entrepreneurs. The role of the entrepreneurs is to identify opportunities to exploit while the knowledge-based organisations have the capacity to carry out the scientific research to generate the knowledge and skills the entrepreneurs need. In addition to this partnering approach, organisations involved in supporting enterprise, or in allocating research resources, could consider ways of addressing the significant skill, communication and information gaps that appear to separate entrepreneurs from research resources.

The suggestion has already been made that knowledge-based organisations should work more closely with entrepreneurs so that research efforts are directed into projects where an entrepreneur is keen to exploit the knowledge created. This avoids the creation of innovations looking for commercialisation. The advantages of licensing technology to entrepreneurs have also been discussed.

9.3.3 The Innovator's Curse

Suffering at the hands of bureaucrats

The entrepreneurs experienced varying degrees of difficulty in their dealings with the government departments and local government agencies involved in regulating their activities. The entrepreneurs' interactions with these organisations often broke new ground for the regulators and required new applications and interpretations of rules and regulations. The entrepreneurs related a number of experiences where the organisations were found to be reluctant to facilitate new practices and typically adopted the most conservative and unhelpful interpretations of their rules and regulations. The following are some examples ...

- The cost and difficulty of obtaining an export licence to dispatch farmed paua directly from an entrepreneur's premises was so great that the entrepreneur saw export through an existing licensed facility as the only option.
- An apparent requirement for the preparation of an exhaustive risk management plan before an existing facility already licensed to export rock lobster could also handle the export of farmed paua became a major obstacle for this entrepreneur. This is an example of an institutional hurdle encountered late in the entrepreneurial process after the plant had been in operation for over two years and livestock were beginning to reach export size. It is also an example of an institutional hurdle that would not be faced if the enterprise remained small (like most New Zealand ventures) and supplied only domestic markets.
- Farmers operating trucks normally obtain an exemption from Land Transport from the requirement to maintain a vehicle log book. Officials who routinely provide this exemption to more traditional livestock operations refused to provide this exemption for a paua farm.
- One entrepreneur was required to remove a "Paua Farm" sign from the side of a state highway. This entrepreneur believes that a sign with the words "Pig Farm" or "Sheep Farm" would not have attracted official attention and that in this case the signage was considered distracting to motorists primarily because of the innovative nature of the enterprise.

What seems to be at work here is the fact that technical change usually outpaces institutional change? Matthews (1986) explains that technical change is subject to fewer potential obstacles and distortions than institutional change and

pinpoints that we seem to have better systems for driving technical change than we do for social and institutional change:

- (i) Although it (technical change) may depend on other people's consent, the dependence is not so inherent as it is with institutional change;*
- (ii) Institutional change is in its nature more complicated, hence more difficult, than technical change, because people are more complicated than things - this is much the same as the reason why the social sciences have more difficulty in making progress than the natural sciences and*
- (iii) that is a point of importance in its own right too, because in modern times the advance of pure science has provided a more solid base for technical change than anything social scientists have been able to offer to practical institution makers;*
- (iv) Complexity arises not only because of the complexity of man but, because of the scope for strategic plays. When man invented the wheel, Nature did not answer back (Matthews, 1986, p. 916).*

Another explanation is that the Innovator's Curse is a manifestation of the anti-entrepreneurialism that exists in all levels of government according to Morris (1998) and a reaction from society against entrepreneurial subversion discussed Section 2.6. This pattern of data supports Sautet's (2006) view that governments are incapable of being entrepreneurial and Kirkwood's (2007) findings on the Tall Poppy Syndrome.

It also seems likely that there is a clash of cultures between entrepreneurs and organisations due to the attitudes and beliefs of the people involved. Entrepreneurs may be much more comfortable with uncertainty and risk than scientists, engineers or regulators. Such attitudes may be deeply rooted in the moral precepts held by the people involved.

Jacobs (1993) asserts that there are two quite distinct sets of moral precepts in common use in developed societies and refers to them as the *guardian* and *commercial* syndromes. Guardians evolved within primitive hunter-gatherer society as those with the responsibility to guard the live and territory of the tribe. Characteristics of the guardianship syndrome are:

- Shun trading – be suspicious of strangers.
- Exert prowess - be skilled and active.
- Adhere to tradition.

- Respect hierarchy - be obedient and disciplined.
- Be loyal – obey orders without question.
- Take vengeance – punish lawbreakers.
- Deceive for the sake of the task – trick strangers and trap prey.
- Make rich use of leisure – enjoy the privileges of rank.
- Be ostentatious – impress and terrify your enemies and assert your status by displaying wealth.
- Show fortitude.
- Treasure honour.

Jacobs suggests that guardianship arose in prehistoric times as a set of morals to be observed by the male guardians of the tribal territory. The commercial syndrome is a more feminine approach and a quite different moral code with these general precepts:

- Shun force – commerce is impossible under threat.
- Be honest – deceit in one transaction will create distrust in future negotiations.
- Collaborate easily with strangers and aliens.
- Compete to expand your business but, do not use force or deceit to damage your competitors.
- Respect contracts even when circumstances change and you would be better off breaking them.
- Be thrifty - be efficient and sparing of effort and resources.
- Promote comfort and convenience rather than ostentation and self-indulgence.
- Don't blindly obey orders.
- Be industrious – don't waste time on unproductive activities.
- Use individual initiative and enterprise.
- Be open to inventiveness and novelty.

In Jacob's view, guardianship was generally dominant in the pre-modern world and remains dominant in pre-modern organizations such as the church or the military that are typically male dominated and characterised by ideas of duty, calling and

hierarchy. The dawn of the twentieth century brought recognition of female rights and values and the rise of modern institutions and commerce. The aftermath of the First World War made western society question the guardianship syndrome and further embrace the commercial syndrome. It is perhaps no coincidence that what followed was an outpouring of innovation and entrepreneurship that brought, and continues to bring, huge increases in the standard of living enjoyed by western societies.

The Innovator's Curse may then come about to some extent because regulators retain the vestiges of a guardianship moral code. Entrepreneurs obviously tend to follow the commercial moral code and this serves them well in dealing with others who adhere to those precepts. Unfortunately when commercial entrepreneurs encounter guardian regulators the two parties may find that they lack a common set of moral precepts to guide their actions in a novel situation.

To summarise, the Innovator's Curse occurs when an organisation with a regulatory function is presented with a novel situation. The organisations are experienced in regulating well established industries and only have established systems and policies to appropriately regulate those established industries. Innovative and unfamiliar activities resulting from technical change are treated with caution or suspicion and there may be a temptation for officials to err on the side of safety and take the most conservative approach to applying any rules or regulations.

The patterns of data relating to the Innovator's Curse in this research suggest that it has been at times a source of intense frustration to the entrepreneurs. The development of industries such as recirculating aquaculture would benefit if organisations with a regulatory role underwent a cultural change to replace some of the moral precepts of guardianship with those of commerce and accepted an additional role of facilitating innovation and working constructively with entrepreneurs to develop industries a much greater extent.

