

**Complexity of thinking and
levels of self-complexity
required to sustainably
manage the environment**

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the degree of Doctor of Philosophy of the
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Certification of Originality

This is to certify that this thesis is an original piece of work. The only material that is not all my own work is an excerpt from a paper jointly authored with my Principal Supervisor, included as Appendix Two.

Keith Johnston
8 January 2008

Abstract

Few decision makers face complexities that are as persistent and pervasive as those who are tasked with managing the environment or managing human impacts on the environment.

This thesis investigates the capabilities of environmental managers to engage with the challenges they face. I address the over-arching question: What is the level of complexity of thinking and self-complexity that might be required to sustainably manage the environment and how does this compare with the current situation?

I approach this question through consideration of relevant theories of environmental management and through the work of two theorists who have been prominent in the field of positive adult development, the study of the positive aspects of the further growth and development of people in adulthood. I consider two aspects of managers' capabilities and development. The first is their capability as systems thinkers. In this I am primarily applying the theories and research about dialectical thinking of Michael Basseches (1984). My second focus is on the way managers make meaning, or their self-complexity. In this I am applying the theories of Robert Kegan (1982; 1994).

The thesis addresses four specific research questions:

1. What is the relationship between the complexity of the thinking of senior managers and assessments of their success?
2. How do the selected environmental managers understand the performance of their organisations as effective environmental or conservation managers and the challenges they face?
3. What is the level of systems thinking and self-complexity exhibited by a selection of senior managers responsible for the management of the environment within New Zealand?
4. What might this imply for the complexity of thinking and self-complexity required to manage the environment well? What does it imply about the work that is being done now? What does it imply about what needs to come next?

The research involved in-depth qualitative interviews with a total of thirty one managers from two different types of environmental management agency in New Zealand. Three streams of data from these interviews are analysed in the study: the assessments by the managers of the effectiveness of their environmental management and the major challenges they face; the level of systems thinking present in the way the managers make these arguments; and an assessment of the self-complexity demonstrated by the managers, using the subject-object interview technique and method of analysis.

From the data and the review of the main theories, a framework for environmental management and leadership is developed, providing indicators of systems capability and self-complexity at different levels of management. Each of the research questions is addressed, an agenda for change is identified, and further research approaches are suggested.

Acknowledgements

According to the African proverb (and Hillary Clinton), “It takes a village to raise a child.” It has taken a few villages to raise this doctoral dissertation. I live in a village by the sea, just north of Wellington, New Zealand. There are many friends in this village who have helped me along this path, and many more in a larger net of national and global villages who have helped nurture this study to fruition.

The central support has come from my wife, Patricia Sarr, who has been steadfast in backing me in this work. She was an enthusiast for this project from the beginning, encouraging me as I stepped away from a management career, and generously serving as the ‘grants committee’ for much of the time that I was a full-time student. Trish clarified with me the central themes, and we worked through ideas together. She brought her own love of the environment, her experience in environmental campaigns, and years of work with non-government organisations and, most recently, with the Department of Conservation. As the project reached its later stages, she was fully involved. She read drafts, commented on the logic (or its absence), suggested edits, and, finally, proofread the whole text, including fixing my inconsistency with serial commas – a failing she has been unable to fix in more than 30 years. She also kept the household running when the project was in its most intense phases. I am grateful for all her efforts in support of this project and delighted we have shared this exploration.

I chose to study at the management school at the Australian National University (ANU) because that is where Dr Paul Atkins, my supervisor, is based. I knew what I wanted to study and went looking for a supervisor in Australasia who was as interested as I was in these theories, ideas, and their applications. Paul has been an enthusiast for investigating in this field and I have also been blessed with his curiosity, engagement, and intellectual rigour. We discovered a shared interest in the Buddhist ideas and practices of mindfulness and non-attachment and have worked together on the application of adult development theories in organisations and in coaching individuals.

The bonus of being based at the ANU was Steve Dovers from The Centre for Resource and Environmental Studies. Steve combines the pragmatism of the land manager he once was with the powerfully analytical mind he now brings to the study of environmental policy and institutions. This is a combination to be treasured and Steve has helped me to ground my study in the policy and practicalities of sustainable management.

There was another treasured combination on my committee: Gerald Midgley and Wendy Gregory, both formerly of the Centre for Systems Studies at the University of Hull and now with Environmental Sciences and Research, a New Zealand Crown Research Institute, based in Christchurch. To have two leading systems thinking researchers based in New Zealand is a rare privilege and I was grateful for their joining my panel.

One other researcher and practitioner made an enormous contribution to my work. Jennifer Garvey Berger came to Australia to conduct training into the subject-object method of interviewing and analysis and then returned to co-host the Meaning-Making in Organisations seminar, with Paul Atkins and me. We held a second seminar in Washington DC in 2006.

She became our friend and then our neighbour. Sportspeople talk about finding the ‘sweet spot’ on a racquet or bat, the place where you can hit the ball most effectively. Jennifer helped me find the sweet spot in my thesis work; she engaged with my volume of material, reading half-formed drafts, and suggesting more effective ways to shape this mass into a qualitative research dissertation. All the while, she understood the fuller dimensions of the project and helped to ground it in adult development theories and their applications. I am grateful for all the care and attention she brought to this on so many occasions.

I was generously supported with funding for my research expenses from the Department of Conservation and Landcare Research Manaaki Whenua. Thank you to Hugh Logan, Julie Craig, and Felicity Lawrence from the Department for their backing and to Dave Choquenot at Landcare. Peter Cooper, at the Australasian management consultancy Advanced Dynamics, has been a supporter, challenging me over many years to explore these theories and think more about their application to the leadership of organisations. It was Peter who pointed me toward Paul Atkins.

Paul Atkins and I were also honoured to enjoy the time of many of the leading theorists and practitioners in the adult development field on a study tour to the United States in April 2005. They gave time, insights, and their curiosity: Robert Kegan, Michael Basseches, William Torbert, Suzanne Cook-Greuter, Jennifer Garvey Berger, Jim Hammerman, Michael Commons, Theo Dawson-Tunik, Carol Zulauf, and Otto Laske.

In Canberra, I was welcomed and hosted lovingly by Bernadette Hince and Nick Drayson, and Paul and Khia Atkins. At home I was supported by my close friends in the pizza group, Dinah Hawken, Bill Mansfield, Rhonda Pritchard, Julian Parsons, Kate Clark, and Al Morrison, and also by my sister-in-law, Marianne Ackerman.

The fast and accurate transcription of some 1600 pages of interviews was largely the work of the indefatigable Linda Scott Palmer. Julie Wintle and her staff provided backup. For help in the village with EndNotes and mutual encouragement on our doctoral journeys, thanks to Sarah Te One.

This thesis would not have been possible without the time and openness of my 31 interviewees, who were liberal with their time, squeezed out of busy schedules, and engaging as subjects. Those interviews were also enabled by the commitment to the project from the Regional Council chief executives and Department of Conservation Conservators. The arrangements for all this were made easier by the efforts of the executive assistants of each of the six leaders. The members of the expert panels, whose assessments formed the basis for my choice of Regional Councils and Conservancies, provided their time and insights. Thank you to all of you.

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Chapter One: A Personal Introduction

On the bookshelf behind me, as I sit at my desk writing, is a modest framed certificate:

“This is to certify that
Keith Johnston
was a national finalist for the
Award of
Young Conservator of the Year 1972

This award being made
in recognition of the
initiative and sustained enthusiasm
shown by a person
under the age of 18 years
towards the cause of conservation
in New Zealand
during the year 1972.

R. A. Falla,
Chairman,
Nature Conservation Council”

I have been involved in environmental issues in New Zealand, in different roles of differing intensity, for more than thirty five years. In that time have seen three waves of heightened environmental concern. The first was in the early 1970s, the second in the mid to late 1980s. We are in the third at the moment, driven now by the deepening concerns about climate change. Both of the first two waves led to stronger institutions and policies and with environmental concerns more deeply embedded in the ways our societies functioned. Each also led to an increased awareness that prior actions were insufficient, inappropriately directed, or inadequately supported in practice, to achieve society’s aims for the protection and enhancement of the New Zealand environment.

In the 1970s I led fellow secondary school pupils as a volunteer in Auckland’s Hauraki Gulf Maritime Park (this work for which I was nominated for the Young Conservator Award). I went on to be a founder and director of the New Zealand Friends of the Earth. This led to my being involved in forming a number of environmental and development non-government organisations and a string of environmental campaigns. In 1989, to my surprise, I ended up in a senior management role in New Zealand’s Department of Conservation (DoC). I served in the Department for 15 years, for more than half that time as the policy and strategy general manager or as the strategic advisor. The Department had been formed in 1987 to draw together all the heritage functions of the government and manages almost a third of the country’s land area in parks and other protected places.

On reflection, I have been an incidental environmentalist. There has been an incidental quality to my involvement in many of these roles; I have come to conservation in different ways, each time committed to the cause and each time, incidentally finding something of my self. I started as a young volunteer because I believed in conservation and worried that the

planet was in peril, but I stayed at it because it was plain fun – gangly youths living on an island and driving jeeps, and trucks and boats and mucking about with chainsaws and having to figure things out for ourselves. I was involved in starting Friends of the Earth in New Zealand and was then more ‘involved’ with the woman who came on a sabbatical programme from Friends of the Earth in San Francisco. That first incident, thankfully, led to many more and we are still happily together. I began as the public awareness manager in DoC intending to run some conservation campaigns for a couple of years, then I discovered that I enjoyed managing people and was good at it and was challenged to think about organisations and how to make them work more effectively. Many years later, I am still challenged in this way.

In my view the progress in environmental management, that I have witnessed over the last three and a half decades, has been remarkable. It is also inadequate to achieve a secure and sustainable future. Such is the scale and momentum of human environmental impact already working its way through the system that the impressive efforts made so far, responding to the more visible and more modest impacts, will be inadequate to deal with these larger issues. More will need to be done.

The issues faced by environmental managers have become increasingly complex. In part this is a function of the way that many of the environmental impacts that result from human activities take a long time to take effect. Animals or plants once hopefully introduced for some good reason or fancy may, many years later, have become widespread as pests or weeds. The impacts of nitrogenous fertilisers spread over farm lands can be felt many decades later, after the nitrates have slowly worked their way through aquifers and into streams and lakes. A second factor that adds complexity is the all-too-human desire to have our cake and consume it too. More pressure is put on ecosystems because more people want more from them.

One of the key influences on how these issues are dealt with is the capability of environmental managers and leaders. The proposition I test in this study is that the responses of managers to these issues might be greatly improved were higher levels of complexity of thinking and consciousness able to be applied by those managers.

Why this proposition and why now? How has my own experience brought me to this question? The culture of the Department of Conservation in its early years was a blend of the professional expertise of forest, park, and wildlife managers and ecologists, with the moral virtue of environmental campaigners. I came from the moral virtue side. As you have no doubt noticed, as deep into this thesis as the second page, this strand of moral virtue and responsibility is still central to the weft of my life. I see protecting the environment as part of our stewardship and our engagement with things that are more extensive and lasting than ourselves.

By the early 1990s I was questioning some of my ways. I had led the process of developing a strategic intent for the Department and it was clear that what we most had to change as conservationists or environmentalists was our attitude towards people. We did not treat people well outside or inside the Department, probably, it seemed to me, because we blamed them for their desires and the subsequent impacts on the environment. Perversely, this attitude hampered us in achieving our conservation aims. The moral hectoring that was implicit in our approach was more effective in fuelling our own indignation. In that, it was an efficient recycling scheme. This is not to say that moral appeals to protect the environment had not been effective. Most of the extensive protected areas of New Zealand

have been set aside after public campaigns based on strong moral claims. The point was that the moral approach had reached certain limits. As an example of these limits, the Department found it had more powers in its legislative mandate to take action than it had the endorsement of the community to use; when it did exercise some of its powers it found its actions constrained by reactions of key groups such as the farming community.

A second more seismic shift in my working life occurred in 1995. A Department of Conservation viewing platform collapsed, plunging 30 metres and killing 14 people and injuring four others. I was put in charge of managing the issue and all its ramifications from the Department's perspective, overseeing our own investigations, our responses to a number of formal inquiries and over time reviewing and changing systems and then restructuring the department. The failures were clearly within the Department and were found by the Commission of Inquiry to be "systemic" (Inquiry 1995).

In addition to the intense process of working to transform the organisation, committed to protecting what was good about it and also to make it much more effective than it had been, there also began a more personal process. It started with exposure to the ideas of systems thinking and then chaos and complexity theories and, over time, beginning to see both that we are part of these complex systems and that much of what we seek to control is at least partially unknowable. Study for a masters degree in these subjects also brought me into contact with the ideas of adult development. There was a sense of continuing to let go of my old campaigning ideas about the importance of winning 'hearts and minds' and instead wondering about my own heart and mind as a manager. I began to wonder how the way I was making sense of things might also be changing.

An example of this is how my understanding of the verdict of "systemic failure", reached by the commission of inquiry into the Cave Creek tragedy, evolved over the years. My initial response was to understand the cause of the tragedy as systemic in the sense that there were multiple errors, and omissions and failures that combined to result in the tragedy, there were few systems to check the incidence of these specific failings, and there was no one person or persons or things to whom fault might be clearly be ascribed. This was essentially a cause-and-effect explanation and there was a web of inadvertent causes, errors, and omissions combining to such tragic effect.

As I worked on driving many of the far-reaching changes subsequently made to the Department, I came to understand systemic success and failure in a more active and conscious way: that the responsibility of leadership was to design systems, strategies and organisational structures to enable the organisation to function as a responsive and constructive body, shaping the world around it and responding to its situation. It was not that all risks could be controlled by all-knowing leaders, or procedures could be described for every contingency, but that leaders were charged with creating the conditions for organisations to develop, and self-organise, to work for the desired ends. The leaders were responsible for the whole system.

A third phase occurred later as I worked in the re-formed Department and also took the time to further explore theories of systems thinking and complexity. I came to understand more that the nature of systems successes and failures are also constructed in the ways people make sense of the world they lived and worked within. Unless people hold a picture of the systems they are operating within then they are less likely to see the likely consequences of their actions or take some responsibility for them. Adult development researchers, I discovered,

had much to say that was relevant to the ways people's ways of making sense of their worlds evolved over time.

I should also note here that these three different ways of understanding systemic failures and successes were not each a replacement for the one that had gone before. New insights added to the earlier ones. Attention needs to still be paid to causes and effects; it helps to see these in a larger organisational picture; and both these perspectives are enriched by an understanding of the different ways people might make sense of what is happening.

In studying for my masters degree, I encountered Robert Kegan's work on adult development and was particularly struck with his idea that society creates a curriculum for its members and that the current expectations are beyond the levels at which many adults make meaning (Kegan 1994). Here was I working in the environmental management system in New Zealand where there was world-leading legislation and institutional arrangements, not just in conservation but also in sustainable resource management and fisheries management. The question that occurred to me was whether the legislative regime and institutions established a curriculum that was more sophisticated than I or my manager colleagues and perhaps the community at large. If this were the case what might be the implications?

From this beginning came an over-arching question:

What is the level of complexity of thinking and self-complexity that might be required to sustainably manage the environment and how does this compare with the current situation?

Under this, I developed four subsidiary research questions:

1. What is the relationship between the complexity of the thinking of senior managers and assessments of their success?
2. How do the selected environmental managers understand the performance of their organisations as effective environmental or conservation managers and the challenges they face?
3. What is the level of systems thinking and self-complexity exhibited by a selection of senior managers responsible for the management of the environment within New Zealand?
4. What might this imply for the complexity of thinking and self-complexity required to manage the environment well? What does it imply about the work that is being done now? What does it imply about what needs to come next?

The process of studying and using theories of adult development has also turned the thesis process into a much more personal journey of reflection not just about these issues but also about who I am and how I make sense of the world and how this has changed and continues to change over time. By my asking questions about the systems thinking abilities and self-complexity of environmental managers in the abstract and in actual interviews, I began to listen to my own stories in a different way and wonder how I had been making meaning in the world.

There is one other matter that is relevant here. I have 'form', as one of my advisors put it. I interviewed Department of Conservation (DoC) and Regional Council managers. All the DoC managers knew me or at least knew of me. Sometimes they would draw me into their answers, referring to things I had been involved in to make a point. Most of the Regional Council managers did not know me personally, some knew me by repute, but almost all of them had had working relations with the Department of Conservation and a number of these

had not been positive – or at least they chose more frequently to refer to the complaints. In my experience this did not compromise the openness and directness of the interviews. People chose to talk openly, and apparently freely, about very personal aspects of their work or private lives. I am very grateful for their candour and trust.

Part One: Theories and Method

Overview of Part One

This study uses the perspective of adult development theories to assess the capabilities of a selection of environmental managers working in New Zealand and explores the ways these capabilities might need to change to achieve sustainable management of the environment.

In the next four chapters I set out the relevant theories and methods on which this theory is based. I start with environmental management theory in Chapter Two because this describes the need that this thesis addresses: the greater need in our society to intervene effectively in tightly interconnected and complex natural and human systems which have been significantly disturbed already due to human actions and on which we depend for our survival. This need is made greater, in part, because of the extra complexity that we expect environmental managers to manage. In particular, the chapter explores:

- 1) The growing complexity of the roles of environmental managers;
- 2) Ways of defining and approaching these roles and implications these have for the complexity of the role;
- 3) The paradigms within which environmental managers may need to operate; and
- 4) The ways these factors intersect to establish the capabilities required by managers.

While Chapter Two explains the *context*, or the ‘problem’, Chapter Three, on theories of adult development, sets out a way to think about issues relating to the *capabilities* of our environmental managers or leaders. This is an approach that has rarely been applied to issues of environmental management. I focus in particular on the work of two theorists, Robert Kegan’s theories of self-complexity and Michael Basseches’ theories of dialectical or systems thinking.

In Chapter Four I draw on the two previous theory chapters to more clearly describe the *roles* of environmental managers and leaders at different levels. I present an environmental management and leadership framework that describes these roles and the differing needs to manage complexity. I return to this framework in Part Four.

The final chapter of Part One describes the methods I have used and the rationale for their selection.

Chapter Two: The Role of ‘Environmental Manager’ and the Complexity of Thinking and Consciousness It Might Require

The global view

Thirty five years ago, in Stockholm, the first United Nations conference on the environment was held. It marked the first ‘official’ recognition of the global nature of environmental threats and sparked a shift in concern internationally. This rise in global attention has also coincided with a dramatic increase in human impacts on the environment. There is now strong evidence for the argument that, in global terms, the most rapid and extensive transformation of the Earth’s ecosystems has occurred in the last 50 years. While this has led to substantial gains in human well-being, benefits have been unevenly spread and many groups have been harmed. It is also the case that the full costs are only now becoming apparent and others may emerge as a consequence of the non-linear nature of the systems (MilleniumEcosystemAssessment 2005:16). Some human impacts on the environment have been reduced in this period, notably discharges of air and water pollution in the developed world, but the overall human-induced impacts have increased substantially. That so much of the ecological transformation of the last century has occurred since the 1972 Stockholm conference, has been a driver for international concern and also is an indicator of the pervasiveness, power, and momentum of traditional interests and the worldviews that sustain the status quo.

The authors of the Millennium Assessment report identify three major problems: about 60 per cent of the Earth’s ecosystem services “are being degraded or used unsustainably”; this could get significantly worse in the next 50 years; and the harmful effects are being borne disproportionately by the poor. While these problems are complex and interacting, the authors say previous improvements have not kept pace with growing pressures and demands. “[T]he changes required are substantial and are not currently under way” (MilleniumEcosystemAssessment 2005:17).

Over many years, many others have reached similar conclusions (Worldwatch 1984-2005; Crosby 1986; (WCED) 1987; Ponting 1991; Gallopin, Hammond et al. 1997; Diamond 1998; Raskin, Gallopin et al. 1998; McNeill 2000; Carpenter, Brock et al. 2002; Raskin, Banuri et al. 2002; Adger 2003; Boyden 2004; Connor and Dovers 2004; Diamond 2005). Unfortunately, while the concept of sustainable development appeared to have the potential to shape an international agenda for change ((WCED) 1987), the promise of this period has not been translated into effective action (Carley and Christie 2000; Raskin, Banuri et al. 2002; Adger 2003).

Environmental management in New Zealand

New Zealand has been a leader in the priority it has given to environmental management, relatively to other jurisdictions, and in the institutional frameworks it has established. Environmental management in New Zealand was fundamentally reformed from the mid-1980s. New central government agencies were established with specific environmental management and conservation mandates (Buhrs and Bartlett 1993; Ericksen, Berke et al.

2003; Connor and Dovers 2004). The Conservation Act 1987 provides for the preservation of protected areas. These now comprise more than 30 per cent of the country's land area. The preservation ethos is applied more extensively in New Zealand than anywhere else in the world. A higher level of protection is applied over a larger area of New Zealand than any other country.

The Resource Management Act 1991 establishes a framework for the sustainable management of the whole country and the Local Government Act 2002 requires for participatory long-term council and community plans based on principles of sustainability. Taken together, these two acts focus all of regional and local government on a sustainability agenda. The Fisheries Act (most recently 1996) provides for an innovative system of harvest quotas set within sustainable limits.

Although the institutional frameworks have been promising, expectations have not been met (Eriksen, Berke et al. 2003). New Zealand's Parliamentary Commissioner for the Environment concluded in a report prepared in advance of the Johannesburg conference on sustainable development (Environment, 2002):

“... New Zealand had the opportunity to become a leading light on sustainable development. Instead, sustainable development has not progressed in a coordinated and meaningful fashion. Current trends in consumption of energy and natural resources, production of waste, growth in urban areas, biodiversity losses and biosecurity threats, land-use and water issues in both rural and urban areas, and air quality in urban areas are all signs that New Zealand is not functioning in a sustainable manner.”

The recent OECD review of environmental management in New Zealand concluded that while there had been significant progress by local authorities in the preparation of resource management plans, different capabilities between councils leads to a wide range in performance and progress. This is also hampered by an absence of national statutory guidance in the form of National Policy Statements and standards and a lack of progress on some key national policies such as the response to climate change and the development of an oceans policy (OECD 2007).

Management of places has become more complex

Environmental managers face greater complexity than even 20 years ago. Overall, there has been a shift in the prevailing model from managing the environment to sustainable development, an approach that integrates the 'sustainable' achievement of social, economic, cultural, and environmental objectives, and expects that this will be addressed at all scales, including globally, and over very long time scales (Connor and Dovers 2004). This drawing of more factors into the mix leads to greater complexity.

Other factors driving greater complexity have operated at national, regional, and local scales. These are driven by specialist and societal expectations of two kinds. Firstly environmental managers and expert advisers argue that more needs to be done to manage the environment to protect what remains and to ensure the effective functioning of ecosystems. Ecosystem management has been adopted as a goal in many natural resources agencies (Grumbine 1994; Grumbine 1997; Callicott, Crowder et al. 1999; Crober 1999; Imperial 1999; van Eeten and Roe 2002). There has been a related rise in concern for biological diversity and therefore the

valuing of the full range of natural environments, rather than just the more charismatic species and their habitats, or the most scenic places (Nash 1982; Thom 1987; Pawson 2002; Star and Lochhead 2002; Young 2004).

Secondly, communities, while protecting the environmental cake, want to enjoy it too. Exploitation pressures have intensified, leading to higher levels of production but much less restorative capacity available within natural systems. This means there is less “margin for error” in human systems and greater pressure on human activities to be able to repair their own damage (McNeill 2000; van Eeten and Roe 2002). This pattern is clearly present in the, thus-far, lucrative intensification in dairy farming in New Zealand and the related pressures on soils and freshwater ecosystems.

Environmental management is not the only complex sector of public management but it is an especially complex one. Stephen Dovers has provided a list of 14 attributes of policy problems in sustainability that contribute to this complexity. Sustainability problems can involve:

- very long timescales and very broad spatial scales that can be highly variable and ignore other boundaries;
- the possibility of absolute ecological limits and thresholds being reached and breached;
- the potential for cumulative impacts and for irreversible impacts;
- the complexity that arises from environmental, social, and economic issues being interconnected;
- poor information, and pervasive risks and uncertainties;
- clashes between different value systems;
- systemic causes;
- lack of research, policy, and management practice;
- assets that exist in market economies but are non-traded and non-valued;
- ill-defined property rights and responsibilities;
- a mix of public and private costs and benefits;
- the need for community involvement;
- the fact the field is still relatively novel, from the perspective of institutional responses; and
- the need for interdisciplinary integrative research (Dovers 2005).

Dovers argues that “significant sustainability issues ... evidence these attributes more often, and especially more often in combination, than do many other, traditional policy issues” (Dovers 2005:49).

There are also aspects of public sector management at large that contribute to the sense of rising complexity¹. I identify five factors that particularly impact on environmental management:

- Public agencies are expected to be more effective and accountable in managing issues and delivering a wider range of services. Failure to meet these expectations has led to growing distrust of bureaucrats and expert advisors in environmental management and other fields of public service (Adger 2003).

¹ While community and business organisations play important roles in environmental management, it is still dominated by public sector agencies. Even where environmental management responsibilities lie with communities and the corporate sector, the factors shaping public governance also often apply.

- It is assumed that government interventions will increasingly be joined up with the development of strategies and delivery of services spanning multiple portfolios, sectors and agencies (Bogdanor 2005; Parker and Duncan 2006). Sustainability and environmental policies and environmental management involve challenges that classically require ‘joined-up government’ (Dovers 2005).
- As part of greater effectiveness, over some two decades the focus in public administration has shifted from the management of ‘inputs’, the resources needed to deliver services; to ‘outputs’, the services being delivered; to now managing to achieve defined results or ‘outcomes’. With each shift in focus, the complexity of the overall task has grown (Schick 1996; Scott 2001; Norman 2003).
- Administration is also expected to be transparent and open, with information made freely available, and at least a minimal form of public consultation as a standard component of most government processes. Communities are more litigious; people have a clearer sense of their ‘rights’; policy development and implementation thus takes more time and is more complex.
- There is generally greater diversity in communities and/or that diversity is better recognised. As a consequence there are expectations that public policies and programmes will meet a broader range of needs and wants and that the tools used will be more flexible and discerning. In relation to environmental management in New Zealand, the resource management regime provides for a high degree of flexibility, based on the assumption that the effects of programmes or actions will be clearly identified and analysed, including the cumulative effects of those actions (Ericksen, Berke et al. 2003; Connor and Dovers 2004). This assumption has been only partly borne out in practice.

There have also been factors that simplified public sector management in general and environmental management in particular. The establishment of public sector agencies focused on consistent objectives of environmental management or conservation, rather than multiple and sometimes conflicting objectives, made achievement of the environmental objectives easier (Boston 1991; Schick 1996; Scott 2001). It may also have constrained the achievement of the more holistic balancing of objectives envisaged with sustainable development².

Dramatic increases in the capacity to collect, manage and manipulate information are already simplifying and/or enhancing the effectiveness of environmental management. In particular, the capacity to model complex systems enables managers to engage in attempts to understand aspects of systems that might otherwise have remained magical ‘black boxes’ in earlier times.

A third force for ‘simplification’ has been the trend to use *markets* and contracts to deliver services more efficiently than through administrative methods operated by public sector agencies. This represents a simplification for the manager; it is a response to imperfect information, the fact that managers cannot be omniscient but the accumulation of information

² A comparison between the success of sustainable development initiatives in New Zealand, Australia, Canada, and the United States would not suggest that multi-objective management agencies for forests and other public lands are more successful in advancing sustainable development. This comparison is complicated by the existence of a more unified national system in New Zealand than the federal and state or provincial agencies in the other three countries. It should also be noted that while the common complaint in these other jurisdictions is of the constraints imposed by fragmentation between environmental agencies, van Eeten and Roe also present a “positive theory of decoupling”. van Eeten, M. and E. Roe (2002). Ecology, Engineering, and Management: Reconciling Ecosystem Rehabilitation and Service Reliability. New York, Oxford University Press.

in markets may get closer to omniscience. It is assumed that the services will be more efficiently delivered through a market-based approach. The simplification occurs because 'managers' are no longer expected to be able to deal with particular problems. However designing markets for the delivery of services or to achieve environmental improvements is a complex task that challenges the capabilities of public sector agencies.

Despite these simplifying tendencies, the overall trend has been toward increasing complexity. These factors listed above intersect and interact to dampen some effects and compound others.

There is a paradox related to this increasing complexity: past failures seem to have led to higher rather than lower expectations about what might be achieved in environmental management. The role of environmental manager has come to be seen as more and more complex. In part this is happening because simple interventions have been tried in the past and subsequently found to be wanting. The key factors that managers of ecosystems encounter are: change is episodic, scale effects are lumpy, ecosystems have multiple states. Experience has shown that policies that assume certainty and are based on constant yields have reduced the resilience of ecosystems (Holling 2002).

Because many of the simpler policies and initiatives have been seen not to work or to have unforeseen consequences, the context is now recognised as more complex. At the same time more people want more services from ecosystems. The increasing interdependence within human systems and between human and natural systems (tighter coupling of the systems) leads to greater complexity and unexpected variation (van Eeten and Roe 2002). Past 'failures' of environmental management might have been expected to lead to lower expectations about what might be achieved. But there is little room for reduced expectations. Instead it seems that the learning from previous attempts at intervention that things are more complicated than they seem, has been combined with societal desires to protect more things *and* consume more things. This has led to the conclusion that the environmental management job has become more complex. It may also be less achievable (van Eeten and Roe 2002; Berkhout, Leach et al. 2003) .

Holling and Gunderson (2002) conclude that management needs to be flexible. "In real situations of ecosystem management, no manager actually knows the ecosystem model. One must simultaneously estimate it and update it while managing the system (p.48)."

The role of environmental manager – It's a tough job but somebody has to do it!

Westley describes the challenges facing environmental managers³:

³ For the purposes of this discussion I define an 'environmental manager' as a person who exercises specific responsibilities to sustain or enhance the physical environment. There are a number of aspects to this:

- The environment may be the primary or secondary concern of the manager. He or she may be accountable for making decisions about an environmental feature, features, or system (of primary concern), or may manage production or other economic or social processes that significantly impact on the physical environment and be required to ensure those impacts sustain the environment (secondary concern).
- Relevant environmental features or systems may include ecosystems or physical spaces (an area or land or sea or an aquatic or atmospheric system for which the manager has responsibility) or particular species, habitats, risks (such as fire or weed or animal pest risks), or physical, economic, or social processes.

"Few managers are so clearly confronted with the need to deal with complex adaptive systems as the natural resource manager within a given ecosystem. It is questionable in fact whether any individual or group can *manage* such systems, which are characterized by high levels of diversity, continuous change and learning, and complex interconnections that render them unpredictable" (Westley 2002:337, emphasis in the original).

For environmental managers there is uncertainty on all sides. They operate in a context of "persistent uncertainty, complexity and incompleteness along all the dimensions that matter – ecological, organizational, political and societal" (van Eeten and Roe 2002).

The best that might be achieved in terms of 'managing the environment' is influencing human interactions with the environment to improve the chances of beneficial outcomes and to increase the capacity of the systems (human and ecological) to recover from disturbances and, in the case of ecological systems, to manage themselves. This task description addresses the human-environment interactions. But increasingly the aspiration is to 'manage' in more integrative and holistic ways, melding social and economic objectives with goals for natural resources. In taking this and other steps, the complexity of the task is being markedly increased.

In this and the following sections I will consider the role of environmental manager from a number of perspectives. First, I will describe the management functions that are required. Then I will describe some of the contexts encountered by environmental managers: what types of environments and ecosystems are being managed and for what purposes? I will then address the paradigm or discourse the manager is working within and how this might be expected to change. In addressing these questions, I will focus, in particular, on the way different contexts require the emphasising of different management abilities. A final section will consider how these factors are inter-related.

Managing *in* and *out*, *up* and *through*

Westley details the experiences of one manager in a North American natural resources agency. In the process she provides a rich case study of the demands on that manager and, in my experience, of managers in similar agencies in Australia and New Zealand. Westley develops a conceptual framework for the multiple objectives that the resource manager she studied (she calls him 'Evan Karel') usually brought to mind, at some point, in addressing any issue: "managing *through*, managing *out*, managing *in*, and managing *up*." (Westley 2002:337)

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- The management objectives may be the protection or enhancement of a particular feature or species, the sustainable management of the physical environment, or also of social and economic factors, or the maintenance or enhancement of a particular process, or delivery of a particular service.
 - Accountable decision-makers may work within private, public, or non-governmental, not-for-profit agencies. For this study the focus will be on public sector agencies with a primary focus on managing the environment or particular ecosystems to ensure their sustainability.

The role of 'environmental manager' has really only existed since the 1970s. Many public officials had natural resource management responsibilities prior to that time, but the notion that they were managing for wider environmental purposes came into vogue around the time of the 1972 United Nations environment conference.

‘Managing *through*’ is the scientific approach to management, treating management interventions as experiments to learn from rather than solutions to be implemented, treating ecosystems from a truly systemic point of view. ‘Managing *out*’ is a commitment to involve external stakeholders in management processes and decisions. ‘Managing *in*’ involves managing position and influence within the organization, and ‘managing *up*’ is taking into account the larger political context⁴.

What is the capability that needs to underpin a decision maker who manages through, up, in, and out? Westley describes this person as a scientist, politician, agency manager, and collaborator in turn, or sometimes all at the same time (Westley 2002). The need to play all of these roles complicates the work and challenges the skills of the individual managers. The need for leaders to be able to see across the mix of roles, and how to blend and deploy them effectively in different contexts, increases complexity.

Different ecosystems, management purposes, and approaches

A useful model of natural resource management contexts and management approaches has been developed by van Eeten and Roe. They focus on the purposes for which the ecosystems are being managed and the differing approaches to uncertainty and complexity that are appropriate to differing contexts (2002). See Table 2.1. below.

Table 2.1: Ecosystem Management Framework (van Eeten and Roe 2002):

Self-sustaining management (e.g., wilderness areas)	Adaptive management (e.g., National Parks)	Case-by-case resource management (e.g., zones of conflict where population, resources, and the environment increasingly compete)	High reliability management (e.g., urban ecosystems, pastoralist ecosystems)
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The basic distinction in the van Eeten and Roe approach is based on defining the primary human interest in the ecosystem: is it in the health of the ecosystem, with implications for human activities and organization (the two left-hand columns of Table 2.1), or is it in the direct production of goods and services for people, such as food, water supplies, forest products, energy, where the primary concern is the reliability of the production system with implications for the functioning of the ecosystems (the right-hand column)? The second column from the right, case-by-case management, is a contested zone.

Hollings and Gunderson (2002:27-28) take a similar approach in identifying two definitions of stability and resilience: one focused on efficiency, control, constancy, and predictability - *engineering resilience*, and one focused on persistence, adaptiveness, variability, and unpredictability - *ecosystem resilience*.

⁴ Managing *up* involves a duality: the need to conform to political imperatives, especially working for democratically elected representatives, and the recognition that these political settings are also strongly influenced by the work of the managers involved.

In the right-hand column of the van Eeten and Roe table is high-reliability management, where the effective management of the system requires: high technical competence; high performance and oversight; constant search for improvement; management of highly complex activities; capacity to cope with high pressures; and a culture of reliability. Reliability is not able to be traded off and there are limitations on trial-and-error learning because of the "fear that the first error would be the last trial" (Roe and van Eeten 2001:200).

At the left-hand end of the spectrum, Roe and van Eeten argue that where ecosystems have little or no human domination (apart from some extractive uses), self-sustaining management is best achieved using complex adaptive systems theory.

The focus of this study will be in the types of management attempted in the two middle columns: situations where humans are seeking to extract value from mostly natural landscapes and seascapes or where humans are dominating an ecosystem to extract benefits and are also dependent in significant ways on key ecosystem processes -- the contested zone. These are the more complex contexts.

The subject organisations in this study work across this spectrum but pay the most attention to these two middle zones⁵. The Conservancies of the Department of Conservation are focused on the two left hand columns with most attention being given to areas requiring adaptive management. Regional and unitary councils are focused on the two right hand columns with the most attention being given to the second column from the right, the contested zone requiring case-by-case management.

In the adaptive management column: "the chief feature of the ecosystems to be adaptively managed is their unpredictability, about which the environmental decision-maker must learn more before trying to manage the ecosystem (or specific ecosystem services and functions) in ways that better mimic its presettlement template" (Roe and van Eeten 2001).

Alas, adaptive management rarely follows the systematic approach to observation and learning suggested by the theory and 'ecosystem focus' usually narrows down to just the conservation of particular species or the management of selected ecosystem services and functions. Perhaps this is because, in practice, the integration and flexibility required of adaptive management adds a level of complexity that is beyond most conservation field operations.

Using their broader definition, Roe and van Eeten describe adaptively-managed ecosystems as being, in reality, "zones of conflict between increasing human populations, resource utilization, and demands for environmental amenities..."(Roe and van Eeten 2001).

In the case of more human-dominated ecosystems, the second column from the right: "Conflict is always possible in these ecosystems because of the ecosystem's inherent unpredictability and the wider demands for high reliability in resource goods and services extracted from the ecosystem are often inconsistent and opposed, especially in the absence of mediating mechanisms ..." (Roe and van Eeten 2001). Here a case-by-case management approach is proposed.

⁵ See the synthesis at the end of Part Two, and in particular Table 7.1, for a discussion of the differing orientations of Regional Councils and the DoC Conservancies as derived from the interview data.

Both outside columns of Table 2.1 are the provinces of expert professionals: field ecologists in the case of the self-sustaining management required for wilderness areas and engineers to provide high reliability management. In addition to the technical insight managers need, in order to understand the systems they are 'responsible' for, they also have to be aware enough of organisational, social, and political systems to get by. But they work in areas where society is generally clear what it wants and what it wants from them.

In the ecosystems depicted in the middle of the table there is less clarity or more conflict about what is wanted by society and about the contribution of expertise. In these contexts, technical expertise must be matched with the ability to manage social processes and conflict. These are the contexts that are the focus for this study.

Going non-linear?

An assumption in much of the literature is that as the focus changes to more integrated, and thus complex, approaches to environmental management, managers and technical advisers will rise to new understanding of the complex, non-linear natures of the systems they have responsibilities for. They may and they may not. By definition, the pattern taken by the non-linearity is likely to be difficult to discern until after it has emerged, perhaps a long time after.

Unless a system has been under observation for a long time its nonlinear behaviour is usually too hard to predict. "[E]cological data are often insufficient to detect or forecast potentially important thresholds. Predictions of linear models generally outperform nonlinear ones, except in cases where strong and tested causal understanding exists, long time series are available, and perturbations (either natural or deliberate) reveal nonlinear ecosystem processes" (Yorque, Walker et al. 2002: 423).

So, if we do not know quite a bit about the system already then it is very difficult to model its nonlinearity.

"For the practicing scientist, the question is when does the weight of evidence indicate that complexity-based approaches add significant value for understanding or forecasting the system? For the policy analyst, the question is when do plausible nonlinearities create risks and opportunities that have low (but nontrivial) posterior probabilities yet extreme utilities" (Yorque, Walker et al. 2002: 423)? And often the question from the manager is "why can't the scientist or the policy analyst give me any useful advice on which I can base my decision?"

How much might we expect managers to recognise and account for non-linearities in advance, rather than just being prepared to react to their effects? Later, in Part Two, in the findings on environmental management, I will address the success of some leaders in being effective simplifiers, providing their staff with a clear direction based in part on the leaders' abilities to distil a clear line from out of a mass of possibilities and counter-vailing information. I am not of the view that these leaders spend a lot of time considering the potential non-linearities in the situations they face, but they do work to be flexible in their capacities to respond and to learn and correct their actions as they proceed.

Words about worldviews: defining discourses, paradigms, and scenarios

Progress in changing the way people live in the environment depends, in part, on changes to people's perceptions of their environment and their thinking about the environment and their interactions with it. The extent to which people's perceptions and thinking needs to change and the extent to which 'environmental managers' might need to be involved in shaping this change will contribute to the complexity of the responsibilities faced by these managers.

Collective ways of seeing the world have been called worldviews, discourses, paradigms or scenarios. Definitions and uses of these terms overlap. I will review these here and then define how I will use discourse, paradigm and scenario throughout this study.

While *worldview* seems to be used as a less technical synonym for both discourse and paradigm, it can be both an individual and a shared worldview. The 'shared view' is a common feature of discourses and paradigms and is often assumed for scenarios.

A *discourse* has been defined as:

“...a shared way of apprehending the world. Embedded in language, it enables those who subscribe to it to interpret bits of information and put them together into coherent stories or accounts. Each discourse rests on assumptions, judgments, and contentions that provide the basic terms for analysis, debates, agreements, and disagreements ...” (Dryzek 1997:8).

A *paradigm* has been similarly defined as a shared perspective but with the added aspect of the perspective or 'discourse' forming the basis for the way a community is organised. Based on Thomas Kuhn's definition of a scientific paradigm, Fritjof Capra defined a social paradigm as “a constellation of concepts, values, perceptions and practices shared by a community, which forms a particular vision of reality that is the basis of the way the community organizes itself” (Capra 1996:6).

Scenarios take these perspectives a step further. They represent bridges between these current shared worldviews or discourses and a range of possible future environments (van der Heijden 1996). Many of the scenarios that project future global environmental states, as a contribution to the debates about pathways to sustainable development, are effectively projections of environmental discourses into a future end state for the purposes of evaluating options and implications. For the purposes of this discussion I will consider scenarios as, in part, discourses represented in the description of a future state.

Sterling notes that the term paradigm is now used very loosely. He suggests it is used at three levels “to denote *different systemic levels* of ideas (which might be better expressed as metaparadigm/ paradigm/ subparadigm)” (Sterling 2003:107, emphasis in the original). In Sterling's view, much of the debate about paradigms “essentially concerns subparadigms within a constant (largely mechanistic) paradigm that remains fundamentally unchallenged” (Sterling 2003:68).

This study will address paradigms at two levels relevant to environmental managers. At the first level, Sterling's sub-paradigm, are the paradigms that undergird different management approaches. I will use *discourse* for the sub-paradigm level. I do this because I want to emphasise the socially constructed nature of the environmental discourses and that this is the level at which most of the community and management discussion is focused.

Beyond this is Sterling’s paradigm level, the larger worldview implicit or explicit within a range of global environmental debates and scenarios. These describe ways to envisage how the role of environmental manager can be expected to change in the medium term. I will use *paradigm* for the underlying ideas or construct involved at this level. Where I am describing a description of a forward state I will use the word *scenario*.

Different management discourses

A summary of four commonly-identified ‘problem-solving’ discourses is set out in Table 2.2 below. I have added assumptions about the nature of the complexity of thinking and awareness needed for successful environmental management within each discourse.

There are three aspects to the relevance of these different discourses to this study. Firstly, the existence of a diversity of discourses adds considerably to the complexity of environmental management. Managers and other stakeholders need, to an extent, to be multi-lingual in order to work across the different legal frameworks and their discourses. Secondly, in my view, within each discourse there exists a different requirement on the participants in terms of the complexity of thinking required. Thirdly, these discourses are embedded in different legislation and frameworks in the New Zealand environmental management system and, as a consequence, drive the different approaches to environmental management in play across New Zealand administrations and can lead to conflicts where the different approaches overlap.