9.3.4 Greener pastures

One entrepreneur's reasons for relocating to North Carolina

It has been interesting to compare and contrast the entrepreneurial environments of Gisborne, New Zealand and Burlington, NC in the United States from the point of view of John Taiaroa and his business associate George Helmore. Taiaroa

believed Burlington offered considerably cheaper costs to establish and operate a new plant for the following reasons:

- Cheaper land and construction costs.
- Provision of free design services from suppliers and the state university.
- Plant and equipment such as plumbing fitting are cheaper.
- Energy is much cheaper.
- Salt for manufacturing sea water is much cheaper than New Zealand.
- Labour is cheaper and more flexible.
- Students will supply free labour and technical support in exchange for learning opportunities.

Other factors John Taiaroa noted in Burlington's favour were:

- Access to grant funding.
- Access to a large market.

John Taiaroa saw no aspect of the entrepreneurial environment in Gisborne as superior to that of Burlington. Establishing a salt water aquaculture facility in Burlington, NC, meant complete reliance on manufactured salt water however, Taiaroa seemed happy with that given the low cost of salt and the modular design of the plant meant that a water quality problem occurring in one module could be quickly overcome and there was therefore not the need to pump in seawater. Taiaroa therefore saw no advantage in Gisborne's coastal location for this plant design.

9.3.5 Post mortems

The Ahuahu Paua Farm was established in 2002 using a NIWA design that drew on the knowledge NIWA had at that time about recirculating aquaculture of paua. This farm, along with the smaller Wharekauri farm set up by William Millton, can with the benefit of hindsight now be seen as an early failure that suffered from a number of fundamental design flaws.

- **Location.** The rural locations conferred the advantage of cheaper land but, brought high energy costs and increased difficulty in attracting and retaining skilled labour.

- **Lack of a simple solution to water quality problems.** The absence of a pipe into the ocean meant neither plant could solve water quality problems by rapidly replacing the water. Alternatively a modular design might have overcome this problem by offering the ability to move livestock into a parallel module with a quite separate water treatment system.
- **Labour Intensive Design.** Both plants lacked the more recently developed self-cleaning tipper trays that would have reduced labour costs and energy costs while promoting faster livestock growth.
- **Energy Inefficient Design.** Both plants lacked the ability to use ventilation cooling that would have reduced energy use and there was no use of alternatives to electricity.
- **Small Scale.** The small size of these operations had two main implications. Firstly, it meant labour and management costs would consume a much higher proportion of revenue than a larger farm. Secondly, it meant the farms lacked the volume production to tackle even niche export markets and unless they could aggregate output with other operators, their marketing options were effectively limited to supplying New Zealand restaurants.

In summarising what went wrong with the ventures and the cluster it is clear that the entrepreneurs Darby Ryan and later Joe Warbrick at Ahuahu, William Millton at Wharekauri failed in their ventures (and John Taiaroa failed to establish a local venture) due to a combination of factors both within their operations and within the entrepreneurial environment.

High on the list for Ryan, Warbrick and Millton were seemingly intractable technical difficulties maintaining livestock health and growth within an artificial marine environment coupled with an inability to obtain assistance in dealing with those problems from knowledge-based organisations. To a lesser extent the entrepreneurs that operated farms also faced problems in dealing with regulatory organisations, difficulty retaining trained staff and rising energy costs. All were concerned at the uncertainty surrounding their ability to market their output at a price that would sustain their operation in the long term.

It is also clear that the entrepreneurs were cut off from access to knowledge and research resources in a number of ways and received relatively little ongoing advice or support from the knowledge based organisations that might have been expected to take an interest in the development of a Gisborne aquaculture cluster.

To its credit, Turanga Ararau, was the exception and had a vision for the development of a Gisborne aquaculture cluster. It took a proactive role and formed the Gisborne Aquaculture Society in an effort to establish this cluster however, this initiative proved unsuccessful primarily because the society failed to attract the involvement of key stakeholders such as NIWA and the GDC. As a training organisation, Turanga Ararau on its own lacked the resources to provide the technical assistance that the entrepreneurs needed most.

It is clear that the process of establishing the cluster could have been improved and that the entrepreneurs would have benefited considerably from the involvement of a professional facilitator. It is possible, although by no means certain, that this intervention might have created an environment in which the key stakeholders might have become involved and provided knowledge and resources and technical problems might have been overcome. This would have required brokering a deal, such a licensing or a memorandum of understanding, which would have made access to that knowledge and those resources affordable for the entrepreneurs. In this way professional facilitation could have resulted in the development of a thriving aquaculture cluster in Gisborne. While this is obviously speculation and is by no means certain, it can be said with some confidence that the intervention of a professional facilitator would have significantly improved the odds of success.

9.3.6 New horizons

Views on the future potential for paua aquaculture in Gisborne

It seems reasonable to conclude that there is potential for a paua farming industry to develop in Gisborne in the future provided those involved have learned the lessons from the early failures.

Unless alternative sources of energy can be obtained, any new venture should be located reasonably close to Gisborne in order to avoid high rural energy costs and also to have better access to human resources. It should use a purpose-built building

designed for maximum energy efficiency and explore alternative energy options. The plant design should use self-cleaning trays to minimise labour costs. It would also need access to piped seawater ideally from a point well clear of a river mouth or alternatively employ a modular design so that the artificial marine environment for the livestock can be changed quickly in the event of a disease outbreak or a water quality problem.

A next generation Gisborne paua farm should be of a reasonable size to secure economies of scale for labour and energy, and to be able to produce consistent volumes for export markets, and this would mean it would probably be of similar size to the OceaNZ Blue plant. Perhaps more importantly it should seek to tap into the knowledge developed by NIWA and OceaNZ Blue by entering into a licensing agreement or a memorandum of understanding with one or both of these organisations.

It should make use of systems for remote monitoring that reduce staff costs, improve the security of livestock and will allow the vital signs of the plant to be monitored not only by local staff but, also by outside experts located anywhere in the world. This together with teleconferencing facilities could mitigate the problem of the plant being remote from technical support and allow it to network with other similar operations and become part of the sort of national or even international clusters that are now being made more possible by improved communication technologies (MacGregor & Hodgkinson, 2007).

10 Implications and recommendations

10.1 Summary of this research

In this final chapter implications and recommendations for policy and practice are put forward, the contributions and limitations of the study are discussed and suggestions made for further study.

10.2 Improving New Zealand's Entrepreneurial Framework

Data from this case supports Sautet's (2006) view that the New Zealand government should take steps to improve the regulatory environment and it has been possible from the data to identify a number of areas where labour regulation could be made friendlier towards entrepreneurs by removing what Frederick and Monsen (2006) would call government "*mollycoddling*" of employees.

- By reducing disincentives for employment making it easier to hire and retain staff.
- By altering regulations to increase workforce flexibility and reduce disincentives to employers.

The data coded to *The Innovators Curse* suggest that general improvement in the entrepreneurial framework could also be achieved if government recognised the importance of creating a better entrepreneurial environment not just for three favoured industries but, also for all New Zealand entrepreneurs – even those involved in subversive innovation. The government could begin with a public statement of its intention to improve the environment for entrepreneurs and this could be achieved in these ways:

10.2.1 Changing the culture of government agencies

By requiring the management of agencies involved in regulating entrepreneurs to initiate a cultural shift from seeing themselves as regulators to instead taking a facilitating role towards innovation - to try to be helpful rather than a reactionary and anti-entrepreneurial role. In regulating emerging industries they should look for how an activity might be permitted rather than how it might be prevented. This role in supporting economic growth could be written into the mission statements of government agencies and watched over by an *Innovation Ombudsman*, who would be

given a special brief to investigate situations where the *Innovators Curse* is encountered. Where the Innovation Ombudsman finds that innovators are being unreasonably held back by bureaucracy he or she would initiate a fast track process to alter the necessary rules, regulations or legislation.

Sautet (2006) advocates reducing the size of government by freezing its spending and this might be an additional way to create a more light-handed approach to regulation that would tend to enhance the entrepreneurial environment. Faced with an inability to enforce all rules and regulations government agencies would be forced to prioritise, simplify and streamline their activities.

10.2.2 Facilitating clusters

This case represents a good argument for facilitation of clusters. Involvement of a professional facilitator and attention to the steps required to achieve the benefits of clustering could well have resulted in a successful outcome for the entrepreneurs and organisations and for the economic development of the Gisborne region and New Zealand. As already noted, Sautet (2006) sees no role for government in cluster development. His vision is for government to take a *hands-off* approach and for government to simply to *get out of the way* of entrepreneurs however, by funding professional support for an emerging cluster, the government can improve the entrepreneurial environment in these ways:

- Help entrepreneurs get access to knowledge that might otherwise remain locked up in knowledge-based organisations (*Disconnections*). The facilitator assists in forming connections (and overcome disconnections) between entrepreneurs and organisations to achieve this. These connections can take the form of:
 - Research collaborations.
 - Licensing of technology.
 - Partnering via Memoranda of Understanding.
- Help entrepreneurs overcome the regulatory hurdles that confront novel activities (*The Innovators Curse*). Again the role of the facilitator is to help form connections (and overcome disconnections) between entrepreneurs and organisations.

The argument that governments should not facilitate clusters can be countered by the argument that, in funding cluster facilitation, governments are only mitigating the barriers to entrepreneurship they raise when they restrict or regulate activities. An important role of a cluster facilitator is to assist entrepreneurs to navigate the bureaucratic landscape of regulation and compliance and in supporting this process a government is acting to smooth over the distortions and barriers government policies have caused in the entrepreneurial environment.

This support for facilitation clusters could be funded by scrapping government spending on the industrial policy outlined in its *Growth and Innovation Framework*. This policy has not produced the hoped-for rise in the OECD rankings and such growth as New Zealand has enjoyed in recent years has come from the success of primary export industries such as dairy and not from the creative, biotechnology and ICT sectors the government picked to support. This policy should be replaced with an approach aimed at reducing or mitigating the harm government does to the entrepreneurial environment – without attempting to pick winners in the way that has been attempted by the Growth and Innovation Framework policy.

10.2.3 Funding facilitation while avoiding picking winners

The argument that governments should not pick winners has been well made so in funding the professional facilitation of clusters government should simply provide a broadly based support and offer funding for facilitation where that support is requested by any credible group of entrepreneurs either on a national basis or in a common geographic location. The government should provide seed funding with little or no assessment of the cluster's potential for success. Clusters could be almost self selecting at the early stage and receive small amounts of initial support providing there was a genuine nucleus of ventures behind the proposal. Clusters that then begin to demonstrate market success likely to contribute to economic growth would qualify for further support. In this way the process of picking winners would be left, as much as possible, to the market.

This research suggests that it would be good practice to avoid funding a facilitator who is employed by one of the organisations involved unless they have the ability to form external links and networks. This would avoid an unbalanced

arrangement centred on the facilitator's employing organisation much in the way the Gisborne Aquaculture Society was centred on Turanga Ararau. By employing the services of an external professional facilitator the cluster is much more likely to be balanced and attract the involvement of all potential participants.

10.2.4 Improving New Zealand's Innovation Framework

The data in this case supports the OECD's conclusion that SMEs do not receive enough training and advice to articulate their needs. This further supports the argument for facilitation of clusters where a trained facilitator can take on the role of connecting entrepreneurs and organisations.

Training organisations need to be encouraged to build links with industry and entrepreneurs so that entrepreneurs can secure the trained employees they need. Knowledge-based organisations such as CRIs and universities should be establishing links with entrepreneurs that will enable them to produce knowledge needed to exploit market opportunities. They should collaborate to exploit that knowledge through licensing and other partnering arrangements. They should avoid creating knowledge in isolation and then attempting to push it onto the market to commercialise it.

Government energy regulation should take into account the importance of containing energy costs for business.

10.3 Implications for the aquaculture industry

Recirculating aquaculture in Gisborne may still represent an opportunity for entrepreneurs and investors provided they have learned the lessons provided by the early failures (many of which have been detailed in this study). As already discussed, it is a particularly appropriate investment for Māori organisations to consider. The factors associated with the apparent success of OceanNZ Blue such as the close links with NIWA and the scale and size of that operation provide clues as to how a successful venture in Gisborne could be crafted.

10.4 Contributions of this research

This research makes a contribution to the discussion surrounding New Zealand's entrepreneurial framework. In particular how the New Zealand government

should support entrepreneurship and innovation through knowledge-based organisations. It has reviewed relevant literature from academic, industry, government and the OECD and examined how a group of SMEs in New Zealand experienced aspects of the New Zealand entrepreneurial environment in their interactions with knowledge-based organisations.

Data gathered in this study revealed a number of patterns relevant to understanding the entrepreneurial environment experienced by the entrepreneurs and these patterns have highlighted areas where public policy could be improved so that efforts to facilitate clusters and support innovation can be more effective.

This thesis also contributes to the policy and practice of cluster facilitation by reviewing literature in this area, examining the extent to which best practice was followed in this case and presenting conclusions as to how the facilitation of the cluster could have been improved.

The methodology chapters of this thesis contribute to literature regarding the use of qualitative methods in entrepreneurship research, in particular the use of ethnographic methods. A by-product of this thesis is an account of the obstacles and challenges faced by the emerging recirculating aquaculture industry in Gisborne which makes a contribution to industry policy and practice.

10.5 Suggestions for future research

This case study has provided data relevant to many of the research questions and that support some of the theories and proposals drawn from literature. An obvious direction for further study would be to examine if the patterns found in this case are matched in other studies of other emerging clusters in other industries and other geographic locations.

The aquaculture industry also promises to be a fruitful area for the further study of Māori entrepreneurship due to the importance of seafood in Māori culture.

It would be particularly interesting to study more successful emerging clusters in New Zealand to compare and contrast the role of organisations and efforts at cluster facilitation in that success. The finding that many of the problems faced by the entrepreneurs could have been reduced had there been professional facilitation of the cluster could be built on by a study of one or more emerging clusters that had enjoyed

the benefit of such professional facilitation. A comparison of emerging clusters with different levels of professional facilitation might better identify the benefits of facilitation and support improved practice.

Industry training did not emerge as an important pattern during coding of data and, because training was not identified as a theme in the literature review, it was not included in the framework for analysis. While several entrepreneurs made comments about industry training and many of these were reported in the narrative, an analysis of this fell outside the scope established for this research. A study of how industry training supports entrepreneurs may be an interesting opportunity for future research.

10.6 Limitations of this study

The use of ethnographic methods limits this work in that it analyses data gathered as tales, accounts and descriptions that are inevitably partial accounts reported from the viewpoints of individual entrepreneurs and interpreted from the viewpoint of the researcher. While it is hoped that the outputs from this research are relevant and will be useful, they are drawn from the interpretations of the entrepreneurs which are in turn subjected to the interpretation of the researcher and hence obviously cannot be presented as absolute or universally valid truths.