Table 2.2 Complexity of thinking and awareness necessary for working within alternate environmental management discourses (or subparadigms): (Dryzek 1997; Pritchard Jr. and Sanderson 2002)			
Administrative rationality	Market rationality	Pluralist democracy	Communitarian democracy
<u>Strength and source of legitimacy</u> Efficient problem solving. Power comes from solving problems well; vulnerability comes from not succeeding.	<u>Strength and source of legitimacy</u> Efficient allocation of resources. Power comes from an efficient market that meets the needs of consumers; vulnerable to market failures and exclusions.	<u>Strength and source of legitimacy</u> Balancing competing interests. Power comes from effective inclusion and fairness; vulnerable to cases of capture by particular sectors (imbalance) or exclusion of others.	<u>Strength and source of legitimacy</u> Creating a sense of the public good. Power comes from effective inclusion and shared development of the public good; vulnerable to inaction.

<p><u>Complexity of thinking and awareness</u> <i>Sought most amongst technical experts, managers and analysts. The expectation is that they have considerable understanding of key system dynamics (and be held to account for any surprises). Where processes have become inclusive of stakeholder interests there is overlap with aspects of the pluralist and communitarian discourse and the awareness demanded of experts, managers, and analysts becomes more complex.</i></p>	<p><u>Complexity of thinking and awareness</u> <i>Relatively limited in the range of those involved and breadth of awareness required. It is exercised at three main points: 1) design of the market rules (by an elite group of policy analysts, regulators, and stakeholders); 2) by producers and suppliers in judgments about consumers' views; and 3) by consumers.</i></p>	<p><u>Complexity of thinking and awareness</u> <i>Politicians attuned to power dynamics; usually extensive interest group engagement (in some form) but awareness often limited to advancing specific agendas (where successful, this includes special interests being sufficiently aware of each other's interests to be able to reach a 'fair enough' resolution); where involved at all, voters are marginally engaged except for specific controversies and referenda.</i></p>	<p><u>Complexity of thinking and awareness</u> <i>Relatively high level of awareness is required of all the major community players, in order to achieve a result. This is primarily an awareness of each other's interests and views, rather than a particularly deep understanding of the relevant system dynamics.</i></p>
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In considering the different needs of each discourse, it is striking how little emphasis these discourses place on the managers' awareness of the systems being managed. With the exception of administrative rationality, the discourses are mainly focused on identifying and balancing the relevant interests. The assumption is that the awareness and capabilities of the actors will be adequate to the task. In administrative rationality, the assumption is that the awareness and thinking of the experts will see us through.

It is also worth noting that each of these discourses proposes a different approach to managing or simplifying complexities. Administrative rationality tends to rely on standardised methods and procedures. Market rationality, as its name suggests, relies on markets. The two democratic discourses rely on devolving issues to smaller subsidiary units to resolve.

In New Zealand, each of the major branches of environmental law is, to a degree, subject to a different discourse. The Fisheries Act 1996 is constructed around a property rights regime market rationality discourse. The main sustainability legislation, the Resource Management Act 1990 and the Local Government Act 2002, are a mix of pluralist and communitarian democracy discourses. The Conservation Act 1987 is based on an administrative rationality discourse. Each of these acts embodies different values systems and different assumptions about people and their relationships to the environment. In my experience, when bureaucrats clash and personalize those clashes, pointing fingers at each other for sins they share, they are often acting out of the different value systems implicit in their legislative and institutional framework, but the difference is personalised (or 'organisationalised') because of a lack of awareness of the underlying values and discourse.

Global scenarios and paradigms

Accepting that the status quo does not offer a sustainable path, a change in the larger environmental paradigm is required. The nature of such a change and its implications for environmental management are addressed below.

Two sets of global environmental scenarios form the basis for the discussion that follows and these are addressed in terms of their explicit or implicit environmental paradigms (Dryzek 1997). The Global Scenario Group's (GSG) scenarios have been constructed with a more explicit focus on worldviews and how they might evolve than would be applied in more conventional scenario planning (Gallopín, Hammond et al. 1997). The scenarios developed for the Millennium Ecosystem Assessment are based on a comparison of two factors: whether the world is more globalised or regionalised and the extent to which environmental issues are managed proactively or reactively. While not made explicit, the paradigms underpinning the four scenarios can be deduced to a sufficient extent. (MillenniumEcosystemAssessment 2003; MillenniumEcosystemAssessment 2005).

At this point I commit a brutal over-simplification and assert, for the purposes of this work, that two main paradigms stand out from the others. These paradigms are threaded through the more viable global environmental scenarios and are, in my view, the only ones that a) have the potential to be manifest in policies and programmes *and* b) have a reasonable probability of attaining and maintaining a sustainable development pathway in the medium- to long-term.

These two paradigms are:

- a) *ecological modernisation* through innovative policies and the rapid application of newer technologies, or
- b) a *new ecological paradigm* – a new way of humans living in relationship to bio-physical systems and to each other that reduces human demands on those systems⁶.

Note that neither of these is the status quo or 'business-as-usual'. Both paradigms suggest substantial change; the first within the larger existing mainstream scientific and economic paradigm, the latter involving a change to that paradigm.

My descriptors are, of course, a mix of the terms used by others. For my purposes here, precise definition is not required. I need to be clear enough about scenarios and paradigms to be able to assess whether environmental managers, in carrying out their roles in the future:

- a) will be working within a paradigm that is a modification of the existing mainstream view – the ecological modernisation paradigm; or
- b) will need to be engaged with a new more radical paradigm, applying and/or shaping it – the new ecological paradigm; or
- c) will need to straddle both paradigms.

The ecological modernisation paradigm assumes substantial reform of existing environmental, economic, and social policies to achieve sustainability. These policies rely on major technological changes: to reduce the environmental impacts of human production and consumption, by reducing the amount and nature of the materials used, and to restore

⁶ A slightly less crude approach would involve splitting the new environmental paradigm scenario in two, into a) local or bioregional and b) more globalised approaches. Analogous distinctions were employed by the Global Scenario Group and the Millennium Ecosystem Assessment.

ecosystems. This modernisation paradigm is analogous to other scenarios such as: Dryzek's 'strong' version of the 'ecological modernization' discourse, the Global Scenario Group's scenario of *policy reform* of the existing sustainable development model, and the Millennium Ecosystem Assessments' 'technogarden' scenario in which proactive environmental policies are pursued in a globalised world (Dryzek 1997; Raskin, Gallopin et al. 1998; MillenniumEcosystemAssessment 2005).

The modernisation paradigm essentially involves relatively fast but still evolutionary changes to existing institutions and market-driven development to drive technological changes. There is a social component to this. A precondition is "forging the political and social will for change" but, in comparison with the new ecological paradigm, the change is evolutionary and based on dramatic reductions in the amount and nature of materials used for human consumption (Raskin, Gallopin et al. 1998).

The new ecological paradigm is a composite of descriptions of a worldview in which people live in a more perceptive and connected way with the environment, with the living world as the basic source of all benefits and society committed "to preserve the critical order of the natural world or of the cosmos" (Goldsmith 1992:xvii).

This new paradigm involves what Sterling calls 'whole systems thinking', a shift in the shared consciousness "from certainty to uncertainty or approximation, from control to participation" (Sterling 2003:169). Dryzek gets to a similar point through a melding of components that he describes as 'ecological democracy' (Dryzek 1997).

The Global Scenario Group authors imagine a transition from the Policy Reform scenario to the even more radical New Sustainability paradigm⁷: "[T]he curve of development must be bent twice. A radical revision of technological means begins the transition. A reconsideration of human goals completes it"(Raskin, Banuri et al. 2002).

The fundamental changes in popular values, lifestyles and political priorities required for this new paradigm also shift the emphasis as to who the lead agents are for reform (Raskin, Banuri et al. 2002). This suggests two changes: one in the nature of the consciousness achieved, another in the extent and range of those achieving this consciousness. Implicit in the Policy Reform scenario is the improved foresight of leadership and experts, an accompanying enhancement in the capability of those leaders to empathise with their communities and communicate their insights to them.

The New Sustainability paradigm assumes that foresight is enhanced over a much wider frame; communities and individuals in those communities are either a) better able to see what is likely to occur, including the emergent properties of systems, and what needs to be done, or b) are more prepared to accommodate the variability that emerges from complex systems because they no longer put such value on control, as in the past, but put greater value on adaptability, or c) some combination of both these options. Professional expertise and leadership in these communities is aligned toward serving the values of adaptability, precaution, novelty, and creativity.

⁷ Note that I use the term 'new ecological paradigm' to refer to the common approach taken in a cluster of scenarios. Where I refer to the New Sustainability paradigm I am referring to a specific scenario of the Global Scenario Group that is analogous to my composite new ecological paradigm.

The implications for managers in working within new or shifting paradigms are substantial.

1) In the case of ecological modernisation, the complexity of management is greater than with the status quo; 2) Complexity increases again with a new ecological paradigm; and 3) Complexity may be greatest if both paradigms are to be embraced at the same time. This transition also involves a shift from more expert-focused approaches, managed within bureaucracies, to more social and political processes involving negotiated solutions with large numbers of stakeholders. The social complexity is increased significantly, although the internal systems complexity may be decreased in the transition across these paradigms.

The traditional ‘Kuhnian’ concept of paradigm change suggested that one paradigm replaced another (Kuhn 1962/1970). Others suggest that one paradigm is absorbed within the other, as Koestler and Wilber have each described nesting ‘holons’ (Sterling 2003). Sterling (p.154) describes the way that he sees an emerging postmodern ecological paradigm as partly *reaffirmative* of earlier ideas, partly *oppositional* and critical where modernist or deconstructionist ideas seem wrong, partly *transforming* where modernist or deconstructionist ideas might be useful but inadequate, partly *alternative* and partly *innovative*. This rings true to the processes of shifts in ideas. The effect is to increase complexity for those involved, in comparison to a change from ‘black’ ideas to ‘white’ ideas.

Synthesis – Approaches to environmental management and the management abilities required

Derived from the material in the preceding sections, the main factors driving the complexity of thinking and levels of consciousness required for effective environmental management can be summarised as:

1. Environmental management has become more complex over time and involves particularly high levels of complexity, relative to other fields.
2. Environmental management often involves a range of spatial scales, including large scales; a range of timeframes, including tens and hundreds of years; and the non-linear patterns of dynamic systems. The combinations created by these factors tend to be more complex than in other fields. They also require a paradoxical approach: consistent action by communities over long time scales and the capability to respond quickly to the surprises that result from non-linear dynamics. Stable and consistent human practices and flexible responses are both most effective through institutions that enjoy community backing⁸. Institutions are needed to maintain actions over the long term; community backing is needed to preserve support for such policies and actions and to also provide support for changes in direction in the face of surprises. Long-term action and flexibility both depend on effective social processes.

⁸ “New public organizations are typically expected to develop and administer effective solutions to complex problems in dynamic environments. The challenge is twofold. They must build or access expertise on a problem that is often changing in rapid fashion and unforeseen directions. They must also translate selected solutions into structured practices, if a stable organization is to arise. This double challenge creates a persistent dilemma between the search for stability and the condition of continuous change. The search for stability must take account of changing stakeholder coalitions, shifting preferences and competing problems. For it is only when the emerging effectiveness is sanctioned by the organization’s environment, that the organization can proceed to build stable structures that facilitate the application of effective practices.”

Boin, A. (2004). *The Early Years of Public Institutions: A research agenda. Why public organizations become institutions*. Leiden, The Netherlands, Leiden University.

3. The focus of much of environmental management is now on complex adaptive management or the even more complex case-by-case management in contested environments, the latter, in part because of the human condition of wanting to protect the cake for the future and also to enjoy it in the present. The combination of these demands, and the paradoxes and complexities described above, mean that there is no one best way of managing. It is not possible to understand every system or capture every non-linearity. Simplifying and adapting may often be better strategies than efforts at omniscience. Again, strong social processes will be needed to enable strategies of simplifying and adapting.
4. Effective engagement with current environment challenges requires choices at the sub-paradigm level about the methods and models used for environmental management and in terms of the whole paradigm in relation to people and the environment. There need to be either dramatic changes within the existing mainstream paradigm of technological modernisation or a move to new paradigm, shaped more by long-term environmental sustainability. Environmental managers are likely to have to manage change in the existing paradigm and, at the same time, help re-shape the paradigm.
5. The environmental managers need to be able to work in many, and often all four, of the modes identified by Westley (managing through, out, in and up) and also to mix a focus on goal-setting and policy development with operational delivery⁹.

In summary: environmental management is a complex job that has become more complex. This process can be expected to continue. It requires the ability to understand both technical and social processes. As the role becomes more complex greater emphasis will be placed on understanding and leading social processes.

Intersecting factors increase complexity

The harder and more complex issues are, the more social skills are required to be able to address these issues, in contexts where there is often not clear authority. This is a critical part of the adult development agenda for environmental leaders. I will discuss ideas of adult development in the next chapter.

The factors listed above are inter-dependent. It is worth considering for a moment the ways these factors interact to affect what Robert Kegan might call the environmental management 'curriculum' – the set of demands the management context places on the manager (Kegan 1994). Take the interaction between the range of scales and time frames and the differences between policy and operational roles, for example. Policy work perhaps makes more of a demand on complexity of thinking, implementation of policies on self-complexity. Policy-focused work is more abstract and generally at a larger scale and intended to cover longer

⁹ For a discussion of the different types of learning associated with policy development and goal setting versus the implementation of policies, see Connor and Dovers. They describe four linked categories of policy learning: instrumental, government, social, and political. Instrumental and government learning are about more intelligently effecting pre-determined policy goals. They are largely about *how* to achieve the goals. The other two categories are more about *what* and *why*. Social learning is about changing those goals or the policy's scope or the framing of the policy problem. Political learning is about becoming better at advancing a particular policy agenda. Connor, R. and S. Dovers (2004). Institutional Change for Sustainable Development. Cheltenham, UK, Northampton, MA, USA, Edward Elgar.

timeframes than much of its application to specific sites. At longer timeframes and larger scales there is more scope for non-linearities to have larger effects. All of this requires greater cognitive complexity. But implementation of policies drags environmental managers into the real world with its own complexities. Implementation involves greater social engagement. The greater intensity of social engagement requires the combination of cognitive and emotional complexity that is reflected in higher levels of ego development or self-complexity.

The extent to which the manager is shaping or applying a new paradigm or straddling paradigms also affects the management curriculum. Two factors are most relevant: the role of shaping or applying paradigms and whether two paradigms are being applied or one. Public sector environmental managers work in institutions and apply laws that are largely based in the existing rationalist, modernist scientific paradigm. Within this framework, environmental managers may change subparadigms, especially in advancing an agenda of ecological modernisation. Over time the emergence of new subparadigms may coalesce into a new paradigm. As new subparadigms emerge, and begin to test the boundaries of the existing paradigm, complexity of environmental management will increase. In my experience, environmental managers will actually be partly engaged in shaping the new paradigm, in some cases resisting its application, in others coping with it, in others applying it with gusto.

The range of management approaches and the different roles performed by managers also contribute to the complexity of the curriculum. The more contested ecosystems (those for which case-by-case management is most appropriate) require more ‘up’ and ‘out’ forms of management (managing politics and engaging stakeholders). This increases complexity. It draws technical managers out from just understanding the ecosystem functions and services involved (managing ‘through’) and satisfying agency needs (managing ‘in’) and requires wider engagement, combining higher levels of consciousness and cognitive complexity.

There is another way in which some of these factors can usefully be combined: the degree to which the dynamics of the systems being managed are understood; the degree to which social aspects require attention; and the degree to which the area or context being managed is a ‘contested’ one. These can be brought together on two axes – see Table 2.3. One axis shows the extent to which the system’s functioning is known or unknown. The other is the extent to which the authority and goals of environmental management are accepted (to either manage a natural ecosystem or to exercise control over a high reliability system) or are contested. The social aspects increase in contexts in which goals and authority are contested. In general public environmental managers are working with very limited knowledge of environmental systems and their dynamics. The situations vary from ones of accepted to contested goals and authority. This will be reflected in my study. Many of the environments of greatest environmental significance are those that are more contested. This is a situation where complexity ranges from medium to high levels.

Table 2.3 What is Known and What is Contested: Complexity Drivers in Environmental Management		
	<i>Goals of management and authority of managers are accepted</i>	<i>Goals of management and authority of managers are contested</i>
<i>Functioning of system to be</i>	Least complex management	Technically relatively

<i>managed is well understood</i>		straightforward but socially contentious
<i>Functioning of system to be managed is largely unknown</i>	Socially relatively straightforward, technical uncertainties are accepted	Most complex management, technically and socially

In the introduction I pointed to my working proposition: that the responses of managers to these environmental issues might be greatly improved were higher levels of complexity of thinking and consciousness able to be applied by those managers. What does this chapter contribute to consideration of the proposition? Overall, this review of the complexity of thinking and awareness required for environmental management, as assessed through a number of approaches, concludes environmental management is a complex job that has become more complex. To deal with the complexity, both ‘technical’ and ‘social’ awareness and capability are required. It is expected that this will require more of an emphasis on social awareness or self-complexity, the consciousness of self, others, and relationships, than is present in existing institutional approaches.

In order to consider the self-complexity and systems thinking capabilities of environmental managers, I need to introduce the relevant theories of adult development. This is the focus of Chapter Three.

Chapter Three: Relevant Theories and Theoretical Issues In Adult Development

Introduction

In this chapter I review the relevant theoretical approaches to adult development and, in particular, the work of two theorists, Robert Kegan and Michael Basseches. In Appendix One I address specific issues of development theory that have a particular bearing on this study, including those relating to scope, scale, stages of development, systemic perspectives, approaches to higher levels of development, and judgement.

Approaches to adult development

The field called ‘adult development’ is relatively new. Only in recent decades has development through the middle adult years become a focus of study. (Baltes, Lindenberger et al. 1998; Cairns 1998; Valsiner 1998; Dixon and Lerner 1999; Armon and Dawson 2003; Berg and Sternberg 2003; Demick and Andreoletti 2003).

Developmental psychology has grown around two poles: first, child psychology and then the psychology of aging. Between these a bridge began to be created, working out from the development processes in children and adolescents, extending the child development work of Jean Piaget to establish an approach that became known as *positive adult development* (Demick and Andreoletti 2003:ix) to distinguish it from the pathologies of adults and the senescence of aging that had dominated study until that time. My interest is in one span of this bridge: higher levels of adult development that might occur toward middle adulthood and their relationship to decision-making by environmental managers.

Three theoretical approaches underlying adult development research are relevant to this study. Kegan is a leading contributor to the first of these approaches; Basseches to the second. The third approach is relevant to ways that adults might be supported or scaffolded in their development.

The first of the three theoretical approaches is the evolution of the *developmental* or *organismic* tradition that has built on the earlier child development theories of Piaget and subsequent extensions of this work. This approach has defined development as proceeding through a clear and defined set of stages (Kegan 1982; Commons and Richards 1984b; Benack and Basseches 1989; Commons, Sinnott et al. 1989; Commons, Armon et al. 1990; Kegan 1994). This approach has been described as seeing development as a ladder – ascending a universal hierarchy of developmental steps in a specified order (Fischer and Bidell 1998). Robert Kegan has been a leading contributor to this approach, especially in his descriptions of how development proceeds.

The second approach traces its roots to the *dialectical* and *contextual* traditions. In these the activities of the individual are seen as being in dynamic interaction with their environments. From the dialectical perspective, change proceeds through processes of contradiction and conflict and their resolution. Contextual approaches also emphasise the interaction with the

environment and, unlike stage theories, assume greater plasticity, change, and multiple directions in lifespan development. Development is assumed to be a continuous, dynamic, multi-factorial process of growth and regression and while individuals grow to be more capable of handling greater complexity, their structures of thinking and personality do not change (Basseches 1984; Baltes, Lindenberger et al. 1998; Rogoff 1998; Thelen and Smith 1998; Berg and Sternberg 2003). If the former approach is a ladder, development here is more like an inter-active mosaic, a kaleidoscope perhaps. Michael Basseches has been a leading proponent of the dialectical approach and, as I will explore later in this chapter, Basseches' framework for dialectical thinking is a powerful analogue for the forms of thought involved in systems thinking.

Both these approaches are now being re-thought in the light of systems thinking and complexity theories. This gives rise to a third approach: the "*developmental systems perspective*" sees the structure of development as an ordered pattern that emerges from the multiple variations that occur within many levels of organisation within people (Baltes, Lindenberger et al. 1998; Fischer and Bidell 1998; Lerner 1998; Thelen and Smith 1998; Stevens-Long and Michaud 2003; Fischer and Bidell 2005, in press). There is a drawing on the form implicit in the ladder metaphor and the motion from the kaleidoscope metaphor. So, while a mixed metaphor here might be a whirling ladder (a la Cirque du Soleil), the authors refer to the "dynamic, systemic image of a *developmental web*." In this case the web, rather than being circular and interlocking, actually looks more like a branching tree as it grows toward higher development, with the proviso that the stems not only branch outward and inward *and* also inter-connect. The separate pathways in the web represent the various pathways along which a person develops (Fischer and Bidell 1998).

This study incorporates aspects of these three approaches. Of the two major adult development theorists drawn on this study, Kegan and Basseches, Kegan's work is in the central developmental tradition; Basseches draws on dialectical approaches. This study is a melding of the two that also has some connection with the developmental systems perspective in considering, in later chapters, how to support adults to make developmental changes.

There are now so many theorists and approaches and variations on these approaches to adult development that the field itself resembles a ladder, kaleidoscope, and divaricating shrub¹⁰. Ken Wilber charts 40 approaches to stage-based development (Wilber 2000). Other recent charts of linkages across developmental sequences in models of cognitive, moral and self-development include Joiner and Josephs (2007), Commons and Richards (2003), Armon & Dawson, (2003), Cook-Greuter(2000), and Baltes, Lindenberger et al. (1998).

The theories of Kegan and Basseches have been chosen for a number of reasons:

- 1) they address adult development generally rather than being specific to a particular domain such as morals (Kohlberg 1958), reflective judgement(King 1994), politics (Rosenberg 2002), wisdom (Kramer 2003), or values (Armon and Dawson 2003);

¹⁰ "One of the most puzzling features of the New Zealand flora is the so-called 'divaricating' habit, largely if not entirely peculiar to New Zealand, of many of the shrubs and some of the juvenile forms of several forest trees. The chief characteristics of a divaricating shrub are free branching with the branches more or less at right angles to each other, the end result being a densely interlacing mass of slender twigs with very small, sometimes sparse leaves." Dawson, J. W. (1963). " Volume 11, Issue 3, September 1963, A Comment on Divaricating Shrubs." Tuatara: Journal of the Biological Society 11(3): 193-194.

- 2) their models are able to represent the complex decision contexts faced by environmental managers;
- 3) they provide sufficient discrimination amongst ‘higher’ adult developmental levels, unlike some theorizing in the field that is too general at higher levels to provide enough of a sieve for the assessments required for this study ;
- 4) their approaches to these higher levels recognises a transformation in the structure of sense-making that seems to me to better represent experience, rather than presenting the higher levels as more-of-the-same-only-grander in the manner of some other models;
- 5) they are not purely cognitive but recognise the role of feelings in the evolution of self-complexity, which is critical to the need for progress on social processes and relationships identified as necessary in the preceding chapter;
- 6) their theoretical approaches have each been developed over more than two decades, for much of the period in which there has been a field of adult development, providing for their proving, and use in a wide range of dissertations and further research; and
- 7) both of the models are supported by well-validated measurement processes.

I have also sought to follow Laske’s advice and favour “theories that have the long breath required for dialectical thinking” (Laske 1999:18)¹¹.

I will now describe the theories of Kegan and Basseches in more detail. At the conclusion of this chapter I will relate the adult development theories to issues of environmental leadership, including drawing on other theorists in the adult development field who have connected these ideas with questions of leadership and organisational design.

Kegan’s subject-object theory of self-complexity

Robert Kegan (Kegan 1982; Kegan 1994) provides an explicit theory of the process of adult development, the subject-object theory. He focuses on how adults make meaning or construct reality. “[T]he activity of being a person is the activity of meaning-making. There is thus no feeling, no experience, no thought, no perception independent of a meaning-making context...” (Kegan 1982:11).

As Kegan describes this, a person’s beliefs are the interpretive lens through which a person takes in, organises, understands, and analyses their experiences – it represents the individual’s ‘way of knowing’. Kegan argues that we are each in a relationship with our ‘way of knowing’ that is durable, for a period of time; reflects an identifiable inner logic and coherence; “and may feel more to us like the way we *are* rather than something we *have*. The world we construct through our way of knowing may seem to us less the way things *look to us*, and more like the way things *are*” (Kegan, Broderick et al. 2001: 3-4, authors’ emphasis).

In taking this approach, Kegan is explicitly going beyond a focus on cognition alone to describe “the organizing principle we bring to our thinking and our feelings and our relating to others and our relating to parts of ourselves” (Kegan 1994: 29). In terms of this dissertation, environmental managers are not just thinking about the systems they are

¹¹ The sort of expression you might expect from someone who is a composer, poet and organisational theorist. As it happens, I have also made largely the same choices of adult development and organisational theories as Laske.

responsible for or the intervention they might choose or recommend. They are also constructing meaning, for example, in the types of stories or models they use to explain situations or issues or the ways they describe the systems they are trying to manage and how people interact with them, and they are organising their thinking *and* feelings *and* how they are relating to others and to themselves.

There is a question about what to call this particular way of knowing. I have followed the practice of Berger, who has done much to interpret Kegan's work, of using the term self-complexity as a way of describing the more complex understanding of the self and the world that develops through these orders of mind (Berger 2002). Terms used by others to describe the thing that develops include meaning-making, ego development, consciousness, and perspective-taking. Researchers have described the stages of development as levels, stages, orders of mind, and action logics.

One of the particular strengths of Kegan's subject-object theory is that it provides an elegant explanation of the ways this development occurs. Kegan coined the name subject-object theory because the major process in transformation between stages is from subject to object - the change from our being embedded in a particular way of knowing, or being *subject* to it, to being able to see that way of knowing (how I am making sense of my world and myself) and reflect on it and relate to it, to having it as an *object*.

The development process, from a subject-object perspective, is a progressive expansion in being able to observe and act upon, to make 'object', the successive ways of knowing that we have been subject to. "The more a person can hold outside him or herself to examine, the more 'developed' the person is" (Berger 2003). Or, as Kegan puts it, we develop through transformation of these ways of knowing or orders of consciousness: "a succession of qualitative differentiations of the self from the world" (Kegan 1982:77).

Kegan describe five orders of self-complexity and a number of transition points between these orders. Of the five orders, three, four and five are of the most relevance to this dissertation, particularly the transition from orders three and four and four and five. I will describe these orders and the major transitions shortly.

Kegan also asserts that societies place expectations on their citizens to be able to operate at levels of self-complexity in a host of fields. These are often more complex than levels at which many individuals are operating (Kegan 1994). The topic for this dissertation arose when I connected this idea of Kegan's with the relatively sophisticated approaches to sustainable management of the environment established in New Zealand statutes. I wondered whether decision-makers such as myself were able to make meaning at the levels that might be required to sustainably manage the environment.

For this thesis, I wish to use Kegan's subject-object theory to examine the fit between the complexity of the environmental manager's job, in terms of the expectations society has of those managers to lead in the resolution of complex problems, and the capabilities of managers to make meaning in complex ways. In doing this there are some caveats that need to be kept in mind. I will discuss these at the end of this section. Firstly, I will describe the orders of self-complexity in Kegan's theory and key transitions between these orders¹².

¹² I most often use the numbers 1-5 to identify these orders. Kegan has used two sets of names for these orders. Other authors have developed their own, but related, names.

Kegan's framework encompasses both child and adult development, although the three later orders are the ones that are most relevant to this study. The *first* order, which Kegan originally called impulsive, describes the 'in-the-moment' self-complexity of small children where the world is magical and changes inexplicably from moment to moment (Kegan 1982:132). "Children in this order need to be reminded of the rules over and over, because they can't hold the ideas in their mind for very long; the rule that existed yesterday about drawing on the walls might not seem to apply today" (Berger 2003:4).

Usually by seven to eight years old, a transition, most famously observed by Piaget, occurs to a world of concrete and durable categories. This *second* order has been variously described as the imperial or instrumental self, or self-sovereign (Kegan, Broderick et al. 2001; Berger (In press)). In this more durable second-order world things are seen as having their own concrete properties - today's rules can be expected to also apply tomorrow - other people are seen as having their own points of view and I have my own enduring needs and interests (Kegan 1994:22). These self-interests are central. "While they are aware that others have feelings and desires, they cannot hold both their own perspective and the perspective of another at the same time. Mostly other people's interests are important only if they interfere with the interests of the person at the second order" (Berger 2003:4).

The relevance of the second order to this study is that it is now thought that many adults can spend many years in the second order (Kegan, Broderick et al. 2001). Previously the second order was thought to be one occupied by older children and adolescents. With the number of adults in the second order ranging in studies from 13 to 36 per cent (Berger 2003), there is a need to look out for aspects of the second order self in individual environmental managers.

The three orders of mind of most interest in this study are orders three, four and five. The transitions of most interest in this study are between the third and fourth and the fourth and fifth orders. I will briefly discuss each of these orders and then turn to the transitions between them.

Older adolescents and perhaps 40-50% of adults operate at the *third* order or in the transition from the third to the fourth order. The third order has been called the interpersonal order. People are able to observe their desires and, to a degree, subordinate them to those of others. They can think abstractly, be reflective and self-reflective, and be committed to something that is greater than their own needs. In this way, they are guided by the people or institutions that are most important to them and can be held by the feelings of others. Berger points out that at the third order, "people no longer see others as simply a means to an end; they have internalized one or more systems of meaning (e.g. their family's values, a political or national ideology, a professional or organizational culture)." But these internalised systems create their own pressure points: "The major limitation of this order is that, when there is a conflict between important ideologies, institutions, or people, those at the third order feel torn in two and cannot find a way to make a decision; there is no sense of what *I* want outside of others' expectations or societal roles" (Berger 2003:4-5).

A much smaller number of adults - perhaps between 20 and 30 per cent (Kegan 1994:195) - make meaning at the *fourth* order, an institutional or self-authoring stage. The 'institution' referred to here is the institution of a *self* with an internal set of rules and regulations and an identity outside of its relationship to others. This 'self' is able to observe the desires and views of others that had such authority over them in the interpersonal third order.

The goal of a clearly structured and identified self is the focus, and aspiration, of much of popular culture and institutions and at the centre of what is defined as ‘credible leadership’. The focus is on leaders clarifying their values, finding their voices, modelling the way toward shared visions to which others have enlisted, inspiring and enabling others to act by first ‘leading yourself’ (Kouzes and Posner 2002).

Very few adults operate at the *fifth* order—the interindividual, inter-institutional, or self-transformational stage. These adults have learned the limits of their own inner system—and the limits of full identification with any one inner system in general. Instead of viewing others as people with separate and different inner systems, those with a self-transformational mind can look across inner systems to see the similarities that are hidden within what used to look like differences. These adults are less likely to see the world in terms of dichotomies or polarities. They are more likely to understand and deal well with paradox and with managing the tension of opposites (Berger 2003).

With respect to the assertions made above about numbers of people operating at these different orders, the data is light and the assessments tentative. In a comparison across a number of studies, Kegan estimates: “one-half to two-thirds of the adult population appear not to have fully reached the fourth order of consciousness” (Kegan 1994:191). Cook-Greuter reaches a similar view (using some of the same material and some of her own research) that 90 per cent of adults operate in the fourth order or below (Cook-Greuter 2000:17).

For purposes of comparison with the findings in this study, tentative estimates based on a weighted compilation of surveys of managers in the United States, from first-line supervisors to senior executives, conclude that ten per cent profile at the third order of self-complexity, 45 per cent are in the third to fourth transition, 35 per cent are at the fourth order and ten per cent profile as beyond the fourth order (Joiner and Josephs 2007:233).

Two transitions are important for this study: from the third to fourth order and the fourth to fifth orders.

The third to fourth transition is the most central transition of adulthood. Many managers are also living in this transition. People in any transition space are able to hold both frames of self-complexity. In this case, they are subject to the fourth order and the third order and may also, on occasions, be able to see their third order frame in action – perhaps when they are reflecting on how they have been held by their concerns about the views of others who are important in their lives. These two frames can be uncomfortable to hold at the same time. The manager in this space may find they often feel pulled between two different people whose opinions she or he values, or between different values or theories or organizational expectations (Berger (In press)). Part of the transition in the leadership space is about establishing confidence in the individual’s own voice and mind (Kouzes and Posner 2002).

The transition from the fourth to fifth orders is critical to this study because it may underpin the capabilities of environmental managers to perceive as whole and dynamic systems the environmental systems and processes they have responsibility to engage with and the social processes and systems they work within.

In chapter two I synthesised the matrix of factors that make environmental management particularly complex and the ways that this complexity is increasing. Increasingly managers face high societal expectations about certainty and standards of services. Environmental managers are conscious of these expectations and of how much they do not know and cannot commit to delivering. Her or his world is rich with complexity and uncertainty. Kegan (1994: 321) describes the demands being made of people in the transition beyond the fourth order: to not see yourself or other people as a single form or system; to think of the notion of something being complete as just a tempting notion; to put the process of interacting before forms or systems; and to see protracted conflict as a sign that you are hooked into believing things are whole or distinct or complete or priorities. Here the value to managing clouded environmental issues becomes more visible. The fifth order requires a fluid sense of the self and of the situation and an emphasis on interaction, exploration and emergence. Joiner and Josephs argue that, in this transition, self observation and reflective capacities are enhanced and broadened and the leader develops “a compelling interest in discovering what lies beyond the boundaries of your known world.” In the fourth order leaders have the reflective capacity but are not able to reflect in action. Instead they do this after the fact (Joiner and Josephs 2007:112).

Berger draws attention to three caveats to Kegan’s theory. Firstly, the theory looks at only “a single slice of what makes us human.” It does not address “myriad aspects of even the internal human experience; it doesn’t obviously correlate with issues of intelligence, morality, psychological wellness. It never attempts to examine issues of class or culture or action in general.”

Secondly, it is an unabashedly hierarchical model but it is not simplistically so. The orders of mind describe a journey that all people are on, implying that some ways of making meaning are not just *different* than but *more complex* than other ways. Berger makes the point that “development is a process, not a race. There are costs to movement just as there are costs to stillness; a person’s current place in the journey is a measure of the opportunities she has been given and which costs she has chosen to pay along the way.”

Thirdly, while different orders may fit people better in doing more or less complex things, “there is no order that is inherently *better* than any other order (just as a more complex idea is not necessarily more valuable than a simple one). People can be kind or unkind, just or unjust, moral or immoral at any of these orders, so it is impossible to measure a person’s worth by looking at his or her order of mind” (Berger 2003: 2-3, emphasis in the original).

Basseches’ dialectical schemata framework

Basseches (1984) also focuses on how our meaning-making develops throughout adulthood, beyond ‘formal operations’¹³, applying the rich philosophical heritage of dialectics to the topic. Basseches developed a framework of what he calls dialectical schemata or specific ‘moves-in-thought’. I argue below that these schemata, and the categories of Basseches’ framework, are effective surrogates for the representation of systems thinking. To make this argument I need to provide some background on the inter-linked strands of dialectical and systems thinking and their application in assessing the capabilities of environmental managers.

¹³ ‘Formal operations’ was the final developmental stage identified by Piaget and generally attained in adolescence.

The question about how much systems thinking is needed for environmental managers to more effectively intervene in environmental and human systems leads to a question about how much systems thinking capability do managers actually have which, in turn, raises the question about how we might assess systems thinking ability. These questions have received little attention in the systems thinking literature although analogous topics have been explored in the adult development field.

Systems thinking has been recognised as involving a significant “shift in mind” (Senge 1990). However, the nature of the shift has not often been specified in ways that might make it easy to be assessed or measured. Might there be different levels to such a shift in mind, in fact, shifts in mind? Perhaps a shift to identifying and mapping systems dynamics involves a different level of complexity of thinking and consciousness than a shift to the wider and more profound understandings implied by the terms ‘systemic appreciation’ (Flood 1999), or ‘whole systems thinking’ (Sterling 2003) or taking a ‘metasystematic’ approach to environmental management (Case 1995). There is also the consideration of how much of this systems thinking can be carried out as reflection in action or how much does it involve reflection after the event?

Where the practical nature of systems thinking has been explored and some measures developed these have tended to focus on content knowledge or skill associated with particular approaches to systems thinking (Zulauf 1995; O'Connor and McDermott 1997; Richmond 2000; Sweeney 2004). Others have taken more holistic approaches and also applied these in very broad and general ways (Flood 1999; Gharajedaghi 1999; Commons and Richards 2003). Much less has been done to identify the ways that systems thinking demonstrates a set of characteristics that, taken together, comprise a different way of making meaning about the world and our interaction with it. To use a categorization coined by Stephen Sterling, the emphasis in much of the literature has been more on ‘systems as discipline’ with associated tools and techniques rather than ‘systems as worldview’ in which a systemic philosophy influences not only *what* we think but *the way* in which we think and perceive (Sterling 2003).

In seeking ways to enable the measurement of systems thinking, Paul Atkins and I have explored the fruitful overlap between systems thinking and dialectical thinking (Atkins and Johnston 2005). The dialectical approach to inquiry has been associated with systems thinking by Churchman (Churchman 1971), and subsequently by writers such as Mitroff and Mason (Mitroff and Mason 1981) and Ulrich (Ulrich 1983). The overlap between these two fields occurs between both philosophical and psychological applications of dialectics and the ‘softer’ approaches to systems thinking.

The exploration of dialectics throughout history represents a long and winding road in the philosophical tradition. It is a tradition that has often been reconfigured. Roy Bhaskar offers a more recent rethinking (Bhaskar 1993). My interest has been less in the philosophical implications of dialectical thinking than in its psychology. The development of a dialectical psychology, comprising both a dialectical approach to psychology and a psychology of dialectical thinking, was led by Riegel (Riegel 1979)¹⁴. At the same time as Riegel was

¹⁴ See also: Baltes, P. B., U. Lindenberger, et al. (1998). Life-span theory in developmental psychology. Handbook of Child Psychology: Theoretical Models of Human Development. W. Damon and R. M. Lerner. New York, John Wiley. 1: 1029-1143.

developing his work Michael Basseches was constructing a framework for describing dialectical thinking in psychological terms and enabling its measurement (Basseches 1984).

A dialectical view emphasises change, wholeness, and relationships. Basseches offers a definition of dialectic that is dense and difficult. But it offers useful insights when it is unpacked. Basseches defines dialectic as "... developmental transformation (i.e., developmental movement through forms) which occurs via constitutive and interactive relationships" (Basseches 1984: 22).

I will take this piece by piece. Both *movement* and *forms* are involved in dialectics and there is a *relationship* between them. Forms change through time, arising and ceasing in relation to other forms and contexts and the processes of change. There is a direction in these transformations. They are *developmental*. The direction of the transformation is associated with a spiral of increasing *inclusiveness, differentiation, and integration*. Let us take a more detailed look at each of the three main components: change, wholeness and relationships. See Atkins and Johnston for a fuller discussion of this material (Atkins and Johnston 2005).

First, the dialectical perspective emphasises change, that objects or concepts don't exist in any permanent sense as discrete entities but rather they arise from a historical context and change or pass away. The emphasis is on the process of existence unfolding including a continual unfolding and development of the idea of dialectic itself, as contrasted with the more fixed notion of Platonic ideals, for example.

Basseches contrasts dialectical thinking with either universalist or relativist thinking: universalism assumes there are fixed, universal truths (theories) and order that science can discover. Relativism assumes there are as many orders/truths as there are people/cultures but no perspective is better than another. The dialectical approach neither assumes universal, fixed orders or a lack of any order, rather it focuses on the evolution and revolution of order, seen as an ongoing process of integration and differentiation. All orders are seen as provisional and inevitably excluding aspects of reality.

A second critical aspect of this definition is the idea of *transformation* or 'movement through forms'. Transformation refers to qualitative changes. Forms are inherently transitory, old forms give way to new forms. Forms are wholes, the world consists of open-systems where the properties of the whole influence, or even constitute, the properties of the parts and vice versa.

Relationships, the third aspect of the definition, are *constitutive* and *interactive*. In constitutive relationships the relationship has a role in making the parties to the relationship what they are. Interactive relationships are characterised by motion or the activity of parties on one another. For example, vehicles and roads obviously interact with one another: Over time both cause changes in the other. However, there is a deeper, *constitutive* sense in which vehicles and roads are related. A road would not *be* a road without vehicles travelling upon it, if aeroplanes travelled on it, it might be a runway; if people, a pathway or mall. Conversely, vehicles would not *be* vehicles without roads on which to travel (even off-road or all-terrain vehicles are defined as such, by their relationship to the terrain they travel over or the absence of needing roads to travel over). Such constitutive relationships are ubiquitous, husband and wife, teacher and student, roads and road builders, love and marriage going together like a horse and carriage.

Basseches (1984) described in detail 24 specific ‘moves in thought’ which dialectical thinkers tend to make. These comprise the Dialectical Schemata Framework (DSF). The 24 schemata are grouped into four categories: motion-oriented, form-oriented, relationship-oriented, and meta-formal or transformation-oriented schemata. The first three of these categories (motion, form and relations) align with the components in Basseches’ definition of the dialectic. The fourth category of metaformal schemata represents a second order of thinking with moves-in-thought that integrate aspects of change, wholeness or relationships. For more on the specifics of Basseches’ schemata see Appendix Two.

Basseches describes dialectical thinking as ‘metasystematic’ – it “organizes a logic of systems into a coherent whole” (1984: 58). As such, it is a “post-formal level of cognitive organization” (1984: 59). While Basseches does not describe stages of development using dialectical schemata, he has speculated about a phased progression through dialectics and draws a distinction between fully-organised dialectical thinking and different ‘substages’ in which there is incomplete or partial development of dialectical thinking (1984: 213-4). These substages may represent possible phases in the development of dialectical thinking (Basseches 1984: 381-7; Benack and Basseches 1989). Two subsequent studies have suggested different patterns of partial and phased dialectical thinking (Case 1995; Laske 1999).

Systems and dialectical thinking

I have chosen the Basseches’ dialectical framework because it is the best available typology of systems thinking. This assertion is not immediately obvious for a couple of reasons. Firstly, Basseches does not mention systems thinking. Basseches was doing his work in the late seventies and early eighties, before systems thinking was pervasive in many literatures as it is today. Secondly, his work is little known in systems thinking field itself. I will show the similarities in approach between the main categorisers of systems thinking and the categories in Basseches’ framework. Then I will discuss how Basseches’ framework does a better job at describing how systems are being thought about in systems thinking than models developed from within the systems thinking field. In essence, Basseches’ approach is broader, more complete than other models and also enables reflection on the relationship between the system and oneself in a way that other models do not.

Firstly, Basseches’ approach, while not referring to systems thinking, covers many of the same structures and dynamics as models of systems thinking. Basseches’ categories of dialectical thinking are close to the constructs associated with ‘soft’ systems thinking. Fritjof Capra summarises the key characteristics of systems thinking as a strand of process thinking (similar to Basseches’ category of motion or change) and a strand of contextual thinking comprising integrated wholes, seen at different levels, and considered in relationships and networks (Capra 1996). Here are Basseches’ categories of form or wholeness and relationships. Basseches’ metaformal schemata lay across both the processes and context strands of systems thinking described by Capra.

After working with and reviewing all the major applications of systems thinking over many years, Bob Flood arrived at a construct of ‘systemic appreciation’ (Flood and Jackson 1991; Flood 1999). The four components of systemic appreciation also closely relate to Basseches’ structure: systems of processes (Basseches’ motion), systems of structure (form), systems of meaning (through relationships) and systems of knowledge-power (also present in Basseches’

relationship schemata). Flood then provides a meta-perspective to unify these systems in his 'prismatic thought'. This is analogous to Basseches' 'meta-formal' schemata.

Secondly, Basseches has tended to take a broader a view of dialectics. While other writers have made the linkage between dialectical and systems thinking, they have tended to emphasise the contradiction and conflict inherent in dialectic (Churchman 1971; Freedle 1975 ; Mitroff and Mason 1981). Basseches' approach includes contradiction but as part of a broader framework. He focuses more on change, wholeness, and relationships. Contradiction and paradox are included as part of the motion of transformation, through thesis to antithesis and then synthesis. Because Basseches has taken a broader approach, his framework also provides a better representation of the different components usually considered to be part of systems thinking.

The distinction between the Basseches' approach to dialectical thinking and others who have sought to describe the thinking in systems thinking is that Basseches focuses on how people are framing things: how we think. Others who have sought to describe systems thinking describe what we think about. Basseches' framework involves a focus on 'me and the system' rather than just the system itself and it is about my own way of dynamically constructing the world. While this is more possible with Gharajedaghi's components (Gharajedaghi 1999) and with Flood's structuring of these components in systemic appreciation (Flood 1999) neither of these authors focuses on this interaction.

There is also common ground between systems thinking and complexity theory and a range of adult development approaches in the focus on boundaries. According to Midgley (2000: 33), "the boundary concept is fundamental: it is the core idea of systems thinking." Systems thinking aims to be both as comprehensive as possible and to enable effective intervention. Thus it cannot be so comprehensive as to become overwhelmed and unable to act. In terms of systemic interventions, the critical consideration is what is included and what excluded, the boundary judgement.

One of the ways to reflect on levels of adult development is the way that later levels involve larger and/or more porous boundaries. There are two overlapping concepts here. Firstly, boundaries expand with adult development: from systematic to metasytematic to paradigmatic (Commons and Richards 2003); from representations to abstractions to principles (Fischer and Bidell 1998); from the interpersonal to the institutional to the interindividual self (Kegan 1982). In each case the system that is being engaged with is larger and the self is dealing with greater complexity. Secondly, boundaries can also 'expand' by becoming more porous. This change is emphasised in theories of ego development and dialectical thinking but not in theories focused on cognitive development.

For all the strengths in this approach there are also some notable limitations in using the dialectical schemata framework as a surrogate typology for systems thinking. It misses some of the strengths of some more 'mechanistic' approaches to defining systems thinking. Those based on systems dynamics are, perhaps not surprisingly, stronger on the dynamics of systems thinking such as feedback loops and stocks and flows. Also, the motion described in Basseches' model is relatively linear. A thesis leads to an antithesis and perhaps to a synthesis and that may then be a thesis that leads on to another antithesis and so on. There is less of the looping back or perverse behaviours of inter-connecting systems. As a consequence, Basseches also give less emphasis to emergence than some other summaries of

systems thinking (Checkland and Scholes 1990) and those who have followed with the development of complexity theory (Kauffman 1995; Mainzer 1997; Stacey 2000).

Leadership and social change

This study is focused on leadership, but that is only a component in the process of social change. A core assumption, discussed in Chapter Two, is that major changes are required to the economic, environmental, and social decisions made in our societies if the objective of sustainable management of the environment is to be achieved. My working proposition, described in the introduction, adds a second assumption, namely that the responses of managers to these major environmental challenges are likely to be greatly improved if higher levels of complexity of thinking and consciousness are able to be applied by those managers.

These two assumptions can be seen as embodying two different stories: one ‘top down’, the other ‘bottom up’. The thesis is largely top down in its focus in that the main concern is with particular capabilities of environmental leaders. The bottom up aspect is the recognition that the changes involved are society-wide and many will be more responded to than led as patterns of societal change emerge.

To imagine how these bottom-up and top-down aspects might interact in practice, let us envisage ourselves at some ‘happy’ point in the future enjoying the fruits of emergent trends and of appropriate decisions that have been made. Sustainable management objectives have been achieved. We can ‘look back’ and consider, for illustrative purposes, how things might have been done differently to achieve this state. Let us assume the outcome that has been achieved is that enough members of the community are engaged in ‘whole systems thinking’ (Sterling 2003) and have worked to fundamentally change environmental management practices.

I assume that such a change has required a combination of¹⁵:

- Information, knowledge and skills;
- A transformation in understanding and values;
- Social processes that enable engagement of communities (learning from the information, knowledge, and skills and supporting transformations in understanding and values);
- A mix of intelligent policies, regulation and market mechanisms – structured to reflect the needs of sustainability;
- Leaders able to enable the social processes and manage the complexity of the issues.

All these factors are related. The relationships are interactive and constitutive and evolve over time.

While my focus is on leadership, adult development theory has something to say about each of the factors above. Different approaches to adult development might be expected to focus on different factors and relationships¹⁶. As an example of the way adult development

¹⁵ I am assuming these changes were not achieved by executive *fiat*, as an order or regulation to think systemically could be considered a contradiction in terms. Nor do I assume change occurred after a fundamental breakdown in society from which there has been an almost complete rebuilding of systems and institutions, a possibility contemplated in some scenarios.

¹⁶ Developmental approaches, particularly those which emphasise stages of development, could be expected to emphasise the capabilities of leaders, transformations in understanding and the smart design of policies, regulations

theories offer perspectives on these issues: the processes of greater democratic engagement are partly dependent, for their success, on individuals having the capabilities to engage with the issues. This also applies to individuals having the capabilities for working together in communities on these issues. Adult development theories suggest that individual capabilities to work on such issues vary significantly. As Rosenberg argues, this affects the ways issues can be worked through in communities (Rosenberg 2002; Rosenberg 2004). It also has implications for how engagement processes might be designed. At present, it is not so much a question about designing processes to recognise the capabilities of the individuals who are participating, but more that these are issues that too hard to address. These are ‘hard’ in two ways. Community processes that recognise developmental needs are harder to design and implement (although they may be much more effective in practice) and they are difficult because the topic of individual and community levels of development is difficult and often divisive. As Rosenberg has noted, there are “potentially serious and noxious” political ramifications in focusing on the variations in individual’s developmental capabilities across societies (Rosenberg 2002:20).

These wider social questions are outside the scope of this study. But I note two things. One, adult development theory offers perspectives on the wider social questions. Two, my working proposition needs to be seen in a wider social context. Leadership and the capabilities of leaders are rooted in and contribute to their social context.

For the purposes of the focusing required for this study, I will assume some factors away. I will largely be assuming that the necessary information is widely enough available and skills are being developed and experiences absorbed and learnt from. I will also assume that policies, regulations, and markets can be improved and implemented effectively, and the expansion of public and community engagement in environmental management in recent decades provides the basis for social processes to enable transformations in thinking to emerge. All of the statements in this paragraph involving sweeping assumptions, although based on the extrapolation of existing trends.

Summary and relevance to environmental management

This chapter reviewed aspects of two theories of adult development: self-complexity and dialectical or systems thinking. Both provide models of higher-level adult capabilities that may need to be demonstrated amongst environmental managers if they are to play a leading role in sustainable management of the environment. These models have been judged to be more effective than other approaches in describing the approaches to the higher levels of adult development. This is particularly the case in comparison with theories that focus on cognitive development alone. The advantage of the selected models is that they provide more insight into human interconnection and self transformation. In terms of my working proposition, the adult development theories are suggestive that some adults will develop to higher levels of complexity of thinking and self-complexity, and this should enable them to

and markets. Those which also emphasise the constructive aspects of development, and may put less emphasis on stages, are likely to focus on the relationships between leadership, transformation and social process. In contrast to developmental approaches, information processing models of enhanced wisdom might focus more on individuals (and communities) accumulating greater knowledge, skills and experience and, as a consequence, having their thinking expand to encompass greater complexity. Socio-cultural, contextual approaches could be expected to put more emphasis on communities working together to lift their thinking to a higher level of understanding of the issues and through this achieve a transformation.

manage greater complexity in a work setting. It is not clear how much there is an increase in effectiveness that is a consequence of seeing greater complexity. It is also not clear how much these attributes can be developed. Finally, it is clear that the working proposition, in focusing on the capabilities of managers, is concentrated on a small part of a much bigger panorama of social change.

In the next chapter I combine these chosen models of adult development with environmental management needs to develop a framework for how the roles and capabilities of environmental managers and leaders might be described at different levels.

Further discussion on key issues relating to adult development theory is provided in Appendix One. These include questions of scale, the structures and dynamics of development, and the nature of transitions that may occur at more complex levels of development.

Chapter Four: Applying the Theories to the Roles of Environmental Leaders

Introduction

In chapter two I focused on theories about environmental management to establish the *context* for this thesis and describe the challenge for leaders of having to deal more effectively with complexity. In chapter three I reviewed relevant theories of adult development to introduce the approach I will use in addressing the *capabilities* of environmental leaders, particularly those involved in dealing with complexity. In this chapter I connect *capability* and *context* to apply these two streams of theory to an analysis of the *roles* of environmental leaders and managers and the *particular capabilities* needed to perform these roles.

I do this by presenting a framework for environmental management and leadership (EMAL). The framework is a result of applying theories of self-complexity and levels of thinking to the contexts and roles of environmental management. It shows the systems capability and self-complexity needed to perform effectively as an environmental leader at different levels of management.

I provide a worked example of the application of the framework and consider the centrality of decision-making and the role of experience. I also trace the theories I have used to develop the framework and the ways these theories have been applied to leadership. Finally, I compare the EMAL framework to other leadership frameworks.

Environmental and conservation management in New Zealand

Before presenting this framework, however, it will be useful to first summarise the institutional contexts in New Zealand for environmental and conservation management. This background is necessary to set the context for many of the examples I use in discussing the EMAL framework.

The fieldwork for this study was carried out in New Zealand in two types of environmental management agency: Conservancies of the Department of Conservation (DoC) and Regional Councils. I chose two types of agencies because of the points of comparison and similarity that might be involved.

There are a total of 13 DoC Conservancies and 12 Regional and 4 Unitary Councils¹⁷ covering the country. The boundaries of the Conservancies and Regional Councils are generally contiguous.

¹⁷ New Zealand local government has a two-tier structure comprising: 12 Regional Councils at one level and 73 City or District Councils at a subsidiary level. There are four 'Unitary' Councils. These are an amalgam of the two-tiers - territorial authorities that also have Regional Council functions. The Chatham Islands council also has Regional Council functions. The three Regional Councils which were the focus of this research were full Regional Councils.

The two different agencies have quite different responsibilities. The Department of Conservation is a national central government agency with responsibilities set out in the Conservation Act 1986. It is charged with conserving the natural and historic heritage of New Zealand on behalf of and for the benefit of present and future New Zealanders. It manages protected areas (about 30 per cent of the New Zealand land area and 28 marine reserves), protected species, historic heritage, provides for the recreational enjoyment of these protected places, and oversees management of the coast. It also has advocacy and educational functions.

While the Department of Conservation has a protection and recreation focus, Regional Councils are charged with the sustainable management and sustainable development of the whole of their region¹⁸. The Councils are elected by voters in the region.

The functions of Regional Councils are¹⁹:

- management of the effects of use of freshwater, coastal waters, air, and land
- biosecurity control of regional plant and animal pests
- river management, flood control and mitigation of erosion
- regional land transport planning and contracting of passenger services
- harbour navigation and safety, marine pollution, and oil spills
- regional civil defence preparedness.

While DoC Conservancies and Regional Councils are managing significant environmental responsibilities over areas of a similar scale, there is a clear difference in the organisational structures and level of management between the two types of agency. Each Regional Council is a stand-alone body with a chief executive and senior management team reporting to an elected council. The thirteen Conservancies of the Department are at the middle tier of its national structure. Each Conservancy is led by a Conservator who is responsible for the full range of conservation functions within the Conservancy boundaries. A Conservancy might comprise one or more national parks and a network of reserves, including marine reserves. Each Conservator reports to a regional general manager who reports to the Director General and through him to the Minister of Conservation. A Regional Council is setting its own strategies, policies, and procedures, albeit within the framework of national legislation and, increasingly, national policy statements and standards²⁰. A DoC Conservancy is developing its own conservation management strategy for its areas and is also working within the strategies, policies and procedures of the national organisation²¹.

Environmental management and leadership framework

In this chapter I present a framework for environmental management and leadership (EMAL) (see Table 4.1). It is a result of applying theories of self-complexity and levels of thinking to the contexts and roles of environmental management. The framework shows the systems

¹⁸ Sustainable management of the environment is a function mandated under the Resource Management Act 1991. The sustainable development responsibilities are provided for in the Local Government Act 2002.

¹⁹ <http://www.lgnz.co.nz/lg-sector/role/index.html> Accessed 10 April 2007.

²⁰ The lack of these national policy statements and guidance has been a point of criticism of the central government agencies in the implementation of the environmental management system in New Zealand. Ericksen, N. J., P. R. Berke, et al. (2003). *Planning for Sustainability: New Zealand Under the RMA*. Hamilton, International Global Change Institute. OECD (2007). *Environmental Performance Reviews: New Zealand*, OECD.

²¹ The differing orientations of Regional Councils and Conservancies, as revealed in my findings, are discussed at the end of Part Two.

capability and self-complexity needed to perform effectively as an environmental leader at different levels of management.

The EMAL framework has two parts to it. Part one presents the systems capabilities and the levels of reasoning or thinking needed for environmental management roles. It is based on Westley's structuring of environmental management functions: managing through, in, up, and out. Part two presents the levels of self-complexity that need to be manifested by environmental leaders. These two parts are drawn from different streams of theory in the adult development field, although there are overlaps between them.

I have earlier described the two main ways in which environmental leaders will need to improve in order to enhance the chances for sustainable management of the environment. The two parts of the EMAL framework correspond to these two streams of improvement. I described in Chapter Two how the contexts faced by environmental managers are shifting from complex to even more complex, requiring an ability to understand both technical and social processes. This means a greater demand for more complex thinking and more understanding of whole systems. This is part one of the framework. The capability to understand social process is, to a degree, covered in the 'managing out' stream of part one of the EMAL framework as it addresses the relational aspects of environmental management. But more than just understanding is required. Part two of the EMAL framework, focused on self-complexity, gets to the heart of the ability of managers to engage in and lead social processes.

The strength of the framework is that it sets out the core requirements of environmental leaders in a series of steps that clearly show what is required if leaders are to manage roles of greater complexity. This can provide guidance to leaders about the nature of their own roles, the improvements in themselves they might focus on, the capabilities needed by those for whom they are responsible, and the ways their agencies may be better organised to manage complexity more effectively.

Part one of the EMAL framework (Systems Capability in Management) traces the development of management capabilities across three core functions of environmental management: using adaptive science-based processes to decide on actions, working in bureaucratic and political processes, and engaging with the community. These core functions are derived from Frances Westley's model of the functions of environmental managers described in chapter two (Westley 2002).

Each of these three functions progresses across five levels of environmental management (and the cognitive complexity required of the role) in which the complexity of the work increases and the manager moves from being embedded in plans, processes and discourses to being able to shape those features, and then being able to shape or influence higher level features such as emergent strategies, whole systems, and the framework of debates, and to be able to hold multiple perspectives on these efforts. The steps in this progression are drawn from models which apply adult development theories focusing on cognition to organisational leadership.

Part two of the framework (Self-Complexity) is a characterisation of self-complexity as manifested by leaders. These levels of self-complexity are not fully aligned with the levels of environmental management. This is reflected in the way two orders of self-complexity (3rd/4th and 4th orders) are split across three levels of complexity of thinking. However the

alignment is close enough, in my experience, to provide a workable construct. The self-complexity part of the EMAL framework addresses the second part of the leadership need: managers engaging in and leading key social processes.

The two parts are based on two different but related streams of adult development theory, the first part focusing on cognition, the second on self-complexity. One distinction between the two parts is that the levels of environmental management in part one are described in the terms of the roles that need to be performed, whereas the part two description is in terms of how self-complexity is manifest in different levels of leadership. It is about the *ways* these roles might be performed.

The clarity of the framework also has its price. While the focus is on the nature of the environmental management role, there is a risk of judging and labelling people rather than retaining the focus on the role. This risk of judging and labelling individuals arises within both parts of the framework and it also seems to be more likely to arise when the second part of the framework is added. The first part, the levels of thinking required, can be quite clearly described as a function of the role. Describing what is required in terms of self-complexity tends more toward describing the person involved, with the consequent risk of the person involved feeling labelled and sometimes diminished or constrained by that labelling.

While it may seem more measured to describe the analytical and theoretical transitions that were needed to construct the EMAL framework, and then unveil the completed framework at the conclusion of the chapter, I have chosen to start with the framework and then trace its derivation from the adult development theories in chapter three, explain their application to the environmental management context, and describe their articulation in the framework. I have taken this back-to-front approach to enable those readers less interested in the links I have forged between theories and applications to jump forward to the next chapter.

In summary, in this chapter, I use two strands of theory to make two important transitions and build the framework. Both of these are introduced here and then will be discussed in more detail in subsequent sections. The levels I to V described in the EMAL framework are based on Elliott Jaques' work on the cognitive complexity of levels of work in organisations and the demands placed on managers (Jaques 1989; Jaques and Cason 1994; Jaques and Clement 1994). I will describe how Jaques' work links to the levels of thinking described by other adult development theorists, including Basseches, and how I have used Jaques' work to show how the roles and functions expected of environmental managers can be described at different levels.

Part two, describing self-complexity and its manifestation in leadership, is based on the work of Bob Kegan and applications of this by Bill Joiner and Stephen Josephs (Joiner and Josephs 2007). This includes descriptions by Joiner and Josephs of the ways self-complexity is manifest in different sources of power and ways in which it is used. My second transition is effected by applying Kegan's orders of mind to leadership, particularly organisational leadership. I will explain the nature of each of these transitions in turn.

Before I delve into theories, their applications and synergies, however, I present the framework and then provide a worked example of the EMAL framework in action in a conservation management setting.

Table 4.1: Functions and Levels of Environmental Management and Leadership (EMAL) – as they relate to systems capability and self-complexity						
Level	I	II	III	IV	V	
Part 1: Systems Capability in Management	Managing Through – Using adaptive science-based processes: seeking patterns, understanding system dynamics, making plans to act.	Tends to use science more to prove or disprove the correct solution. Systems thinking, where it is used, is as a method or discipline.		Seeing interventions more as experiments to learn from rather than solutions to implement, while still concerned with results. Systems thinking is used more as a worldview than a method.		
		Fits information to a prescribed pattern or plan and, in acting, makes local adjustments as required.	Implements plan. Can identify cause and effect patterns, accumulate data to test patterns and modify these accordingly to help implement plan.	Produces plan. Able to identify and make choices between multiple cause and effect patterns.	Contributes to dynamic strategy. Able to identify multiple systemic, nonlinear patterns and test and modify these.	Decides dynamic strategy. Sees systems of systems. Able to consider 2 nd and 3 rd order system effects, choose between options and keep choices under review.
	Managing In and Up – Working in bureaucratic and political processes	Follows procedures and processes, works around local variations.	Understands process strengths and weaknesses, notes problems, accumulates data and makes changes.	Can define and implement process improvements. Sees constraints in systems. May see constraints in self and relationships.	Can define system improvements and can identify alternative approaches and choose among them. May also be able to see alternatives for self and relationships.	Understands whole system dynamics and can identify changes. May also see dynamics and fluid nature of self and relationships and reflect on and engage in change.
	Managing Out – Engagement with communities and interests, nature of discourses.	Embedded in the discourse, with local variations, engagement to advance objectives with local communities.	Sees the discourse but accepts it as a given (as constraint or opportunity). Sees risks in ‘other’ discourses. Engages to educate and advance the plan.	Able to develop and advance a unifying discourse or story to support achievement of preferred outcomes. Engagement to achieve outcomes, perhaps help define the plan.	Chooses between different forms of discourse – and how these shape outcomes. Able to identify and use different forms. Engages to define outcomes.	Able to hold multiple discourses. Sees ways to reframe debates to improve environmental management. Engagement as a mutual learning process.
Part 2: Self-Complexity	Self-complexity manifest in leadership	3rd order Focused on others who are regarded as most significant. Can feel torn between competing authorities. Power derived from connections.	3rd/4th order Tends to still be held by views of profession or peers but also fashioning self-authored views. Power derived from expertise and position. Tactically oriented, focused on analytical problem-solving.	4th order Can take multiple perspectives while maintaining own views. Power derived from drive to achieve organisational outcomes. Strategic enough to lead episodic shifts in direction.	4th/5th order Beginning to explore self as fluid and interconnected with others. Uses range of styles, and engagement, to achieve valued outcomes. Visionary and open to change, including basic assumptions.	

Levels of conservation management: a worked example

How might 'higher-levels' of systems capability and self-complexity be apparent in environmental management? How might the changes across the EMAL framework be demonstrated in practice? One example might be provided in the context of conservation management.

A conservation manager for a district might be responsible for the design and implementation of a range of programmes, largely carried out in protected areas, to protect or restore threatened species and control animal pests and weeds and other threats. The work would involve choosing priority sites, and designing and implementing the most effective management programmes. It is likely there would exist a spectrum of support and opposition within the community for the conservation objectives and management methods chosen but the overall objectives would fit within legal and political mandates.

In part one of the EMAL framework this is essentially Level II work although the manager would also be needing to contribute to the development of the overall plan and suggesting process improvements (although not necessarily making the final choices in the plan, or decisions on process improvements).

From the second part of the framework, the manager, perhaps working at a third-fourth order level of self-complexity, would use the available science to decide on the 'most effective' course of action. It is most likely that she or he would engage with stakeholders to gain support for the preferred approach.

Conservation managers and staff show high levels of commitment to their work. However, usually they will be in the situation where resources are inadequate for the overall conservation objectives for the district. In the scenario described above, the more tactical among them will use the programme and its results to show what can be achieved and, conversely, what is not being achieved at other sites and indicate the extent of potential losses. In this way they might hope that as professional managers they can demonstrate the value they are contributing and would then be better resourced by the government to do the job they see needed, as professionally as possible. Their behaviour, in this way, might be little different from many other expert professionals in public agencies in fields such as health, welfare, science, and education.

By contrast, a conservation manager who is able to operate at a higher level of adult development, using a fourth order level of self-complexity or beyond and perhaps working at Level IV in terms of systems thinking, would also be likely to apply the best science and information available but might frame the issues differently because they might bring a broader view about the transformation that may be required to achieve environmental management objectives over the longer term.

He or she would also be aware that resources will always be inadequate, especially given the long time frames over which environmental issues play out. One approach would be to define the value provided to the community by 'professional' management and thus to leverage more resources for the management agency. A longer-term option may be to define the value to be provided in conjunction with the community, to use the available science and

information to create a dialogue within the community about how much is possible, engage the community in defining the issues and finding solutions in which the community are active participants and committed to achieving the objectives.

To take this latter course requires sophisticated reflective capabilities, greater recognition of a range of discourses and perspectives and the capability to work with these, and skills in conversation and collaboration. To work effectively at this level the manager would also need to be in a role with a higher level of discretion and responsibility, perhaps one that enabled them to decide on strategy and define and shape system (rather than process) improvements and the wider conservation discourse.

It is also the case that the complexity is not just 'out there' in the systems to be 'worked on', or provided for in the role, but is intrinsic to who we are as humans. This manager, using an fourth or fourth-to-fifth leadership style, would need a higher level of self-knowledge than the third-to-fourth order 'expert' described in the earlier scenario. They would also need higher levels of flexibility, able to make bridges between shifting expectations between and within communities, and the hard scientific realities of conservation. The ability to balance this flexibility and to also drive action forward is more likely to be found beyond the fourth order and with access to complex as well as complicated thinking, working at levels IV and V.

Achieving a more collaborative engagement with communities, working on the social system 'out there' and an understanding of one's self, while still performing within the accountability requirements of modern public sector agencies, can be assumed to require a level of complexity of thinking above the level of thinking expected of managers for the organisational management tasks they face.

It is also my assessment that the shift to management of ecosystems (Crober 1999; van Eeten and Roe 2002), even in its more limited forms, working on the physical systems 'out there', requires a level of complexity of thinking in understanding systems that is above the level of thinking expected of managers in undertaking their organisational management responsibilities.

This aligns with the claim that transformational change requires complexity of thinking above that needed for routine management (Mehltretter Jr. 1995). In order to be able to transform the system, whether it be the system of conservation management or an organisation, a person needs to hold a larger view of the system to be transformed than is required to just manage within the system.

This claim is connected to the working proposition for this thesis. Stated in the context of the EMAL framework: How much will it be enough of a gain to improve environmental management by consolidating the capabilities of the leaders at the fourth order of self-complexity and the fourth level of systems capability, able to imagine parts of the whole system, define improvements, able to identify and use different forms of discourse? This will be an extension of and build on existing capabilities. Will it be enough? How much is there also a need for the capability to go to (or to have adequate access to) the more transformational fifth level of systems capability and fifth order of self-complexity? Different responses to these questions will drive different strategies.

Stephen Dovers asked the question in another way: how many fifth order environmental managers does it take to change a light bulb?²² How much of self-transforming, whole-of-systems thinking is required in the environmental management system? The question might be better put: how many fifth order capable managers might it take to change all the light bulbs? How many might be needed, and where, to effect change across the whole system?

Before tracing the theories underpinning the EMAL framework and how they have been applied in leadership contexts, I wish to address two other relevant and related matters. I will briefly describe the relationships between systems thinking, self-complexity, and the exercise of judgement through decision-making. Then I look at the role of experience, particularly experience arising through decision-making.

Making decisions faced with uncertainties

The quality of environmental management depends on the cumulative effect of many decisions made by environmental managers²³. The thrust of this study is that those decisions are affected by the ways the manager makes meaning and his or her ability to handle complexity. Other factors are also significant. The judgement exercised in each decision is also a product of the manager's experience and personality²⁴. The nature and effects of personality on judgement are not addressed here. My main focus is on the need for and capabilities of leaders to understand complexity, with the nature of the relationship between complexity of thinking, judgement, and self-complexity being especially relevant to this study. I will also then briefly touch on the ways experience can shape thinking and self-complexity.

Firstly I address the centrality of decision-making and, in particular, decision-making in novel circumstances. Brian Dive defines a *decision* as “a considered act in response to a demand or need, to progress a process, change a state of affairs, or solve a problem” (Dive 2002:48).

Decisions, according to Elliott Jaques, are what all work is about. Jaques defines *all* work as: “the use of discretion and judgement in making decisions, in carrying out a task, backed by knowledge, skills, temperament and wisdom, and driven by values” (Jaques 1989:15). He explicitly excludes from his definition the carrying out of known tasks or exactly obeying the rules. “Work ... is not the traversing of known paths. The work is to choose pathways or construct new ones, and to adapt them as you encounter unanticipated difficulties in traversing them” (Jaques 1989:23). Jaques argues that even the most mundane tasks involve

²² Pers comm..

²³ These may be decisions by managers that have direct effects or decisions about recommendations to a final decision maker in an elected government, such as a Minister or an elected council.

²⁴ Usha Haley argues that managers of different personality types tend to use different approaches in making strategic decisions. She compares the different models employed by managers of different personality types, based on the Myers Briggs Type Indicator. She suggests different personality types prefer different approaches to gathering data, generating alternatives, and evaluating options. Different types may emphasise different corporate objectives, take different approaches to risk, and work most effectively at different stages of strategy formulation. Haley, U. C. V. (1997). *The MBTI and Decision-Making Styles: Identifying and Managing Cognitive Trails in Strategic Decision-making*. Developing Leaders: Research and Applications in Psychological Type and Leadership Development. C. Fitzgerald and L. K. Kirby. Mountain View, CA, Davies Black.

the exercise of discretion²⁵. Judging or deciding is a process of choosing an option or action, or course of actions.

If work is the exercise of discretion in novel circumstances then, Jaques reasons, those with the greatest levels of responsibility have to face up to the most complex of novel circumstances. He uses this as a design principle to structure organisations and systems to reflect the levels of complexity that need to be managed at different levels and he reflects this within a hierarchy of accountability. The role of managers is to take accountability for, and add value to, the work of their subordinates. They add value by being able to deal with novel circumstances of greater complexity than those being addressed by their direct reports.

This added value component is effectively constructing a context in which others make decisions. It has been called ‘sense-giving’ by Karl Weick. He makes the point that, in the face of pervasive ambiguity, organisational life is as much about making sense and giving sense as it is about making decisions (Weick 1995). Weick quotes Thayer writing “A leader at work is one who gives others a different sense of the *meaning* of that which they do by recreating it in a different form, a different “face”.... The leader is a *sense-giver*. The leader always embodies the possibility of escape from what otherwise might appear to us to be incomprehensible, or from what might otherwise appear to us to be a chaotic, indifferent, or incorrigible world – one over which we have no ultimate control” (Thayer 1988).

This emphasis on the uncertainty and novelty of the circumstances to be faced and the focus on work being the choosing and adapting of pathways may be an especially specific definition of work but, as we have seen, an emphasis on uncertainty and novelty is particularly applicable in the context of environmental management where high levels of uncertainty appear endemic (van Eeten and Roe 2002; Westley 2002).

Places of experience

If work is about making choices in novel and uncertain circumstances, how does experience help? It appears it can be enabling and constraining. Gary Klein has developed a model for how people make decisions in real time under conditions of stress and high consequences. With experience people encode patterns which enable them to then recognise familiar situations. Experience also leads to the encoding of action scripts or patterns that guide habitual behaviour. Decision-makers under pressure match the situation to the recognisable pattern of familiar situations and modify their assessments or actions when they see variations in the pattern. Over time experience leads to pairings of situations with actions

²⁵ Jaques provides examples of the discretion required in basic Level I tasks: “Type this memorandum, coping with words difficult to read or hear. Machine this batch (say by turning, or milling, or drilling), dealing with unexpected characteristics of the metals being machined. Drill holes with this jackhammer, and get around any big rocks in the ground in the way of the drill. Police the beat, dealing on the spot with any suspicious signs. Get the answers to these questions from the family, using this given procedure if there is an uncooperative mother who won’t answer questions. In short: At [Level I] an individual proceeds along a prescribed linear pathway to a goal, getting continual feedback in order to proceed, and using previously learned methods for overcoming immediate obstacles as they are encountered, or else reporting back. N.B. People higher up the organization all too often come to believe that no real judgement or decision-making is required at this level. They are wrong! The essence of work is the same at all levels: namely, the exercise of discretion within limits. It is the latitude of these limits and the complexity which change with level” (p.24). Jaques, E. (1989). Requisite Organization: The CEO's guide to creative structure and leadership. Arlington, VA, Cason Hall.

that become increasingly automated. However, Klein makes the point that expertise for this is more easily acquired in some domains than in others. He draws a distinction between domains where expertise can be gained and more complex settings where time delays are long, feedback is uncertain, and the number and variety of experiences is too small: “Under these conditions we should be cautious about assuming that experience translates into expertise” (Klein 1998:282). In these uncertain settings, our expertise may not go much beyond surface routines. There would not be the chance to develop reliable expertise. These uncertain contexts seem to be closer to the settings faced by environmental decision-makers. The aspect of environmental management where there is more opportunity to gain expertise from experience appears to be more in the process rather than the substance of the management, in the processes of investigating issues and making decisions and the methods of engaging with stakeholders and reflecting on experience.

A second relevant consideration of experience is that both patterning and sense-making might be seen as building blocks of experience which, when accumulated and reflected upon, can be the basis for a transformation in the way the self and the world is understood. This might function as an example of Kurt Fischer’s model of how short-term ‘micro development’ can contribute to ‘macro development’ - larger shifts in the complexity of thinking and the way meaning is constructed (Fischer and Bidell 2005, in press). See the discussion in Appendix One on scale or axis of development. These models of how decision-makers construct and use experience are also congruent with the dynamics of Kegan’s subject-object transformation. There are ways in which experience is integrated into an expected pattern and becomes a tacit skill which the decision maker is subject to in Kegan’s terms, and then ways that the decision maker might make that pattern or his or her sense-making object and this may offer the possibility for a more fundamental change in approach. This seems to be equivalent to the shift between Chris Argyris’ double- and triple-loop learning (Argyris and Schon 1974).

We can envisage that the level of the leader’s self-complexity is relevant to his or her capability to make judgements and also to the ability to review those judgements being put into practice and to making meaning of the experience and to make meaning with and for others. Kegan makes the point that: “The very idea of *managing* ... suggesting as it does the activities of handling, arranging, configuring, deciding, executing, finessing, operating, and presiding would seem to require or to imply the *authoring* capacities of the fourth order of consciousness. The greater psychological differentiation of this way of knowing is reflected in the social ability to order the parts by first distinguishing oneself from them. The greater internality of this way of knowing now creates the self – not the present social surround – as the *source* of direction and value” (p.168, emphasis in original) (Kegan 1994). Kegan also points out that many people are managing or being expected to manage from within the third order of mind, although for the individuals involved this may often be more of ‘managing’ in the sense of coping rather than providing leadership, or it may be employers hoping that their middle managers will be compliant and orderly followers of the organisational line.

I now turn to the steps I have taken in constructing the EMAL framework. I describe how this involved two conceptual transitions. The first involved relating cognitive complexity to the complexity of tasks and roles; the second related self-complexity to leadership style.

The first transition: task complexity and cognitive complexity

The structure of the EMAL framework, Table 4.1, is based on one of Elliott Jaques' most important contributions²⁶. He constructed a framework of increasing complexity as a tool for work and organisational design. Elements of his framework are set out in Table 4.2. In my personal experience, both in restructuring a government department according to Jaques' stratified systems theory and also working with this as an organisational consultant, his theory has power as an organisational model (Jaques 1989; Jaques and Cason 1994; Jaques 2002). Less helpful was the rigid way Jaques seemed to hold to his views²⁷.

Jaques' model does three things that are relevant to this discussion:

1. It provides definitions of the complexity of work at different levels in an organisational hierarchy (*task complexity*);
2. It sets out a useful shorthand for the complexity of the work (the planning *time horizon* involved); and
3. It describes the *cognitive complexity* necessary to perform the work.

These three aspects of Jaques' model are set out in Table 4.2.

I use these three aspects of Jaques to make a transition between theories of levels of thinking or cognitive complexity in adult development and the ways these are manifest in the complexity of the work of environmental managers. Later, in chapter ten, I will relate my systems thinking findings to the levels set out in the EMAL framework in table 4.1. This transition can be seen as a series of steps or linkages:

1. A large part of the EMAL framework is based on Jaques' model of task complexity applied to functional streams of environmental management (drawn from Frances Westley's model).
2. Jaques' model of task complexity and roles in organisations overlaps with his model of cognitive complexity.
3. Jaques' model of cognitive complexity is very similar to the approach to cognitive complexity advanced by such central adult development figures as Michael Commons, Kurt Fischer, and Theo Dawson-Tunik.

²⁶ Jaques is a particular case. His work is important because it effectively applies ideas that are very similar to those of adult development theorists into organisational settings. While most of the other theorists have approached these issues from a theoretical perspective (and, at that, the Piagetian perspective, or in opposition to it), Jaques has arrived at his models through empirical work in British industry, then applications of the models in many other organisational settings and countries and has also brought a background in psychoanalysis. There are significant provisos about Jaques' work: his views are expressed didactically, poorly footnoted, and subsequent empirical work by himself has seemed to be sparse although there is a body of dissertations and further research into applications of his models. The logic and studies by which Jaques establishes his model also differ significantly in their approach in comparison with much of the other adult development research. For a useful introduction to Jaques (including an analysis of why Jaques' work has remained isolated from mainstream theory) and a comprehensive bibliography of research into his theories see: Craddock, K. (2007). Requisite leadership theory: An annotated research bibliography on Elliott Jaques' organization theory.

²⁷ Jaques' approach is didactic rather than dialectical: "There is one, and only one, requisite pattern of hierarchical structuring; that is to say, you can use any structure you like for your organization as long as you use the one I shall describe!" (p.11) Jaques, E. (1989). Requisite Organization: The CEO's guide to creative structure and leadership. Arlington, VA, Cason Hall.

4. Applying Basseches’ dialectical schemata framework, or a simplified version of it, provides a framework for cognitive complexity that can also be laid alongside the work of Jaques and Commons et al.

Table 4.2: Elliott Jaques’ model of levels of task and cognitive complexity (Jaques 1989; Jaques and Cason 1994)					
Level	I – Direct judgment	II – Diagnostic accumulation	III – Alternative paths	IV – Parallel processing	V - Unified whole system
Levels of task complexity required	Proceeds along a prescribed linear pathway to a goal, getting continual feedback in order to make adjustments and proceed.	Notes potential problems and obstacles, accumulates data and takes action to overcome them	Works out alternative paths, finds a path that stands a chance of coping with short-run requirements while at the same time providing the initial stages of a realistic path towards goals a year or more ahead. Able to change to alternative paths if necessary.	Constructs and/or manages a number of level 3 paths and alternatives, all running at the same time and interconnected. Involves parallel processing, pacing these projects in relation to one another in resourcing and in time.	Judges the likely impact of changes or events on any and all parts of the system, including sensing likely 2 nd - and 3 rd - order consequences and interconnections, making judgments about a constantly shifting kaleidoscope of events and consequences with far too many variables to map on a chart.
Time horizon	1 day – 3 months	3m – 1year	1-2years	2-5 years	5-10 years
Cognitive complexity necessary to perform the tasks	Assertive processing, 1 st level of abstraction	Cumulative processing using accumulated data, 1 st level of abstraction.	Serial processing, 1 st level of abstraction	Parallel processing of several lines of argument, 1 st level of abstraction.	Conceptually formulated assertions based on principles, 2 nd order of abstraction.

I will focus first on the first two of the three Jaquesian factors: time horizons and levels of task complexity. The environmental managers who are the focus of my research operate at levels II to V in Jaques’ model. A manager working at Level II is focusing on work that will take effect from 3 months to a year out. Their work involves noting potential problems and obstacles, accumulating data and taking action to overcome them. An Area Manager in the Department of Conservation was designed as a Level II role in Jaques’ terms (DoC 1997). An Area Manager reports to a Conservator, a Level III role, and might be managing 15 to 25 permanent staff and have responsibilities for a part of one or more national parks and other

conservation lands, running animal pest and weed control and species protection programmes and maintaining a range of facilities for visitors.

The role of Conservator in the Department of Conservation was designed to be a Level III role. According to Jaques, the Level III manager has a time span of one to two years. The complexity of the task is based on working out alternative paths – finding a path that stands a chance of coping with short-run requirements while at the same time providing the initial stages of a realistic path towards goals a year or more ahead. A leader at this level needs to be able to change to alternative paths if necessary.

The role of Regional Council chief executive could function at levels IV or V in the Jaquesian framework, depending on the scale and complexity of the role. It is generally more likely to involve Level V work. Jaques describes the Level IV manager operating on a two to five year time span, the level five manager working out five to ten years as their maximum frame. The Level IV manager constructs and/or manages a number of Level III paths and alternatives, all running at the same time and interconnected with one another. This involves parallel processing, pacing these projects in relation to one another in resourcing and in time. The Level V manager needs a unified view of the whole system. This leader has to judge the likely impact of changes or events on any and all parts of the system, including sensing likely 2nd - and 3rd-order consequences and interconnections, making judgments about a constantly shifting kaleidoscope of events and consequences with far too many variables to map on a chart.

In my experience, and that of other organisational consultants using this model, a majority of managers end up working below the requisite level of task complexity. A host of factors conspire to tug them down into the detail of the work of their direct reports, and those staff are usually working at a level below, and so on.

Mapped over his model of task complexity is the third factor in Jaques' model. He offers a hierarchical construct for judging the level of mental processing needed to perform the tasks (Jaques 1989; Jaques and Cason 1994). In Jaques' model, cognitive complexity builds in two ways: the complexity of the concepts being talked about and the ways these concepts are put together in conversation²⁸.

The same structure is employed by Kurt Fischer in his levels of skill theory, with one variation²⁹ (Fischer and Bidell 1998; Fischer and Pruyne 2003). Fischer's model has been

²⁸ The concepts go from simple concrete matters to symbols to abstract concepts to universal concepts (an order of information complexity that is beyond the scope of this research). For example milk spilt into a stream is a 'concrete' matter; it is something that can be touched or pointed to. If it is described as effluent or water pollution the language being used is 'symbolic' in Jaques' terms. If a strategy for effluent management is being discussed, in terms of the social conditions in the community and the need to change values about water pollution, then abstract concepts are being applied. The second factor in Jaques' model of cognitive complexity is the way these ideas are put together. Discussion of each concept is subdivided from simple to more complicated ways of putting the ideas together. Take, for example, concrete matters or symbols: these can be just declared as separate points or reasons, or they can be listed as a cumulative set of ideas with one adding to the other. At the next level of complexity these ideas would be assembled into a serial line of cause-and-effect reasoning. At a fourth level more than one line of cause-and-effect reasoning is set out and interrelated.

²⁹ Jaques' model and Fischer's levels of skill theory can be mapped directly onto one another. Both employ a recursive structure with a high order category of abstraction or mental representation. Fischer starts from childhood and steps up from representation to abstraction to principles. Jaques starts in adulthood. His analogous levels are tangibles, symbols, and intangibles. Where Jaques employs four subcategories repeated for each category of abstraction, Fischer uses three. Jaques' first and second subcategory can be mapped onto Fischer's first subcategory.

combined with the similar work of Michael Commons (Commons, Miller et al. 2005) to develop an assessment tool that is very similar to the assessment tool developed by Jaques (Dawson-Tunik 2004; Dawson-Tunik (in press)). While Jaques seems to have worked completely separately from these authors, referencing a couple of them in books at only the very end of his life, and they are similarly silent on Jaques' work, his approach to cognitive complexity covers the same ground with virtually the same structure as the authors mentioned above³⁰.

Jaques' model linking task complexity and cognitive complexity is a key linkage in the transition I need to build to support the EMAL framework. To review the steps involved in making this transition: Jaques' organisational constructs (such as time horizon and task complexity) were combined with Frances Westley's functions of environmental managers to define the nature and levels of the tasks facing environmental managers. The cognitive model of adult development that underpins Jaques' model is very similar to those of such researchers as Commons, Fischer and Dawson-Tunik (Fischer and Bidell 1998; Commons, Miller et al. 2005; Dawson-Tunik (in press)). The theories of Michael Basseches used in this thesis, are similar in approach to those of Commons and Fischer although Basseches resists structuring his framework of dialectical thinking into the distinct levels employed by these other authors. These related approaches to defining levels of complexity in thinking are summarised in Table 4.3. The alignments in this table, between the levels used by different theorists, are based on those in similar compilations by other authors (Wilber 2000; Armon and Dawson 2003; Commons and Richards 2003).

³⁰ According to Michael Commons, Jaques has the right model and approach to cognitive complexity but that Commons and Dawson-Tunik have a better method of assessment. Michael Commons, conversation with the author, Atlanta, April 7, 2005.