This work is also subject to the limitations imposed on it by its scope. By confining itself to the relationships between entrepreneurs and organisations it inevitably ignores large areas of the entrepreneurial environment. For example, the design has allowed the research to take an interest in regulatory issues and compliance costs while questions regarding taxation in general and the taxation of research and development in particular fall outside the scope.

By selecting a single industry and a single geographic area it has been possible to explore the case in some depth but, at the same time this certainly limits the ability to generalise from this research. Aquaculture in Gisborne may simply have been seen as a poor choice for investment of resources by organisations who may have decided to concentrate their efforts in locations and/or industries that they judged to have better prospects of success. Hence, this research does not shed any light on the performance of any of the organisations in regard to their own goals, only how they were seen to perform by the entrepreneurs.

Some of the views reported in this research are at times critical of organisations and individuals and the design of this study, which focuses almost entirely on the viewpoints of the entrepreneurs, has not provided for there to be any right of reply to these criticisms. The entrepreneurs in this study may well have had difficulty accepting and/or discussing their own role in their situation and may have been expressing an emotional response and a desire to assign blame for their difficulties to someone other than themselves. While the researcher has done his best to accurately record, and to weigh and discuss, the viewpoints and voices of the entrepreneurs and put them in context it would certainly be unfair to draw negative conclusions about the conduct of any person or organisation mentioned or referred to in this thesis without seeking a different viewpoint to balance that of the entrepreneur being reported or to further explore the context within which any statements were made by the entrepreneurs.

The entrepreneurs also expressed strong views on what they perceived as flaws in New Zealand's social policy and it must be acknowledged that the design of this research meant that only the voices of entrepreneurs are reported. It did not provide for voices of employees, trainees or job-seekers who might have expressed quite a different view. The researcher's positionality may also have coloured interpretation of the data on this and other issues. It should also be recognised that this research has taken a particular approach to the question of how economic growth can be created and there are other approaches that it has not explored.

It should also be noted that, during fieldwork, there was no opportunity or invitation to view the workplace of Ned Davy. As a result, the data from observation relating to this entrepreneur were gathered during interviews with him, conducted firstly the researcher's office and later in a Gisborne café, and during meetings of the Gisborne Aquaculture Society. This lack of workplace observation has limited the strength of the data with respect to this entrepreneur.

10.7 In conclusion

To summarise, this work contributes to the discussions regarding how New Zealand's entrepreneurial environment and innovation framework might be improved, how government support to clusters should be delivered and how ethnographic

methods can be put to use in researching entrepreneurship. As a by-product it also sheds some light on the future development of aquaculture ventures in New Zealand.

This research suggests that the current New Zealand government, and with it a section of New Zealand society, fails to acknowledge the vital contribution that entrepreneurs make to economic development. This is evident from the government policy on growth and innovation (The New Zealand Government, 2002) which downplays the role of entrepreneurs. This government anti-entrepreneurialism may have contributed to the fact that this policy has failed to achieve its stated aim of raising New Zealand to a higher position in the OECD rankings of GCP per capita.

This research has noted that anti-entrepreneurialism also seems to be expressed in aspects New Zealand's Innovation Framework and this is supported by the OECD's suggestions that CRIs should work with existing firms to commercialise innovations and that more assistance should be provided to SMEs to articulate and satisfy their needs.

This research reports that four of the entrepreneurs failed in their ventures due to a combination of factors both within their operations and within the entrepreneurial environment. These factors included technical difficulties maintaining livestock health and growth within an artificial marine environment, an inability to obtain the assistance needed from knowledge-based organisations, problems in dealing with regulatory organisations, difficulty retaining trained staff, uncertainty about the market, and high energy costs. What promised to be a successful emerging local cluster has at best suffered a serious setback and at worse completely failed with little possibility of being revived. While the reasons for this failure were complex, there can be no doubt that many of the patterns of data revealed in this study, especially those that relate to the relationships between the entrepreneurs and organisations, were factors that contributed to that outcome. The organisations involved assisted and worked with some of the entrepreneurs at various times but, communications were often poor or non-existent and the objectives of the entrepreneurs and organisations often seemed misaligned leaving the entrepreneurs cut off from knowledge resources.

Perhaps the most important output of this work is the conclusion that a professional approach to facilitation of the cluster would have overcome many of

these issues by promoting communication and mutual understanding, assisting entrepreneurs to secure the resources of technical and business advice and knowledge they needed and in better coordinating the efforts of the entrepreneurs and organisations.

It must certainly be acknowledged that a policy of providing government support for regional clusters is likely to produce both successes and failures and would require some care in its implementation and monitoring to increase its chances of being effective. However, this research has clearly identified that the attempt to develop an aquaculture cluster in Gisborne could have been greatly improved by the intervention of a skilled facilitator and it is reasonable to speculate that this intervention might well have prevented the business failures and resulted in the development of a thriving successful cluster. While government provision of support for cluster facilitation may not always be a perfect solution, if implemented intelligently it would at least provide a mechanism for supporting the efforts of entrepreneurs to commercialise innovations and create economic growth.

As we have seen, an important role of a professional cluster facilitator is to take a step by step approach and begin by conducting or co-ordinating an analysis to ensure that the cluster has a reasonable chance of success so that resources are not wasted on ventures that lack the resources to succeed. Risks need to be taken in developing new industries but, decisions to establish a new venture or develop a cluster should as much as possible be based on careful analysis rather than wishful thinking.

Finally, the New Zealand government should recognise the potential of entrepreneurs to create economic growth and should express that recognition through a policy of providing carefully managed support for facilitating clusters (that may be either regional or national). It should also conduct a review of New Zealand's entrepreneurial environment and innovation framework to ensure that government organisations have incentives to be pro-entrepreneurial. It should aim to make New Zealand a society where entrepreneurship is encouraged and celebrated.