Table 4.3: Selected Theories on Levels of Thinking

Elliott Jaques	I – Direct judgement	II – Diagnostic accumulation	III – Alternative paths	IV – Parallel processing	V - Unified whole system
Michael Commons and Francis Richards (Commons and Richards 2003)	Abstract		Formal	Systematic: Sees and describes the properties and transformation within a system.	Meta-systematic: Relates whole systems to each other, leading to formation of a meta-system or framework of several systems.
Kurt Fischer (optimal level), (Fischer and Pruyne 2003)	Single abstractions		Abstract mapping – context-specific. Coordination of two abstractions. Knowledge is contextual, justification is specific to situations.	Abstract system – specific reflective judgment. Coordination of two aspects of two abstractions. Knowledge is constructed by comparing a range of views and evidence.	Coordination of abstract systems – general reflective judgement. Coordination according to a generalised principle. Justification is probabilistic.
Michael Basseches’ Dialectical Schemata Framework (Basseches 1984) ³¹	Formal analysis		Partially-organised dialectical thinking		Well-organised or advanced dialectical thinking
Johnston and Atkins [modification of Basseches]	Straightforward thinking		Complicated thinking		Complex thinking

The fourth step outlined above is the relationship between Basseches dialectical schemata framework (or a simplified version of it) and the cognitive complexity models of Jaques and Commons et al. In this study, I eventually used a simplified version of the dialectical schemata framework. The details of these simplifications are provided in chapter five. In short, I use three categories of systems thinking: straightforward, complicated, and complex thinking. In Basseches’ terms these are equivalent to an absence of dialectical thinking, partial dialectical thinking, and fully dialectical thinking.

In relation to the Jaquesian levels in the EMAL framework, our categories of straightforward, complicated, and complex thinking can be laid over the description of the levels of capability required for the role. However, the fit is not exact. In essence, straightforward thinking is demonstrated at levels I and II. Complicated thinking is necessary for Level III and is often found among people managing in Level IV roles. Complex thinking is necessary for Level V roles and very helpful for Level IV roles. Part of the awkwardness in the match between

³¹ Note that Basseches would reject such a structured presentation of his ideas as I have here. He is included because of the central role his framework played in my analysis.

systems thinking and the nature of the roles is because these are two different things: systems thinking is more about thinking and the environmental management functions are more about doing, or at least the things that need to be thought about that relate to the doing. The EMAL framework is a competency framework with the competencies presented in terms of how a leader might need to behave. The data can be looked at both ways. Later, in Chapter Eight and in Table 10.2 I analyse the views expressed by managers from the perspective of how much systems thinking they are demonstrating. In the EMAL framework the focus is on what the managers are required to do and how they seek to lead in that context. The extent to which they are systems thinkers is implicit, rather than explicit, in this framework. For all this, the data can be discussed in terms of this framework because, in the examples selected, the managers are talking about what they are doing, or thinking aloud about what they are doing.

The second transition: self-complexity and leadership style

Self-complexity contributes to judgement and decision-making by shaping what the leader can see – how much complexity can the leader see of the situation (how can he or she sift, sort, and simplify that complexity, how might he or she make patterns from that complexity, and explain these patterns to others to help them to act?) and what can the leader see of him or herself and how might he or she see their self in relation to others? In this, self-complexity also shapes the ways the leader *acts* in leading.

Joiner and Josephs describe leadership styles as a manifestation of self-complexity in organisational settings and describe the increase in capability through their model as an increase in leadership agility (Joiner and Josephs 2007). This shift, from orders of self-complexity to the ways they might be manifest in leadership styles, is the second transition that contributes to the EMAL framework.

What appears to change, when managers and leaders learn from the experience of dealing with greater complexity, is that leaders can carry more complex patterns or more qualified simplicity and they hold a relationship to the pattern-making that is different. At Kegan's third order we can expect leaders to seek out and follow the patterns established by others – whether as professional or expert guidance, religious scruples, corporate norms, or military expectations. As they move toward the fourth order they develop the capability to construct their own patterns as frames within which they can act. In the move toward the fifth order they see the ambiguities, uncertainties, and alternatives to these patterns and frames, not so much as options to choose between but as diverse components of a large whole (Kegan 1994; Berger 2003). This same transition can be observed in how leaders conceive of themselves and in their relations with others: from being made up by the views of significant others in the third order to establishing a clear self identity in the fourth to then developing an awareness of the fluidity and interconnectedness of this self with others in the fifth order.

The self-complexity second part of the EMAL framework obviously overlaps with the first part, the cognitive. Kegan's orders of mind cover three lines of development: the cognitive, interpersonal, and intrapersonal (Kegan 1994). The first part of the EMAL framework, dealing with the complexity of the environmental management task and the systems-thinking capability needed to manage this complexity, is based in the cognitive line of development. It also intersects with the interpersonal. The functions relating to managing out, in, and up are focused on the complexity of relationships inside and outside management agencies. So

this part of the framework is about the complexity of *thinking* required to manage those relationships effectively at different levels. What is missing from the first part of the EMAL framework is how to manage the *feeling* aspect of these increasingly complex relationships. This is where Kegan's intrapersonal line of development is most relevant.

It could be argued that Kegan's three lines of development are sufficiently comprehensive to make the task complexity aspects of the EMAL framework irrelevant. That may prove to be the case. There are two arguments to retain both systems capability and self-complexity approaches: one is that organisations are much more oriented to the cognitive complexity of tasks and the capabilities required, so this approach is more likely to be accessible to the managers involved. Secondly, the debate remains open as to whether cognitive complexity might be the dominant factor (Jaques and Cason 1994; Commons, Miller et al. 2005).

There have been a number of attempts to apply these adult development ideas in the leadership field. Of most relevance to this dissertation is an approach that is derivative of Kegan and has also run alongside Kegan's work. Bill Joiner and Stephen Josephs (Joiner and Josephs 2007) apply the structure of the orders of mind to leaders and identify self-complexity characteristics and leadership behaviours for leaders operating at different orders of mind. This work is partly based on Kegan and partly on parallel research.

Kegan's exploration of ego development has, to a degree, been paralleled by Loevinger (1970). Both followed on from the work of Kohlberg (1958) and Perry (1970). While Kegan explored the theoretical dimensions of the adult development field and the dynamics of changing orders of self-complexity, Loevinger developed an assessment tool, the Washington University Sentence Completion Test, and then developed some theoretical explanations for the pattern of results she achieved. Cook-Greuter (2000) extended Loevinger and Kegan's work by focusing on further differentiating higher levels of development. Torbert (Torbert 1991; Fisher, Rooke et al. 2003), working with Cook-Greuter, applied these ideas to management and organisations. Laske has applied these ideas in assessing human capability in organisations (2001).

Table 4.4 is a summary of the work of selected theorists: Kegan, Torbert (building on Loevinger), Cook-Greuter, and Joiner and Josephs. The alignments in this table are based on those in other compilations (Cook-Greuter 2000; Wilber 2000; Armon and Dawson 2003; Commons and Richards 2003; Joiner and Josephs 2007). The second part of the EMAL framework is an amalgam of the perspectives set out in Table 4.4. Essentially it represents Kegan's model with some additional applications from leadership situations, mainly based on work by Joiner and Josephs.

Table 4.4: Selected Theories on Levels of Self-complexity					
Robert Kegan (Kegan 1982; Kegan 1994; Berger 2003)	3 Sees world through the perspectives of others; authority comes from outside sources; self-conscious; thinks in abstractions.	3-4	4 Can take multiple perspectives while maintaining his or her own view; self-authoring; thinks in abstract systems.	4-5	5 Perspectives of others used to continuously transform his or her own system, systems are interpenetrating; authority is fluid, shared and contextual; thinking is dialectical.
Torbert, Cook-Greuter et al., (Cook-Greuter 2000; Fisher, Rooke et al. 2003)	<u>Diplomat</u> Managerial focus is on others: staff, superiors, associates, profession, organisation, and/or nation, and meeting the needs of the chosen group. Can provide goodwill and loyalty and smooth avoid conflict.	<u>Expert</u> Managerial focus on problem-solving, seeking causes, ‘craft-based’ skills, efficiency and continuous improvement.	<u>Achiever</u> Managerial focus on long-term goals, effectiveness and results-oriented. Objective reality. Sees complexity and system features as factors to be addressed in achieving goals.	<u>Individualist</u> More independent and maverick than the Achiever. Relative view of reality. Self-curious. Developing systems insights.	<u>Strategist</u> Process and goal oriented with a systems view. Principles based. Aware of contradiction and paradox.
	<i>Heroic or Conventional</i>			<i>Post-Heroic or Post-conventional</i>	
Joiner and Josephs (Joiner and Josephs 2007)	<u>Conformer</u> Concerned with gaining approval and avoiding disapproval of the people they regard as most significant. Working to establish the connections they feel they need with key people.	<u>Expert</u> Power derived from expertise and position. Tactically oriented, focused on analytical problem-solving and completing tasks and projects.	<u>Achiever</u> Driven to achieve organisational outcomes with power being derived from this. Strategic orientation enables them to lead episodic shifts in direction.	<u>Catalyst</u> Able to use Achiever and Expert power establishing a participative culture capable of achieving valued outcomes over the long term. Open to change, visionary orientation, willing to rethink basic assumptions.	<u>Co-Creator</u> Principled commitment to the common good, collaborative approach rooted in a shared purpose. Focus is on creative, long-term solutions developed through dialogue and emotional resilience.

These leadership styles are based on the orders of self-complexity. The levels in the EMAL framework are built up from levels of task complexity in an organisational accountability

hierarchy. While the fit is not perfect it is close enough for my purposes. The link is through cognitive complexity. Different orders of cognitive complexity are assumed to be necessary for different levels of task complexity. Different orders of cognitive complexity are a big part, but not the whole story, for orders of self-complexity.

As an example of the fit issues, it would be possible to be working in a Level IV role in terms of the EMAL framework and be using third-fourth order leadership style. However, it is also likely to be more challenging to perform that role in that manner without any of the self-authoring ways of making meaning that are evident at the fourth order. Joiner and Josephs make a similar point. They illustrate how different leaders operating at each of their five levels³² would manage the same difficult organisational issue quite differently. Their point is that leaders function at all these levels (Joiner and Josephs 2007:13-30). My data suggests that a number of the leaders filling roles at Level IV may be in the transition from the third-to-fourth to fourth order leadership styles.

The levels of self-complexity described in the EMAL framework are returned to when I discuss the self-complexity findings from my study and their relevance to the EMAL framework in Part Four.

Other leadership frameworks

A further test of the relevance of the components of the EMAL framework was carried out by mapping the roles identified for environmental managers by Westley onto the leadership abilities described in the leadership capability framework of the New Zealand public sector (Renton-Green 2003), and comparable models in the United Kingdom and Australia (APSC 2004; CabinetOffice 2004).

These models usually mix a large number of factors. For the development of a leadership capability framework for the New Zealand public sector, the project team sought to disaggregate these components (Bhatta 2001; Renton-Green 2004). The result was a leadership capability profile consisting of four categories. In the words of the framework: “public service leaders ... have the required *personal attributes* and through a depth and breadth of *pathways and experiences* develop and apply *leadership abilities* and deliver *results...*” (Renton-Green 2003: 6, emphasis in the original).

While the different components of this model can be identified in different parts of my study the model is hampered by the static nature of some of its components; it is neither dialectical nor developmental. In essence the leadership abilities have been isolated as a separate component because it is assumed that these are the only factors that are amenable to change. Personal attributes are seen as too fixed, or slow to change, to be able to be developed in a senior manager’s career (Renton-Green 2004:20). While there is a realism to this, adult development theories would suggest a more dynamic interchange within personal attributes,

³² Expert, achiever, catalyst and two other higher-level orders: co-creator and synergist. According to Joiner and Josephs these five levels of leadership agility correspond to three orders of consciousness in Kegan’s model. Expert is at the higher end of Kegan’s third order; achiever is equivalent to Kegan’s fourth order and the remaining three levels in the Joiner and Joseph’s framework are roughly early, middle and higher levels of Kegan’s fifth order. Joiner and Josephs also identify an earlier level called conformer which corresponds to Kegan’s third order, but they pay less attention to leadership at this level. (p.248). Joiner, B. and S. Josephs (2007). Leadership Agility: Five Levels of Mastery for Anticipating and Initiating Change San Francisco, Jossey-Bass.

and between these attributes and experience and leadership abilities, and would advocate a focus on influencing these dynamics in order to support the development of leaders.

I took the leadership abilities from the capability framework and the roles identified for environmental managers by Westley and synthesised a short list of the key capabilities needed for environmental managers. These map closely onto the components used in the EMAL framework which are given in brackets:

1. Systems - Understanding of systems being managed and their resilience including driving strategic capability (managing through),
2. Organisation - Understanding organisational processes and systems including public sector accountabilities (managing in and up),
3. Relations - Understanding communities and worldviews and ability to engage with these (managing out), and
4. Leadership - Ability to lead, and work within, teams of people (self-complexity).

Summary

In this chapter I have brought together my understanding of the highly complex context of environmental management, set out in chapter two, and the capabilities required to manage these complexities, as seen through the adult development lenses, set out in Chapter Three. I have analysed the roles of environmental managers and leaders and presented a framework of the levels of complexity faced by environmental leaders and the capabilities required of them if we are to enhance the chances of sustainably managing the environment. In constructing the EMAL framework I have drawn on two streams of adult development: one focused on complexity of thinking, the other on the complexity of the self. I argue that both these streams are needed because the capabilities required are both cognitive and affective as the issues being faced are technical and social and both these need to be solved socially, in concert with many and varied groups of people.

The framework enables environmental leaders to assess the nature of the roles they are being asked to perform, the level of complexity of the work, and the capabilities required. It provides guidance to leaders not only about the nature of their own roles and the capabilities needed to manage the roles of those for whom they are responsible but also is an entrée into thinking about ways their agencies may be better organised to more effectively manage the environment.

When I considered my working proposition in the context of the EMAL framework, the question arose as to how much the leadership development need is one of consolidating environmental leadership in the fourth order of self-complexity and how much there is a need to enhance the fifth-order capability. I will return to this question in Part Four.

In the next chapter I describe the methods I have used to address the research questions that are pursued in this study. After the presentation of my findings in Parts Two and Three, I will return to relate these findings to the EMAL framework in Part Four, the analysis section of this dissertation.

Chapter Five: Questions and Methods

Questions

The research questions this study sets out to address are:

1. What is the relationship between the complexity of the thinking of senior managers and assessments of their success?
2. How do the selected environmental managers understand the performance of their organisations as effective environmental or conservation managers and the challenges they face?
3. What is the level of systems thinking and self-complexity exhibited by a selection of senior managers responsible for the management of the environment within New Zealand?
4. What might this imply for the complexity of thinking and self-complexity required to manage the environment well? What does it imply about the work that is being done now? What does it imply about what needs to come next?

Design issues

There were a number of issues I faced in choosing research methods and implementing them for this study. These included: the selection of particular Regional Councils and Conservancies, the selection of managers to be interviewed, the balancing of my needs for data and managers' needs for confidentiality; and a range of questions relating to the choice of data gathering and analysis methods. This chapter addresses those issues in turn. But first, I consider the overall methodological approach.

A summary of the methods used in this study is presented in Table 5.3 at the end of this chapter.

Methodological approach: 'an awkward amalgam'

Midgley argues that research or observation represents a special case of systemic intervention. His overall perspective on the methodology of systemic intervention is that those intervening need to be explicit about three things:

1. their choices about boundaries, what is included and what is excluded;
2. their choices about the theories and methods being employed; and
3. that they are taking action for improvement, defined as "the purposeful action of an agent to create change for the better" (Midgley 2000:129-131).

Firstly, in deciding on approaches to the intervention or observation of systems, boundary critique becomes critical. I used Ulrich's technique, of asking 12 questions about the nature of the 'existing' and 'ideal' boundaries for any intervention, to analyse this research proposal

(Ulrich 1996; Midgley 2000). This showed the limitations of constructing the research within a PhD framework, as it narrows the boundary decision-making and potential utility of the work, and indicated the additional stakeholders and potential beneficiaries that might usefully be engaged in the process.

Secondly, the choices about theories and methods being employed arose from two broad issues and a cluster of practical considerations.

The broad issues were: the extent to which the research is qualitative or quantitative and the approach the research takes toward reality – is it there to be discovered or is it a construction of human activity?

The research approach was qualitative, although, as Boyatzis points out, qualitative research can still be legitimately and usefully translated into quantitative data (Boyatzis 1998). A qualitative approach was adopted because the depth of inquiry required, and the relative complexity of the issues to be investigated, precluded a quantitative approach.

What approach should research take towards reality? Should the research adopt a positivist/objectivist or constructivist perspective? To what extent are there truths to be ‘discovered’ or to what extent is reality constructed? How should the study be positioned in relation to this spectrum?

My approach was an awkward amalgam. In effect this research attempted to straddle strands of positivist and interpretivist thought (Lincoln and Guba 2000). Although it placed greater emphasis on making judgements about people, an approach derived from positivist practice and with vestiges of that practice built into the approach, the models upon which the judgement was based were constructivist. The tension arose because I sought to study individual capabilities that are largely exercised through social processes. The management of the environment is a social process, although it involves attempting to influence physical processes. This management is based on the development of individual and collective capabilities.

Three components were the subject of investigation:

1. the systems thinking capabilities of individual managers,
2. how individual managers make meanings, their self-complexity, and,
3. perhaps to a lesser extent, the managers’ various systemic understandings, either of the environment they are managing, or their perspectives on the environment or of the systems within which they are working.

The study of each of these components, to a large degree, relied on an interpretivist approach. It would have benefited from the active participation of those who are the ‘subjects’ of the study.

However, the possibility of a fully participatory study was constrained by the nature of the subject matter. At the core of this study was the assessment of the capability of individuals. It would not be appropriate for the work group to make such an assessment, although there are techniques available to do this; nor can the assessments made about individual members be shared with others in the group. They could have been but it is unlikely that I would have received the levels of access to managers and their level of participation had this been a feature of the research design.

We are left with a study that is focused on making judgements about individual leaders in organisations or units that have been assessed for their performance by ‘outside’ experts. Then I draw conclusions from the picture created by those accumulated judgements.

Finally, the research involved with this dissertation was clearly oriented toward action for improvement in the systemic thinking and consciousness of environmental decision-makers to enhance the prospects of sustainable environmental management.

Choosing Councils and Conservancies

I came to this research topic intrigued by whether the relatively sophisticated regimes for environmental management that had been introduced in New Zealand placed particular demands on the capabilities of environmental managers. Obviously, to study this I would need to do my fieldwork in the New Zealand system. It was also a system I knew a part of well, as a conservation manager, and had a working knowledge, through study and association over many years, of the other environmental management parts. I was keen to study these questions in both the conservation and environmental management parts of the system because I was interested in the similarities and differences between them.

One question that arose early in the design period was how to structure the selection of DoC and Regional Council managers. Should this be at random or patterned and, if so what might the pattern be? I developed a plan to investigate whether there might be a relationship between the assessed performance of a Council or Conservancy and the levels of complexity of thinking and self-complexity demonstrated by members of the management team.

This approach required that I have a means of ranking Regional Councils and Conservancies. I established and used groups of experts to rank the performance of the Regional Councils and Conservancies.

The first expert group was asked to rank Regional Councils against five criteria. Four of the criteria related to the environmental leadership provided by the Council. These were: communicating a clear understanding of environmental issues and setting a clear direction, taking effective action, operating as a cohesive and well managed team, and engaging effectively with communities. The criteria were set out with contrasting statements of best practice and poor performance. The fifth criteria involved assessing the relative degree of difficulty the council faces in its work. These criteria were to be considered in terms of the purpose of the Resource Management Act 1991: “to promote the sustainable management of natural and physical resources” Section 5 (1). The criteria and assessment forms are set out in Appendix Three.

The group members were chosen for their breadth of knowledge of Councils across the country. The responses came from the Chief Executive and senior managers of the Ministry for the Environment, the Parliamentary Commissioner for the Environment, a leading academic in the planning and resource management field, a person with long experience in sustainability issues in the local government sector, leaders from environmental organisations and resource-using industries. This ranking was carried out in August of 2005.

A second group was used to rank DoC Conservancies against the same five criteria used for Regional Councils. These criteria were considered in terms of the functions set out in the

Conservation Act relating to the preservation and protection of natural resources “for the purpose of maintaining their intrinsic values, providing for their enjoyment by the public and safeguarding the options of future generations.” The five criteria are set out in Appendix Three. This ranking was also carried out in August 2005.

Because the Conservators work at a lower level than the top management structure in DoC, it was possible to use the top management team, including the Chief Executive, as the core of this group. To this was added the Department’s internal auditor, the chair of the New Zealand Conservation Authority, and a Deputy Commissioner of the State Services Commission with a close knowledge of the Department.

Many of those asked to make these assessments reported on the difficulties involved in making comparisons between different Councils and Conservancies and in considering performance over a number of years. An additional factor in the case of Regional Councils was the quality of governance. While my research interest was the management performance of Councils and Conservancies, a number of respondents commented that council performance was significantly affected by the performance of the elected members of the council and the relationship between the chair of the council and the chief executive.

For all the difficulties cited by individuals in making assessments, the group rankings were very clear cut. There was little disagreement about the highest and lowest rankings of the Councils and Conservancies. There were a larger cluster of Councils and of Conservancies in the middle ranges but these were also consistently ranked. For the rankings of the Councils and Conservancies see Appendix Three.

I selected three Councils (one each of those whose performance was ranked high, medium, and low) and three Conservancies (also one each ranked high, medium, and low). I then invited the leaders of the three selected Councils and three Conservancies to participate in the research. All agreed to participate. However, in one occasion a chief executive of a Regional Council said his managers could participate but he would not be available. I then chose to select another with a comparable ranking and that chief executive agreed to the suggested approach.

The approaches I took to assessing capability and the subsequent interviewing of managers and analysis of the material are set out in the following sections.

Alternative methods for assessing individual capability

I considered a range of methods for assessing the capabilities of managers. I chose to use ‘domain-general’³³ methods and five of these were studied in greater detail. This study of methods included training in the methods or meeting with trainers or the method designers for each method. I also conducted and analysed four pilot interviews. These five methods focus on one of two things: the way people reason (the level of their thinking), or the way they make meaning (their level of ego development or self-complexity). The methods also differ in the approach used to gathering data. Four of them are based on analyzing texts, which are usually generated in open-ended interviews although, in some cases, can be

³³ ‘Domain-general’ assessment methods do not associate levels of human development with perspectives from defined subject areas. Those that do are called ‘domain-specific’ and have been excluded.

derived from transcripts of debates or even written documents. The fifth method, the Sentence Completion Test (SCT), is more structured. As its name indicates, it is based on the completion of 36 standardised sentence beginnings.

The matrix in Table 5.1. indicates the mix of approaches to gathering data and the focus of the analysis.

<i>Approach to gathering data:</i>	<i>Open-ended</i>	<i>Structured</i>
<i>Focus of analysis: Level of Thinking/ Reasoning</i>	<ol style="list-style-type: none"> 1. <i>Hierarchical Complexity</i> Fischer, Commons, Dawson 2. <i>CIP - Complexity of Information Processing</i> Jaques, Mehlretter 3. <i>Dialectical or systems thinking interview</i> Basseches, Laske 	
<i>Level of Ego Development or self-complexity</i> (Thinking, feeling and doing)	<ol style="list-style-type: none"> 4. <i>Subject-Object interview</i> Kegan, Lahey 	<ol style="list-style-type: none"> 5. <i>SCT – Sentence Completion Test</i> Loevinger, Kegan, Torbert

Chosen Methods

I chose to use two of these methods, employing one of the methods that assess level of thinking and one assessing ego development. The reason for this combination has been canvassed in earlier chapters. In short, I reached the conclusion that a greater emphasis on social perspectives, rather than technical approaches, would be required to achieve sustainable environmental management. This focus on social consciousness, an understanding of the self, others and relationships, may bring levels of ego development to the fore. However the relationship between cognitive complexity, ego development or self-complexity, and the capabilities of leaders remains unclear.

An assertion of the primacy of cognitive capability arises through the research of Glenn Mehlretter Jr. His dissertation found that the level of complexity of mental processing was a better predictor of transformational leadership than level of ego development (Mehlretter Jr. 1995). Jaques, whose work formed the basis for part of Mehlretter’s dissertation, also emphasises cognitive capability and sees temperament only as a potentially negative effect, arguing it only comes into play with leaders if there are pathological factors that constrain them from achieving their potential (Jaques and Cason 1994).

My intention was to balance these two factors by assessing for both of them. This then raised questions about which methods to choose for assessing each factor and how to combine methods that assessed for the two factors.

Systems thinking

There is a divergence in the way different theories consider what happens at higher levels of development (this is discussed at greater length in Appendix One in the section entitled “Divergence between theories of cognition, ego development and dialectical thinking at ‘higher’ levels”). My interest was in using a method that would be able to assess the existence of fully dialectical thinking and I considered that this was not possible using the ‘hierarchical complexity’ and ‘complexity of information processing’ methods because both of these approaches were based on models that followed the same construction of thinking through all levels. My concern was that to be fully dialectical, and also at the higher levels of self-complexity, the structure of thinking is not just ‘larger’, or encompassing of greater abstraction, but is also transformed. The only assessment method for thinking and reasoning I considered would adequately capture this aspect of higher levels of operation, should they be present, was Basseches dialectical schemata framework.

There was a second reason for choosing the Basseches’ framework. The dialectical schemata framework is a very useful analogue for assessing the capability of someone as a systems thinker (Atkins and Johnston 2005). It provides a richer, fuller, and more nuanced measurement approach than other typologies of components of systems thinking (Zulauf 1995; Flood 1999; Gharajedaghi 1999; Richmond 2000; Sweeney 2004). Sweeney, Richmond, and Zulauf have each derived their models of demonstrable components of systems thinking from the application of a method of systems thinking – system dynamics. Checkland has developed his own method, soft systems methodology and his definition of systems thinking reflects that method (Checkland and Scholes 1990). Flood and Gharajedaghi both take an overview approach. Basseches’ approach is closest to Flood and Gharajedaghi in embodying the more holistic approach to systems thinking and, unlike Flood and Gharajedaghi, he also presents a way of carefully assessing the extent to which someone is thinking dialectically or systemically. However, the very richness and subtlety of this framework also posed challenges in its use. See the section later in this chapter for a discussion of modifications I made to Basseches’ framework of analysis: “Simplifying the Dialectical Schemata Framework.”

Self-complexity

Two main options were available for assessing the levels of self-complexity of the interviewee³⁴. These were the subject-object interview and the sentence completion test. In the time I have been working on this study my supervisor Paul Atkins and I trained in scoring of Sentence Completion Tests, working with Susanne Cook Greuter, perhaps the most experienced scorer of SCT, and in the administering and scoring of the Subject Object Interview, working with Jennifer Garvey Berger, one of the only two people who provide training in this method.

The attraction of the SCT was its simplicity. It takes around 45 minutes to administer and can also be scored relatively quickly. Scoring could be contracted out to experienced scorers

³⁴ Other approaches tested for levels of self-complexity in specific domains by asking questions and analysing the responses in the terms of these topic areas.

or could be learnt. The simplicity of the method was also a weak point. While the data is much more manageable it is also much more limited. There is a second limitation, in my experience having taken the SCT and talked with others who have done so: it feels like taking a test and this seems to heighten the evaluative nature of these approaches and the emotional sensitivity of the participant to being judged. I have had the experience of discussing with a group of participants (in another study) their experience of the SCT versus their experience of a subject-object interview and the experience for the participants of the interview was almost always more positive than taking the SCT.

The attractions of the Subject-Object interviews are the personal engagement between interviewer and interviewee and the richness of the material produced. There are challenges in interviewing and in analysing and managing the richness and volume of material produced. In my experience and the reported experiences of Berger, participants consistently say they enjoy being interviewed (2005). Subject-object interviews are labour-intensive. They require practice to administer effectively. The challenge is in asking questions that provide evidence of the structure of the individual's self-complexity and in being able to formulate and ask questions, in real time, that test the range of possible levels of self-complexity, using the particular stories the interviewer has chosen to tell³⁵ (Lahey, Souvaine et al. 1988; Kegan, Broderick et al. 2001). The scoring of these interviews also requires care and experience. For all these challenges, the subject-object interviews generate a rich resource of thematic material. In this study I provide examples of self-complexity and systems thinking arranged by themes. The self-complexity component of this analysis would not have been possible without the subject object interview. The SCT would not have produced comparable material.

Combinations of interview and other methods

Because of the richness of the data to be revealed I choose to use open-ended interview techniques to explore systems thinking and self-complexity. As I have indicated above, these provided a number of advantages:

- 1) they would provide rich material for a thematic analysis of how managers view the performance of their management teams in terms of sustainable environmental management or ecosystem management;
- 2) they would enable more effective comparisons between the material gathered in the two parts of the interview (rather than if one were an interview and the other were a pencil and paper 'test');
- 3) they were enjoyable and engaging to do, and to experience as an interviewee.

As indicated, the disadvantage was the richness and volume of material generated and the complexities involved in each of the assessment techniques. One issue was whether I could improve efficiency and reduce complexity by combining the interviews or methods in some way.

I looked at the experience of others in combining methods in ways similar to the approach I was considering. Mehlretter showed one way to combine methods. He conducted an 'engagement' interview, analyzing it using the complexity of mental processing technique

³⁵ Stories told by participants in my interviews ranged from the sublime (deep experiences in nature) to the prosaic (problems with the golf handicap and a ride-on lawnmower) to the deeply personal (conflicts at work, depression, and a partner's serious health issues).

and had the interviewee complete the SCT, a pencil and paper exercise (Mehltretter Jr. 1995). If the SCT were not used then all the material relating to individuals would be generated through interviews. I investigated whether separate interviews would be required for the two components, whether the same interview could be divided into two parts, or whether the same piece of text could be analysed using two different methods.

Laske used both the intended approaches but carried out separate interviews, although he commented that he thought the same material could be analysed using the two techniques (Laske 1999). He also uses two interviews for his commercial assessment method (Laske 2001; Laske 2003).

Rosenberg conducted semi-structured interviews based in part on the subject-object model to assess how people evaluate social and political life (Rosenberg 2002). In this he was able to combine an assessment of self and political awareness by using three different scenarios: a personal one, a domestic political one, and one involving foreign policy (pp263-264). Rosenberg found consistency between the way the individual interviewees responded to the three scenarios.

Dawson-Tunik has taken interview material and analysed it twice from different perspectives: the hierarchical complexity of the interviewee's reasoning, and an analysis of the conceptual content of their argument (Dawson-Tunik 2004). Dawson-Tunik's work shows that, in certain circumstances, the same material may be able to be analysed using different methods. In other work by Dawson-Tunik, she and colleagues have compared different (but similar enough) scoring methods by scoring the same material using a range of methods. These included domain-general and domain-specific methods (Dawson 2002; Armon and Dawson 2003; Dawson and Wilson 2003-2004; Dawson 2004).

After consultation with many of the authors of these methods during a study tour to the United States in 2005, I decided that the one interview text could not be used for both types of assessment. I chose to conduct one interview comprising two parts, one focused on dialectical or systems thinking and the second on the subject-object method. The reasons these parts need to be kept separate is that the interviewer is seeking different kinds of material for each approach. In the first part of the interview the aim is to discover what the interviewee knows and thinks about the topic and, in terms of assessing dialectical thinking, to push the interviewee to argue about what they know or think (Basseches 1984; Jaques and Cason 1994). In the second part of the interview, the focus is on encouraging the interviewee, through questioning, to a point where they do not know, where they are uncertain. This is where the interviewee reveals their 'growth edge', the point between one level of self-complexity and another or the point at which perspectives they are subject to are on the edge of becoming object (Lahey, Souvaine et al. 1988; Berger and Atkins 2007).

Interviews

In the selected Councils and Conservancies, I sought the agreement of the leader, the chief executive or Conservator, to be interviewed. I also sought the leader's agreement to interview four managers³⁶ (direct reports to the leader) engaged in environmental

³⁶ In councils and Conservancies where there were more than four direct reports to the leader, the leader and I chose not to interview managers with responsibilities that were not directly related to environmental management.

management tasks and took advice from the leader on who might it might be most appropriate to interview.

In the case of DoC Conservancies, I interviewed the Conservator and four managers in each of three selected Conservancies. One manager declined to be interviewed and was substituted with another.

In the case of Regional Councils, the numbers interviewed in the three Regional Councils varied. In one Council I interviewed the leader and three direct reports: a fourth manager was unavailable through illness. In the second Regional Council I interviewed the chief executive and three direct reports and a third tier manager responsible for strategic planning. A key second-tier manager chose not to be interviewed. In the third Council the chief executive suggested seven managers who were considered to have relevant responsibilities. This larger number was the function of a more matrix-based approach to management. One of these managers declined to be interviewed. Two of the six managers interviewed were not direct reports to the Chief Executive.

In total, I conducted 31 interviews, 15 in Conservancies and 16 in Regional Councils. The interview was conducted in person, took about two hours and consisted of two parts. The interviews were recorded and transcribed. The interviews were carried out between October and December 2005.

The first part of the interview involved a discussion about the performance of the management team in achieving the goals of sustainable management in their region, in the case of the Regional Council, or ecosystem management in the Conservancy, in the case of DoC. For the protocol for this part of the interview, see the interview guide in Appendix Four. This part of the interview was also used to assess the level of systems or dialectical thinking demonstrated.

The second part consisted of a subject-object interview. Here the approach was more open-ended than with the first part of the interview. The overall objective with this method is “to understand how the self is organized” (Lahey, Souvaine et al. 1988:305). At the beginning of the interview participants were given a form with six headings: “success”, “torn”, “angry”, “strong stand and convictions”, “moved/touched”, and “important to me”. Each heading was accompanied by a short request where the interviewee was asked to note down a recent incident that would fit under this heading. For example:

“Torn:

If you think back over the last month or so and recall a time when you felt really in conflict about something, or part of you felt one way or was urging you in one direction and someone else or another part was feeling another way, something that relates to your leadership or your leaders, can you note down two or three things that come to mind in relation to that situation.”

The other headings and requests are detailed in the interview guide in Appendix Four.

Participants were given ten to fifteen minutes to make notes on these six topics. The notes were private to them. Then they were invited to choose one of the topics and tell the story they had made notes on. They were then questioned about the story and how it affected them and the ways they made sense of this. The aim for the interviewer, as it is described in the manual and in the training for subject-object interviewing, is to play two distinct roles: “one

as the sympathetic and supportive listener who has his ears open to what the interviewee's experience is in the interview; and one as the researcher, or as the person who actively questions how the interviewee is constructing whatever it is that she is talking about to you" (Lahey, Souvaine et al. 1988: 294). In the course of the subject-object part of the interview, lasting almost an hour, interviewees would generally cover 2-3 of their stories. More than half of these were work-related topics although they were advised that any topic was acceptable, that the choice of topic was theirs to make. Perhaps the emphasis on work topics was a function of the interview following on from the previous hour's focus on their environmental management work. For all that, a large number of participants also chose non-work topics, ranging from the deeply personal to the more mundane, from issues of depression to golf.

Analysis of material

There are three forms of analysis used in this study. The transcript of the first part of the interview was analysed in two ways: firstly, the main content themes about the experience of environmental or conservation management were extracted from the material; secondly, a modified form of the dialectical schemata framework of Michael Basseches was used to assess the extent to which the interviewee was demonstrating dialectical or systems thinking (Basseches 1984; Bopp 1984). The modifications to the Basseches framework are discussed further below. The third form of analysis involved the transcript of the second part of each interview. This was assessed using the subject-object methodology to establish the self-complexity level that the interviewee was operating at (Lahey, Souvaine et al. 1988). There were some 1600 pages of transcripts, about 840 pages from the part one interviews and a further 760 from the subject-object interviews. Issues relating to the three forms of analysis are discussed in the next three sections.

Content coding

Initially a coding structure comprising five main headings and sixteen subcodes was designed and used to code excerpts from all the part one material. The main headings used were: progress so far and what now needed to happen in environmental and conservation management, the context for management, the complexity of the physical and social environment, issues of action and learning, and any material that demonstrated the order of self-complexity of the interviewee. This latter category was inserted as a possible cross-check on the material from part two of the interviews. Details of this initial coding framework are given in Appendix Five.

Files were created for twelve of the sixteen subcodes where a significant amount of material had been excerpted from the transcripts. The greatest volume of material occurred under the codes relating to current progress on conservation and environmental management, future challenges, societal perspectives, and the ways organisational issues have affected the management context. This material was carefully reviewed to extract the central themes. These formed the initial structure of the findings presented in chapters six and seven. The final modified structuring of these ideas was arrived at after a careful reading of the files of material recorded under other subcodes. See Figs 6.1 and 7.1 for diagrammatic presentations of these themes.

Simplifying the dialectical schemata framework

In the first part of my interviews I questioned each interviewee about his or her agency's performance as environmental managers and the main challenges they faced. I began by assessing this material in terms of the extent to which different dialectical schemata, or moves-in-thought, as identified by Basseches, were present in the transcript. This was an approach set out in Basseches' book (Basseches 1984) and in a manual developed by Basseches and Michael Bopp (Bopp 1983). It was also used in analysing interview transcripts in a number of doctoral dissertations (Bopp 1983; Hurd 1991; McNeill 1993; Case 1995; Laske 1999).

After I had assessed one third of the interviews using this method, Paul Atkins and I chose to develop a more workable technique based on the Basseches framework. Basseches' 24 schemata provided more detail than was necessary for my purposes and was unwieldy to use. The modified approach was based on the four categories of schemata developed by Basseches. I developed three bands of thinking: straightforward, complicated, and complex. See Table 5.2 for a comparison between Basseches' and my approaches.

My first category is called *straightforward thinking*. The construction of this category is indeed straightforward. Straightforward thinking involves cause and effect reasoning and does not demonstrate elements of dialectical thinking.

The second category is *complicated* thinking. Complicated thinking shows the foundations of systems thinking. The interviewees exhibit many of the first order dialectical schemata, those that occur in the first three categories of the Basseches framework (schemata of motion, form or relationship) and also simple contradictions, but not the second order integrative schemata (Basseches' metaformal category). With this partial representation of his moves in thought, Basseches refers to thinking such as this as incomplete development of dialectical thinking (Basseches 1984) (p.188).

My third category involves constructing more complex forms. This thinking involves making comparisons between different models and systems and/or holding multiple perspectives and/or recognising that a number of these might be 'right'. I have called this *complex thinking*. Other names for this could be systemic thinking, metasystematic thinking or fully dialectical thinking³⁷. Basseches refers to this as "fully organized dialectical thinking" (Basseches 1984:182). Leaders who demonstrate this thinking provide examples of the second order of Basseches' schemata, metaformal moves in thought³⁸.

³⁷ Levels from other schema categorising cognitive stages that are generally comparable to this 'complex' level include: Basseches – fully organized dialectical, Commons and Dawson-Tunik – metasystematic, Jaques – conceptual cumulative and conceptual serial. Basseches, M. (1984). Dialectical Thinking and Adult Development. Norwood, NJ, Ablex Publishing Corporation. Jaques, E. and K. Cason (1994). Human Capability: A Study of Individual Potential and its Application. Falls Church, VA, USA, Cason Hall. Armon, C. and T. L. Dawson (2003). The Good life: A Longitudinal study of adult value reasoning. Handbook of Adult Development. J. Demick and C. Andreoletti. New York, Kluwer: 271-300.

³⁸ There is a further modification we made to the Basseches' categories. For the purposes of this categorisation, the moves in thought relating to contradiction we seen to be relatively ubiquitous and although Basseches classed these as metaformal, this was not considered systemic for our purposes.

Paul Atkins and I then separately ranked five interview transcripts using the modified approach. Inter-rater reliability was 100 per cent using the coarse, three-level categorisation scheme. Furthermore, we arrived at identical ratings based on many similar observations about the same pieces of structure present in the transcripts and different pieces of structure.

Table 5.2: Comparison between Dialectical Schemata Framework and simplified form	
Basseches' Dialectical Schemata	<i>Johnston and Atkins' simplified model, based on Basseches</i>
	<i>Straightforward thinking</i> (no dialectical or systems thinking)
Schemata of motion	<i>Complicated thinking</i> – combining examples of the first order of Basseches' schemata (motion, form and relationships) and simple contradictions
Schemata of form	
Schemata of relationship	
Metaformal schemata	<i>Complex thinking</i>

Subject-Object analysis

Analysis of the subject-object part of the interview was carried out by me after completing the training in subject-interviewing to reach an approved standard of reliability. Half of these transcripts have been scored by a second scorer. The reliability standard sought is to achieve a score within one sublevel of the other score. Scores at the adjoining sublevels of 4(3) and 4/3, for example, are considered sufficiently proximate to constitute a reliable score. Reliability was achieved for the fifteen interviews scored by myself and one of two other trained raters. A sample of five transcripts were also scored by Jennifer Garvey Berger to ensure that reliable scoring was being achieved by the multiple raters. A 100 per cent reliability rating was achieved once any issues of difference were discussed and addressed.

Confidentiality

The confidentiality of the participants has been of particular concern. New Zealand is a small country. For example there are only 13 DoC Conservators in the country and 12 Regional Council chief executives. Three of these Conservators and three of the chief executives were interviewed for this study; many of their direct reports were also interviewed. Care has been taken to alter any technical and other details that might enable identification of the participants. I am often vague on descriptive details such as length of service, time in the job and the nature of the issues being dealt with in order to ensure the confidentiality of the interviewees.

In the chapters discussing my findings on systems thinking and self-complexity I have given each person a pseudonym so their thinking can be followed across a number of examples, if necessary, and some of their context can be described. Because only two of the thirty one

interviewees were women I have made all the pseudonyms male to avoid identification. In Chapters Six and Seven where I discuss the findings on conservation and environmental management, I have not used pseudonyms to identify the person being quoted to prevent cross identifying interviewees from one section to the other. These constraints limit the richness of the story that can be told but are necessary to retain confidentiality.

Summary

The basic research methods used in this thesis are summarised in table 5.3 and the linkages made to the relevant chapters where the findings are discussed. I chose to study managers working in two contexts in New Zealand: conservation management by the Department of Conservation and environmental management by Regional Councils. Each group of managers was responsible, in their particular fields, for management over roughly the same spatial scale. I used separate expert panels to rank the Regional Councils and the Conservancies of the Department of Conservation respectively. I then selected top, middle, and bottom performing Councils and Conservancies and interviewed the leader and senior staff in the relevant fields.

The interviews consisted of two parts. The first part of the interview was focused on dialectical or systems thinking and the second was focused on self-complexity used the subject-object interview method. The content of the first part of the interview addressed the progress of the Council or Conservancy in environmental or conservation management (respectively), the challenges that were still to be faced, and the extent which managers saw their responsibilities in systemic ways. The content of the first part of the interviews was analysed to develop an understanding of the state of environmental and conservation management.

Table 5.3: Summary of Methods Used

<i>Interview Approach and Focus</i>	<i>Method of Analysis</i>	<i>Findings</i>
<i>Part One of Interview – Focusing on environmental or conservation management performance and challenges</i>	Content analysis of major environmental and conservation management themes	Part Two - Chapters Six and Seven
	Assessment of systems thinking using simplified dialectical schemata framework	Part Three - Chapter Eight
<i>Part Two of Interview – Subject-object interview focusing on stories chosen by the interviewee</i>	Subject-object interview analysis	Part Three - Chapter Nine

Part Two: Findings on Environmental Management

Overview of Part Two:

In Chapter Six I present the main environmental management themes that emerged from the interviews with sixteen Regional Council managers. In Chapter Seven I present the findings on conservation management that arose from the interviews with the fifteen Department of Conservation managers.

In both cases, the managers were asked to assess how well they felt their organisation was doing with their particular responsibilities for managing the environment and also for their views on the main challenges and constraints they faced. Quite different themes emerged from the interviews with the Council managers to those with the DoC managers. The Regional Council focus was primarily on action factors that could be described as managing ‘out’, in Westley’s terms, with a group of supporting factors that could be seen as managing ‘in’. In the case of the DoC managers the focus was more on managing ‘through’ and managing ‘in’. The difference in the orientation of the DoC Conservancies and managers and that of Regional Councils and their managers is discussed further at the end of Part Two.

Progress made by individual Regional Councils toward sustainable management, in the views of the managers involved, varied from good to mixed. There was a number of inter-connecting actions that managers described to explain their success, or lack of it. These were described at two levels, an action level and a support level. At the action level these included: implementing an approach that has been agreed with the community, having a strategic approach to relationships, and being tough enough to enforce the rules.

The support factors included: quality leadership, quality governance, quality science, and having a significant income stream in addition to rating.

In the case of the Conservancies of the Department of Conservation a relatively consistent view was expressed by most managers. It could be summarised as follows: “We do a good job implementing our plans, but the scale of the job is very large and the plans are only a small part of what we think needs to be done. We do not have enough resources, especially money, and we do not know enough about ecological interactions to make confident decisions about priorities. Taking a more integrated approach to conservation management is a good idea but mainly just an idea. We are also having more success engaging with the community and building community support for what we do.”³⁹

³⁹ This summary quote is a composite created by me to illustrate the main themes.

Chapter Six: Regional Council Managers on Sustainable Environmental Management

Environmental progress: Introduction

The main themes that emerged from interviews with managers in three Regional Councils can be arranged under four broad headings:

- 1) Progress made by individual Regional Councils toward sustainable management varied from good to mixed.
- 2) There was a number of inter-connecting actions that managers described to explain their success, or lack of it. These were described at two levels, an action level and a support level. At the action level, success factors included:
 - Implementing an approach that has been agreed with the community,
 - Having a strategic approach to relationships, and
 - Being tough enough to enforce the rules.
- 3) There were also a group of inter-related factors needed to support these actions. These included:
 - quality leadership, in particular to provide a framework within which relationships and action fit,
 - quality governance,
 - quality science, and
 - financial resources.
- 4) There was a shift in emphasis from sustainable management (mainly of the bio-physical environment) to sustainable development, which also encompasses social, economic and cultural concerns, which is reflected in changes in the roles of Regional Councils.

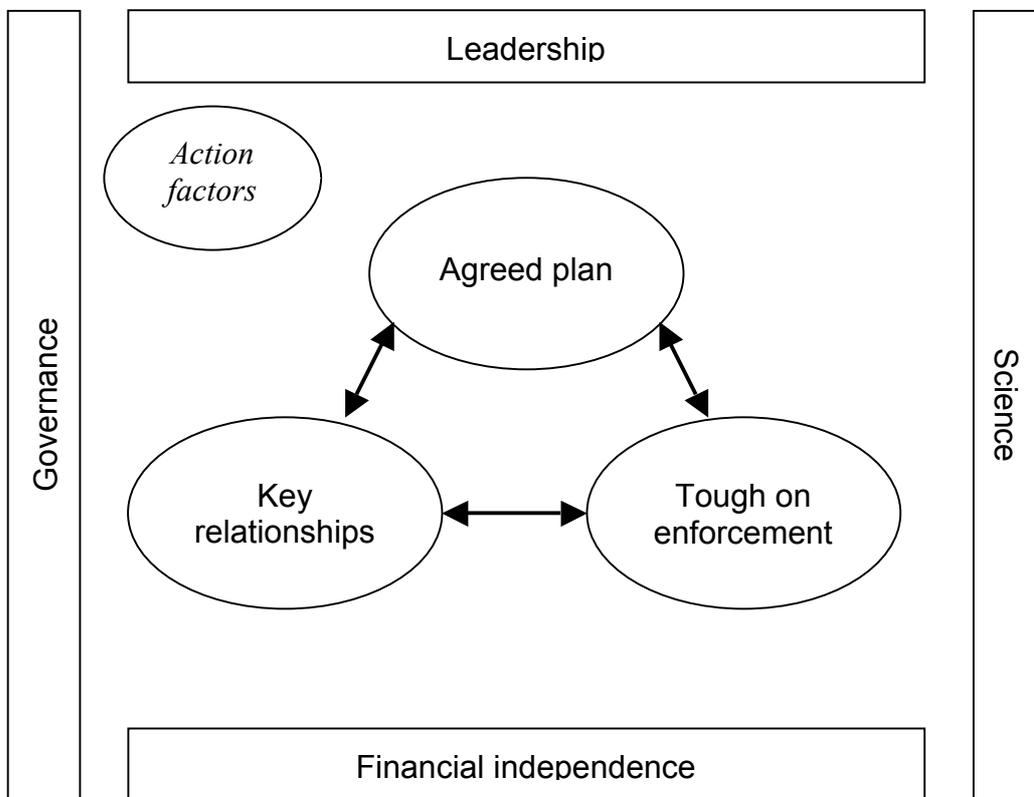
These four themes intersected. See Fig. 6.1 for a graphic representation of these themes. Note that the action factors are shown in oval bubbles and the surrounding supporting factors are shown in rectangles.

The varying progress of the three Councils was reflected in varying experience of the success factors. The Council judged by an expert group, and its own managers, to be the most successful demonstrated most of the action and support elements listed above. The Council judged as one of the least successful had difficulties with almost all those elements. There were also differing perspectives over the extent of the shift in roles. There may have been a pattern between the relative success of Councils under the existing regime and the extent to which their managers contemplated taking up an expanded role. The Council judged to be the least successful under the existing regime appeared more inclined to shift to a different role as a way to transform its performance; the Council judged most successful appeared less inclined to change. These main themes are represented in Fig 6.1.

Fig 6.1
Major themes in Regional Council progress toward sustainability

1: There was variable progress on environmental management between different Councils, ranging from 'poor or mixed' to 'very good'.

2: This variation in performance represented variation on seven Regional Council success factors, below. There were three action factors and four support factors. These factors were inter-connected. [Note: Action factors are shown in circles; support factors in boxes.]



Supporting Factors

3: Relative success in the past may have affected the views of Council managers in adopting new roles. There was the potential for shifts in the role of Regional Councils from a 'sustainable management' focus under the Resource Management Act 1991 to a 'sustainable development' approach under the Local Government Act 2002. The Council judged most successful in the past seemed the least inclined to change roles.

Progress made by individual Regional Councils toward sustainable management varied from 'good' to 'mixed' in the views of the managers involved

Judgement about the effectiveness of environmental management varied across the three Regional Councils focused on in this research. The three Regional Councils were chosen on the advice of an expert panel of advisers. The advisers gave a confidential assessment of all Regional Councils. I then chose three. One council was judged to have been the best performer on matters relating to sustainable management of the environment, a second was assessed as the worst performer, a third was chosen from the middle of the field. I interviewed the chief executive and 3-6 managers at each of these Regional Councils. Most of these managers reported directly to the chief executive.

On key themes relating to sustainable management, the perceptions of the managers in each of these Councils varied in ways that reflected the assessments of the Council given by the expert panel.

Managers at the two more successful Councils thought they had made greater progress toward sustainable management than managers at the Council assessed as the least successful performer.

Council One

From the Council judged by the panel as the most successful, there was a sense of focused, specific achievements. The knowledge of the state of the physical environment had improved markedly and, with many indicators, the condition of the environment was improving or holding steady. A key point was that managers knew a lot more about sustainable management than they did twenty, or even ten, years ago. The chief executive of this Council said the Council, and their community, had "a good handle on their physical environment". They felt confident they were maintaining or protecting the quality of freshwater resources and knew "very precisely" what was happening with freshwater allocation and what was happening with air quality. He also pointed out the gaps, the most prominent of these being the details of what was happening with indigenous biodiversity.

The four senior managers interviewed at this Council were generally very upbeat. For them, the most dramatic shift had occurred in public attitudes. Sustainably managing the environment had become a mainstream concern in the community. It now involved making changes that were seen as positive and part of a 'good news' story. Here were two managers from this Regional Council:

I do think that this mainstreaming of environment ... has become real. And in that sense, our job's got real easy. We're doing God's work now! And it gives me just great optimism for the challenges ahead. I can't see any significant environmental hurdles that we can't overcome because fundamentally now people are in the right space. That's not to say we won't boot them in the arse from time to time, and be surprised it's the real world. We'll wake up one day to find that something's just destroyed or we've thrashed something around and we've made a cock up. It's life. But I think they'll be rare. And I think, by and large, we can be confident. Because of the changes that have occurred. They're huge.

In the end, [the region's state of the environment report] is the ultimate report card by which we pass or fail in terms of our competence, our success as an organisation, our success as scientists or whatever. And it's a good news story. [O]ne of the challenges we find ourselves facing, is any number of commentators, specialists, whatever, who basically announce that New Zealand is going to the dogs environmentally, and we're facing this problem and that problem, and it's an unremitting story of gloom and doom. The blunt reality is that story does not match up with the truth that we find.

Council Two

In the Council that was judged amongst the average performers there was also a positive assessment from the five senior managers who were interviewed, although qualified due to some difficult long-term water quality and development issues.

I think this Council has been particularly effective. It's had to make some hard decisions....

This represented the views of four of the five managers, who said that hard decisions had been taken and statutory requirements more than met. They also consistently identified the challenges involved in a number of large-scale and long-time frame water quality and natural hazard issues faced by the Council. One manager was more circumspect in his judgement, putting less emphasis on the successes and more on the way the long-term pressure points of housing development and water quality had not yet been dealt with in a way that he considered 'sustainable'.

Council Three

The seven senior managers interviewed in the Council judged to have been the least effective had a more mixed assessment of their experience. They offered a wider range of views on their effectiveness and more of them were more likely offer a mixed assessment.

There's a mixed success, some failures.... So I can think of the last fourteen-odd years ... and find some quite substantial successes that move along that sustainable management line.... And, on the other hand, I can see some things we've bottomed out on, and are having to revisit We've had to backtrack and try different approaches to manage land use as it affects water quality, for example.

The cost of not getting effective management regimes in place, for example, is that physical systems, such as freshwater systems, may have to be pushed to non-sustainable levels before the community sees a problem and is prepared to act. One manager with responsibilities for this work expected the Council would probably only know enough about freshwater systems after we've exceeded ... sustainability limits, because of how these systems are reacting, and how quickly development can actually proceed. Whereas, the environmental protection and stewardship takes a lot longer. So we're at different timescales, and the pace of progress is outstripping our ability to actually characterise and monitor.

This might be seen as a characteristic environmental management problem in any field requiring a precautionary approach, and there is a clear view the Council could have performed better. As one manager said "this Council came fairly late to its responsibilities" in dealing with freshwater issues, in comparison with other Councils.

Other managers point to the slowness to get plans in place, the obstacles presented by the Resource Management Act, the reluctance of Councillors to take on key communities and farmer stakeholders, the weaknesses of technical-expert managers in dealing with key

relationships with landowners, a focus in the Council on technical expertise and constructing highly-detailed regulatory plans that then took a long time to get approval through the system.

We always had an image of being a legalistic, conservative, regulatory sort of outfit - which we were. And we just used to be 'know-it-alls' really, in lots of ways. We didn't understand sustainability, we didn't really understand that you have to take the community along with you if you want to do some things.... It's moving from sort of autocracy, further out into sustainable solutions in the sense that they're likely to last, which is something we don't talk about in sustainability. How enduring a particular solution might be.

Perhaps not surprisingly, these managers felt more battle-scared than those in other Councils. The others all talked about many of the tough battles they have endured, but they spoke as often being the victors. In Council three that was not so often the case. As a consequence these managers were much less sanguine about the extent to which environmental concerns had become 'mainstream'.

[H]ave we got the public with us? Do people want to support us? Are we an organisation where people are rushing to the front door to say we're with [the Regional Council] to make sure we can actually protect environmental values? ... No, we've not succeeded in that.

Rising Standard of Sustainability

Managers across all three Councils saw 'sustainability' as an elusive and fluid concept. As one manager said by way of introduction:

I first should point out that I've actually got a fairly limited understanding of what is meant by sustainable management.

But you've had quite a lot of responsibility for ...

Indeed, but that doesn't make it any easier to actually understand what is meant by it.

Many managers saw sustainability as a concept that was defined by the community and that will evolve over time: "you never actually get to it", as one manager said. "You simply get closer to it. Because things change. People's attitudes and values change, over time."

Another made the same point more colloquially:

[W]hat will correctly happen with the notion of sustainable management is that the bar will continue to be raised in many areas. It's not 'there's the limit' and we all get there, and we breathe a sigh of relief, and can knock off and have a beer. I think society demands increasingly higher standards and the tension you've got against that is they also demand greater GDP and greater incomes.

The Resource Management Act 1991 (RMA) defined sustainability in terms of the sustainable management of the environment. The mechanisms focused on plans, regulations, and environmental bottom lines. A decade later, the Local Government Act 2002 (LGA) took a broader view of local authorities working with communities to achieve sustainable development. This changing definition of sustainability has meant a marked culture shift for many managers:

[I]f you look at some of the issues we've faced in the past, it's been very much a legalistic approach, fight people in court, rather than sit down and talk to them. So there's quite a culture shock required to go from the RMA regulatory style, to an LGA collaborative partnership style in the sustainability framework.

Elements for successful action

The interviews with Regional Council managers identified three inter-connected types of successful action necessary for sustainable management of the environment, and a quartet of factors needed to support those actions. The action elements were:

1. developing and implementing an approach or plan that has been agreed with the community,
2. taking a strategic approach to relationships with stakeholders and in engaging the community, and
3. being tough on enforcement.

These elements for successful action are discussed below.

Interviewees also identified important supporting actions that made success more likely. These are grouped under four headings:

1. providing quality leadership that establishes the framework within which relationships and action are aligned,
2. overseeing this with quality governance,
3. having access to quality science and information, and
4. having adequate financial resources.

These will be discussed in the following section.

There seems to be a key connection between agreement with the community, toughness, trust and relationships with landowners. Of the three Councils, the managers of the two judged most successful and of average success, stressed the need to have had a plan or overall approach agreed with the community, to have been tough with landowners, and to have had good relationships with key stakeholders, especially landowners and major resource users. The leader of the Council judged most successful said that because their relationship with landowners was their most critical one, they had moved early to be seen to be on the side of the landowner, while also setting standards and enforcing those standards. This toughness was seen as a complement to developing strong relationships with key stakeholders.

In the Council judged least successful, it took them an extremely long time to develop an agreed plan or suite of plans, they failed to construct good relationships with landowners and other key resource users, and failed to take firm action to enforce standards. Each of the Councils has a strong political connection with rural landowners, either as Councillors or communities of constituents, but the Councillors in the Council judged least successful had not supported a rigorous approach to enforcing standards.

1) Overall approach or plan agreed with the community

Council managers saw themselves as implementing a mandate developed through a community process and signed off on by their Council.

As staff of a local authority we are all under political influence cos we don't make policy, politicians do. But once they make the policy, we will implement it without fear or favour. And I think that [our] regional community understands that now. So they know that there's no point in trying to get around it. You know, it's easier to obey the rules. And I've always seen the rules - through our regional policy statement and our regional plans - as effectively contracts which our Council has entered into with its community. And they should be seen as contracts and be as inviolate as contracts. And I say that because they have been through a rigorous public consultative

process, which even allowed people to seek the intervention of the court, the Environment Court, to resolve any outstanding issues that couldn't be agreed at a local or regional level. Now if you go through all of that, you can't then just put them to one side.

As another Regional Council leader said, the public process is what gives the Resource Management Act its integrity. He said, it is not "you and I sitting here saying 'that's the right answer'. You go through this very turgid, often wearying, process of asking the folks." This same leader made the point that this process and the policies that emerge from it then mandate the Council to get on and take action:

We have worked very hard on getting the initial policy discussions over with and getting on with some work. And that's not to say policy ain't work, but it doesn't actually deliver any bloody thing. You've gotta get out there and do some work.

The Council judged least successful appeared to have got caught in an extensive process of plan development and consultation. This compromised its ability to get on with the "work" because it was hard to get past policy development and then having to defend policies and plans in Council meetings and before the Environment Court. Various Council managers had different ways of describing the difficulties that led to this situation and the difficulties this created. One Council manager of long standing summarized the situation by saying:

I think we've fallen over in some areas.... The Resource Management Act is - in terms of planning - is a very, very, slow snail. It's an extremely democratic process and it really is very difficult to carry through. And we took a long, long time in a key plan which still isn't through.

The effect for this Council has been the reverse of the factors listed above. Regulation and enforcement have been weakened because there has not been a planning framework to support them. Managers said the planning framework had not been completed because of the time it had taken the Council to work through community processes. As one said, without the community processes, "the regulatory regime has had to operate independently without the benefit of those planning instruments" and with a consequent lack of authority. This manager said this was being corrected with a big push on to integrate the community planning processes which develop plans which include regulations and then aligning the regulatory processes to make sure the plans are enforced.

There was a big push on at the time of the interview; when asked why this had not occurred earlier, managers at this Council listed a number of factors that had blocked progress. These included:

- The length of time it took to get plans or regulations approved including –
 - the slowness of consultation processes,
 - the time to get Council agreement,
 - the capacity for individuals to object, and
 - the ways people deny the science as a way of stalling the introduction of regulations;
- The number of plans the Council had to develop and difficulties it had in setting priorities;
- A focus in the interpretation of the legislation by the courts on individual consents and not on cumulative effects;
- Resistance of Councillors to sustainable management because it would constrain rural development; and
- Weaknesses of Council management -

- in setting strategic priorities,
- in setting priorities amongst the multiplicity of plans that were required,
- in senior managers being too narrowly focused on technical expertise, and
- in working across the technically-oriented silos that had developed in the Council.

2) Strategic approach to relationships with stakeholders

A second success factor, especially focused on in the Council rated as the most successful, had been taking a strategic approach to key relationships. Farmers were key to each of the Regional Councils focused on in this study. Understanding what these key stakeholders valued and how they thought was seen as central to performing the role effectively. As one manager described it:

It is not our responsibility that farmers, you know, biff way too much nitrate on their soil. But it's our responsibility to do what's in the Act, which is to set objectives and policies and controls, to ensure that that doesn't happen. So as soon as you realise that in fact other people are what is most important in your business, then I think you start to develop strategies that are people-focused. You have business processes that actually work for customers. You think in terms of the way people externally think.

It is one thing to be conscious of how stakeholders think and to interact with them accordingly, it is another to be very clear about which stakeholders are the most important. A manager in the Council ranked as the most successful detailed the long list of agencies and bodies the Council might need to have good relationships with. He added:

Then you sit down and say to yourself, "of all these, who are the ones we must have very good trusting relationships with?" And I think this is where we differed from quite a number of Councils.... Top of our list was farmers. They're the biggest resource users, they're the ones who can cause us most grief. If we don't have a very good working relationship with them, we're dead. So we put ourselves very strategically into the camp of "we are here to work with you, and assist you, and we'll fight off some of your natural enemies." ... Other Councils, for example, might have put DoC in that category, and put farmers in the category of a bit of the enemy. You're dead if you do that. Our resource users were the key people that we had to have effective partnerships with.... You've gotta line up who you need to get on with, versus who it's nice to get on with, and make all that work for you.

In the Council ranked as the least successful, relationships had been marked by a number of acrimonious debates on a range of key issues. There was an interaction here between the need to be tough (in many cases with farmers) and the need to have good relations. Some managers saw this as a tension, others saw it as part of a larger whole.

The trusting relationship with landowners combined understanding the perspectives of all the parties, an agreed framework with landowners, and consistent implementation including being tough when necessary. As one manager put it: "demonstrating you've got a fist is an important part of developing a relationship, which then can turn to a trusting relationship." A couple of managers from the highest ranked Council stressed the importance of the inter-connection between being seen to take action to get results, being tough, and being trusted.

Basically ... we develop policy, we monitor, and, if necessary, we enforce. And to us that is a key sort of triangle with links between those three phases. And the result of that is that we develop respect and trust in the community, unlike some of our colleagues, particularly district Councils who seem to think they issue resource consents, and then they're all forgotten about. And as a result, I don't think they

achieve the whole maximum potential of using the tools that are in the RMA. So we are big on enforcement, we're big on monitoring. While there was some blood on the floor early on, when we got into this, about 20 years ago and when I was here, it's now accepted as normal practice and indeed it's very interesting to run into people who you had huge scraps with 20 years ago, who are now right with us.

There are risks in the focus on important relationships, especially if those relationships are not seen as serving the wider outcomes of the community. Sometimes these risks were seen in terms of winning and losing, as a manager at a second Council did in describing the pressures that arise from partnerships:

[I]n the face of the territorial authorities wanting to generate more rate income by allowing subdivision and promoting development... and being inclined to sort of gloss over the environmental effects of what they're doing, ... the challenge is for us to continue to put our stake in the ground and a line in the sand. And stand up for sustainable management. When we're in partnerships [with territorial local authorities] there's a lot of influence being brought to bear to compromise and, you know, to stick up for the partnership and things like that. We have to be careful not to give away our reason for being.

This focus on the risks also had a cost if it was not seen within the wider frame. Reflecting on the experience of the Council rated as the least successful operator, one manager described the way that being a 'tough' regulator could block other important perspectives. It could make it harder to respect the constituents in a democratic system, harder to consider how to deliver value to the constituents and, in marketing change programmes, harder to think in ways that get them to want to make the changes needed.

[O]ur constituents ought to be a really key focus for us. And I think that we expunged a lot of thinking about that - about customers - because we think that being a regulatory organisation, we're asking people to do tough stuff they wouldn't otherwise want to do, that we don't have a customer base. We most certainly do have a customer base - we have a very straightforward transaction, a rating bill, that's financial, and so there is an expectation that for my 40-odd bucks per hundred thousand dollars value of my property, I get something. And that expectation may be a negative expectation, or it might be a highly positive one, but you still have got a group of people who are fiscally providing you with something and they're expecting some social profit for it, or not.... In the end, people have to want to do what it is what you want to do. And we have a responsibility in the way we establish our business to deliver that. And I think that one of the biggest mistakes that organisations that are regulatory-focused make ... is that they believe that they are directly responsible for the outcome [rather than just trying to influence it].

From the same Council, another manager told a story about taking a more collaborative approach:

I went to a meeting yesterday [about a] major issue with gravel extraction from rivers. Traditionally, rivers have been a free source of gravel for contractors. It's been to the benefit of the river engineering because there's been a lot of aggregation in those rivers, and so getting shingle down into a level which increases the capacity in the river is a good idea. But the last few years in the development boom has seen the amount of gravel taken out increased dramatically, generally from the sites favoured by the contractors 'cos they're close to the towns, to the extent where they're being over-extracted, and that's starting to threaten the stability of stop banks. So we've gone through a programme of basically saying "whoa - too much going out of these areas, we want to shift you out of those areas and into some other areas where there still is shingle, but it's a bit further away." And the ... first two public meetings were

horrific. With the contractors basically not believing [the Regional Council] and that this was an issue. But it gradually worked through and I went to a meeting yesterday where we were, again, bringing back some more information and working that issue through. And we'd actually been in to talk to all the contractors so we were on the journey. One of the contractors came along to that meeting with a particular proposal of a co-operative venture between all of the operators down there, which simplified the process and solved our problems and, you know. We've ended up, at the end of three meetings, with probably an agreed way forward at least for the next two or three years, to get them out of the areas where we don't want them extracting from and into some other areas, while we do some further work about what's a long-term strategy.

You know, it's classic. [The Regional Council] tries to come down and impose a rule, but that's not going to work. And you've got to get that group of people to a point where they accept - even if it's reluctantly - they accept well, okay, there is an issue here....The best way was getting an agreement between all the contractors as to how to handle it. Which is where we've got to. But I think if we'd tried going down the regulatory regime alone, we'd still be battling.

3) Managers note that they have had to be tough to successfully carry out regulatory functions

Many managers at both the two Councils judged as being more successful stressed the extent to which they had had to be tough. Of all the topics covered, this is the one that the most managers got the most energetic talking about. This 'toughness' extended across the management of a range of issues and is stressed in particular in regard to regulatory matters such as pollution and water quality. Here are three examples from these two Councils:

You need to make sure that when you go into battle ... that you have your troops behind you; well prepared, and well armoured if you mean business. Because to some degree we have ... while we'd like to think of ourselves, and moving towards being "champions" of the environment in the ... region, at times we have had to be warriors. And if you don't prepare, if you're not fit, and you haven't done your homework, you're going to end up as dead meat. You need to have people you can trust, and the worst thing that can happen is to be seen as somebody who backs down at the first hurdle. 'Cos otherwise you're never going to get over anything, 'cos people will just put the hurdles in front. And they'll put them all around you in the end and you'll get nothing done.... [B]ut perhaps I'd better qualify that, 'cos it does sound a bit stropky. What I'm saying is, where you're going is not where you want to go, it's where your community wants you to go. You know, the battle plan has been prepared, again, I'm using sort of aggressive terms - but the battle plan is effectively the contract between you and your community. And they have agreed that they want you to go there.

[Early on the Council] sat down and talked about demonstrating to people that we can change things. And that develops a trust. Putting a regulatory regime in place. A lot of people now refer to us as the outfit that's doing all these engagement facilitation extension-type things. What they forget is that we were the hardest bastards in New Zealand, and still are! We issue more abatement notices, we prosecute more people, than almost any other Council in New Zealand. In other words, you do this stuff on the back of an understanding albeit now left largely unstated that if we don't get it right this way guys, we're coming at you another way. And it's a Teddy Roosevelt approach to life⁴⁰. So that was critical, was people

⁴⁰ This is a reference to Teddy Roosevelt's fondness for quoting the proverb, "Speak softly and carry a big stick – you will go far."

understanding that what you say you mean. And you're going to be turning up to make it work.

[I]t's like traffic cops. Until the cops up the game, people would push the limits. With the environment, it's the same. It works here because it taps on the basic human psychology of ... if they know they're going to get caught, they won't do it. We try and work with people ... enforcement is the last step, right? While I say ... we have impressive enforcement statistics, there's a whole lot of success stories that people, you know, through advice and information, change. But at the end of the day, you've got to smack the odd recalcitrant person, and when you pick the right one and smack 'em hard, the message goes right round. It makes a hell of a difference.

Particular examples cited by managers in the two 'more successful' Councils included encounters with large industries, marine oil spills and the discharge of dairy shed effluent into streams and rivers. In those regions where tougher regulatory action has been pursued, managers report significant shifts in attitudes. Here are quotes from two managers from two different Councils:

[W]hen I first came into this, I was bloody threatened around some of these farms personally, with shotguns a couple of times. You know, you were the bloody Gestapo, you were this ... you know. Hell, life's moved on. I get far more compliments ... people actually taking the time to write in or phone in now about our staff than ever I get complaints.

A real breakthrough [was] control of effluent from dairy sheds, where we now have a situation where the spokespeople for the dairy farmers - and it's mainly, you know, dairy section Fed Farmers and Fonterra, are now on our side. Whereas when we started cleaning this mess up back in the early '90s, we had every bloody farm advisor - including the farm advisors ... employed by MAF - bad-mouthing us out there as being 'over the top', ridiculous, theoretical, yada-yada-yada.... That's a big shift. We now have the actuality of the dairy industry owning its own problem and wanting to help to solve it⁴¹.

In the 'least successful' Council managers described how they had tried to be tough but had been unsuccessful. They did not feel they had had the same support from their elected Councillors. One manager described how the Council, encouraged by its management team, initially sought to take a regulatory approach to change the behaviours of land owners and land managers:

[T]hat has found a lot of opposition, not just within the community in some areas, but also with our Councillors, who are the decision-makers in the end. And while they all agree that some regulation is necessary, they put barriers up to bringing that in and so we're having to probably go back to look at ways to change people's behaviours. And that's more the 'carrot' approach, with a resource care activity, we're putting in a lot of money to entice and encourage people to change their behaviours.

This manager also pointed to the Council moving back toward an emphasis on enforcement alongside some of these other carrot-offering approaches, moving to rapidly increase staff capabilities and skills in this area, "in the last year or two."

Tough action is tough work and it may lead to successful prosecutions. But successful prosecutions may, or may not, change the environmental outcomes. The issues may be more

⁴¹ Fed Farmers is Federated Farmers, the national farmers' organisation; Fonterra is the dominant New Zealand farmer-owned dairy processing company; and MAF is the Ministry of Agriculture and Forestry.

complex than the simple cause-and-effect approach implicit in setting the regulatory framework and enforcing effectively.

But even in the short term, water rights for dairy sheds, discharges, followed up fairly hard, a good investigation and prosecution, hasn't meant that the water quality has improved. It's actually gone the other way. Or it's standing still.... [W]hat seemed like the top notch efforts at the time, with hindsight, maybe have not been enough.

Support factors

Four factors emerged from the interviews as important to support the action elements discussed above. These were the quality of leadership and governance and the quality of science and information. It also helped to have independent means.

Leadership and governance are closely linked. The leadership function involves setting and communicating a clear direction for the Council. This direction setting is a function to be undertaken with the elected Councillors, so the leader needs to be able to support the chair and councillors to help them set overall direction and to lead the staff and also debate within the community. Leaders pointed to clarity about the roles of chief executive and chair as being particularly important. In assessing the performance of Regional Councils a number of the expert group referred to critical factors being the quality of the elected leadership and the relationship between the chair and chief executive.

My interviews are biased by my only talking to Council chief executives and managers and not to elected representatives. There was a tendency amongst some of my interviewees to blame the politicians for many of their ills. Others of the leaders saw the issues from a number of perspectives. They reflected on the tension between needing to make changes that have effects over the medium term and the need for democratic representatives to be responsive to those they represent:

[W]hen you're wanting to turn something around, we do suffer from having a ... triennium.... In that first year, you're coming ... particularly for a new person, coming to terms with just what the hell this place is all about and how it works. Second year, you do the business, third year, you've got to be very careful because if you get too radical, then you lose your seat. That's one of the disadvantages of democracy. But democracy has many other advantages.... The new Local Government Act, of course, with its requirement of the LTCCP [long-term Council, community plan], is intended to try and overcome some of that. But the fact that it's reviewed every three years means, you know, three years out can be quite theoretical, because it can all be ... it's all up for grabs again. And my observation - and I can say this from where I'm sitting - is that many elected representatives in local government are most uncomfortable with any form of strategic planning. They see it as a constraint on their ability to respond and react as they see fit at the time.

Another tension is that between complexity and simplicity. A central part of the 'sense giving' (Weick 1995) role of leaders is simplifying the complexity faced by staff members and stakeholders. As the leader of Council One described it:

We run around in circles trying to do all these sorts of analysis of threats and potential ... and I mean all that's good healthy thinking. But quite often the things we need to attend to are just right out there. And go and attend to them. And the next day you've got another bridge you've got to cross. And if you keep working in just a nice systematic and "keep it simple" type way, sometimes you find that things are fine.

This leader went on to describe an important way the simplicity and complexity can be managed: take action, make mistakes, fix them up. The prescription, in this leader's words, for setting up an organisation like a Regional Council was:

being as informed as you can, hold discussions to a reasonable length of time, make some bloody decisions and back yourself to 1) get most of them right, and 2) where you don't, fix them. You know, you can always loop back. But get on with some stuff.

Later, returning to the same theme:

.... knowing that you can loop back and tweak things on the way through. I think in terms of our monitoring of stuff we've got in place here, we're going to get plenty of heads up on whether we're missing the game. And I think the other thing, too, is ... and it's a little bit of heresy in some people's minds ... for many of the things we do to the environment, they are reversible, if we cock it up. For example, if there's too much cowshit going into creeks, if you stop it, in a year's time, the creek's perfect.

The confidence in this view comes from getting the science good enough. A critical aspect to that is having science that is closely tailored to the strategic objectives of the organisation. Managers at Council One were much more confident that they had achieved this aim than the managers in Council Three. Here a manager at Council One talked about their experience in managing their research and science functions:

We have good staff here, in terms of their knowledge, in terms of their attitude, in terms of their getting to grips with the fact that there is a purpose for their work beyond the pure science.... [T]he science is always for a purpose beyond its own existence. And I think we do well.... In terms of the interpretation of data, to convert it into information, and making sure that information is the right information this Council needs to do its job properly, that's always one of the things we are conscious we need to make sure we are doing well and, by and large, I think we do it very well. And if you want to talk about the sorts of problems and challenges we face, that is one of the areas which is always an ongoing challenge, to make sure we never just gather data for data's sake. We're always optimising its value to this Council, to the regional community. And when I look at some other organisations, including some of my fellow Regional Councillors, I get the impression that some of them are just a bit too preoccupied with the data and haven't really thought through the value in terms of informing wider processes.

In Council Three, managers saw the science underpinning the advice given by Council staff as a particular constraint:

In New Zealand, there is a large lack of scientific expertise in the environmental area, at the moment. We struggle to retain and obtain new staff in the science area. And when it comes to getting that science through to the Council, we're often faced with opponents out there in the community, having the ability to fund opposition science. And that can be a very, very time-consuming and difficult process, as well.

The two Councils ranked as more successful also enjoyed 'independent means'. By this I mean they are reasonably well endowed by dint of other investments, including shares in the local port, and so are not completely dependent on the region's ratepayers. As a regulatory agency, an element of financial independence provides important room to manoeuvre. One leader remembered earlier times when, as a catchment authority, the finances were at the discretion of the local territorial authorities:

[W]e would go cap in hand to ... local authorities and have to give an account of ourselves and copped a hell of a lot of unnecessary flak. It was not a pleasant

experience, for what was peanuts in terms of their budget but it was a bit like sport to them.

For Council Three, finances had been more of a challenge and the Council was much more dependent on its own ratepayers. This may have made it more responsive or vulnerable or both:

[T]he organisation is quite small, compared to other local authorities - such as our neighbour, [the city]. We don't have an asset-base to draw upon, it's the ratepayer base and that in itself is a limiting factor.

Shifting roles

There had been a major change in the legislative framework for local government⁴². The 1991 Resource Management Act (RMA) requires Councils to sustainably manage the environment. The 2002 Local Government Act, which sets out the broader ambit for the work of local authorities, enables Councils to also expand their role to one of advancing sustainable development and it also requires community participation in arriving at key decisions.

I think we're starting to see a significant change in New Zealand which reflects the attitudes towards sustainability throughout the world. Of shifting from the regulation-based [Resource Management Act 1991] view of sustainable management, to the [Local Government Act 2002] pro-active view of sustainable development. And that's the transition I think that will be the most fundamental change that we're looking at in the way that Regional Councils could operate. Cos it's not a requirement. RMA is a formal, statutory requirement which will continue. The LGA is the less-specific, more pro-active, more partnership-oriented approach to sustainability, which reflects the change in the world's thinking about sustainability since the time the RMA was written, and when the LGA was written.

The views on the potential shift in Council functions varied across the Councils and, in one case, within the Council. Managers in the Council that had been judged most successful were generally inclined to 'stick to their knitting', to retain the main focus on environmental management. In the 'average' performing Council there was a view that the new Act offered a number of possibilities that the Council was pursuing where the community supported the initiative. In the Council judged least successful, Council three, managers were divided. Those who had served a longer period tended to be skeptical of the change; newer managers saw opportunities to not so much change the functions of the Council (as in Council Two) but to change the way the Council handled issues.

Council One

Coming back to our role though, as an organisation. I don't view us ... you know, within that very ... increasingly worldly place that [this region] will be, as all New Zealand will be, the role of little units of local government with all our constraints and stuff around us, I think will become increasingly less important as sort of being the "leaders" of all thinking and dynamism and all that sort of bloody bullshit that runs around. But in terms of specific things like, our task, in terms of maintaining that environment within a thing that is moving so fast, I think will become ever more critical.

⁴² Local government refers to regional, district, and unitary councils.

So it's a critical role in maintaining a sort of context or bottom line, from which the community then actually does its development.

Get on with it!

But it's not the doing the development, or leading the development

I quite strongly feel that way. You know, that it is the fundamental role of public agencies, public services, to deal with matters of quality of access to health services, to good environment, whatever it might be. And to run the processes that give integrity to those notions and stuff we talked about earlier. And it's an incredibly important role. And just because you don't ... you know ... the French burdened king's views of sort of being half-God and half-king, you know, get over it. You've still got an important job to do.

Council Two

[I]ncreasingly, what we're doing as a Council is activities - irrespective of what they are - that are best done on a cross-boundary at a regional level. So we're prepared to look at any activity that's for the benefit of the community, that the community wants, that's best done at a regional level. And step in there between the community, the District Councils and the Government. Too often now, we're having to do that with a Government that is just reluctant to put the money up or become involved.

And this is quite a shift for the Council? You're moving into areas that the Council has not been involved in before.

Correct. But it's a shift in the legislation, primarily. Council has always had the idea that it could do more, but it has been constrained until the 2002 [Local Government] Act.

Council Three: Enthusiastic view

I think we're starting to see a significant change in New Zealand which reflects the attitudes towards sustainability throughout the world. Of shifting from the regulation-based RMA view of sustainable management, to the LGA pro-active view of sustainable development. And that's the transition I think that will be the most fundamental change that we're looking at in the way that Regional Councils could operate. 'Cos it's not a requirement. RMA is a formal, statutory requirement which will continue. The LGA is the less-specific, more pro-active, more partnership-oriented approach to sustainability, which reflects the change in the world's thinking about sustainability since the time the RMA was written, and when the LGA was written.

Council Three: Skeptical view

It allows us to do a number of other things. It doesn't allow us to undertake a specific development role, for example. But it doesn't do anything about cumulative effects, it doesn't touch the RMA. It gives us a ... it does a couple of things. It makes us - and I don't know if it really is ... will work - there's supposed to be a much larger community ... this is totally nonsense ... a much larger community say in what the Council does. Now, as a bureaucrat, you know that's basically a fiction, because if the Council wants to do a particular thing, it will serve it up in a particular ... it'll get its way. Because most people are too bloody busy to be bothered. There's only a few squeaky wheels ... and at the end of the day, they don't really count too much. But it's supposed to do that, and we've gone out and we've asked the community what they want. But you only get this thing, oh, we want clean air and we want clean

water. Fine, you know, so do we. So that's not particularly useful. But the other thing is expanding our ... what we do. And I don't think that will go too far because the districts are very jealous of their jurisdiction. I mean, fiefdom is the whole thing, it's very strong in this country. So we might have one or two minor powers that we can do things, but I don't see a lot of change.

Chapter Seven: Conservation Managers on Conservation Progress and Challenges

Introduction

This section is based on interviews with 15 managers from the Department of Conservation. The interviews were conducted in three Conservancies. The Conservator was interviewed and four managers who report to the Conservator. This material is drawn from the part of the interview focused on how well they were doing in achieving integrated conservation management and the key challenges they faced.

In this section I describe the Conservation managers' views about the progress they were making and the key challenges they faced. These are presented in seven over-arching themes. I discuss how these themes are interconnected.

Overall themes

The seven overall themes that I heard managers expressing in these interviews were as follows:

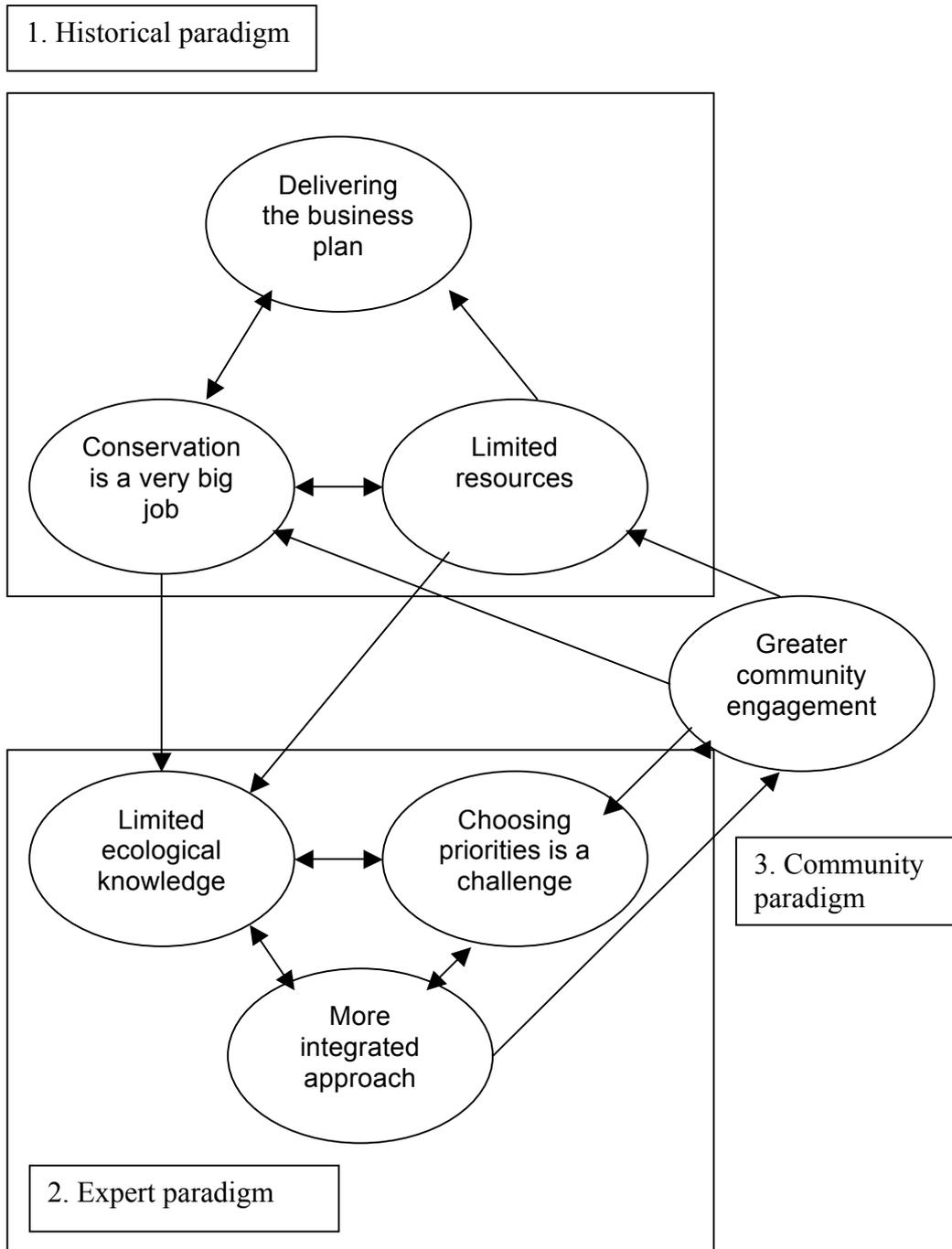
- 1) We do a good job implementing the plan,
- 2) The scale of the job is very large,
- 3) The major constraint is not having enough resources, especially money,
- 4) A second major constraint is our not knowing enough about ecological interactions,
- 5) It is hard work deciding on priorities and preparing the plan,
- 6) Taking a more integrated approach is a good idea, and
- 7) We're having more success engaging with the community.

I discuss these themes in more detail below. They were closely interlinked. See Fig. 7.1 for my map of these linkages. In my judgement there were a number of paradigms in play here. Each of them built on the other. The first three themes were the traditional plaint of over-stretched conservation professionals (and many other professionals): "we are doing our best to implement the plan but it is too big a job and we need more resources." The second three themes also clustered together. These connected with a paradigm that said: "we need to manage ecosystems in more integrated ways but choosing priorities across a range of places and programmes is extremely difficult because we know relatively little; only by being able to demonstrate we are doing the most important work and doing it well will we get the additional resources we need." The final theme was the bridge to a third paradigm that was crystallising within the Department as the interviews were being conducted and subsequently emerged as a new strategic direction. It effectively accepted the logic of both paradigms but then sought to break out of the limited circularity implicit in both of them and argued that only by changing the relationships with communities and more clearly delivering value to them through conservation would the additional resources be provided to the Department or directly through community and individual conservation efforts.