References

- Acs, Z. (2006). How Is Entrepreneurship Good for Economic Growth? *Innovations*, 1(1), 97-107.
- Acs, Z. J., & Karlsson, C. (2002). Introduction to institutions, entrepreneurship and firm growth: From Sweden to the OECD. *Small Business Economics*, 19(3), 183-187.
- Andersson, T., Serger, S. S., Sörvik, J., & Hansson, E. W. (2004). *The Cluster Policies Whitebook*. Malmö: International Organisation for Knowledge Economy and Enterprise Development.
- Apollonius. (3rd century BC translated 1912). *The Argonautica*. Alexandria: Harvard University Press, Cambridge MA.
- Audretsch, D., Thurik, R., Verheul, I., & Wennekers, S. (2002). *Entrepreneurship: Determinants and Policy in a European-US Comparison*. Boston: Kluwer Academic Publishers.
- Barney, J. (2003). Speech to Babson College Doctoral Consortium. In B. Johnstone (Ed.). Boston.
- Barth, F. (1969). *Ethnic Groups and Boundaries: The social organisation of cultural difference*. Boston: Little, Brown and Company.
- Bascand, G. (2007). *Surplus for Crown research institutes*. Retrieved. from <http://www.stats.govt.nz/NR/rdonlyres/8F39FC23-297A-43C3-BC18-B3593C8B80B4/0/crownresearchinstitutestatisticsyearended30Jun07mr.pdf>.
- Blaikie, N. (2000). *Designing Social Research*. Cambridge: Polity Press.
- Boon, S., & Ram, M. (1998). Implementing quality in a small firm: An action research approach. *Personnel Review*, 27(1), 20.
- Borbasi, S., Jackson, D., & Wilkes, L. (2005). Fieldwork in nursing research: positionality, practicalities and predicaments. *Journal of Advanced Nursing*, 51(5), 493-501.
- Bourdieu, P. (1977). *Outline of a Theory of Practice* (R. Nice, Trans.). Cambridge: The University Press.
- Bourdieu, P. (1990). *The Logic of Practice*. Cambridge: Polity Press.
- Brandenburger, A., & Nalebuff, B. (1998). *Co-Opetition* Doubleday.
- Brewer, J. D. (2000). *Ethnography*. Buckingham: Open University Press.
- Burgess, R. G. (1982). *Field Research: A Sourcebook and Field Manual*. London: Allen and Unwin.
- Busenitz, L. W., Gomez, C., & Spencer, J. W. (2000). Country institutional profiles: Unlocking entrepreneurial phenomena. *Academy of Management Journal*, 43(5), 994-1003.
- Bygrave, W. (2004). Opening Address AGSE-Babson Entrepreneurship Research Exchange. In B. Johnstone (Ed.). Melbourne.
- Bygrave, W. D., & Hofer, C. W. (1991). Theorizing about entrepreneurship. *Entrepreneurship Theory and Practice*, 16(2), 13-22.

- Carton, R. B., Hofer, C. W., & Meeks, M. D. (1998). *The Entrepreneur and Entrepreneurship - Operational Definitions of their Role in Society*. . Paper presented at the International Council for Small Business, Singapore.
- Casson, M. C. (1982). *The Entrepreneur: an economic theory*. Oxford: Martin Robertson and Co. Ltd.
- Chesbrough, H. (2006). *Open Innovation: The New Imperative for Creating and Profiting from Technology*. Boston, MA: Harvard Business School Press.
- Chetty, S. (2004). On the crest of a wave: the New Zealand boat-building cluster. *International Journal of Entrepreneurship and Small Business*, 1(3-4), 313-329.
- Clifford, J. (1986). Introduction: Partial truths. In J. Clifford & G. E. Marcus (Eds.), *Writing Culture: The poetics and politics of ethnography*. Los Angeles: University of California Press.
- Dana, L. P. (1993). Environment for Entrepreneurship: A Model of Public Policy and Economic Development. *The Journal of Entrepreneurship*, 2(1), 73.
- Dana, L. P. (2007). New Zealand graduates in entrepreneurship: toward a paradigm of interdependence. In A. Fayolle (Ed.), *Handbook of Research in Entrepreneurship Education: A General Perspective* (pp. 196-206). Cheltenham: Edward Elgar.
- Dana, L. P., & Dana, T. E. (2005). Expanding the scope of methodologies used in entrepreneurship research. *International Journal of Entrepreneurship and Small Business*, 2(1), 79 - 88.
- Dann, L. (2004, 17 May 2004). Paua Farmers Tap Rich Demand. *New Zealand Herald*, p. 4.
- Davidsson, P. (2003). The Domain of Entrepreneurship Research: Some Suggestions. In J. Katz & D. Shepherd (Eds.), *Advances in Entrepreneurship, Firm Emergence and Growth* (Vol. 6, pp. 55-59). Greenwich, CT: JAI Press.
- de Laine, M. (2000). *Fieldwork Participation and Practice. Ethics and Dilemmas in Qualitative Research*. London: Sage Publications.
- Deeds, D. L., Mudambi, R., & Willhite, A. (2001). Institutions and Entrepreneurship: Theory and Simulation.
- Denscombe, M. (1998). *The Good Research Guide for Small Scale Social Research Projects* (1 ed.). Buckingham: Open University Press.
- Denzin, N. K., & Lincoln, Y. S. (2003). *Strategies of Qualitative Inquiry* (Second ed.). Thousand Oaks, CA: Sage Publications.
- Desrochers, P., & Sautet, F. (2004). Cluster-Based Economic Strategy, Facilitation Policy and the Market Process. *The Review of Austrian Economics*, 17:2/3, 233-245.
- Down, S. (2002). *Clichés, generations, space and friendship: the self-identity narratives of two entrepreneurs*. University of Wollongong, Wollongong, Australia.
- Down, S., & Reveley, J. (2004). Generational Encounters and the Social Formation of Entrepreneurial Identity: 'Young Guns' and 'Old Farts'. *Organization*, 11(2), 233.
- Drucker, P. (1985). *Innovation and Entrepreneurship*. London: William Heinemann Ltd.

- Easton, B. (1991). The Porter Project [Electronic Version]. *Listener* 3 June 1991. Retrieved February 2008 from <http://www.eastonbh.ac.nz/?p=186>.
- Easton, B. (1994). Towards a Political Economy of New Zealand: The Techtonics of History, *The 1994 Hocken Annual Lecture, University of Otago*.
- Eisenhardt, K. M. (1989). Building Theories from Case Study Research. *The Academy of Management Review*, 14(4), 532-550.
- Eliasson, G. (1996). *Firm Objectives, Controls and Organization - The Use of Information and the Transfer of Knowledge Within the Firm*. Dordrecht: Kluwer Academic.
- Emerson, R. M., Fretz, Rachel I., Shaw, Linda L. (1995). *Writing Ethnographic Fieldnotes*. Chicago: The University of Chicago Press.
- Ffowcs-Williams, I. (2007). Economic transformation: Empowering the regional Cinderellas. *Future Times*, 3, 12.
- Fletcher, D. (1997). *Organisational Networking, Strategic Change and the Family Business*. Business School, Nottingham Trent University.
- Foucault, M. (1977). *Discipline and Punish. The Birth of the Prison*. New York: Penguin Books.
- Foucault, M. (1978). *The History of Sexuality. Vol 1: An Introduction*. New York: Vintage Books.
- Frederick, H. (2002, 27/11/2002). Growth is more than just paying off the bach and the boat. *The New Zealand Herald*.
- Frederick, H. (2005a). Entrepreneurship: New Perspectives in a Global Age. *International Journal of Social Economics*, 32, 174-176.
- Frederick, H. (2005b). Global Entrepreneurship Monitor Aotearoa New Zealand. Auckland: UNITEC: Centre for Innovation and Entrepreneurship Research.
- Frederick, H., & Chittock, G. (2006). *Global Entrepreneurship Monitor Aotearoa New Zealand 2005 Executive Report* (Vol. 4). Auckland.
- Frederick, H., & Monsen, E. (2006). The Outlier Phenomenon In Entrepreneurship And Economic Growth: Mollycoddling Policies Create New Zealand's Perfect Storm. *Frontiers of Entrepreneurship Research*
- Frederick, H., Virasa, T., & Chua, B.-L. (2003). *Increasing the Supply of Entrepreneurship in APEC: A Scorecard Approach*. Paper presented at the Babson-Kaufman Entrepreneurship Research Conference, Boston.
- Gartner, W. B. (2007). Entrepreneurial narrative and a science of the imagination. *Journal of Buisness Venturing*, 22, 613-627.
- Geertz, C. (1973). *The Interpretation of Cultures*. New York: Basic Books.
- Glancey, K., & Pettigrew, M. (1997). Entrepreneurship in the small hotel sector. *International Journal of Contemporary Hospitality Management*, 9(1), 21.
- Gray, A. (2004, 23 May 2004). The ultimate guide to the right help. *New Zealand Herald*, p. 9.
- Hamilton, R. T., & Dana, L. P. (2003). An increasing role for small business in New Zealand. *Journal of Small Business Management*, 41(4), 402-408.