There were many other dynamics at play between these themes. While managers were confident they were delivering on the plan, and that delivery had improved over time, they

still struggled to prepare the plan because it was hard to choose between a range of different conservation needs and tasks, resources and knowledge were limited, and the scale of the possible job was very large. Integration offered some benefits and also intensified conservation efforts at particular sites. This put further emphasis on the need to make clear choices about which results, sites, and projects were the most important. The changing engagement with communities and key stakeholders connected with each of the other themes. Communities were playing more of a role in delivery at some sites. The expectations of different interests affected the setting of priorities, the scale of the job, and, ultimately, the resources available. Often community groups were enthusiastic advocates for more integrated approaches, and could be reluctant to see conservation efforts narrowed down to particular sites.

Fig. 7.1: Major Themes in Progress Toward Integrated Conservation Management



We do a good job implementing the plan

This was the first response of most Department of Conservation managers asked about how well conservation was going in their area of responsibility. This overall sentiment was qualified in a number of ways, picked up in the themes below. One Area Manager spoke for many when he said:

I think it's going ok, we achieve our business plan outputs and things, things happen.... We achieve, we deliver the outputs with the agreed standards that the department expects.

Focusing on doing a high quality job of delivering on the plan has meant not doing other things. Managers have had to adapt to only doing what they are best able to do. These comments were from managers in the other two Conservancies:

It would be nice to be doing that, that, and that, and that. And covering all that. But once you've been in this business for so long, your expectations are narrowed down to almost that you are happy if you achieve what the business plan says will be achieved. So I have actually got an amazing tolerance to seeing things die off and go backwards.... [I]t's no good getting emotionally strung out about it and saying "Oh my God, the yellowheads have just gone backwards again".... So what I get satisfaction from ...what I judge it against is: "are we achieving what we said we would try to achieve in the year ahead?" Or that we have a bit more of a three-year/five-year type vision. "Are we still heading in the right direction?"

I try not to let that cause me any tension because there's such a huge amount we're not doing Well it's a frustration, but what I prefer to do is try and think about the good work that we're doing because I know we've picked off the bulk of the best sites and then I try and think, "how can we achieve the results we want get at those sites", and, if we do, I will be happy that we're actually doing our bit and I guess that's my consolation - is I think we're doing, we're actually doing the most important work.

The scale of the job is very large

The conservation job, particularly the maintenance and enhancement of ecosystems, and species and their habitats, was seen as a very large task. In general, natural systems are in decline and Department of Conservation managers felt they are only holding the line at particular sites. These sentiments, from managers in two Conservancies, echoed the general view:

[M]ost of the natural values in [the Conservancy] ... are stable or declining. Over the wide landscape scale, the things that have been introduced into New Zealand, all the plants and animals that have naturalised here, are still working towards an equilibrium. And generally that equilibrium drives down the indigenous component at their expense. There are a few places where we intervene effectively where we either hold that, or perhaps to a degree reverse it. But they are relatively small scale.

[The opossums are] turning it into a bloody desert. But that's in the canopy. And the deer are taking out the understory. So, effectively, we're not managing our obligations within the national parks policy. We should be getting rid of those things, and we're not. We can't afford to. And that's the scale of the bloody biodiversity problem. It's bloody horrendous.

The major constraint is not having enough resources, especially money

This view was also widely held. Asked what would most have to change at the Area level, one Area Manager spoke for many when he said:

That would be simple - more resources. If you've got more staff and more dollars you can do more, can't you?

In general, managers thought they spent the resources they had effectively and more resources could be spent on doing more of the same to good effect. A second manager from a second Conservancy said:

I'm really quite happy about our understanding of what's important, and our process around getting there, and I think that we're in a position that we could readily launch - if we're given the opportunity - to do a whole bundle more.

A second major constraint is not our knowing enough about ecological interactions⁴³

The concern that not enough was known about ecological interactions was held by a number of managers:

[W]e also don't know all about the ecological interactions. So taking the stoats out, what does it do for the rats? And taking the stoats out, is that actually really helpful if, in fact, the rats appear to explode?... We've been looking at that in a very small scale, and drawing some conclusions which we don't really know whether that's [robust].

This uncertainty about what is happening in ecosystems was balanced by an acknowledged need to act and make decisions. Another manager from the same Conservancy said the conservation effort was 'hugely constrained' by lack of knowledge of the workings of ecosystems and that this gap became more telling as the Department took "more of an ecosystem management approach." For all that, he said:

[W]e know more than most other people, so whether we like it or not we have got the knowledge. It's just, we probably don't have a hell of a lot of it. But we've got the best knowledge there is out there. You can always have more.

It is hard work deciding on priorities and preparing the plan

There was increasing confidence about delivering on the annual plan but it remained a major challenge to prepare that plan. It meant making hard choices about what were the most important things to do, and what not to do. These hard choices could be seen at two levels:

43 Other constraints identified by individual interviewees included:

- lack of clarity about national directions,
- loss of community goodwill (a consequence of the Department taking legal actions under the Resource Management Act),
- particular skill constraints,
- the slowness of decision-making and formal planning processes,
- lack of information and time for managers to think and decide,
- sometimes lack of clear accountability, clarity of roles, and teamwork,
- the demands of the annual planning and reporting cycles, and
- the way the annual planning cycle has the effect of shortening the time scales of managers and their staff.

firstly, what were the most important conservation results to be focusing on? Which places, ecosystems, or species were most in need of protection, which were the most special and/or the most at risk? Secondly, would the planned actions (such as weed control, eradicating animal pests, fencing, taking legal action) effectively deliver the conservation results? An Area Manager said:

[I]t's not just enough to follow the orders and deliver the result. You want to be able to convince yourself and your staff that it's within the context of achieving something that's more than just an annual outcome....

Addressing these questions was hard work. As a support manager in a second Conservancy pointed out:

[W]e've spent a lot of time working with Programme Managers and technical support people and Area Managers and our SMT [senior management team] to try and agree, and make sure everybody understands the big picture in each function, and how the Areas fit into it to collectively contribute to the Conservancy strategy. Right? But you still run into trouble when we're trying to cut our cloth according to the thing, you know. What not to do. We have trouble with it at SMT. Area Managers have trouble with it. Programme Managers have trouble with it. Nobody ever seems to be successful in making hard decisions about not doing things....

Different managers, describing the way the priority-setting challenge was being addressed in different Conservancies, stressed different aspects of the issue. All acknowledged it is hard. In the Conservancy that seemed to have made less visible progress, managers emphasised how hard this work was. One, from that third Conservancy, made the point that targeting conservation effort meant realigning resources and that this is "real hard, because you've got that many other people in the field who are dedicated to their particular area of work."

He cited as obstacles to more integration and improved priority setting: the lack of a biodiversity strategy that focused on what the Department was responsible for and the limitations with the application of a national decision support framework [The Natural Heritage Information Management System - NHIMS]. Another manager in the same Conservancy said the reasons why more integrated management and priority setting was not happening were:

Because we've been waiting for NHIMS to do it for us. And secondly, the Department hasn't got the resources to commit it at a Conservancy level to do that sort of analysis. And thirdly we've got no guidance to do it and [are] told to bugger off. And fourthly, it'd be a pointless exercise because the funding is in silos.

One of these managers told a story to illustrate the way people resist the harsh realities of clear priority setting because, in part, it means having to give up on cherished places and projects. He described the application of a decision framework used to identify priority ecosystems across the country, in terms of intactness and quality. Having identified the ecosystem concerned:

[T]hen you would try and take a part of that ... perhaps a small part of it, and say "this is the part that we will try and manage in as close to as natural state as possible, using all our integrated methods of control, and perpetuate that in its natural state." And everything else, we really won't be able to do too much in, because it's too much cost to do an integrated approach everywhere. Let's say ... the best example of [this ecosystem] is in Nelson. And everyone says, "yes, yes, yes" until you say ... "and that means that the bit of that unit in Canterbury and Otago and Southland that you're playing around with, we'll have to flag away". And everyone says: "no, no, no". And you say "but wait a minute, that's a rational approach".... And everyone says "no, we

don't want to do that, because our guys are committed to our patches!"... [T]hat's what we would do if we were entirely rational, but we're not. 'Cos that's too difficult, that's too painful. So what we do is we say, "oh, no, no. We'll actually ... if we're going to implement that strategy at all, we'll implement it with new money." So that means that all the other duplication and over-investment elsewhere, will continue.

In a second Conservancy, they felt they were a bit further along. They could see a way forward although they were still very challenged by the task:

We've done a lot of thinking and strategic planning focused on things like pests and particular pests - like, we have a goat strategy, and trying to put a possum strategy together, and we're concerned about a deer strategy and things like that - but one of the problems with that, is it's very difficult to prioritise between them. But if you turn everything around and you have ... identified a range of sort of achievable ... outcomes at sites that you can progress towards achieving over time, that actually means that those sort of ... those sort of actions you're taking, all those columns of things like pests, become a tactical response. And it's easier to prioritise if you focus on the outcomes, than it is trying to prioritise between the tactics. And we're heading that way.

Again the hard questions, about what does not get done or gets stopped, blocked progress. Priorities were different at the different levels in the organisation. This was the same manager as in the previous quote:

Well, at an Area level, it might make sense to pull out of this one. But your part in this one, when you go back to Conservancy scale, is absolutely a priority. That's what seems to happen. In different ways all the time. Can't seem to get past that, for some reason. We've been racking our brains for several years now, we haven't got there.

The third Conservancy was recognised to have made greater progress on this issue. This appeared to be a mix of the leadership within the Conservancy and the type of planning they had done - focusing on key sites and the conservation outcomes to be achieved rather than the management activities (the outputs or the work) at those sites. Integrated plans were prepared for key sites describing long-term goals and the whole suite of ecological work to be done.

[W]e're not doing everything at every site. We are managing key things at key sites and I think, for us we're integrating our management to achieve longer term goals. [W]e're talking about [ecological] functioning.... [S]imple things like mistletoe pollination - you need a certain number of forest birds so we're trying to take account of those things for integration rather than, we'll bash possums.

This manager said shifts in understanding were occurring as a consequence of this work:

[T]he trick is to get everyone talking about outcomes rather than outputs and I think now that is slowly happening over time. So I would say our group talks mainly about outcomes and that's quite a change from an organisation that used to focus on killing things. We want people to kill things. But we want them to talk about outcomes.

Taking a more integrated approach is a good idea

Taking a more integrated approach to management was seen as intuitively desirable but this was more often seen as integrating the delivery of work programmes rather than understanding and managing a whole system or series of systems in a more integrated way.

Often operationally-focused Area Managers saw integration as just the combining of different work programmes, including overlaps between working on maintaining huts and tracks and weed and animal pest programmes. As one Area Manager described it, the focus was on:

“sharing resources, better planning, better forward planning over a longer time frame. Not the one month chunk, I'd like to see it for three months.”

Notice that the timeframe is extended from one month to three, from immediate to short-term work planning rather than the multi-year time frames needed for planning the integrated management of whole ecosystems.

From another manager in the same Conservancy the work activities were linked into delivery of a broader range of outcomes:

So if we're doing ... a wetland monitoring exercise that's in the business plan, I think that where we could improve is to deliver that to a quality standard, but also to influence another area of our interest in a meaningful way. So an example of that might be, not just do the survey, and find out what's in that wetland, but [use it] to influence [the management of private land] that might affect that wetland, or around that wetland.... Recognise that it's a connected system, that the things that you do away from it, affect it.

Many of the reasons managers gave for not taking a more integrated approach were also listed in the priority setting theme above. They tended to point to things outside the manager's control. Another manager in the same Conservancy said:

[I]t often suits for us just to be managing one particular thing, rather than a whole ecosystem.

There is a greater appreciation of the values of engaging the community

While there has always been an acceptance that community support was needed for conservation success, there was a sense that dynamics of these relationships had changed. Communities had changed, the Department's approach had changed and support for conservation had grown. This shift had been variable across communities. In the Conservancy where the change had been most marked, one Area Manager said:

I think the most outstanding measure of our success would be community feedback.

Many managers made the point that communities now saw greater benefits in conservation.

The same manager, continued:

[W]e're now looking at the management of that land mass, not just from conservation management viewpoint.... But we're also identifying to people that there are social and economic benefits arising from that land.

The Department was also a more established part of many small, rural communities:

As time's gone on we've had a large number of people from outside the district settle here, some of those have been what you might call reasonably alternative but they're all very environmentally conscious and, over time, barriers have broken down, attitudes have changed, people have become a bit more relaxed.... We've got a lot of staff here and a lot of our staff now have been recruited out of the community and people realise we are a key part of the community and we do contribute and we do have a very important role to play.

Regional and local councils were now also paying more attention to conservation management. In a Conservancy where the trends in community engagement had been more mixed, two managers reflected on the experience:

[W]hat we do need to do is recognise that the programmes that the other agencies are putting in effect, are critical to the success in the area...

Prior to this, the Department used the provisions of the Resource Management Act “to bludgeon [councils] into some acceptance of the responsibility”. This practice had had its price:

We’re still bearing the scars of some of those battles over district plans and the degree of Department involvement in ... trying to identify places to be protected and the backlash out of some of the rural communities. If you drive up some of the side roads off the main road north of here, there’s still signs on farm gates saying “no access to local government or Department of Conservation staff” on farm gates. Just for mile after mile! And there’s some really neat bio-diversity values in the hills on those places as well.

The first of these managers, who at the time of the interview said he now realised DoC, and he, didn’t have all the answers, described how the Department’s thinking about biodiversity protection developed and the changes in the way it behaved:

Fifteen years ago, I guess we were thinking we had most of the answers, we went round and told people all about how to do it, that we’ll jump on board, you know. And if they weren’t going to listen, we’d make them listen! So ... there were some self-evident truths and maybe older and wiser heads. [Also] I think that the whole indigenous bio-diversity thing in New Zealand was waiting for DoC to get set up for some of the thinking to come into place anyway, about how there’s a holistic picture, not a very itchy-bitsy thing which it was prior to DoC being set up.

So I think our ... organisational learning curves mirrored the kind of conceptual learning curve about what the scope of the problems are and the multi-faceted approach needed to turn it around. But ... I guess one of the first truly big shifting points was that when we said that the conservation communities were one of the cornerstones.

A number of approaches can be taken to working with the community. It depends on the attitudes and abilities of both the Department and the stakeholder groups. To what extent might this have been the case of a group of conservation professionals convincing community interests of their competence, or the Department and these community interests learning together, or the community trusting the Department to learn on the job, to be the experts practicing adaptive management? This choice is neatly canvassed in the comment of another Area Manager from the same Conservancy:

I guess the other biggest priority is going to be, how do we work with the community? How do we persuade them that what we do is the right thing? And how do we get them to understand that a lot of this is kind of adaptive management; you know, some of it is experimental. We don’t have all the answers. We do have to go and spend money to find out the answers.

Synthesis for Part Two: Summary, Orientation, Complexity, and a Return to the Over-arching Question

Introduction

In this section, I first summarise the findings from Part Two. Then I compare and synthesise the findings from the two groups of managers. The emergent picture is of the two groups having quite distinct orientations and in their work facing differing types and levels of complexity. After describing these differences, I return to consider the over-arching question in the light of these findings.

Summary of findings on conservation and environmental management

Regional Council managers were more or less satisfied with the extent to which they were delivering on sustainable management in their regions. The Council judged most successful was generally satisfied that environmental indicators were mainly going in the right direction, despite a rapid intensification in dairy farming and nitrate loadings on pastures and potentially in waterways. Managers at this Council also recognised the potential for improvement but felt they were on the right path. Managers at the average performing Council ranked their own performance as above average although they considered their Council faced some very challenging water quality and growth issues. At the Council ranked as the least successful there was criticism of past practices and significant changes in approach. Again, however, the issues the Council faces were particularly challenging and it was not clear that there was community support for the measures needed to address these.

At the Conservancy level in the Department of Conservation there was less variation in perceptions of performance between those who had been seen to do well or not so well. In general the sense was that Conservancies were effective in delivering on their planned actions but that these were inadequate to deal with the transformation of ecosystems occurring through habitat loss and the momentum of damage built into the system caused by introduced animal pests and weeds. The general sense among DoC managers was that they know what to do but they did not have the resources to do it or, in some cases, with deer control or use of 1080 poison, for example, may not have had adequate public support to do what they think was required.

While these perspectives in the two types of agencies were different and, as I will discuss in the next section, the complexity of the management roles also differs, the fundamental strategic issue faced in each agency was similar. In essence, Regional Councils needed to build adequate community understanding and support for the particular measures that are needed to sustainably manage the environment and that also affect particular individuals or groups. In addition to gaining the support of the wider community, this means it is essential to build enough support or acceptance from those individuals or groups directly involved, because they are the people making the changes in environmental practices that the community requires. The delivery is done by groups and individuals rather than by the Council. The complexity for the Council was in working with individuals and communities and developing long-term solutions that were cognizant of or able to adapt to second and third order systems effects.

In the conservation case, the need was to also change the social relationships. The need was to change the ways communities valued conservation efforts and for conservation action to be something that communities took ownership of, although, in general, the work is still often delivered by the Department.

In both cases the need was for managers to have the capability to engage with multiple stakeholders and develop ways to manage complex systems that met the needs of many of those stakeholders, and there were many ways where the successful Regional Councils and DoC Conservancies had demonstrated they were already able to balance the needs of a range of stakeholders. To the extent that this was the case then the agenda for change, in terms of the development of managerial capability was to consolidate these capabilities.

However the environmental management themes might also have been read in a less optimistic way. It was clear that the Department of Conservation was taking only the most rudimentary steps toward integrated management of ecosystems, except at a few intensively managed 'mainland islands'. Even at those sites the understanding of the functioning of the ecosystem was basic and the implications of carrying addressing multiple threats at the one site were still being explored.

The scientific knowledge in Regional Councils about particular issues, such as water and air quality, was generally more detailed than in conservation but there were some telling gaps, particularly in the long-run implications of fertilizer use on water quality and understandings about water availability and aquifers. For Regional Councils, with many more of these decisions subject to judicial or quasi-judicial processes, there was also much more resistance to what scientific knowledge was available and exploitation of uncertainties for individual or sectoral gains.

Orientation, roles, and complexity

One aspect that emerged from the interview material was a confirmation of the different types of complexity faced by environmental managers. This could be considered in terms of part one of the EMAL framework, introduced in Chapter Four, and Westley's typology of environmental managers "managing *through*, managing *out*, managing *in*, and managing *up*" (Westley 2002:337). To recap: 'Managing *through*' is the scientific approach to management, treating management interventions as experiments to learn from rather than solutions to be implemented, treating ecosystems from a truly systemic point of view. 'Managing *out*' is a commitment to involve external stakeholders in management processes and decisions. 'Managing *in*' involves managing position and influence within the organisation, and 'Managing *up*' is taking into account the larger political context.

What emerged was a picture of a different orientation to these factors within the Conservancies of the Department of Conservation in comparison to the orientation of Regional Council managers. In essence there was a different emphasis put on managing through, out, or in and up between the two types of agencies and different levels of complexity were being faced in each of these.

The complexity of the natural and human systems faced by both Regional Councils and DoC was roughly comparable. Regional Council issues included such diverse challenges as

allocating freshwater, dealing with water and air quality, contracting for public transport services, seeking to protect biodiversity on private land. The level of complexity of these issues was similar to that faced by DoC managers in protecting threatened species, establishing marine reserves, or planning and delivering the integrated management of natural ecosystems under threat from a suite of animal pests and weeds. Using van Eeten and Roe’s ecosystem management framework, the DoC managers and those from Regional Councils were both focused in the more complex and contentious zones of adaptive and case-by-case management with the DoC focus on adaptive management and the Regional Council on case-by-case approaches (van Eeten and Roe 2002). I would observe that in both types of organisation it is questionable how much the management effort was actually systemic. For example, water allocations were case-by-case and Regional Councils struggled to understand the whole-of-system effects and certainly to convince the Environment Court of the need to address cumulative effects. Integrated conservation management occurred only at a few intensively managed sites, and then only to a limited extent. At others it was, at best, integrated work programming rather than considering interventions in terms of the whole ecosystem.

In Table 7.1 I identify five factors in which the different orientations of the two types of management agency can be observed. These are: the focus of the work of the respective agencies, the central management question they each face, their sources of finances, the different levels of management in the two types of organisation, and the different relationships they might have with the public or with key stakeholders. I also identify in italics the locus of this orientation in Westley’s model and the EMAL framework. These are the predominant focus rather than the exclusive focus. Obviously while Regional Councils have a more outward focus in their revenue raising than a Conservancy within a central government department, there is also an upward political focus, as well an internal management focus, in the Regional Council’s rating and investment decisions.

Table 7.1: Comparison of the orientation of Regional Councils and the Department of Conservation across core management factors

Orientation factors	Regional Council	Department of Conservation Conservancies
Focus of work	Primary roles are policy-setting for region-wide and district environmental planning and regulation of resource use and pollution. Some operational functions such as public transport and flood control. <i>More managing ‘out’ and ‘through’.</i>	Primarily perform operational roles with hands-on management of protected areas and species. Minor policy and regulatory functions. <i>More managing ‘through’.</i>
Central management question	How do we best influence resource users, communities and local authorities to behave sustainably toward the environment? <i>Managing ‘out’.</i>	How do we use public resources as effectively as possible on the highest priority conservation work? <i>Managing ‘in’, ‘up’, and ‘through’.</i>

Finance	It raises its own revenue through rating and investments such as port shares. <i>Managing 'out' and 'up'.</i>	Largely funded through central government funding. Conservancies tend to be dependent on revenue coming 'down the pipe' from head office. <i>Managing 'in' and 'up'.</i>
Different level of management	Lead by chief executive reporting to an elected Council. General managers or directors lead departments and report to CE. CE role is Level V, although relatively small scale, in Jaques' terms (Jaques 1989) ⁴⁴ . General manager roles are Level IV, although also relatively small scale. <i>Managing 'in'.</i>	Lead by Conservator within a national department. Conservator reports to an operational general manager (Level IV role). Conservator role is level III. Area Manager and Conservancy support manager roles are level II. <i>Managing 'in'.</i>
Relationships with the public and key stakeholders	Depends on working through individuals and communities and seeking changes in their behaviours, largely on private lands. <i>Managing 'out'.</i>	Does much of the work itself on public lands and 'controls' public actions in relations to those lands. In order to be effective needs to change its relationships with communities to be seen to be doing what the community values and increasingly needs to be facilitating the conservation work of those communities. <i>Managing 'out', as for Regional Councils, but this is less central to DoC than for the Councils.</i>

In summary, Regional Councils are required to be more outwardly focused, have more direct control over their own finances and future and have management and leadership roles that are more complex. Conservancies of the Department of Conservation manage similar physical

⁴⁴ Elliott Jaques' strata of task complexity and *cognitive complexity* include:

Level II roles – Diagnostic accumulation: Time span 3m – 1year. Notes potential problems and obstacles, accumulates data and takes action to overcome them.

Level III - Alternative paths: Time span 1-2years. Works out alternative paths, finds a path that stands a chance of coping with short-run requirements (say weeks or a few months) while at the same time providing the initial stages of a realistic path towards longer-term goals a year or more ahead. The person must be able to change to alternative paths if necessary.

Level IV - Parallel processing: Time span 2-5years. Constructs a number of L3 paths and alternatives, all running at the same time and interconnected with one another either by the person running subprojects or managing others doing this. Involves parallel processing, pacing these projects in relation to one another in resourcing and in time.

Level V - Unified whole system: Time span 5-10years. Judges the likely impact of changes or events on any and all parts of the system, including sensing likely 2nd - and 3rd-order consequences and their interconnections. This means making judgements about a constantly shifting kaleidoscope of events and consequences with far too many variables to map on a chart.

Jaques, E. (1989). Requisite Organization: The CEO's guide to creative structure and leadership. Arlington, VA, Cason Hall.

areas and the actual environmental management issues are of similar complexity. However, because the Conservancy is located in a national management structure, decision-making in the Conservancy is less complex, more of the decisions are taken outside the Conservancy, for example in terms of overall direction and financial allocations, and the focus of the work is more 'through', in Westley's term, centring on the adaptive management of the public lands in the care of the Department. Consequently the relationship with the community is more constrained to seeking support and engagement in conservation work, rather than seeking to have individuals and organisations change their behaviours.

It was noticeable in the interview material that Regional Council managers were more likely to see themselves as shaping the systems they worked within, whereas Conservation managers were more likely to portray themselves as part of a system delivering conservation results. This may be a function of differing orientations of the two types of organisations or it may reflect different levels of managerial work and complexity, or both. It is also my observation that the thematic framework from the Regional Council interviews (Fig. 6.1) was described, in part, by some of the managers interviewed as the framework they were working within. The framework of themes discussed by Conservation managers (Fig. 7.1) is much more my construction, based on comments they made. The Conservation managers were less likely than those in Regional Councils to provide their own analysis of the relationships between the concepts they were working within.

From the combination of these factors, I conclude that the Regional Council management role is more complex than that faced within Conservancies of the Department of Conservation. A combination of three things leads me to this conclusion:

1. Regional Councils have to be more outwardly focused and most of what they do is achieved through others;
2. While the environmental issues faced by both agencies might be of similar complexity, because most of the decisions made by Regional Councils affect private landowners directly then a higher burden of proof is often required in order to act and more of the decisions are likely to be subject to litigation;
3. Organisational management complexity is higher in a Regional Council than in a DoC Conservancy because the Council is a stand-alone organisation, with its own elected governance arrangements, as compared to being a unit of a national organisation.

This is not to diminish the complexity of the issues facing managers within the Department of Conservation although what has been clear from the interview material is that the most complex work, taking an integrated approach to the management of ecosystems, is largely not being done, save for partial efforts in a few special projects. It is largely not being done in other parts of the world either, save for partial efforts in a few special projects, for reasons of lack of knowledge of the function of the ecosystems involved, capability limitations, and resources.

Returning to the over-arching question

With these findings on environment and conservation management I can turn back to my opening proposition, offered in the introduction, that the responses of managers to environmental challenges might be greatly improved were higher levels of complexity of thinking and consciousness able to be applied by those managers. When I consider this

proposition in the light of the findings in Part Two, what emerges is that the proposition is too focused on the solution of *how* environmental leadership might be improved. It takes as a given that such an improvement is necessary. Do these findings support that? Perhaps my over-arching research question, also posed in the introduction, is a better place to start:

What is the level of complexity of thinking and self-complexity that might be required to sustainably manage the environment and how does this compare with the current situation?

Stated differently: how much is there a problem and how might it be defined?

As was shown in the summary at the beginning of this synthesis section, there is a way to read the record optimistically and a more pessimistic reading. From the views of managers summarised in these findings I could describe the following 'problem' statements for Regional Council environmental management and DoC conservation management. While Regional Council managers generally had much better information than in the past and felt they knew what needed to be done in most areas, the problem, inasmuch as there was a problem, was that, in places, there were significant areas of resistance to change on the part of a number of stakeholders and there were particular issues that have much higher levels of uncertainty and complexity. I will return to these issues shortly.

For Conservation managers the problem might have been stated thus: Conservation managers knew how to carry out their main environmental management tasks effectively and could have much greater impact if more resources were made available. The other more uncertain and complex problem they faced was how to know what conservation work would make the greatest difference and how to manage important sites in more integrated ways.

Within each of conservation and sustainable environmental management perspectives, there are different levels of complexity in the issues managers face. In terms of the levels of complexity presented by their roles, managers in Regional Councils and in DoC, might describe their situation as follows:

1. With more resources we can do more of what we all ready know and do. For this work the complexity of thinking is unchanged.
2. We could also attempt to do more of the same things, or find different ways to do them that engender much more support, by changing how we do things and, in particular, by changing the engagement with key stakeholders. The self-complexity and complexity of thinking in this work is likely to be greater than the status quo because it involves analysing how we do things now and rethinking these practices and implementing new approaches.
3. We need to address the 'wicked' problems, those that are highly complex, uncertain, and involving long time frames. These require greater complexity of thinking and self-complexity.

There may be a fourth category that these managers might miss as they look out from their current reality. This is the way that a larger perspective, greater complexity of thinking and greater self-complexity, might enable them to rethink the things they are already doing well. How many managers operating at the fifth-order level of complexity does it take to change all the light bulbs? The response might be to ask another question: how many might it take to rethink our approach to light? The three points listed above arise in response to my questions about problems: how much is there a problem and how might it be defined? These are useful focusing questions and with the narrowing of focus there also comes constraint. Focusing on

the problem situation risks not seeing the power of transformations in perspective to effect changes right across the system. Managers in their current reality cannot be expected to see the potential for transformation that comes from looking outside that reality, but they can be supported to ask questions that can open them up to these possibilities.

I would add a fourth component to the three-point managers' problem statement I offered above:

4. As we grapple with the 'wicked' problems, and change the ways we engage with stakeholders, how might we apply the new perspectives we learn from these issues and approaches to transform a lot of what we already do?

The optimist and the pessimist would differ on the extent to which the issues environmental managers face might be categorised in the first two categories, where things are already known or involve improving on the known, and the third and fourth category, where issues involve the unknown or the approach redefines and transforms the issues. Having analysed the interview material in full, and considered that in the light of the literature, my perspective tends toward the more pessimistic. There are many issues that can be effectively managed with proven techniques and, with enough attention and care, the politics of these issues can often also be managed effectively. Yet, beyond this, I think there are some issues that involve another level of complexities and uncertainties.

Examples of issues high in uncertainty and complexity include the long-term impacts of land uses on freshwater quality and water availability, climate change responses and the transition to renewable energy sources, integrated ecosystem management, and transport issues, particularly for the Auckland region. The Auckland issue is confined to one region; for some of the issues the greatest impacts are multi-regional (issues such as freshwater quality and quantities); other issues occur nationally such as climate change and integrated management of ecosystems.

To be able to lead the agencies addressing these issues over the medium term, I believe requires regular access to fifth-order self-complexity and complexity of thinking. This does not mean that the leader necessarily needs to have these capabilities; it means that they need access to them. The leader needs enough capability to be able to draw on this thinking and use it. Also, there may be choices about bringing these capabilities into an organisation for a period or concentrating them in a task force that works across a number of agencies. These examples are about the application of level five capabilities to particularly complex issues. This leaves out the value of these capabilities in two areas: firstly, dealing with whole of organisational or whole of system change in the agencies and legislative frameworks involved, and, secondly, the transformative potential for this level of perspective-taking to re-frame issues that may currently be being dealt with effectively, in terms of existing practices and paradigms, but might still be re-thought to considerable advantage if the paradigm were to change.

A further consideration is the difference in the levels of complexity faced in Conservancies of the Department of Conservation in comparison with Regional Councils. This suggests the need for fifth order thinking and self-complexity is either greater in Regional Councils and/or where the need does arise in DoC it may be at the national level or in addressing whole-of-system issues.

The capability to deal with greater levels of uncertainty (more situations where there are also more uncertainties) involves a developmental shift. This is the shift to level five on the EMAL framework. It involves a shift to either complex thinking and/or into a self-transforming frame of self-complexity. These are co-requisites to a degree but different people may advance along different paths putting more or less emphasis on the thinking and feeling sides. These questions will be taken further in Part Four. I now turn, in Part Three, to my findings about the capabilities demonstrated by the managers I interviewed.

Part Three: Adult Development Findings

Overview of Part Three

The following two chapters discuss my findings on the systems thinking capabilities and orders of self-complexity demonstrated by managers when I interviewed them.

Chapter Eight describes my findings about the nature and extent of systems or dialectical thinking I found among managers. This is based on the material gathered in part one of the interviews with environmental managers where they were asked to assess the results their Council or Conservancy, or group within those agencies, had achieved in sustainable management and the major challenges they now faced. The substance of their responses, *what* they were thinking about their environmental management, provided the findings presented and analysed in Part Two. In Chapter Eight I present findings on *how* they were thinking about environmental management.

Chapter Nine describes my findings of the orders of self-complexity of managers. This material is drawn from the second part of the interview, where the subject-object interviewing technique was used. Each chapter has a summary of the findings and an overall summary of the combined adult development findings appears at the end of Part Three.

Because part of my interest in this research was to explore the extent of fifth order or self-transforming thinking and complex systems thinking amongst environmental managers, I went so far as to chose those research tools from the adult development field that would be the most useful in discerning the nature of the shift involved from the fourth or self-authoring order of self-complexity to the fifth or self-transforming order. These needed to be tools that best captured the transformational nature of the change from complicated to complex thinking. I was focused in this zone of transformation because I had a view that this capability for transformational thinking would be necessary to manage increasingly demanding human interactions with complex natural and social systems. I have not found things to be quite as I expected them to be.

Chapter Eight: Findings About Systems or Dialectical Thinking of Environmental Managers

Introduction

The transcripts from the first part of 18 of the 31 interviews were analysed using a simplified form of Basseches’ dialectical schemata framework. Because the analysis process was particularly labour intensive not all transcripts were able to be analysed. I chose to focus my analysis in two ways. I firstly assessed the extent to which there might be complex thinking or a transformation to complex thinking by analysing all the transcripts of interviewees I suspected might demonstrate complex or complicated thinking at the higher levels. Secondly I sought to develop a picture of the range and distribution of levels of thinking demonstrated across the whole group of managers. To do this I analysed a sample of the other transcripts, representing each of the Councils and Conservancies and the range of tiers of management.

In this chapter I introduce the three levels of systems thinking I have assessed managers against: straightforward, complicated, and complex thinking. The relationship between these categories and those of Michael Basseches is shown in table 8.1.

Table 8.1 (also 5.2) Comparison between Dialectical Schemata Framework and Johnston and Atkins’ simplified form	
Basseches’ Dialectical Schemata	<i>Johnston and Atkins’ simplified model, based on Basseches</i>
	<i>Straightforward thinking</i> (no dialectical or systems thinking)
Schemata of motion	<i>Complicated thinking</i> – combining examples of the first order of Basseches’ schemata (motion, form, and relationships) and simple contradictions.
Schemata of form	
Schemata of relationship	
Metaformal schemata	<i>Complex thinking</i>

I demonstrate these three categories by profiling three managers who each showed as operating predominantly at one of these levels. I provide examples from their respective transcripts to support this. Then I present material thematically. I chose three themes that emerged in a number of interviews and provide examples of managers speaking about these themes and each demonstrating different levels of thinking in doing so.

A summary of my findings is presented at the conclusion of the chapter.

Three case studies

Three case studies are presented below to illustrate the three levels of thinking. Alan was a manager who showed straightforward thinking and reasoned using simple cause and effect logic. Malcolm, the second manager, demonstrated complicated thinking but, with one exception, did not show complex thinking. Bruce, the third case study, was a leader who appeared to be complex or systemic in his reasoning.

Alan

Alan had been an Area Manager for the Department of Conservation for more than a decade. His was a large Area which he manages with 13 full-time staff. It blended a familiar mix of parks and reserves, including marine reserves, threatened species, animal pest and weed issues, and a range of recreational facilities. The district had a significant Maori community. The territorial local authorities have traditionally been focused on economic development and not been sympathetic to environmental protection. Many of the relationships with key groups in the community could be testy as the Department was often seen as having interests that were distinctly different from local authorities and other key groups in the community. Alan had worked in the conservation field for his whole career. He was considered a competent manager. In the interview about his conservation management responsibilities he gave clear and confident answers. He was positive and straightforward in his assessments. He usually reasoned by describing simple relationships of cause and effect: A leads to B which might lead to C. He did not demonstrate moves-in-thought that could be described as dialectical or showing systems thinking.

Malcolm

Malcolm was a Conservator for the Department of Conservation. He had also been in this role for more than a decade. He was one level more senior in the Department's hierarchy than Alan (the Area Manager referred to above). As a Conservator he had around 100-120 permanent staff to manage and may have had 3-5 Area Managers, as well as other support managers, reporting to him⁴⁵. In most cases the boundaries of the DoC Conservancy are the same as those of the Regional Council – the analogous unit of local government. The Regional Council is the locally elected body managing the whole area under the Local Government Act and the Resource Management Act and is focused most particularly on sustainable management of the region. The Conservancy of the Department of Conservation is responsible for the management of the publicly-owned protected lands and waters. In Malcolm's case this was about 40 per cent of the whole region. The Conservator's role is at the intersection between the national priorities of the Department and the Government and the local conservation priorities that arise at particular sites and within particular areas. Malcolm was accountable to his operational General Manager for ensuring that national outcomes are being achieved at the highest priority sites within the Conservancy. To assist him there was also a 10-year plan for the Conservancy (a conservation management strategy) developed with extensive public input in a process presided over by a citizen-based Conservation Board and signed off on by the New Zealand Conservation Authority, a national citizens-based conservation body. The Conservator's job involves extensive engagement with a wide range of stakeholders. In the interview Malcolm frequently showed examples of complicated thinking, highlighting simple contradictions, posing a thesis and

⁴⁵ Alan is an Area Manager in a different Conservancy to Malcolm.

then offering an antithesis, placing concepts or events within a structure or flow of events. He did not go on to show the more complex forms of thought, with one possible exception.

Bruce

Bruce was the chief executive of a Regional Council. While relatively new to this role at the time of interview, in comparison with the 10-20 year service of many of my interviewees, he had been a manager in the field of environmental management for most of his career. Bruce's council manages a region that covers an area of roughly the same size as Malcolm's Conservancy and performed a mix of operational, regulatory, and policy functions. These range from public transport services and flood management (with a policy and operational focus) to pollution control and management and allocation of freshwater and maintenance of water quality (with a policy and regulatory focus). The issues arise in both urban and rural settings and the councillors, representing urban and rural districts, reflect the different perspectives and tensions that arise from these.

Bruce demonstrated complex thinking. It's in the nature of complex thinking to often construct complex explanations that weave in and out of details and high principles. These explanations are difficult to capture in a single quote. In Bruce's interview he introduced a number of themes that he returned to on a number of occasions. He also often pulled back and compared different models and systems and the ways they performed in practice. Bruce demonstrated a capacity to integrate different systems and models and construct a multi-layered picture of the situation.

Straightforward, complicated, and complex thinking

At the beginning of the first part of each interview I asked each manager how their management was going – how they thought their agency was doing in their area in sustainably managing the environment (in the case of Regional Councils) or the integrated conservation management of protected areas (in the case of the Department of Conservation). The main themes arising from this and related questions are provided in Chapter Six. The way in which different managers responded to these questions is discussed here.

Alan's straightforward thinking

Alan provided an example of a very straightforward response to a question about how management of the areas he is responsible for was going and, in the follow-up, how priorities are being set. He used the public service jargon of 'delivering outputs' (e.g. running the animal pest control programmes or doing threatened species work or maintaining tracks and huts) which contribute to conservation 'outcomes' (healthier natural ecosystems, species numbers increasing, people having safe and enjoyable visits to parks and reserves):

I think it's going ok, we achieve our business plan outputs and things, things happen.... [W]e achieve, we deliver the outputs with the agreed standards that the Department expects....

How do you know or how do you feel confident that those are the right outputs?

Through local knowledge, through knowing the local setup, knowing the [region], knowing basically what we have within our area and that's how I monitor that.

When Alan was asked about the main challenges he faces he did not so much articulate the challenge in terms of a situation or condition or dynamic that might need to be changed but instead described the priority programmes or outputs that he is focusing on. In part this is a function of the Area Manager's role being the delivery of priority programmes. But those programmes are delivered in a social and environmental context and the challenges that determine their success include a range of issues with stakeholders and the wider community,

their preferences, attitudes and capabilities, and issues internal to the Department. Alan referred later to some of these, after specific questioning, but he did not come to these unprompted and did not link them up and draw out the tensions and consequences as someone might who is demonstrating more complicated thinking. Some of his peers and his boss, the Conservator, made more of these connections.

Within the sort of medium term what would be the main challenges or the main priorities that you are focusing on?

Do you want nuts and bolts?

Well, in general terms if you were to say, ok the main points off the fingers of my hand I imagine we'll be focussing over the next few years are these sorts of things this is the sorts of stuff that we're focussing on, from the Area perspective to start with.

Well it's animal control is a priority, marine conservation's a priority, island restoration is a priority, conservation of a community is a priority, threatened plants is a priority.⁴⁶

Alan's view of the priority-setting and business planning process was expressed in very straightforward ways with simple relationships between effects and causes:

And how does that fit together in your mind in terms of that range of priorities and sort of balancing resources between them?

We definitely have priorities within our direction that we're focusing on as an Area but a lot of the times it's in conjunction with the Conservancy's priority. So our animal pest work, for instance, it is a priority for us to do this "x" amount of work because this is a priority within the Conservancy. So that's really how that works.

And when you pull back and look at the Area's priorities within the Conservancy picture, do they make sense in the sense of do you think YOUR priorities are being adequately resourced in relation to other Areas, for example. Is there a sort of consistency of priorities heading across this Conservancy that makes sense to you?

Yes because the Conservancy priorities are put together by the Areas basically. It's in conjunction with all the Areas looking at the ecological nature of the task that we're doing.

Alan provided a similarly straightforward cause-and-effect view in answer to the question 'what most needs to change?' It is noticeable that he pointed outward in terms of the changes needed (more money) rather than to within his operation. In a system where Alan's accountability is for ensuring effective delivery of programmes, and I was told by his Conservator he has been doing this effectively for many years, it may be unsurprising that his sense was that with more resources they could do more of the same.

How would you describe looking out from here? What are the things that you think most have to change in order to ... enhance success of the Area and the Conservancy?

⁴⁶ Note that Alan's boss, a Conservator named Phil, can be as blunt or straightforward in his language as Alan, these are practical men doing practical jobs after all. But Phil is expressing ideas that are more complicated in the way they inter-relate, than Alan is. This is Phil answering similar questions:

And so what would be the big challenges?

The big challenges ... the suite of predators and they're not all taking species out of nests, some of them are grazing the understory of the forest. A deer is just as much destructive to New Zealand's ecosystem as is a rat or a mustelid. There are people ... people predating on marine reserves. A gang patch is seemingly a licence to pluck a marine reserve. So it's a ... from the coast to the mountains, there are pressures on our ecosystems.

And how do you see those challenges changing over time?

They change over time as we learn more about the nature of the pressures, we realise the scale of the task, the enormity of task, against the nation's financial ability to deal with it. The scale to maintain is an appallingly large problem. To enhance it - I was told last week by [a Regional Council] that it's unrealistic to expect enhancement, that maintenance is the best we can do. Well, we are trying to do more than maintenance.

That would be simple - more resources. If you've got more staff and more dollars you can do more, can't you?

So there's nothing that would need to change, if the level of resources stayed the same? What I take from that, is that you're performing at an optimum level.

I think we are. I think we're performing at the level for our resources and for the manpower and the staff, or for the resources, staff and money, we're performing at a level, that at the moment, that we can't do more, we physically can't do more. I haven't got the staff or resources to do more and I think we're working at the top end of the level for our Area. I've got highly skilled staff, that have been around for a long time. Locally, they know the Area very well and they're very good at what they do.

Malcolm's complicated thinking

Malcolm, a Conservator, demonstrated more complicated thinking. His views on how conservation management was going in his Conservancy provided a picture that was more conceptual and nuanced than the view provided by Alan:

[M]ost of the natural values in [the Conservancy] ... are stable or declining. Over the wide landscape scale, the things that have been introduced into New Zealand, all the plants and animals that have naturalised here, are still working towards an equilibrium. And generally that equilibrium drives down the indigenous component at their expense. There are a few places where we intervene effectively where we either hold that, or perhaps to a degree reverse it. But they are relatively small scale.

His account of the challenges of priority setting also described many more complications than Alan did. In the excerpt below, Malcolm told a story to illustrate the way people resist the harsh realities of clear priority setting because, in part, it means having to give up on cherished places and projects. He described the application of a decision framework used to identify priority ecosystems across the country, in terms of their relative intactness and quality. In telling this story he set out a thesis and an antithesis and recognised the contradictions involved (all examples of complicated thinking) but he did not go on to provide a synthesis or resolution of the contradiction (more likely to illustrate complex thinking).

[Having identified the ecosystem concerned] then you would try and take a part of that ... perhaps a small part of it, and say "this is the part that we will try and manage in as close to as natural state as possible, using all our integrated methods of control, and perpetuate that in its natural state." And everything else, we really won't be able to do too much in, because it's too much cost to do an integrated approach everywhere. Let's say ... the best example of [this ecosystem] is in Nelson. And everyone says, "yes, yes, yes" until you say ... "and that means that the bit of that unit in Canterbury and Otago and Southland that you're playing around with, we'll have to flag away". And everyone says: "no, no, no". And you say "but wait a minute, that's a rational approach".... And everyone says "no, we don't want to do that, because our guys are committed to our patches!".... It's the lack of crunching it. Because at some point you're actually going to have to say ... you've gotta say to some Conservators and some Area Managers, "look, I know you've got five people working on [this type of ecosystem] in Canterbury, but we're actually not going to do that work anymore, we're going to do it all in Nelson and you've got this number of staff and this number of resources and we're going to transfer them. And we'll do that in an appropriate way organisationally." But that's what we would do if we were entirely rational, but we're not. 'Cos that's too difficult, that's too painful. So what we do is we say, "oh, no, no. We'll actually ... if we're going to implement that strategy at all, we'll implement it with new money." So that means that all the other duplication and over-investment elsewhere, will continue.

In this story Malcolm set out a simple contradiction. He illustrated a thesis – working on the best example of the ecosystem in Nelson – and then posed an antithesis that he saw arising – the resistance that comes from people in other places because “our guys are committed to our patches” and the pain involved in changing this. Malcolm did not then move on to develop a synthesis of the thesis and antithesis, a resolution that combined elements of both in a new form or a new way forward. However he did, in passing, criticise the ‘synthesis’ that had emerged from within the system – not disrupting existing programmes by only implementing the strategy with new money. He did not suggest other possible syntheses that might be compared with the ‘new money’ approach but rather went back to the ‘entirely rational’ thesis and talked of the duplication and over-investment involved if it is not pursued fully.

Malcolm concluded this account by expressing his doubts about how the decision-making framework might end up being applied in practice: “Quite frankly, it was about that point that I thought that this really isn’t going to go anywhere!” Note that his sense of whether it was going somewhere was posed as an either/or choice rather than as a need to find a both/and synthesis – although it should also be noted that this was a process Malcolm was observing with a view to implementing it rather than one he was directly responsible for.

At one point later in the interview, Malcolm provided a number of examples of complicated thinking, setting out a thesis and antithesis and operating at a high level of abstraction. He made the comparison between citizens or species being naturalized or alien and discussed the contradictions between these and New Zealanders’ ambivalence in wanting to buy or “bring back our legitimacy.” He also hinted at a synthesis. Here, he appeared to be on the verge of what I would class as complex thinking although, to be a full example of complex thinking, we might expect this passage to continue to indicate ways that this contradiction between naturalized people and alien species can be held, or lived and worked with. With complex thinking, there might be not so much of an expectation that a ‘right’ answer could be found but more that working with the contradiction provides a fertile place for advancing conservation.

[A]t a higher level again, perhaps, the fact that there’s - in my view - a lot of almost self-denial, even some angst and regret that we’ve let all these [introduced animal pests] loose in New Zealand. And they’re munching their way through the plants and the animals and that we cannot actually do anything on a landscape scale to actually stop that.

[Y]ou mean the angst or regret is that we can’t really affect it ... or that we actually delude ourselves that we can?

We delude ourselves that we can. And we regret that we ever did. So, for example, you know, if you go back to our pioneering days as a society where we brought everything that we thought would possibly fit in New Zealand, either because it reminded people of where they came from, or it was part of the ecology where they came from and it was valued in some way. Like deer, for example, game animals, rabbits, possums for industry. All those things that we know about from the past. I mean, we tried to introduce anything we possibly could. Zebras. The lot - I mean, it’s amazing if you look back on what people tried to introduce! And some of them succeeded. A lot of them didn’t. And then after they succeeded, we did some other things like well, they’ve succeeded too well, let’s introduce something to control them. And of course that didn’t work either. Well, often it didn’t. And all those stories there of mustelids to control rabbits. Or things that we brought and domesticated for one purpose, like cats that then went feral. Or pigs that were allowed to go feral. We’ve let all those things go and there is culturally a sense of regret that people did that. But then there is a view that we’re stuck in the, they are stuck in that mindset that we introduced them, they’re not naturalised, but we are. So we can call ourselves New

Zealanders, but they can't. They're always going to be forever alien. But we don't see ourselves as alien. But we regret their introduction and in many cases delude ourselves that we might get rid of them. So we never, we haven't as yet socially, culturally made the transition for some of these species between them being alien invaders and being destructive and negative to being adapted and valued as a part of our ecosystem. We're still in a virgin state, ecosystem state of mind. And that is still our image of what we want to re-attain. We want to re-attain, we want to buy back, bring back our legitimacy. And of course that's not possible! But anything else which recognises that that's not achievable is actually at the moment, especially the way the Department is organised, a step too far.

Bruce's complex thinking

Synthesising different approaches, frameworks and models, and understanding the dynamics that might occur between these is much more the province of complex thinking. When asked about the overall progress toward sustainable management in his region, Bruce began his answer by referring to the state of sustainable management in New Zealand as a whole, the relative merits of two different legislative frameworks, and how this relates to international trends:

I think we're starting to see a significant change in New Zealand which reflects the attitudes towards sustainability throughout the world. Of shifting from the regulation-based RMA [Resource Management Act 1991] view of sustainable management, to the LGA [Local Government Act 2002] pro-active view of sustainable development. And that's the transition I think that will be the most fundamental change that we're looking at in the way that Regional Councils could operate. 'Cos it's not a requirement. RMA is a formal, statutory requirement which will continue. The LGA is the less-specific, more pro-active, more partnership-oriented approach to sustainability, which reflects the change in the world's thinking about sustainability since the time the RMA was written, and when the LGA was written.

This response reflected one of a number of the metaformal dialectical schemata from the Basseches framework, that can be found in Bruce's interview text. These metaformal schemata form the basis for my category of complex thinking. In this example Bruce was beginning to demonstrate the "evaluative comparison of forms or systems"⁴⁷. While the evaluation of these two legislative approaches begins here it is distributed through a number of examples in the transcript. Bruce returned to this comparison below:

So in the sense of getting the institutional arrangements right, I think the RMA and regional government, is a sensible way forward. But there are some aspects of the RMA - which I don't think is the original intent, but certainly in relation to the practice - which act against some of the concepts that I see as fundamental for achieving sustainability. If you look at some of the precursors for getting sustainability, I see that you need science-based management, and it has to be based on good information. That'll never be perfect, but you have to have a mechanism for dealing with scientific uncertainty. And there's some examples of that I can give with what we've done recently, to show how that can happen. You need to have multi-stakeholder involvement in a collaborative approach. That's essential. And you need to have an integrated way of doing things. You have to foster collaboration rather than adversarial relations. The key drawback that I see of the RMA, is that it encourages adversarial relations and is too court-based. To expect lawyers who haven't had training in natural resource management to come up with the appropriate sustainability solutions, is asking too much of people who aren't trained in that area. And if you have the two groups that are providing the advice, in an adversarial

⁴⁷ Basseches' dialectical schemata #19.

format, they're going to find it very difficult to distinguish between the two. And that's certainly been my experience with court-based systems. The judges, or even a lot of cases, hearing commissioners, do not have the range of expertise to actually make a sensible decision. We've just seen a classic example of that with [a decision by a special body set up to allocate resources].... [W]ell-intentioned people have come up with a solution that is clearly flawed. Not even based on science, not based on what stake-holders would agree, and they've just made some arbitrary decisions. That was their way of dealing with the complexity.

Is that different from the 'arbitrary' decisions that an elected body might have made?
I'm not talking about an elected body. If you look at the work that we're doing which is trying to get more the LGA style of sustainable development, which I see as being partnerships to achieve community outcomes, which is the way that the Act is designed and I think that's a very sensible, different style from the RMA.

It is important to note here that Bruce has combined what I am calling complicated thinking and complex thinking. There are multiple examples of complicated thinking in the quote above and these are presented in a higher level structure that is a comparison between the two legislative approaches in practice. Some of the examples of complicated thinking in this paragraph include:

- The contradiction of some aspects of the RMA acting against concepts considered fundamental for sustainability;
- Setting out the components of a whole system, the elements required for dealing with scientific uncertainty;
- Relating ideas to a context of bigger ideas, as he does in discussing the limitations of a legalistic or adversarial approach in making 'sensible' decisions on sustainability; and
- Developing a thesis and antithesis and alluding to a synthesis, as he does in suggesting the thesis of fostering collaboration, the antithesis of adversarial, court-based approaches, and alluding to the synthesis of "partnerships to achieve community outcomes", although it is not until later in the interview that he fleshes out this synthesis in describing the way that these collaborative solutions also have to be formally followed through in the regulatory, court-based framework.

These examples of complicated thinking sit within a bigger frame of complex thinking that can also be mapped. In the terms of Basseches' metaformal schemata, this might be seen as the 'evaluative comparison and evaluation of different systems or forms' (dialectical schemata 19) in which the approach to sustainability as practiced under the RMA system is compared with what is possible under the LGA system. A second Basseches schemata that could be applied is "understanding the resolution of disequilibrium or contradiction in terms of a transformation in developmental direction" (dialectical schemata 17). In this case this relates to the full resolution of the thesis, antithesis, and synthesis described above: the tension between a collaboration focus and the court or legally-based approach is resolved by a synthesis that gives legal effect to partnerships to achieve community outcomes. In Bruce's words later in the interview, this approach "gives statutory backing to the non-statutory agreement."

Much of the interview with Bruce was given over to an exploration of water management issues within his region:

I've been trying to figure out, what are the relevant scales for management of water within [this region]? From what I can tell, there are at least three scales we need to operate at. And we're gradually getting the stakeholder groups in some of the

smaller scales, and we're very close to having the group that we need for all of [the region].

In his exploration of this issue he demonstrated the linking, coordination and comparison of different systems operating at different scales and then went on to evaluate different conceptual models he has used to deal with the complexities involved. He first discussed the water management issues at the regional, catchment, and sub-catchment scale, with examples and maps to illustrate each scale, the nature of the specific issues and of multi-stakeholder engagement at each scale, and the stages of the work programmes relevant to each of these scales. He also suggested there could be a fourth scale at the level of individual farms. That discussion runs across five pages of transcript, so I have not been able to simply excerpt from it for this discussion. An edited version of this discussion is provided in Appendix Six. The discussion of multiple scales also included a diversion into a comparison of the merits of the 'pressure-state-response' model for environmental assessment and priority setting or an alternative model he had been involved in developing that he argued was better suited to "the pro-active sustainability tasks, rather than just the reactive regulatory tasks."

The description of a multi-scaled approach to water management involving multiple stakeholders at each level led to a consideration of different approaches to decision-making and their relative value in dealing with complexity:

I'm really familiar with Etzioni.... He talks about the concept of mixed scanning. Saying he agrees that [the classical] rational comprehensive approach is too complex. [Lindblom's] 'muddling through', you can understand why it occurs, but it's not good enough. And he talks about mixed scanning, where you have an overall framework that you put in place. And then you deal with specific issues in the context of that framework and you can deal with those specific issues in more detail. Hence the concept, mixed scanning. You operate at two different levels. My view is in terms of dealing with the complexity that mixed scanning is a concept which can deliver the ability to cope with complexity. Both a rational way, but also recognising that there's a limit to how much any individual can cope with. And so I get ... this is my general framework [referring to his overall approach to water management], I've also got to get my three different tiers set up. These people can operate independently of the rest of the system if they focus on this particular point [pointing to the map of a sub-catchment]. So I can deal with the complexity at this [middle] scale, knowing that having set up this point in a broader framework, that I don't have to worry about the rest. I worry about the rest when I'm dealing at this [regional] level.

Thematic case studies

In this next section, three more extended case studies are used to illustrate how the different levels of systems or dialectical thinking are demonstrated in relation to particular themes. The three themes are ones that emerged from the data. The nature of the questioning about the effectiveness of environmental or conservation management was open-ended, allowing the subjects to define the successes and failures they had experienced and the challenges they saw for the future. Although I did not pursue specific themes in the questioning, there were a number of subjects that arose across a number of interviews – sometimes within the same Regional Council or Department of Conservation Conservancy, sometimes across a number of Conservancies or Councils.

Each of the three cases illustrates an overall theme. In turn, the cases involve issues relating to:

1. What is most important?
2. What is the most appropriate approach to sustainable management? and
3. Different values applied to a specific issue.

What is most important? The first case study describes different perspectives and levels of thinking amongst managers within a Conservancy in relation to their processes for priority setting and planning. This is about how they identify what is the highest priority work.

What is the most appropriate approach to sustainable management? The second case study involves managers within a single Regional Council considering changes to the mandate and focus of their organisation as a result of new legislation that defines the roles and powers of local government.

Different values applied to a specific issue. The third case study addresses a long-standing issue in conservation management, deer control, and different approaches to this work and the different values about humans and the environment that underpin these approaches.

Case study one: Priority setting and planning in conservation management

Here are the views of three managers working in the same Conservancy of the Department of Conservation. They were discussing the annual business planning process and other systems and strategies by which the Department decides on priorities for conservation effort. Two of the managers exhibited straightforward thinking. One is the Area Manager Alan who was looking at his Area's priorities and how they fit within the priorities across the whole Conservancy. The Conservator Phil took a broader view, looking at the priorities of the Conservancy, and the stakeholders in the Conservancy, in the context of national directions from the government of the day. While Phil was looking across a broader range of factors than Alan, both were reasoning in relatively straightforward cause-and-effect ways. A third manager is Kevin, an adviser to the Conservator. His reasoning was more complicated. I have added a fourth voice of my own construction to demonstrate how this topic might be considered by a manager employing complex thinking.

Straightforward thinking

Here Alan gave a very straightforward view of the priority-setting and business planning process:

And how does that fit together in your mind in terms of that range of priorities and sort of balancing resources between them?

We definitely have priorities within our direction that we're focusing on as an Area but a lot of the times it's in conjunction with the Conservancy's priority. So our animal pest work, for instance, it is a priority for us to do this "x" amount of work because this is a priority within the Conservancy. So that's really how that works.

And when you pull back and look at the Area's priorities within the Conservancy picture, do they make sense in the sense of do you think YOUR priorities are being adequately resourced in relation to other areas, for example. Is there a sort of consistency of priorities heading across this Conservancy that makes sense to you?

Yes because the Conservancy priorities are put together by the Areas basically. It's in conjunction with all the Areas looking at the ecological nature of the task that we're doing.

Here, by way of comparison, is Alan's manager Phil discussing the factors involved in the business planning and priority-setting process. While a number of related factors are considered, the thought forms are relatively straightforward: national and local matters need to be balanced, the government's objectives need to be met, and you do what is required of you.

[T]here is some national good issues that we need to meet and they're generally sensible.... But there's also a strong local feeling that we need to balance, up against the national requirements. We have to maintain a working relationship with a wide spectrum of local groups and people who are interested in doing things on the land and for the land.... So we have to blend that in with the national issues. The national stuff is definitely a key component, where we work for a government department and we've got to meet the objectives of the government of the day. So we'll do that. There are political to's and fro's there that need to be accommodated, and honestly met.

And does it feel like a constraint?

It can't be a constraint because basically compliance brings the money to do the work. So we've got to comply, we've got to meet it, and we've got to meet the national objectives. I mean, if you don't want to do it, you go and set your own company up!

Complicated thinking

The next example is a more complicated form of thought. This is from Kevin, a third manager in the Conservancy, whose role was to provide advice to the Conservator and Area Managers. As in the previous example, a number of factors were being balanced. The opinions expressed in the first part of the example were in a straightforward form. There were judgements about how much money is required, the nature of running the 'business', how well the Department was doing at assessing value for money.

[W]e've finally sized the job ... or our component of achieving what's expected under the Biodiversity Strategy, stopping the decline and all that. The job is a metre long, and we've got about two inches of funding. And I think that's fair enough. But, having said that, the real world is we run a business that has a limited amount of money and what we're trying to focus on is ensuring that the money we have got is well spent. And we do the best we can with the money we've got. How do we do that? Probably not very well at the moment, for lots of reasons.

In the second half of this example the thought form became more complicated. The manager transformed the structure of the issue or process from one of trying to compare functional strategies to describing outcomes sought at sites. Implicitly, he was seeing these outcomes at sites and the strategies in a matrix configuration. By focusing on the outcomes at sites, he observed that the functional aspects become a 'tactical response'. Kevin was taking two sets of ideas and putting them together to form a more complicated form of thought.

We've done a lot of thinking and strategic planning focused on things like pests and particular pests - like, we have a goat strategy, and trying to put a possum strategy together, and we're concerned about a deer strategy and things like that - but one of the problems with that, is it's very difficult to prioritise between them. But if you turn everything around and you have a ... identified a range of sort of achievable ... outcomes at sites that you can progress towards achieving over time, that actually means that those sort of ... those sort of actions you're taking, all those columns of things like pests, become a tactical response. And it's easier to prioritise if you focus on the outcomes, than it is trying to prioritise between the tactics. And we're heading that way.

Complex thinking

I did not find an example of a complex thought forms among the Conservation managers, although one example relating to deer control that I provide at the end of this chapter came closest. How might complex thinking be expressed in discussing the progress and challenges involved in integrated conservation management? To illustrate this I have re-written the summary paragraph that appears at the Overview of Part Two⁴⁸ to describe managers' views on integrated conservation management. This version is intended to illustrate complex thought forms; in the process it became more long-winded:

The challenges we face are closely interlinked. We are delivering on the individual projects set out in our plan, and that delivery has improved over time (in terms of its efficiency and effectiveness) but we still struggle to prepare a plan that I might confidently assert sets out the most effective actions, on the most important conservation issues, and represents the consensus objectives of the conservation community. This is because we do not have the information to be assured enough about the relative importance of ecosystems and species and the levels of threat they face. This absence of information constrains our ability to enjoy an informed engagement with the community over conservation priorities. Without such an engagement, our interactions with communities can generate more heat than light, although that passion can also be an important force for conservation action. We get frustrated with our engagements with community groups, with the discussions centred more on competing anecdotes and assertions than comparable conservation information, and they feel diminished and disempowered in their involvement with us. Our respective reactions can be mutually reinforcing, opening up larger gaps between us and the community.

Of course, resources are constrained. This puts pressure on conservation efforts and on engagement with the community. Integrated approaches to management offer benefits in terms of the understanding of the system being managed and ways to combine different programmes at the same site. But taking an integrated

⁴⁸ The paraphrasing of the views of Conservation managers that was included in the Overview of Part Two is as follows:

"We do a good job implementing our plans, but the scale of the job is very large and the plans are only a small part of what we think needs to be done. We do not have enough resources, especially money, and we do not know enough about ecological interactions to make confident decisions about priorities. Taking a more integrated approach to conservation management is a good idea but mainly just an idea. We are also having more success engaging with the community and building community support for what we do."

approach can concentrate conservation efforts onto particular sites. This can put further weight on the choices about which results, sites, and projects might be the most important. Community groups might be more attached to 'their' site than the experts' assessment of the 'most important' site. Community groups and the Department can get looked into conflicts over what exactly is the 'right' choice. The challenge is to rise above the trade-offs and seek to expand the possibilities at the intersection between better information, improved priority setting processes, and community energy for conservation. We can view this challenge, in the face of an abundance of opportunities, as being about how to expand the field of possibilities, resources and conservation activity. Or, applying a scarcity lens, we can reinforce the idea of being in a 'competition' to ensure the limited resources get spent on the 'most important' outcomes.

The different ways of thinking about planning and priority-setting set out above also involve different approaches to the issue. Alan and Phil presented straightforward approaches that were also focused on satisfying different interests as the way to set priorities. In the case of Alan, the Area Managers agreed between themselves and set the Conservancy priorities. In the case of Phil it was more a matter of balancing the national and local needs. Kevin was attending to the ways the priorities are arrived at within the Conservancy. While there were many strategies that helped to prioritise within streams of work, he was focusing on clearer priorities between streams of work and was proposing defining the conservation outcomes needed to be achieved at different priority sites, which would then drive decisions on how much possum or weed control needs to be done, for example. The constructed example of complex thinking blended some of these approaches and placed them in a larger frame. It connected the issues around better information and mechanisms for priority-setting (Kevin's concern) into engagement with the key stakeholders in the community (Phil's concern) but established this in a larger framework and assumed a more inter-active and dynamic interaction between the Department and the community which influenced how the plan was backed by the community.

Case-study two: Changing approaches to environmental management as a consequence of the Local Government Act 2002.

This case study is about perspectives on the overall approach to sustainable management. Three managers in the same Regional Council offered three quite different perspectives on the changes that might be enabled by the Local Government Act 2002 (LGA). In arguing for these perspectives they each demonstrated a different level of thinking. What I was looking for here was not whether the manager believed in the opportunities or constraints offered by the LGA but how they constructed their arguments in considering the issues and the complexity of thinking they showed in doing so.

You may recall from the previous chapter the assessment made by Bruce, a Regional Council chief executive, that the enactment of the Local Government Act in 2002 would be "the most fundamental change in the way that Regional Councils could operate." He said the LGA enabled a shift to a pro-active view of sustainable development rather than the regulation-based view of sustainable management derived from the Resource Management Act. "RMA is a formal, statutory requirement which will continue. The LGA is the less-specific, more pro-active, more partnership-oriented approach to sustainability, which reflects the change in the world's thinking about sustainability since the time the RMA was written, and when the LGA was written."

Other managers in Bruce's Regional Council had different views on the potential offered by the new legislation. One provision of the LGA is the requirement for all local authorities to prepare Long-term Community and Council Plans (LTCCP). The first of these was in preparation while I was conducting interviews for this research. Bruce is the only leader interviewed for this research who consistently displayed complex thinking. His view was that the power in the LGA was in the proactive, partnership-oriented approach it enabled – rather than in the formal planning tools it provided for. His manager with responsibility for preparation of the council's first LTCCP, Jeff, was frustrated at the lack of commitment to the work in his council and felt preparation of the plan had been hampered by the lack of strategic prioritization by senior managers. Jeff described these constraints on the planning process in ways that demonstrated the cause-and-effect logic of straightforward thinking. A third manager, Greg, profiled as a complicated thinker. He made points in ways that showed the historical context and the structure of the larger picture. He saw contradictions but did little to resolve them. Interestingly, with his long experience working under the RMA and earlier planning legislation, he saw little benefit in the LGA changes and instead argued for major reforms of the RMA.

Straightforward thinking

Jeff was a Regional Council manager with many years of local government experience although he had been with this particular council for only a few years. Among his responsibilities was development of the Long-term Community and Council Plan (LTCCP), a requirement of the new Local Government Act 2002 (LGA). Jeff described how he had struggled to have his fellow Regional Council managers give the work on the new plan the attention that he thought it deserved.

[T]he opportunity, I feel, with this first LTCCP 2006, has been lost. It's quite clear in the LGA that it is a key strategic document, that it hasn't, in effect, been treated as such. You know, there was the opportunity to not only have the outcomes, and the measures to assess progress towards those outcomes, but to also align our key activities towards achieving those outcomes. And implicit in that, is strategic prioritisation. And it hasn't happened. So it's been a frustration for me.... [W]e haven't realigned our activities. They've been re-named, but essentially they are the same. So it's going to take about two or three iterations of the LTCCP before we actually, you know, get it right, I would think.

Jeff saw a number of reasons why this has happened. In short, senior management had not been prepared to set clear strategic priorities; Council managers had taken a compliance approach to developing the plan; and the Council had not yet made the shift in thinking from the Resource Management Act (RMA) regime, with its emphasis on managing environmental effects, to embrace the broader social, economic, environmental, and cultural remit of the Local Government Act (LGA). Each of these reasons is set out below:

[T]here has to be, you know, a strategic prioritisation. And it hasn't happened yet. And a lot of things are given equal weight.... [At] the higher level ... there needs to be a lot of that strategic thinking. And it hasn't happened as yet. Senior management, basically, need to make that call.

And in a lot of cases, [the LTCCP] is regarded as a "tick box" sort of a process. And also, at the senior level, there is certainly the imperative to get an unqualified audit So there has been that focus on getting compliance, rather than looking at the "what is the intent of the Act?" And the intent is to actually performance manage towards achieving those outcomes, as I see it, implicit in that are strategic leadership and that hasn't been addressed. There's ... at the moment there is no prioritisation. And our decision-making processes are found wanting.

The Local Government Act, is ... behind that, is transparency with the community. You know, it's about the community decision-making ... and also about community outcomes. And it's based on those four well-beings – social, economic, environmental, and cultural. Regional Councils are finding that difficult because their focus has been on the RMA. So it's going to take some time before they actually come around to thinking about the cultural and the economic and the social areas.

Jeff's thinking, in these short excerpts, seemed to involve largely straightforward cause-and-effect reasoning. Each of my questions about the reasons for the less than ideal progress on the Long-term Community and Council Plan was met with a specific factor that impeded progress. Taken together, these added up to the list above, but Jeff did not construct the overall picture this way, he moved from one frustrating factor to another.

There are places where it shaded into more complicated thinking. For example, he drew the tensions between the imperative to comply with audit requirements (which he disputed) and the intent of the LGA and the differences between the LGA and RMA approaches, but these were simply stated. The absence of strategic prioritisation or the broader objectives of the LGA were stated as just that, as the absence of these factors and the leadership required to address them.

Complicated thinking

Greg had spent all his career in resource management roles, with central government departments and then with many years with the Regional Council. To describe the transition in thinking about sustainable management he cited, as an example, the ways engineers have had to think differently about building a bridge. He constructed this example in ways that demonstrate complicated thinking. He placed the different approaches in an evolving context; it demonstrated both the motion and forms of transformation.

When engineers first started out, they just thought about the best location for the bridge, and then later on they got much more involved with the economics. So you had the physical element, then you had the economic element. And then, the next thing, probably in the '70s, the environmental considerations came in.... So you've got physical, economic, environmental. And more recently... the whole Maori thing, the cultural became important. And now, layered on top of that, although the two aren't distinguished, is social.... And we're just starting now to really try and understand what the evaluative factors might be in a social sense.... So, over time we've grown the number of evaluative factors that you consider when you are going to undertake something in the environment. Now people often forget the physical, but that's still there and very important. It's the infrastructure.

I then asked whether the same sorts of questions are being asked, but just across more fields such as the environment, social, and cultural impacts, or whether there was a shift to asking different or bigger questions such as “is this bridge or whatever the structure might be, the right solution, or do we need a transport or a transport mode solution?”

There are two stages now. In the bad old days, where the Ministry of Works ran everything, that first question about the need for the bridge was decided. And then the question about the design of the bridge and ... the effects were then looked at. Now, that still happens, but there's more debate of course.... It usually starts with an issue. Quite a lot of discussion about an issue. And then there's possible options for dealing with it. Sometimes in those options you might consider the sustainability of the various options before you choose one. But sometimes there aren't any options.

Greg's answer to a question about what he would do differently if he were running the process, showed some complicated thinking. While he described particular causes and effects, these were arranged in different levels: there were the effects of the lack of prescriptive planning on the environment of the district, and there was the way the planning approach allowed these effects to accumulate, and a gap in the system that prevented these issues from being addressed.

I'd have the Resource Management Act, but quite a lot different. I'd start there. And I think that government has a responsibility in planning. Even if it's only setting down what you can't do. Setting down limits. [For example, making] a conscious decision as to what is urban and what is rural. And there's a whole lot of decisions regarding the transport corridors and everything that flows from that, that we haven't made here. Here [in a local district] we've just said "let rip". "RMA, you can do what you like, provided you don't have any effect." So you've got everything there – you've got a mixture. You've got farms, and then almost urban cul-de-sacs next door, and then lifestyle blocks. And there's going to be a huge range of issues floating around. And I'm talking in terms of sewage, contamination, water supply.

So there are significant effects but they're cumulative, is that ...?

Absolutely, cumulative and because each consent ... it's the old thing about the straw and the camel's back, or death by a thousand cuts. Each little consent you can't argue ... the cumulative effect of that is minute. And the [Environment] Court has really said [on] cumulative effects, unless you can show them pretty clearly, we're not interested. So we're getting all of this ribbon development and all, you know, bit by bit, each consent.

I asked Greg if he thought the changes to the Local Government Act provided any opportunity to move back to a more planned approach. Did he think the LGA with its provision for preparing long-term plans provided a umbrella which might provide direction on RMA matters?

No, no, we don't.... It doesn't do anything about cumulative effects, it doesn't touch the RMA. It does a couple of things. It makes us – and I don't know if it really will work – there's supposed to be a much larger community say in what the Council does. This is totally bloody nonsense. Now, as a bureaucrat, you know that's basically a fiction, because if the Council wants to do a particular thing, it will serve it up in a particular way; it'll get its way. Because most people are too bloody busy to be bothered. There's only a few squeaky wheels ... and at the end of the day, they don't really count too much. But it's supposed to do that, and we've gone out and we've asked the community what they want. But you only get this thing, oh, we want clean air and we want clean water. Fine, you know, so do we. So that's not particularly useful.... But the other thing is expanding what we do. And I don't think that will go too far because the districts are very jealous of their jurisdiction. I mean, fiefdom is the whole thing, it's very strong in this country. So we might have one or two minor powers that we can do things, but I don't see a lot of change.

Here Greg gave an answer that differed from those given by his two colleagues. He rejected the Long-term Community and Council Plan process by which Jeff put so much store and he was dismissive of what might be achieved in engagement with the community. Greg seemed firmly grounded in the values of expert professionals and the changes he sought were to enable those professionals to address issues such as cumulative effects and setting limits and standards. Bruce, whom we have met before and whose comments follow below, was much more confident about what could be achieved in engagement with the community, and how essential this was to making progress, and how this needed to be linked back into systems that use science to reduce uncertainty, and reveal and engage with differences in values in the

community and then connect back to the formal regulatory system. Bruce described these possibilities in more complex ways than did his managers.

Complex thinking

Bruce talked about the LGA/RMA comparison from the perspective of the different models of sustainability that these represented and how the intent of the LGA can work in practice. The question here is more “what is the style of working that arises under the two Acts?” rather than what might be achieved through the formal LTCCP planning process and how that should be carried out – which is Jeff’s narrower concern.

In terms of concept, I think the LGA has got it right. It’s not necessarily through the LTCCP. Just in terms of framing the issue.... If you look at the work that we’re doing which is trying to get more the LGA style of sustainable development, which I see as being partnerships to achieve community outcomes, which is the way that the Act is designed and I think that’s a very sensible, different style from the RMA.

Bruce cited examples of how these partnerships to achieve community outcomes are being developed as means to resolve a number of contentious community issues. In one case he said:

Decisions have been made by the stakeholders. And we’ve gone from a totally adversarial situation to collaborative decision-making and a successful outcome. And that model of sustainability I think will work.

These processes are not separate from the RMA consenting process but, rather, provide a context for gaining community agreement in advance of the issuing of consents. Citing another contentious issue involving allocation of freshwater, Bruce said:

[W]e have not changed the consent. Yet. But the agreement is, that once we get to a suite of flows that will deliver the environmental outcome, and they have worked out the way that they can manage that in terms of their operations, we will then change their conditions. So we’ll give statutory backing to the non-statutory agreement. Now, you’re talking about LGA process.... So I think it’s possible, and it’s certainly not an LTCCP process, but it is very much geared to how do you get different stakeholders to actually work together? With science and their values being recognised.... And I’m certainly of the view that if you’re going to achieve sustainability, you’ve got to achieve it at multiple scales.

Bruce was describing this as a set of interconnecting systems and approaches: the community engagement process, the integration of values and science, the fixing of the results in a formal regulatory regime. He had come to this view through a range of experiences. He provided many examples. I will cite one here to illustrate how he argues at multiple levels. This particular case involved setting the water quality criteria for a major harbour with high ecological and recreation values. When he began the task he saw this as largely a technical issue.

I thought, here’s a nice, interesting technical task. And went away and produced water quality criteria ... and the industry said “oh no, this is far too hard. We can’t cope with this, you’ll send us out of business.” The community said “oh, look, this is terrible, these aren’t nearly strong enough to protect our interests.” I understand this issue had been going on for quite some time, like about 20 years. So it wasn’t going to be solved by technical means. So having struggled through all of that saying, there’s got to be another way of doing this, and having had a long term interest in sustainability, although much more of the technology end of how you solve things, rather than necessarily the political end, what became clear when we worked out that we’d be far better off – and this is the deal we struck with industry and the community

– was that here are the combined objectives, we did a value survey across the entire area about what are the multiple values you need to address – and we got industry and the community together, along with the relevant [government] agencies, independent chair, and said “if you can reach agreement on what are the water quality standards . . . , we will make those law.” And we set up a separate scientific forum, ‘cos there were fights between all the various scientists, as well as fights between the different stakeholder interests, and what became clear in the science, that the greatest fear of industry [was] that a single measurement would put them out of business. [I]f there is a problem... it’s not one measurement, it’s multiple measurements of the same parameter. And where there is a causal link, is making certain that you have a number of monitoring parameters in that causal link [so] the actual cause of it can be determined. So multiple measurements and multiple parameters. Got the scientists on side.... We set up this multi-stakeholder group, about 25 people. What we did as an organisation was provide advice, or got specialists involved, made certain all the administration was done. And after two years, they got agreement... That is now law. So it showed me that getting multi-stakeholder collaborative approaches, backed by science, and then getting that agreement and turning it into a statutory mechanism, was a far more productive way to achieve sustainability than either a technical solution imposed, or a regulatory system imposed.

In telling this story, Bruce went into the detail of the narrative and of each of the components and was then able to pull back to describe the broader system into which these pieces fit: a multi-stakeholder collaborative approach, a way of working through the science and reaching agreement or bounded disagreement on the science, then a method for establishing the agreement in the law. He was able to compare this with approaches focused solely on technical, political or regulatory methods.

Case study three: Conflict and values in relation to deer control

Issues about control of introduced species of deer were cited in many interviews with Conservation managers. Deer control has been a contentious conservation issue in New Zealand, with calls for the eradication of deer going back more than 80 years (Young 2004:131) as they have been identified as browsing out the understory of forests, preventing the regeneration of many plant species, and eventually leading to a transformation in forest composition. The National Parks Act and National Parks Act General Policy requires the eradication of introduced species from within national parks. Deer hunting organisations argue these species should be accepted on conservation lands and managed as valuable recreational resources (DoC 1997). In some ways the positions of preservationists and hunters have hardly changed in the past eight decades, although the scientific evidence has got much clearer in recent years that even relatively small numbers of deer can have significant ecological impacts (p.29). Also in recent years the export market for wild venison has collapsed. This has meant it is no longer economic to shoot and harvest deer from helicopters, removing a major incidental means of deer control across large areas of Conservation land.

Deer control has many of the characteristics of the water quality issue being described by Bruce in the previous section. There are fundamentally different interests and values, and these are argued out over the science and policies and practices. Deer were introduced to New Zealand as sporting animals. Those who hunt deer tend to argue that humans and introduced animals need to live in an evolving balance in this landscape, as both are relatively

recent arrivals on these islands and both are significantly modifying the environment. Others more committed to environmental preservation argue that *because* of the dramatic changes to the New Zealand environment resulting from the arrival of Maori and Europeans and the introduction of many species, a maximum effort should be made to retain what is left. These people put more emphasis on the ‘intrinsic’ value of indigenous species, separate from human-use values⁴⁹. Deer hunters put more emphasis on the value of humans being able to use protected places for sport and to enjoy introduced and indigenous ‘game’ species. In the examples below Conservators from two different Conservancies talk about the issues associated with deer control.

Straightforward thinking

What follows is a relatively ‘straightforward’ view from Phil:

Red deer are chewing out the understorey in our national park.... [Because of the halting of helicopter deer recovery for venison] we’ve had three fawn crops that have basically been unmolested, and of course they’ve moved on to adulthood and now they’re breeding. The pressure of the deer was such that every green shoot that stuck its head up, or came through the ground, was nipped off So we started aerial removal And we’ve got to the point where we are now starting to get some regeneration. We’ve tried enhanced recreational hunting, basically telling them that they’re good people, and get out there and have a go! And trying to encourage them more. They really don’t make any difference. We’ve kept detailed records and recreational hunting just doesn’t produce the goods in terms of animal control. It gives you a measure of animal control, but they don’t keep ahead of increasing animal numbers. But aerial control is very effective.... Where we are controlling deer ... we are controlling deer to a high level, an intensive effort over 800 hectares and we’ve shot a lot of bloody deer. But we are now starting to see what a ... understorey would look like. We haven’t known it, really. There’s ... a couple of generations of New Zealanders who expect it looks like something. But, really, it should look like something else. It should be so full of bloody stuff in the creek beds that you struggle to walk up it. They shouldn’t be the open routes they are....

Phil explained the deer control issue in terms of a set of cause-and-effect relationships: the halting of helicopter deer recovery had led to three seasons of deer breeding which increased pressure on vegetation by browsing out the understorey of young plants. In response the Department had had to run aerial control operations of its own, because recreational hunting was tried but this did not kill enough deer quickly enough. Aerial control, shooting deer from helicopters, was effective and leads to the restoration of what the forests looked like without high deer numbers.

If I got half a million bucks worth of aerial control, I could make a hell of a difference in a few catchments. And make it look a lot better. But of course that would ... bring you full frontal with a major political force now ... Outdoor Recreation... they think all deer are virtually sacred. And they sort of don’t give a hell of a lot of recognition to the national park values or the General Policy for National Parks [which requires removal of deer from National Parks]. So you’re right up against that, straight away.

Phil’s conclusion was that he could do more but that political opposition to deer control blocked progress. Again, this was a straightforward cause-and-effect explanation. There was no contradiction, irony, or paradox although there was the sense of thesis and antithesis in the two opposing views about deer control.

⁴⁹ The definition of ‘conservation’ in New Zealand’s Conservation Act 1987 is “the preservation and protection of natural and historic resources for the purpose of *maintaining their intrinsic values*, providing for their appreciation and recreational enjoyment by the public, and safeguarding the options of future generations.” Emphasis added.

Complicated thinking

Malcolm presented a more complicated view of the issues. He was describing the contradiction in the Department and others promoting a national park in an area that included a premium deer hunting site. Malcolm set the issue up as a contradiction that had been managed but could become more starkly drawn in the future. This account involved thesis and antithesis and an implicit working synthesis. Then there was the prospect of another antithesis emerging in contradiction to this synthesis if in the future it became easier to control deer or the impacts of the deer were judged to be unacceptable.

[I]t was clear to me that when we were pushing for Stewart Island as a national park, there was a clear and obvious conflict with the fact that it's also the most important whitetail [deer] hunting resource in New Zealand. We turned it into a national park⁵⁰, with extermination philosophy, and then we say 'oh, but we can accommodate this'. *And really, can we accommodate it, do you think?*

No! 'Cos it's either a national park, and we're going to try and return it to some sort of more natural state. And that was a clear example of, we so wanted it to be a national park that we were prepared to overlook the fact that it was going to put us into fundamental conflict with a user group who have always seen to manage it as a recreational hunting area. We could do things to reduce the whitetail population on the island. I mean, that's highly effective, you know, aerial 1080⁵¹ and the like. But are we going to do that? I don't think so! So we'll sort of live a lie and each party will have what they want and leave our national park and the community will be able to use that as a marketing tool. And we'll feel great about that....

Is it sometimes more effective to live a lie?

Of course it is! Of course it is (laughs).

There may be a sense to that?

It's not without sense in that the objectives of the Department and a group of people who wanted the national park got what they wanted. The hunters who were concerned that that would automatically mean the deer were going to be removed probably got some soft soaping, to not scare them too much. And probably the unspoken dialogue was we thought when it's national park, we should get rid of the whitetail, but we haven't got the technology or the financial resources to ever do it. So we can't. And the hunters thought well, it's a national park, they should get rid of all the whitetail deer, but they haven't got the technology or the financial resources to do it, so they won't. So each party said well, we can live with that. But, and this is the key element, [if] the Department ever said that the destruction is so bad, and the changes are so immense, we've got to do something and we've just discovered a way of doing something, and we now want to do it. Then what was a theoretical conflict then does become very much a real conflict.

Here there was a thesis that said, Stewart Island is of national park quality. The antithesis was that the herd of whitetail deer on the island offered the best whitetail hunting in the country. The accommodation (an implicit synthesis) was to tacitly ignore the provisions of the National Parks Act General Policy that require the eradication of the deer. Then this tacit ignorance synthesis became a new thesis and a new antithesis might yet emerge with major deer impacts and the financial and technological resources to remove the deer. Notice that Malcolm also told this story by speculating on the perspectives and assumptions of the Department and the hunters in what he calls the unspoken dialogue.

⁵⁰ The National Parks Act General Policy requires the elimination of introduced species from national parks.

⁵¹ 1080 is the name given to sodium monofluoroacetate, a poison that is extensively used in possum control in New Zealand. Mammals are very susceptible to the effects of 1080 so deer hunters have been prominent in campaigning against its use in possum control as it also kills deer.

On the cusp of complexity

Malcolm then moved to a more fundamental level. In this quotation that was seen earlier in the chapter, Malcolm suggested the values conflicts around deer control, and introduced animals in general, might be based in a deep angst in the New Zealand psyche. This appears to be on the cusp of a complex thought form. The ideas are more abstract than are normally found among Conservation managers. However the structure of the argument generally shows complicated thinking.

[A]t a higher level again, perhaps, the fact that there's - in my view - a lot of almost self-denial, even some angst and regret that we've let all these things loose in New Zealand. And they're munching their way through the plants and the animals and that we can't actually do anything on a landscape scale to actually stop that.

[Y]ou mean the angst or regret is that we can't really affect it ... or that we actually delude ourselves that we can?

We delude ourselves that we can. And we regret that we ever did. So, for example, you know, if you go back to our pioneering days as a society where we brought everything that we thought would possibly fit in New Zealand, either because it reminded people of where they came from, or it was part of the ecology where they came from and it was valued in some way. Like deer, for example, game animals, rabbits, possums for industry. All those things that we know about from the past. I mean, we tried to introduce anything we possibly could. Zebras. The lot - I mean, it's amazing if you look back on what people tried to introduce! And some of them succeeded. A lot of them didn't. And then after they succeeded, we did some other things like well, they've succeeded too well, let's introduce something to control them. And of course that didn't work either. Well, often it didn't. And all those stories there of mustelids to control rabbits. Or things that we brought and domesticated for one purpose, like cats that then went feral. Or pigs that were allowed to go feral. We've let all those things go and there is culturally a sense of regret that people did that. But then there is a view that we're stuck in the, they are stuck in that mindset that we introduced them, they're not naturalised, but we are. So we can call ourselves New Zealanders, but they can't. They're always going to be forever alien. But we don't see ourselves as alien. But we regret their introduction and in many cases delude ourselves that we might get rid of them. So we never, we haven't as yet socially, culturally made the transition for some of these species between them being alien invaders and being destructive and negative to being adapted and valued as a part of our ecosystem. We're still in a virgin state, ecosystem state of mind. And that is still our image of what we want to re-attain. We want to re-attain, we want to buy back, bring back our legitimacy. And of course that's not possible! But anything else which recognises that that's not achievable is actually at the moment, especially the way the Department is organised, a step too far.