- Hammersley, M. (1990). *Reading Ethnographic Research*. London: Longman.
- Henry, E. (2007). Kaupapa Maori Entrepreneurship. In L.-P. Dana & R. B. Anderson. (Eds.), *International Handbook of Research on Indigenous Entrepreneurship* Cheltenham: Edward Elgar.
- Hindle, K. (2006). 'A measurement framework for international entrepreneurship policy research: From impossible index to malleable matrix. *International Journal of Entrepreneurship and Small Business*, 3(2), 139-182.
- Hjalmarsson, D., & Johansson, A. W. (2003). Public advisory services - theory and practice. *Entrepreneurship & Regional Development*, 15(1), p83, 16p.
- Hjorth, D., & Steyaert, C. (2004). *Narrative and Discursive Approaches in Entrepreneurship*. Cheltenham: Edward Elgar.
- Holliday, R. (1995). *Small Firms: Nice Work?* London: Routledge.
- Hosking, D., & Hjorth, D. (2004). Relational constructionism and entrepreneurship: some key notes. In D. Hjorth & C. Steyaert (Eds.), *Narrative and Discursive Approaches in Entrepreneurship* (pp. 255–268). Cheltenham, UK.: Edward Elgar.
- Jacobs, J. (1993). *Systems of Survival: a dialogue on the moral foundations of commerce and politics*. London: Hodder and Staughton.
- Janes, A. (2003, 7 September 2003). Paua Struggles to Match Hype. *Sunday Star Times*, p. 3.
- Jeffs, A. (2003). *Assessment of the Potential for Aquaculture Development in Northland* (No. NIWA Client Report: AKL2003-012). Auckland: National Institute of Water & Atmospheric Research Ltd.
- Johansson, A. W. (1999). How can consultants advise SMEs? In B. a. L. Johannisson, H. (Ed.), *Images of Entrepreneurship and Small Business* (pp. 141-164). Lund: Stidentlitteratur.
- Johnstone, B. A. (2005). Changing the Game: Entrepreneurs bring Networks to Small Markets. In K. Neill & M. W. Shanahan (Eds.), *The great New Zealand radio experiment* Southbank, Vic , Australia: Thomson Learning/Dunmore Press.
- Johnstone, B. A. (2006). Ethnographic Methods in Entrepreneurship Research. In H. Neergaard & J. Ulhøi (Eds.), *Handbook of Qualitative Research Methods in Entrepreneurship*. Cheltenham, UK.: Edward Elgar.
- Kasper, W., & Streit, M. E. (1998). *Institutional Economics: Social Order and Public Policy*. Cheltenham, UK: Edward Elgar.
- Kennedy, G. (2008, January 25, 2008). NBR Search for Exciting Companies: The Fishing and Aquaculture Sector. *The National Business Review*, p. 28.
- Kilby, P. (1971). Hunting the Heffalump. In P. Kilby (Ed.), *Entrepreneurship and Economic Development*. New York: Free Press.
- Kincheloe, J. L., & McLaren, P. (2003). Rethinking Critical Theory and Qualitative Research. In N. K. Denzin & Y. S. Lincoln (Eds.), *The Landscape of Qualitative Research, Theories and Issues*. Thousand Oaks, CA: Sage Publications.
- Kirkwood, J. (2007). Tall Poppy Syndrome: Implications for entrepreneurship in New Zealand. *Journal of Management & Organization*, 13(4), 366-382.

- Kirzner, I. (1973). *Competition and Entrepreneurship*. Chicago: The University of Chicago Press.
- Kirzner, I. (1994). *The Entrepreneur in Economic Theory*. Lund: Crafoord Lectures 5, Institute of Economic Research.
- Kirzner, I. (1997). Entrepreneurial discovery and the competitive market process: An Austrian approach. *Journal of Economic Literature*, 35, 60-80.
- Kirzner, I. M., & Sautet, F. (2006). The Nature and Role of Entrepreneurship in Markets: Implications for Policy. *Mercatus Policy Series, Policy Primer No. 4*.
- Kondo, D. K. (1990). *Crafting Selves: Power, Gender, and Discourses of Identity in a Japanese Workplace*. Chicago: University of Chicago Press.
- Lachmann, L. M. (1986). *The Market as an Economic Process*. Oxford and New York: Blackwell.
- Lechner, C., & Dowling, M. (2003). Firm networks: external relationships as sources for the growth and competitiveness of entrepreneurial firms. *Entrepreneurship & Regional Development*, 15(1), p1, 26p.
- Legge, J., & Hindle, K. (1997). *Entrepreneurship: How Innovators Create the Future*. Melbourne: McMillan Education Australia Pty Ltd.
- Lévi-Strauss, C. (1966). *The Savage Mind*. Chicago: University of Chicago Press.
- Lévi-Strauss, C. (1978). *Myth and Meaning: Cracking the code of cultures*. Toronto: University of Toronto Press.
- Lévi-Strauss, C. (1997). *Look, Listen, Read*. New York: Basic Books.
- Lichfield, J. (2005, 12 December 2005). Saving the world's rarest shellfish. *The Independent*.
- Long, W. (1983). The meaning of entrepreneurship. *American Journal of Small Business*, 8(2), 45-59.
- Longenecker, J. G., McKinney, J. A., & Moore, C. W. (1988). Egoism and independence: Entrepreneurial ethics. *Organizational Dynamics*, 16(3), 64-72.
- Low, M. B., & MacMillan, I. C. (1988). Entrepreneurship: Past Research and Future Challenges. *Journal of Management*, 14(2), 139-161.
- Luke, B., Verreynne, M.-L., & Kearins, K. (2007). Measuring the benefits of entrepreneurship at different levels of analysis. *Journal of Management and Organization*, 13(4), 312-330.
- Lyotard, J.-F. (1984). *The Post-Modern Condition (1979)*: Manchester University Press.
- MacGregor, R. C., & Hodgkinson, A. T. (2007). *Small business clustering technologies : applications in marketing, management, IT and economics*. Hershey, PA: Idea Group.
- Malinowski, B. (1922). *Argonauts of the Western Pacific*. London: Routledge.
- Malinowski, B. (1944). *A Scientific Theory of Culture and Other Essays*. Chapel Hill, NC University of North Carolina Press.
- Marcus, G. E. (1998). *Ethnography Through Thick and Thin*. Princeton, NJ: Princeton University Press.

- Matthews, R. C. O. (1986). The Economics of Institutions and the Sources of Growth. *The Economic Journal*, 96, 903-918.
- McClelland, D. C. (1965). Achievement Motivation Can Be Developed. *Harvard Business Review*, pp. 6-8, 10, 12, 14, 16, 20, 22, 24, 178.
- McGraw, T. K. (1991). Schumpeter ascending (re-emerging intellectual interest in entrepreneurship, innovation, and economic development). *The American Scholar*, 60, 371-392.
- Miller, R., & Côté, M. (1985). Growing the Next Silicon Valley. *Harvard Business Review* (July/August), 114-123.
- Ministry of Economic Development. (2005a). Cluster Development Programme Review. from http://www.med.govt.nz/templates/MultipageDocumentTOC_19759.aspx
- Ministry of Economic Development. (2005b). *SMEs in New Zealand: Structure and Dynamics*. Retrieved March 2008. from http://www.med.govt.nz/templates/MultipageDocumentTOC_2806.aspx.
- Montanye, J. A. (2006). Entrepreneurship. *The Independent Review*, 10(4), 549–571.
- Morris, M. H. (1998). *Entrepreneurial Intensity: Sustainable Advantages for Individuals, Organisations and Societies*. Westport, CT: Quorum Books.
- Mulligan, W. (2005). *Introduction to Clusters: Systems to upgrade competitiveness*: Federation of Maori Authorities.
- Nemec, K. (2006). *Enhancing innovation within the seafood industry; What helps and hinders relationships between research providers and the industry?* (No. NIWA Client Report: AKL2006-064 NIWA Project: AUS03101).
- New Zealand Seafood Industry Council Ltd. (2003). The Modern Face of Maori Fishing. *Big Fish*, from http://www.seafood.co.nz/f464,16472/16472_Bigfish1IndustryProfile2003.pdf
- New Zealand Trade and Enterprise. (2003). Marine Developments. *Venture*: (20), 22-23.
- North, D. C. (1990). *Institutions, Institutional Change and Economic Performance*. Cambridge: Cambridge University Press.
- North, D. C. (1994). Economic Performance Through Time. *American Economic Review*, 84(3), p359-368.
- OECD. (2007a). *Competitive Regional Clusters: National Policy Approaches*. Paris: OECD.
- OECD. (2007b). *OECD Reviews of Innovation Policy: New Zealand*: OECD.
- Owen, W. F. (1984). Interpretive themes in relational communication. *Quarterly Journal of Speech* (70), 274-287.
- Peneder, M. (2001). *Entrepreneurial Competition and Industrial Location*. Massachusetts: Edward Elgar Ltd.
- Perren, L., & Ram, M. (2004). Case-study Method in Small Business and Entrepreneurial Research: Mapping Boundaries and Perspectives. *International Small Business Journal*, 22(1), 83.

- Perry, M. (2007). From Networks to Clusters and Back Again: A Decade of Unsatisfied Policy Aspiration In New Zealand. In R. C. MacGregor & A. T. Hodgkinson (Eds.), *Small business clustering technologies : applications in marketing, management, IT and economics*. Hershey, PA: Idea Group.
- Peterson, R. A. (1981). Entrepreneurship and Organization. In P. C. Nystrom & W. H. Starbuck (Eds.), *Handbook of Organization Design* (pp. pp. 65-83). New York: Oxford University Press.
- Piore, M., & Sabel, C. (1984). *The Great Industrial Divide*. New York: Basic Books.
- Porter, M. E. (1990). *The Competitive Advantage of Nations*. London: The Macmillan Press Ltd.
- Porter, M. E. (1998, November-December). Clusters and the new economics of competition. *Harvard Business Review*, 77-90.
- Porter, M. E. (2007). Letter to The Economist published 15 November, 2007.
- Ram, M. (1999). Management by association Interpreting small firm-associate links in the business services sector. *Employee Relations*, 21(3), 267.
- Ram, M. (2000a). Investors in People in small firms Case study evidence from the business services sector. *Personnel Review*, 29(1), 69.
- Ram, M. (2000b). People and growth: The WhitCo experience. *Human Resource Management International Digest*, 8(5), 15.
- Ram, M. (2001). Family dynamics in a small consultancy firm: A case study. *Human Relations*, 54(4), 395.
- Ram, M., Abbas, T., Sanghera, B., & Hillin, G. (2000). "Currying favour with the locals": Balti owners and business enclaves. *International Journal of Entrepreneurial Behaviour & Research*, 6(1), 41.
- Ram, M., & Holliday, R. (1993). Relative merits: Family culture and kinship in small firms. *Sociology : the Journal of the British Sociological Association*, 27(4), 629.
- Ram, M., Sanghera, B., Abbas, T., & Barlow, G. (2000). Training and ethnic minority firms: The case of the independent restaurant sector. *Education & Training*, 42(4/5), 334.
- Randall, W. B. M. (2001). *An Intitial Survey of the Biotechnology Industry in New Zealand*: Industry New Zealand.
- Requier-Desjardins, D., Boucher, F., & Cerdan, C. (2003). Globalization, competitive advantages and the evolution of production systems: rural food processing and localized agri-food systems in Latin-American countries. *Entrepreneurship & Regional Development*, 15(1), p49, 19p.
- Reynolds, P., Bygrave, W., Autio, E., Arenius, P., Fitsimmons, P., Minniti, M., et al. (2004). *Global Entrepreneurship Monitor 2003 Global Report*.
- Richardson, L. (2000). Writing - a method of inquiry. In N. Denzin & Y. Lincoln (Eds.), *Handbook of Qualitative Research*. London: Sage.
- Rivkin, J., & Ryan, M. (2004). *Literary Theory: An Anthology* Blackwell Publishing.

- Santarelli, E., & Pesciarelli, E. (1990). The emergence of a vision: The development of Schumpeter's theory of entrepreneurship. *History of Political Economy*, 22(4), 677-696.
- Sautet, F. (2006). Why Have Kiwis Not Become Tigers? Reforms, Entrepreneurship, and Economic Performance in New Zealand. *The Independent Review*, 10(4), 573-597.
- Schumpeter, J. A. (1934). *The Theory of Economic Development*. Cambridge, Massachusetts.: Harvard University Press.
- Schwartzman, H. B. (1993). *Ethnography in Organizations* (Vol. 27). Newbury Park, CA: Sage Publications, Inc.
- SIAC. (2002). *New Zealanders Innovators to the World: Turning great ideas into great ventures a innovation framework for New Zealand*. Wellington: Science and Innovation Advisory Council.
- Silverman, D. (2000). *Doing Qualitative Research - A Practical Handbook*. London: Sage Publications.
- Sirolli, E. (1999). *Ripples from the Zambesi*. Gabriola Island, BC, Canada: New Society Publishers.
- Smith, D. (2007, 1 September). A Richer Country. *The Listener*, 210.
- Smith, K. G., Gannon, M. J., & Sapienza, H. J. (1989). Selecting Methodologies for Entrepreneurial Research: trade-offs and Guidelines. *Entrepreneurship: Theory & Practice*, 14(1), 39.
- Smith, N. R. (1967). *The Entrepreneur and His Firm: The Relationship Between Type of Man and Type of Company*. East Lansing, MI: Michigan State University Press.
- Spradley, J. P. (1980). *Participant Observation*. New York: Holt, Rinehart and Winston, Inc.
- Storey, D. J. (1998). *Six steps to heaven: evaluation of the impact of policies to support small businesses in developed economies*. Coventry, UK: Centre for Small and Medium Sized Enterprises.
- Strauss, A., & Corbin, J. (1998). *Basics of Qualitative Research*. London: Sage Publications.
- Taylor, S., Thorpe, R., & Down, S. (2002). Negotiating managerial legitimacy in smaller organizations: Management education, technical skill, and situated competence. *Journal of Management Education*, 26(5), 550.
- Te Ara - the Encyclopedia of New Zealand. (2008, 4 April 2008). Rāwiri Taonui. 'Canoe navigation'. Retrieved 28 April, 2008, from <http://www.TeAra.govt.nz/NewZealanders/MaoriNewZealanders/CanoeNavigation/en>
- Teske, P., & Schneider, M. (1994). The Bureaucratic Entrepreneur: The Case of City Managers. *Public Administration Review*, 54(4), 331-340.
- The New Zealand Government. (2001). Directory of Official Information. Retrieved 6 February 2008, 2008, from <http://www.justice.govt.nz/pubs/reports/2001/dir-of-info-2001/list-r/r-6.html>

- The New Zealand Government. (2002). *Growing an Innovative New Zealand*. from <http://www.executive.govt.nz/minister/clark/innovate/innovative.pdf>.
- The Treasury. (2004). *New Zealand Economic Growth: An analysis of performance and policy*. Wellington: New Zealand Treasury.
- The World Bank Group. (2008). Doing Business 2008 [Electronic Version]. Retrieved March 2008 from <http://www.doingbusiness.org/economyrankings/>.
- Todaro, M. P. (1977). *Economic Development*. Essex: Longman Group Ltd.
- Van Maanen, J. (1988). *Tales of the Field: On writing ethnography*. Chicago: University of Chicago Press.
- Varamäki, E., & Vesalainen, J. (2003). Modelling different types of multilateral co-operation between SMEs. *Entrepreneurship & Regional Development*, 15(1), p27, 21p.
- Veciana, J. M., & Urbano, D. (2001). *Institutions and Support Programmes to Entrepreneurship in Catalonia: An Institutional Approach*. Paper presented at the Research in Entrepreneurship and Small Business (RENT XV), Turku, Finland.
- Westhead, P., & Wright, M. (1999). Contributions of novice, portfolio and serial founders located in rural and urban areas. *Regional Studies*, 33(2), pp. 157-173.
- Willis, P. (2000). *The Ethnographic Imagination*. Cambridge, UK: Polity Press.
- Wisker, G. (2001). *The Postgraduate Research Handbook*. Basingstoke, Hampshire, UK: Palgrave.
- Yin, R. K. (1994). *Case study research: design and methods* (2nd ed. Vol. 5). Thousand Oaks: Sage Publications.
- Zorn, T. E. (2001a). Conducting Thematic Analysis of Interviews and Field Notes. Hamilton, New Zealand.
- Zorn, T. E. (2001b). Designing and Conducting Semi-Structured Interviews for Research. Hamilton, New Zealand.
- Zorn, T. E. (2001c). Lecture Notes on Ethnography. In B. Johnstone (Ed.). Hamilton, New Zealand.

Appendices

Appendix 1

AUT Ethics Committee approved information sheet

Participant Information Sheet



Date: 1 June 2005

Project Title: Institutions advising entrepreneurs – a case study of the Gisborne aquaculture cluster.

Invitation

You are invited to participate in this study which will examine how institutions that form part of New Zealand's Growth and Innovation Framework use advisory services to support entrepreneurs within emerging industries in Gisborne.

How are people chosen to be asked to be part of the study?

You are being invited because you are involved in an entrepreneurial venture within an emerging industry.

What happens in the study?

You will be interviewed in your work place and the researcher may record your comments, take notes and may also make photographic or video records (to be used only for purposes relating to the study). The researcher may also record observations relating to the topic of the study in your workplace. It is expected that the research will become more focused on particular issues as it progresses and therefore you are likely to be contacted for further interviews on a number of occasions to request your views on those issues.

What are the discomforts and risks?

There should be no discomforts or risks.

What are the benefits?

You will be assisting policy makers and practitioners in delivering advisory services to support enterprise development. You will have the opportunity to discuss how you have benefited or failed to benefit from advisory services.

How will my privacy be protected?

Your identity and information about your work role and your workplace gathered during this research is likely to be included in the researcher's doctoral thesis and in further academic publications that may result from this research. However this information will relate to your work role and workplace and the researcher will avoid gathering or publishing any unrelated private personal information. Please advise the researcher immediately if you consider any information about your work role or your workplace that is discussed, or any event relating to your work role or workplace that is observed, to be too private or personal for publication.

How will commercially sensitive information be protected?

Every reasonable effort will be made to respect the commercial sensitivity of any information the researcher will obtain as the result of this study and the researcher undertakes not to discuss commercially sensitive details of your business activities with any of the other subjects of this research. If you provide any information to the researcher that you consider commercially sensitive and that you do not want to be published or discussed with other people, please mention that it is commercially sensitive.

How will the researcher avoid any conflict of interest?

The researcher undertakes to avoid obtaining any information that result in a conflict of interest between his role as a researcher and his own commercial activities. Should such a situation arise he will advise you immediately. He also undertakes not to act on any information he receives from you for his own commercial purposes.

How do I join the study?

You are asked to sign a consent form.

What are the costs of participating in the project?

The only cost to you will be your time. You will be asked to provide the researcher with the opportunity to visit your workplace and conduct an interview with you, with the possibility of follow up contacts requesting one or more further interviews as the study progresses. Interviews are expected to last around 20 to 40 minutes although the researcher may ask to spend a longer period to carry out observation at your workplace. The researcher will do his best to minimise any inconvenience.

Can I change my mind about this invitation?

You can decide to withdraw at any time during the course of the fieldwork and request that any data gathered will be destroyed.

What do I do if I have any concerns about this research?

Any concerns regarding the nature of this project should be notified in the first instance to the Project Supervisor who is Dr. Chris Batstone chris.batstone@aut.ac.nz Ph. 09 917 9999

Concerns regarding the conduct of the research should be notified to the Executive Secretary, AUTEK, Madeline Banda, madeline.banda@aut.ac.nz, 917 9999 ext 8044.

Researcher Contact Details: Bruce Johnstone bruce@johnstone.co.nz Tel. 021 669 646

Project Supervisor Contact Details: Dr. Chris Batstone chris.batstone@aut.ac.nz Ph. 09 917 9999

Approved by the Auckland University of Technology Ethics Committee on 18 May 2005

AUTEK Reference number 04/227

Appendix 2

AUT Ethics Committee approved consent form



Consent to Participation in Research

Title of Project:

Institutions advising entrepreneurs – a case study of the Gisborne aquaculture cluster

Project Supervisor: **Dr. Chris Batstone**

Researcher: **Bruce Johnstone**

-
- I have read and understood the information provided about this research project (Information Sheet dated 1 June 2005.)
 - I have had an opportunity to ask questions and to have them answered.
 - I understand that the interview may be audio-taped or video taped and transcribed.
 - I understand that I may withdraw myself or any information that I have provided for this project at any time prior to completion of data collection, without being disadvantaged in any way.
 - If I withdraw, I understand that all relevant tapes and transcripts, or parts thereof, will be destroyed.
 - I agree to take part in this research.

Participant signature:

Participant name:

Participant Contact Details (if appropriate):

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.....
.....
.....

Date:

Approved by the Auckland University of Technology Ethics Committee on 18 May 2005
AUTEC Reference number 04/227

Note: The Participant should retain a copy of this form.

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