This was on the verge of a complex thought form when he got to discussing the contradictions. While he did not resolve or hold the contradictions, but rather shifted from one perspective to the other, he did two things that took him to the verge of complex thinking. Firstly, he added complexity by presenting the contradiction at two levels. The first level of contradiction was in the way humans have introduced these animals for a purpose and then, when the animals have been more of a pest than a value, humans have chosen to remove them. The second level of contradiction Malcolm presented was in the deeper feelings he thought New Zealanders hold about this. This was Malcolm's sense that New Zealanders wanted to buy back their legitimacy because of the species humans have released here and the idea that "we can call ourselves New Zealanders but they can't." Secondly, he started to point toward his resolution of the contradiction, by recognizing and acting according to the view that it is not possible to return New Zealand forests to their

virgin states. But this was not yet a complex resolution of the two parts of the contradiction. It was more an adoption of the antithesis rather than finding a higher order synthesis to the issues.

Summary

My main findings from the analysis I conducted of interview transcripts are that:

- Only one manager, of the eighteen transcripts analysed, operated as a complex or systemic thinker as a regular part of his discourse, as demonstrated in the interviews.
- Most managers showed some level of complicated thinking. Eleven of the eighteen transcripts analysed showed managers operating as complicated thinkers, sometimes touching on complex thinking. Four of the eighteen transcripts analysed showed managers who seemed to operate as straightforward thinkers who sometimes do more complicated thinking.
- Two of the eighteen managers showed only straightforward thinking.

As I discussed in the introduction to this chapter, there was a bias in my sampling of the interview transcripts for analysis. I analysed all those transcripts where I thought, from my experience of the interview, that I might find complex or high level complicated thinking. I then sampled across all levels. When I attempt to adjust for this bias, my estimate is that, across the total sample, about 10 per cent (3 of 31 interviewees) demonstrated straightforward thinking.

About one third form a cluster who mixed straightforward and some complicated thinking. They showed they could do complicated thinking but tended to stay mainly in the straightforward mode.

More than half the group appeared to consistently operate as complicated thinkers during the interviews. I estimate that about a third of the members of this group showed complicated thinking touching on complex thinking. There was one interviewee who clearly demonstrated complex thinking most of the time. See table 7.2.

Almost all the forms of thought arising in my interviews with Conservation managers were examples of 'straightforward' or 'complicated' forms of thought. Only in one instance did one of the Conservation managers I interviewed touch on 'complex' forms of thought. Complex forms of thought occurred more frequently amongst managers in Regional Councils than in the Department of Conservation. Conservation managers tend to mainly show in straightforward to complicated categories of thinking. Regional Council managers tended to be more in the complicated to complex category of thinkers.

Those leaders of the units judged to be 'most successful' were not those who demonstrated the higher levels of systemic thinking but, rather, seemed able to simplify complexity for their teams.

Table 7.2: Patterns of systems thinking among managers emerging from the analysis of the interviews			
<i>Basseches' Dialectical Schemata</i>	<i>Johnston and Atkins' simplified model, based on Basseches</i>	<i>Patterns emerging from the analysis of interviews</i>	<i>Rough estimate across all interviews</i>
	Straightforward thinking (no dialectical or systems thinking)	Straightforward thinking	~10%
Schemata of motion	Complicated thinking – combining examples of the first order of Basseches' schemata (motion, form, and relationships) and simple contradictions	Straightforward thinking plus some complicated thinking	~30%
Schemata of form		Complicated thinking	~40%
Schemata of relationship		Complicated thinking touching on complex thinking	~20%
Metaformal schemata	Complex thinking	Complex thinking	<5%

Chapter Nine: Findings About Managers' Self-complexity

Introduction

Self-complexity was the focus of the second part of the interview, where I used the subject-object method (Lahey, Souvaine et al. 1988). The relevant transcripts from all thirty one interviews were analysed according to the subject-object method as set out in the manual and taught in the training programme⁵². I simplified the scoring by reducing the number of subdivisions. I classed the transcripts as third order, third-fourth order, fourth order, and fourth-fifth and fifth order, were I to find such levels⁵³.

As is standard practice, the assessment of a subject-object interview is made on the whole of the interview transcript. The interview method, while open-ended in terms of the stories interviewees choose to tell, uses questioning designed to reveal the underlying structure of a person's self-complexity. These are coded in the transcript and scored and a composite picture is built up over all the structural elements in the interview. The challenge in reporting on these results in a narrative such as this is that the specific examples are being taken out of the context of the individual's story and the composite whole that reveals the level of the interviewee's self-complexity.

I present the case study material here in four sections. I start with the fourth order. I do this for three reasons. Firstly the self-authoring fourth order is the basic standard for management and leadership. It is not that all leaders operate at this level of self-complexity, but it is the level that most closely resembles the set of values that is represented in the literature (Kegan 1994). Secondly, perhaps because it is a way of making meaning that is so part of organisational culture, there is a way in which the level of self-complexity seems to be easiest to see at the self-authoring fourth order. Thirdly, by presenting the fourth order first it is also possible to make comparisons to both the third and fifth orders. I do this, using the Finlay case, at the end of the fourth order section.

In the second section, I present the third order examples. It seems easier to see the third order qualities in contrast to a fourth order frame. Then I present a group of interviews which indicated managers in transition between the third and fourth orders. Finally I present an example of someone who shows indications of self-complexity beyond the fourth order. In Chapter Ten I summarise the fourth order cases I include here and present a fifth order version of these summaries.

Although in the subject-object part of the interview the interviewees get to choose the

⁵² Some of these assessments are tentative due to there being a limited amount of analysable material in some transcripts.

⁵³ My classification of third order spans Kegan's subdivisions of 3(2), 3, and 3(4). 3(2) is primarily third order but retaining an element of second order. There were no transcripts in this category in my research. 3(4) is primarily third order but moving toward an element of fourth order. Where the number is given in brackets this indicates that there are elements of this frame but not a full frame. My classification of the transition from third to fourth orders includes two of Kegan's subdivisions: 3/4 and 4/3. In each of these both the third and fourth frames are fully present with one being judged to predominate over the other. My fourth order classification includes the Kegan subdivisions of 4(3), 4, and 4(5).

subjects they talk about, it was common for some stories to centre on conflicts -- conflicts with contractors, public debates, conflicts over prosecutions, or staff issues. How different managers make meaning around these conflicts provided clear examples of different frames of self-complexity. From this I have extracted themes to help organise the material. One theme is about managers describing their approaches to taking hard decisions, often in situations of conflict. The second theme deals with how managers view themselves in these contexts and how they see their own successes, failures, and meaning-making. I present the third and third-to-fourth order cases divided between each of these themes. At the fourth order I found the material could not be so easily separated. Participants told stories about taking hard decisions and they reflected on how this affected them and how they saw themselves through this. While material could be extracted from each of these cases to demonstrate the two themes, it was too unwieldy and artificial to define one interview or case as focused on taking hard decisions and the other on the participant's sense of self.

Fourth Order

Almost half of the managers interviewed for this study, fifteen of thirty one managers, profiled as operating on or around the fourth order of self-complexity. Of these, eleven were Regional Council managers and four DoC managers. The leaders of the three Regional Councils and the three DoC Conservators profiled as fourth order. Three Regional Council managers, two chief executives and one second-tier manager, are focused on in this section to illustrate aspects of the fourth order of self-complexity as demonstrated in my data.

The three leaders in these cases each talked about making hard decisions and exercising their judgement and how they thought of themselves as responsible for that and how they identified themselves in this way.

Blair was very confident of his judgement and experience. He knew his role and knew the work of his organisation intimately. He backed himself in a clear, self-authoring fourth order way to make decisions, including making mistakes and then putting things right again.

Bruce also described a tough decision to prosecute. He described the need to reach a decision that has integrity and the way he constructed that sense of integrity was a very fourth order construction. He had to deal with uncertain knowledge, tight time frames, and the likelihood of public acrimony to reach his own view on the 'right' thing to do.

Finlay, who was one of Blair's direct reports, described a hard decision and multiple selves. He also talked about prosecution issues. In this case the focus is on his balancing of the two different roles he thought he needed to play. I use the Finlay case to also make comparisons with how such a story might be told from a third or a fourth order perspective.

Blair

Blair was a successful Regional Council chief executive. He had been a leader in resource management in the public sector for decades. He was confident and assertive and had a reputation for being tough. He was proud of his Council's reputation for taking tough action to protect environmental bottom lines and he was just as proud of their success in building strong relationships with the farming community. Throughout the interview he consistently and confidently demonstrated self-complexity in a fourth order frame.

At the time I was conducting interviews in this Council, the Council and management had been involved in taking a particularly delicate decision on a prosecution. This decision was mentioned unprompted, and in confidence, in three quarters of the interviews I conducted at the Council. It was clearly capturing the attention and emotional energy of the members of the management team. Blair raised this issue when we were talking about the core values of the organisation, displayed on his wall, and how these were enacted in day-to-day decision-making. I asked where these values had come from, from an external code of conduct or from within:

Oh, they're from within. They've gotta be from within. And people have to understand and sense that. That, you know, you're not going to haul them in because there's a rule in a bloody book that says ... you're going to haul them in because it's bloody important.

When offered the choice of whether something comes from within the person or from the perspectives of others, interviewees sometimes appear to opt for the perspective coming from within because that seems to be what they feel they should say in a society that puts such emphasis on self-authorship. Note that, in this excerpt, Blair went a little further. In saying that "people have to understand and sense that," that the values are held within him, he was seeing himself as the leader and seeing the part values contributed to his leadership role. These features were object to him in a fourth-order way.

In terms of taking tough decisions, how do these simple values get applied in complex situations? Blair talked about having to be pragmatic and make decisions that are workable, balanced against the core values. When he was asked about how he handles 'grey areas' his strong internal moral compass gave him a very clear steer. He used the prosecution decision as an example. When asked how he achieved a balance, he replied:

Well, that's your task. And it's a bit like the Resource Management Act. You've got ecological bottom lines! And you work above them. And I mean you do that all the time. But fundamentally, you come down to "shall speak the truth". And "shall deal with people honestly" and "shall not rip people off" or whatever it might ... they're pretty simply things.

And how do you approach the grey areas, 'cos even in ... in my experience, even in the clarity of having some strong values, you still run into grey areas.

I think people invent grey areas, I really do. You know, what you're saying is sometimes you come across matters that are complex. But when you sit them down to what's right and wrong, and, you know, like this ... prosecution. Man, you could complicate that. Look, it's not all that bad, what he's doing. And it's not really having a huge environmental effect. And you come across all that bullshit all you like. Well, you sit down, just look at it with the simplicity that exists and say that "this is the space we've got to be in." You know, it's the old "when I get out of bed tomorrow morning, am I going to churn on this, or is it going to be ... I'm going to say, well, whatever happens next, we've done what was right." You know, it's the same ... and it doesn't matter whether you're dealing with a staff discipline situation, or going to beat up the Mayor of [a local city] – as I'm going to do in about two weeks time over an issue. You've fundamentally gotta ask yourself ... but do so in a way that's professional and careful. And make sure you haven't got your own personal agendas or egos or whatever it is floating into an analysis. It's gotta be right. And I don't think those grey areas – if you really get into them – are as grey as a lot of people make them out to be. I think often, the right thing to do is pretty obvious.

Both the other Regional Council chief executives I interviewed also raised conflicts they had had with city or district authorities and the decisions they had made to prosecute them⁵⁴. Bruce's description of this conflict is set out in the next section. A second perspective on the specific prosecution decision Blair had been describing was provided by one of his managers, Finlay, and is the third fourth-order case presented here.

Before we leave the Blair case it is worth recording how someone who clearly and unequivocally makes meaning at the fourth order saw himself and experienced the satisfactions of the job and the success of his organisation in relation to his staff. This can be contrasted with a leader such as Ben, a case presented later in this chapter, and the way his sense of self was built up from the way his staff viewed him.

[I]t gives me a really good professional buzz, to be part of an organisation that I think many do recognise. But, more particularly, I recognise the good work these people do in their day to day ... it's really good. ... I'm literally delighted that the people in this place achieve.

It's very satisfying for you because of the feedback you get from others about their success, or your sense ...?

Well My sense. I know what they're doing. And that's why I take the time to do that. I actually think I'm the best judge of their success than anyone else. And I don't mean that to sound arrogant at all but, shit, I know what we're meant to be doing. And I know how hard it is, a lot of the work they engage in, and when I see how well they do. In terms of the personal thing out of that, I get a lot out of the fact that you are their leader. And they're achieving things. And my role is very much to put the connections in place and, you know, make sure the resources from the simple to the most complex environmental relationship things are there that enable them to go about all that. And that's where your personal satisfaction comes out of, I think.

Blair knew what his staff were doing, and thought, because of that, he was the best judge of their success. He could see the role that he played in creating the context within which those people were able to function and how this made him feel good about himself. This was a very clear and confident fourth-order frame in which he saw his world.

Bruce

We have met Bruce in the previous chapter. He was the third Regional Council chief executive (see the previous chapter for details of his role). He also had had to decide to prosecute a city in his region. Bruce's description appeared more equivocal perhaps than Blair's, provided above, or it may have been expressed more equivocally, but the order of self-complexity seemed to be similarly fourth order. Where Blair was certain about his particular prosecution decision because of his own strong moral perspective, Bruce, in the particular case he described, was more concerned about getting the technical aspects of the decision correct although he saw these as being interconnected with legal and moral

⁵⁴ In the case of one of the chief executives, Jack, this came up in the first part of the interview, rather than during the subject-object section and I did not use that technique to explore the way he made sense of the situation. However, in reading the transcript using a subject-object lens, he appears to make meaning about these issues at two levels. The first is a third-order sense of implementing and defending the rules. But these rules have been produced through a public process. Defending these rules, and implementing them without fear or favour, appears to be important because Jack had a clear perception this was the right thing to do. He arrived at this from a fourth order view of what he saw as right.

“But in the end, [the local authorities] know damn well ... that ... we'll mean what we say and that a contract between us and our community is written in ink, until it's reviewed...”

[I]f I have delegated authority to proceed with a prosecution, it doesn't matter what the Chairman says about how terrible that would be. I will have the courage and the ... I'm a leader ... to say, “I'm sorry, them's the rules, and there are no extenuating circumstances.”

concerns. For both of them the focus was on making the right decision and the assumption was that there is a clear right decision to be found. In neither case was paradox or holding of multiple perspectives brought into play although these were tested for.

How did Bruce work through that decision and how did he see the risks and ambiguities involved?

There was a situation where the city had ... clearly breached the Resource Management Act. And ... the decision had to be made in a very short period of time, because we had just run up to the statute of limitations and I'd just received all of the information. And clearly, I had to make a decision, do we throw down the gauntlet to the city and take them on in a very serious fashion, which was going to be politically difficult. Or does one take a different path, which would be less personally challenging, but not necessarily fulfilling the responsibilities of the job? And having to consciously make the decision yes, the right thing to do in terms of the role, despite the pain it was going to cause, was to proceed with prosecution.

The challenge here was seen as a fourth order one: there was a right thing to do in terms of the responsibilities of the role although it was going to cause some pain to do it. Getting it 'right' was a central concern as Bruce makes clear.

And of course the adverse reaction came. I don't know whether you're familiar with the coverage there, but the Mayor just went ballistic, totally ballistic. Yelling and screaming from the rooftops, full page coverage in the press, damning [the Regional Council] for all sorts of nefarious activities – how dare they take another local government organisation to court? No mention that they'd actually breached the law, or anything like that.

So one is certainly 'torn'⁵⁵ there, knowing that you're going to have to put up with some incredible public acrimony, and potential criticism, for taking that action. But knowing that it was the right thing to do.

And what's the hardest thing about doing that?

You know you're going to subject to major conflict. You're going to be scrutinised incredibly closely. I mean, you're making a decision where you know you're walking on a tight-rope in terms of making certain that you are doing the right thing.

This focus on a best or most correct approach, arrived at by the individual, in terms of his or her self-authored view is a central feature of the fourth order frame. At the third order the right thing to do may also be a central focus but deciding what is the right thing is more based on external points of reference such as professional standards, rules, norms of agencies, and the views of peers. From a fifth order perspective the 'right thing' is likely to be more elusive. A decision may need to be made on the balance of the evidence and the experience of the decision maker but they will do so with more of an awareness that their perspective is a construction based on their experiences and this may be seen quite differently by others, and that actions they take will have positive and negative feedbacks that may lead to consequences that are quite different from those they intend.

There's no doubt when you go into a courtroom, you are never quite certain what's going to come out the other end. You never know which way the judgement is going to be. So you have to be pretty certain of your ground if you are taking that sort of public stand against another public agency.

Because having taken that stand, you need to get it right? It ups the stakes?

Yes, yes. You know you'll have some support, but you also know you'll have some very intense scrutiny and criticism for taking that action.

⁵⁵ This is partly a reference to the 'torn' card, one of the subject headings under which interviewees are invited to consider stories they can tell as part of the subject-object interview.

And what's the most difficult thing about being exposed in that way?

Well, if you get it wrong, then clearly both your personal and professional credibility is on the line.

By this point in the interview with Bruce I was reasonably confident that he had a clear fourth order frame and not much of a third order frame. My interest in questioning him on this story was the extent to which he might see beyond the fourth order frame: what evidence might there be of fifth-order thinking?

And how, in a context like that, where – as you say – you go to court, you can never be certain what will emerge, how the rights and wrongs are going to get interpreted, and so implicitly in that, there isn't an absolute right or wrong, necessarily. How do you actually deal with that uncertainty?

You've got to make a personal judgement on the information before you, and I certainly queried and got further advice in a number of areas. To be especially confident, the information coming to me was sufficiently robust that I could act upon it.

And what's most important to you about ...in making that particular judgement, and how you make that judgement?

Oh, the veracity of the information. And the integrity of the case that you have to make.

Faced with the uncertainties of the legal process, Bruce's response is to make a decision that is as right as it can be, as well grounded in verifiable information contributing to a case that has integrity. Here I check whether there is a third-order frame contributing to this view.

And is the veracity of that information, the integrity of that case, ...how much is that defined by a set of professional standards – whether they're some combination of engineering and legal standards – or how much is it in the end your personal judgement about what's the appropriate interpretation of the law in that circumstance?

No, it's not only the interpretation of the law. That is important, I mean, you only get authority as a regulator through the law. But it's also working out what is the right thing to be doing. So it's not just a legal or professional question, it's also a moral question as well.

Bruce comes back to a fourth-order description of the right thing, based on legal, professional, and moral considerations. Asked again about uncertainty and multiple perspectives, this time in the context of making a moral judgement, Bruce turns back to the veracity of the information. Someone seeing this issue through a fifth order frame might answer this question with a description of the multiple factors that could contribute to a moral judgement and the tensions and contradictions that might exist between these factors.

And in making that moral judgement, how do you deal with the multiplicity of perspectives that might exist about what's right or wrong in those circumstances? Or the ways in which information can be shaded, or you know, can mean ...

Yeah. I mean, you've got to get a feel for how much faith you can place in that information coming to you. There is a matter of judgement about whether the information is accurate or not. I mean, certainly having had many years' experience reviewing technical information and other legal cases, you do get some sense of when you have to dig deeper to find out whether something is accurate. Or whether you can take from the information that's provided that, you know, it's got a pretty high integrity.

As the interview continued we came back to this question of having to make decisions in conditions of uncertainty and often of considerable political risk. Bruce provided a number

of examples; each time, in my judgement, he gave a strong fourth-order answer and did not venture into a fifth-order frame.

An example is where, describing a situation in which he had to deal with significant errors made in the Council's financial management, Bruce gave a textbook fourth order answer that reflected on how he sees himself. Asked what was most important to him in running an audit and investigation process in relation to these errors, Bruce said:

Trying to make certain that I understood enough about the situation that the decisions I would make, would be ones of integrity, and would also deliver a positive outcome.

And the judgement of the success of that, in terms of both the outcome and integrity, did that lie with yourself at base, or was it with the councillors, or was it with the people who were affected?

Clearly, you have to have a view yourself. I mean, if you can't make your own decisions with integrity, then they're not worth much. But there's no doubt that if people endorse the outcome, that gives you some comfort, that at least people are coming to a similar judgement to what you have. That you can explain to people your view of the events, and they are sufficiently comfortable with that, that they accept the outcome. And that was certainly the case with this situation.

The approach here was similar to Blair's in the previous section. The decision was based on a clear personal sense of what was right. For a third order perspective in the face of possible malfeasance, see the case of Alan later in this chapter.

Were these questions about the audit and the staff investigation process to elicit a response from a fifth order perspective, the interviewee might have reflected on the fact that he had to make clear decisions that he could account for to the Council and in public and might also end up in front of the Employment Court and yet these decisions were by definition partial (in both senses of the word) and were part of an on-going process, and would have consequences for how he would be seen as a leader and he could only have limited influence as to how these dynamics would play out. Someone answering from a fifth order frame would probably say more about the effects on them as a decision maker.

Intriguingly Bruce appeared to demonstrate complex systems thinking in the interview but not to demonstrate a fifth-order frame in the second stage of the interview. It could be that my questioning did not make clear enough what I was driving at in trying to explore beyond the self-authoring realm or perhaps he did not particularly want to talk about himself so turned back to the challenges of resource management. With Finlay we see a different perspective on the fourth order. His case also presents a chance to make further comparisons between third and fourth order and, separately, the third and fifth orders.

Finlay

What we often see in the fourth order is recognition of differing perspectives, ambiguities, and contradictions and a need to chart a path through the uncertainties that result. In each of the three cases discussed in this section, the manager being interviewed assumed that there was a right answer to be found from amongst the uncertainties and competing views. The following discussion touched on the ambiguities involved in pursuing a prosecution. This was conducted with Finlay, a Regional Council senior manager who reported to Blair. He had long experience working in Regional Councils and in the private sector in environmental management roles. The prosecution he discussed was the same delicate matter Blair had raised. The Council had decided to prosecute a prominent member of the community for

breaches of the Resource Management Act. This person had already been convicted of similar breaches of the law, and he also happened to be a person who had been a thorn in the side of Council managers for some time.

Finlay discussed some of tensions and ambiguities relating to this case and he held these in a largely fourth order way. While there were ways that aspects of this story were told that could be third order, taken as a whole, the story illustrates a fourth order perspective.

The fourth order structure of the story lay in the way that Finlay made a conscious choice to play two distinct and potentially conflicting roles. He acted as 'cop' and confidant: on the one hand taking action to prosecute the individual concerned and on the other acting as a confidant for this person. He recognised that these two distinct roles had different 'rules' associated with them and were part of different systems, and he also saw that, while there were risks, by bringing them together, with care, he could be more effective in pursuing the sustainable management aims of the Council. Recognising the hazards involved, he allowed as how if it were a cleverer person he had had to act against he might not have taken the risk. This seeing of the different systems involved and choosing between them is a fourth order characteristic.

Within the story ran two other contributing sub-narratives. I will first discuss these sub-narratives briefly, before coming back to the dual roles theme. One sub-narrative was the question of how Finlay felt about the appropriateness of the actions he had taken. The other was the sympathy he felt for the person subject to the action. I discuss these in turn.

Being confident about the right course of action can have a third and fourth order manifestation. In a third order sense it can be confidence that the action is in line with the rules, or professional standards, or the actions of leaders, role models or peers. In the fourth-order sense, as we saw with Blair above, these perspectives become factors that are considered as the decision maker reaches his or her own decision about what is right. In Finlay's case it was clear he considered he was doing the right thing and, over the course of relating the tale, he indicated he thought the actions and decisions that had been taken were in the Council's interest, in the community's interest, and in his own interests. He held this sense of direction in a self-authored, fourth order way. Asked how he felt about the decision to prosecute, Finlay said:

Oh, it's the right thing to do, it's the right thing.

And it's the right thing to do because of how it will look in the rest of the community or it's the right thing to do because it's the application of your values or?

Both, yeah, both. I mean, this organisation pretty much does reflect the value... I mean, I'm in the position, as you know, where my values do get reflected in the decisions on a whole lot of things. So, yeah, there's no real problem with that.

Note here how he states this as the Council being comfortably aligned with his values, as he has been involved in drafting the relevant values statements. This points to a self-authoring construction. We might expect, were he to be proceeding from a third order perspective, that he would be more concerned to be in line with the values of the Council, rather than vice versa.

The next excerpt also suggested a fourth-order distance in the weighing up of options when Finlay talked about putting the facts through in his head and seeing the whole case laid out.

I initially had a little bit of sympathy for this person. Then, when I put the facts through in my head, and we gathered the case together, and I saw the whole thing

laid out and in my reporting to the Council, no. My sympathy went. The guy had just been stupid. Absolutely stupid.

Later I return to Finlay's conceptions of the right actions, methods, and results and how he constructs those ideas in the discussion on dual roles. Now I turn to the question of sympathy.

Finlay mentioned feeling sympathetic. Our interest is in *how* he felt this sympathy. Did he perhaps understand the person involved as someone who might think or act or feel differently from ways he would and still feel sympathy for him? This would be a fourth order construction of sympathy. By way of contrast, at the third order of self-complexity, for a person to feel sympathy they need to be in a position to themselves hold the feelings of loss or suffering the other person holds. If a person were to hold a different perspective on an issue then true sympathy for them would be less likely because they feel and think differently. At the fourth order a person can see the difference between the frames of reference that create the feelings involved. A person can see that the other person feels differently, because they have a different system for generating their feelings, and still feel sympathetic toward them.

It is also the case that Finlay was dismissive of the individual concerned. How genuine was this sympathy? There were times in this story when Finlay was sympathetic and times when he was almost gleeful at this person's misfortune. He said of the individual concerned:

[H]e's a fool, but he's behaved badly, he's made his bed, he now has to lie on it and there's dire consequences.... [I] just said to him "don't do it". You know if you do these things and breach that consent, you know I will be down there or my guys will be down there, taking action.

Asked what was the most troubling part of the story for him, Finlay slipped from glee to concern:

I don't think it's troubling, I think it's bloody interesting! I actually have ... because of the fun in this.... Because here was a man of ... big in stature, but not intellect. That, you know, is supposedly going to do X, Y and Z and set the world on fire and sort us out. And all he's done is fall on his sword! 'Cos a lot of the claims he was making about us needing sorting out, were again, a function of our earlier enforcement action with him.... He's in big shit. And he's just about bankrupt, and his whole life's been a failure ... and this is the bit that I worry about. I mean, he was talking about taking actions into his own hands. And I said, nothing in life is worth topping yourself. You need to find a friend, a confidant who you can talk these things through, talk your problems through. In twelve months time, this will be a blip on your horizon. But you've got to think about what you've done and how you respond to all of this. Because if you turn up in court and give the judge this, you are definitely gone. You're gone more ... you're gone big time. If you turn up and show a bit of compassion for what you've done – I've forgotten the word.

Remorse ...

Remorse, that's it. Then you're not gone by far and you may still have some sort of standing.

In this case, Finlay's sympathy was for somebody quite separate from himself – very much an 'other' person. This is not someone he particularly admired. Part of the sympathy seemed to be prompted by this person being stupid, or nearly bankrupt, or a failure, or feeling perhaps suicidal. In terms of the discussion of the third and fourth order construction of sympathy discussed above, Finlay seemed to be able to be at least partly sympathetic toward someone

whom he neither agreed with nor admired. He had a perspective on how this person made sense of the world, of his system for generating feelings, but it was one that was far from flattering:

Firstly, I don't think he is very bright. Secondly, he's got a bit of this dog-bloody-Irish stubbornness. And thirdly, I think he just listens to everyone else, who treat him as a bit of a fool and say things provocatively to him.... And they're just setting him up to fail. But he can't see it.

There was little in this to challenge Finlay's strong sense of what was right in the world. While there was genuine sympathy, there was not necessarily empathy present; there was little of a fifth-order sense that this person being described could be a part of Finlay or vice versa. There was not a sense of being interconnected in a bigger system or of Finlay looking at his own way of making sense of all this. As we see below, Finlay played his role as confidant, and took risks in doing it, in a way that he considered would advance the environmental outcomes of the Council, have the Council be seen to do the right thing, and also reflect well on his own humanity. In the way he told the story, about what he did and said, he saw himself clearly playing the 'right' role. The person who faces prosecution is an other, someone who is to be sympathised with because of the extent of the trouble they face and who also is seen to have brought this trouble on themselves because of the inadequacies of themselves and their system for understanding the world.

In the story, Finlay described himself playing a dual role. He was the regulator and he also counselled the perpetrator on how he might get his life in order. This appeared to be an intriguing and challenging combination. There was a risk that things said under the counselling hat might compromise the prosecution process. Finlay tended to see this as a more 'natural' combination of performing the role required and helping someone in need.

Asked what was most challenging about playing these two roles, Finlay said:

It wasn't challenging at all. I wore my judicial regulatory hat and then just changed the language and said now, look, that bit's finished. Now let's talk as people who've got to know each other round here. Let's talk and talk heart-to-heart about what's going to happen. What you need to do. You know we're going to win. We don't take actions unless we win. You know we're going to win.... You're gone. Turn yourself around. Turn this ... tidy the place up. Do something. You haven't got any money, it doesn't take money to do this. Show some remorse....

And so you're saying it wasn't challenging to play those two roles at the same time?

No, no. I found it just natural. It was a natural.

And that's interesting because you're basically ... there is a tension between those two roles, but you're able to carry

The roles often get very mixed. 'Cos I find that works, like, to engage people. The way you engage them, the language you use. And the examples and analogies you use to certain people.

And in mixing those roles, you also know ... there's also a part of you that knows that in the regulatory function, there's some things you have to do and there's a clarity and a separation as well as maintaining the relationship?

Yep, yep, as well as a human side. A side that says, look, I understand what you're doing. I don't absolutely understand why you've done this, now you've done it, here's a way of trying to help you move forward. With these constraints.

There is a way that some of these concerns about engaging with people and attention to relationships can sound similar to concerns evident in a third-order frame about how other people might react or feel. There is a difference here in that Finlay was seeing the relationship as a part of a bigger system. He was seeing the distinct roles of regulator and

adviser and provided a more fourth-order sense of the ways these roles can inter-twine. Notice also that at the end of the above quote Finlay said he might not absolutely understand why someone had taken a certain action. This is an example of the fourth order recognition that people have their own systems for generating thoughts and feelings and for each person this system is different.

Finlay also introduced an additional dimension. He had talked about the way the roles can get mixed and how this is a natural thing to do, but then he acknowledged that there were in fact risks, that Finlay was conscious of these risks but he made a judgement about whether it was safe to mix roles in the way he did. He suggested that, had the perpetrator been a brighter individual, he, Finlay, would have had to proceed with more circumspection.

Do you think there are risks you are taking in mixing those roles in that way?

Yeah, yeah, yeah.

And you're conscious of those risks?

Yeah. But this guy's an idiot.

So if he'd been cunning

I wouldn't have done it.

You wouldn't have taken the risk?

No. Oh ... it would be horses for courses, it would be just how far I'd go. But then cunning and clever people don't do this.

No, they don't get themselves caught.

Not this far in. But with more ... and I don't want to appear arrogant, but yeah, with more clever people I'd be a bit more circumspect.

Finlay returned to the importance of relationships and of not being seen as a 'cold, hard bastard.' This was not from a third-order concern about the effects of being seen this way on how Finlay thought of himself, but the more fourth order concern that caring in these relationships sometimes helps to unlock some of the issues, and, as he described it, to look beyond the prosecution.

[T]here is the cool, hard face, but again, there's the reputation and the human face of having a bit of compassion. I don't see too many issues with doing that. In fact, I do it a lot. Even with the difficult people, I do it. 'Cos most people, firstly they like it. They'd like to think that you're not a cold, hard bastard. And secondly, it helps unlock sometimes some of the issues and how to move forward and ... you know, ultimately I don't like prosecuting people. But you have to do it. And the key is to often look beyond the prosecution.

When I asked Finlay about what was most satisfying about juggling these two roles, and successfully managing the risks around the conduct of the regulatory role, he told another story that complemented the point he had made about putting these different approaches together to achieve the Council's larger outcomes and then also showed limits in how he held this view. Finlay said the most satisfying thing about taking risks and playing both roles was:

To see people turn the corner and come right. I often look at people and I think "is this a belligerent bastard?" or is this someone who's genuinely just made a mistake and so on and so on. And so we tailor the tools, enforcement tools, for that and the way that we engage them on the basis of that. But I mean if I'd equally met someone who was, you know, absolutely smart and was going to have a go, then I'd be the cool, hard bastard. There'd be nothing, I'd give nothing. But some of the people ... I think a lot of the people you meet though, there's been some reason why they've done it. And there's often a bit of remorse and stuff.

Here the dual roles narrative and the sympathy narrative come together. We saw that the third order construction of sympathy arises because the person agrees and can feel the same way but the fourth order construction occurs when they can see how someone might think and feel differently and they can feel sympathetic toward them in their different situation. Here Finlay showed the ability to understand reasons why people have done things that he would disagree with, up to a point.

But what might Finlay's stance be towards 'belligerent bastards' or people for whom it is too late when they show remorse? At this point Finlay introduced the idea of 'jacked-up prosecutions.' The term was Finlay's and may tend toward hyperbole. It refers to an agreement before a prosecution proceeds on how the prosecutor and prosecuted are going to behave, in this case how the prosecuted company might plead and agreeing between the Council and the company on the statement of facts. It might be seen as similar to plea-bargaining and could be viewed as a pragmatic and effective implementation of the law or a cynical and cosy set of relationships between the powerful groups in the region. Finlay's point was that it worked in terms of halting environmental damage and the council being respected by the community and the company involved. The way he constructed this story depended on his being able to hold a view of the perspectives of the different stakeholders and what was needed in order for them to act differently. It may have also helped to not be overly punctilious in following all the prosecution procedures and letter of the law. Someone seeing this issue from a third-order perspective might have been more constrained by procedures or more concerned to only act with the approval of particular stakeholders.

Finlay told the story below to describe how the Council has responded when there has been a breach of the Resource Management Act with an illegal discharge of pollution or waste disposal without the necessary consents and it has been too late for the people or companies to show remorse, or that they have 'turned the corner and come right.'

What we have done then is there have been jacked-up prosecutions, where we've said to certain people – and again this is the basis of trust – I've said to certain companies, "look, various things are happening here. We're going to have to ping you." This was done at a lunch having some beers with these guys. "You know we're going to have to ping you." And they've said "yeah." "And you know that we won't shut you down, we can't in law, but this'll hurt you a bit financially, but it will deal with the situation we've got in this area." And they've said "yeah". So I've said, "right, I'm about to ping you on this. You're going to plead guilty, aren't you?" "Yeah." "We can agree on the summary of facts." "Yeah". And this guy said, "well, so long as A, B, and C are in there." And I said, "yeah, I'm happy to agree to that." "We'll plead guilty." So we shook hands and the matter went through. They pleaded guilty. There was a fine. Job done. Community happy. We'd taken action. Company's happy.

...And did you get the outcome?

Yes, yeah, yeah, we did. We got the respect of the community, we got respect for the practical way we handled it with the company. And the company have now put various things in place to stop this happening again. Win-win-win. In fact, it was fun! It was actually fun. To think that you could deal with something like that.

And what was the most rewarding part of that for you?

That it came off, that it actually came off.

Asked about the risks in mixing up the roles like this and 'jacking up' prosecutions, Finlay said:

Oh, people get the wrong message about what we're doing. But how can you? How can you get the wrong message when there's a case to be answered, but you're not being a prick when you're doing it.

Asked another way: how can they get the wrong message when we are doing the right thing? In Finlay's mind he saw there was a case to be answered and they were behaving decently in the way they were prosecuting it. In acting in that way they were maximising the chances of good environmental and community outcomes. How could people get the wrong message? How could anyone see it differently?

Third and fifth-order versions

In answering these questions we can reflect on how Finlay might have told these stories from third or even fifth order perspectives.

Finlay told his stories with feeling, insights, and energy. There were differing perspectives and ambiguities laid out, a relishing of many of the details, and sympathies for fellow human beings. It was also told from within a fourth-order frame. There was a clear weighing up of the evidence and a correct path was chosen and was expected to be defended. The differing perspectives and ambiguities added colour and insight, reflecting as they did variations and deviations from a central narrative that established a clear right and wrong that came from within himself.

I would expect someone operating in a third, or even a fifth order frame, to tell this story differently. Working from within a third order view a manager might be more torn between the ways the application of the rules might require prosecution or particular procedures to be followed and yet this might affect how the people involved might think of the manager and how the manager thinks of him or herself and also how other people might think of the Council and the manager and how this influences their self-concept. We will focus on third-order views in the next section.

Someone operating in a fifth order frame might hold the tragedy and the humour in the prosecution situation in the same moment. They might reflect on the irony and incongruity of someone in the position of the person being prosecuted but also see parts of themselves in analogous circumstances. Finlay saw irony in this person who had been so critical of the Council getting his comeuppance, but this was ironic in a way that was separate from Finlay: it was happening to somebody else and it 'served them right' and the contradiction was with things he had said or done in the past. This might be contrasted with a more fifth order perception of ironies that someone might see between this situation and different experiences from their own life, seeing more the connections rather than the distinctions.

There is another example of an irony that might be described differently from a fifth order frame in the account of the 'jacked-up prosecution.' Finlay did not refer to how the act of jacking up might be seen as both supporting and threatening the environmental management system and the outcomes sought. It could support the system by enabling the system to work with credibility and the confidence of the key stakeholders. But this is as long as the negotiation process between prosecutor and defendant is discreet enough. If the negotiation, or jacking up, becomes too explicit then I imagine the integrity of the system could become suspect in the eyes of many. Finlay does not see this duality when he suggests there is only one right way to see this: "How can you get the wrong message when there's a case to be answered, but you're not being a prick when you're doing it."

Our ‘someone’ operating in a fifth order might see ways in which the wider system contributes to the situation and is changed by it. They might reflect on the way they are making sense of the situation and see how the different roles they are others are playing interact and shape and change the system within which they operate.

I am not arguing that someone operating from a third order frame or for at least a part of the time with a fifth-order view would necessarily make a different decision from that made by someone working in a fourth order frame. I am not judging the decisions that were made. I am saying that from third and fifth order frames of self-complexity, the story would be told differently and different meanings would be constructed from that different story. And it is possible that at each level a different decision might be made or different factors considered and perhaps different people engaged with or engaged with in different ways.

Elements of third order frames are discussed in the next sections and a hint of a fifth order way of making meaning can be glimpsed in the story told by Warren, recounted at the end of this chapter. In Chapter Ten I summarise the cases of Blair, Bruce, and Finlay as examples of the fourth-order frame, and then present fifth order versions of them.

Blair, Bruce, and Finlay were each focused on making the right decision, on their own terms. They saw different perspectives and balanced between them, drawing on their own internal ‘compasses’ to do this: Finlay balancing roles, Bruce dealing with uncertainties and public opposition and wanting to be clear that his decision had integrity on his terms. The decisions were held within each individual’s strong values base. Blair’s confidence in his values base and his ability to see the way forward clearly was a classic fourth order perspective. These men are leaders in their fields and manifest the self-complexity expected of leaders in most organisations.

Not all the managers interviewed for this study demonstrated the fourth order of self-complexity at the interview. Of the thirty one interviews analysed, fifteen profiled on or about the fourth order in self-complexity, nine profiled as in transition from the third to fourth order, and the remaining seven profiled as being predominantly third order. While I found hints of the fifth order, no one profiled as having a full fifth order frame, which would at least place them in the transition from fourth to fifth order. I now turn to examples from the third order of how managers face hard decisions and how they make sense of themselves in these roles.

Third Order

Theme 1: Making Hard Decisions

In the previous section I showed with the case of Blair the self-authoring way in which a clear sense of what needed to be done emerged from within himself. At the third order this clarity is more often sought from outside the individual, in norms and procedures and rules and the views of others. At whatever order of self-complexity people are influenced by these views and constraints; it is the ways this influence works and how people respond to it that varies at the different orders, as the following examples of people making meaning from third order frames will show.

Alan

We met Alan in the previous chapter. He was an Area Manager for the Department of Conservation (See Chapter Eight for a description of his role).

In the story presented here Alan described the challenge of dealing with a major contract that was not being delivered up to the necessary standard, both in terms of the quality of the job and the timeliness. The added complication was that the contractors were closely connected with a network of stakeholders that had important ongoing relationships with the Department, were significant players in the region, and had powerful political connections beyond the region. It took many years to get the contract completed to specifications. Alan described this as a huge success, not just in terms of getting the job completed to the quality standards but because relationships remained intact. Along the way it was also a nightmare:

[E]ven though we were at logger-heads for a long, long time, you know, we're still on talking terms and it never got quite to the point where we're going to take them to court and I threatened it a couple of times that they weren't going to do the job to the standard and holding payments back. Oh, it was a nightmare, it was a nightmare but at the end of the day it worked well.

When Alan described the issue and what was hardest for him about it he talked about the standards that he was expected to meet. He described this in a classically third-order way. The standards were external to himself. The standards were set by the Department and professional bodies and the community at large; the risks to Alan and the contractors were in failing in the eyes of external judges.

It was trying to get through to [the contractors] that I'm accountable for, and responsible for, this contract and paying out government money which, I'm not signing nothing for, unless it's to the standard or requirement that was first originally agreed on. That was the hardest thing....

[It's] the Department's way of how it does business, you don't pay, there's no way that I would pay for something that isn't up to scratch. That's like dodgy stuff. If I got audited, or someone from [the funding body], knocked on the door and said, "Right I want to go and see [this project]" and you know

There's no way I'd be prepared to have that hanging around my neck, knowing that that [project], accepting something that was less than what we'd agreed to and having it round my neck *for years*, a [project] life is 25 years, there's no way I would. *In a situation like that do you see possibility of flexibility? Is there any possibility for you to sort of set the rules yourself? Or change the rules yourself?*

No, no, no way. Not in a contract situation. Contracts are, if you have got it well documented, what the quality standard, what you're expecting of the contractor, it's black and white. Black and white. Absolutely black and white.

This was a challenging situation. There were challenges in terms of getting the job done to standard, of Alan meeting his accountabilities, and of his need to maintain relationships. This is not to underestimate the challenges Alan faced, nor his success in completing the project. It also needs to be recognised that contractual situations are relatively inflexible. Contracts are black and white, as Alan said. What is of particular interest here is the way Alan constructed these challenges. In terms of the relationships, Alan described a set of challenges that were external to himself rather than being generated or described as from within himself or who he was in the world:

- the job needed to be to the originally agreed standard or requirement (external),
- it's the Department's way of how it does business (external),

- there's no way that I would pay for something that isn't up to scratch... dodgy stuff (internal and/or external),
- if I got audited, or someone from the funding body knocked on the door (both external),
- there's no way I'd be prepared to have that hanging around my neck (external, as it is a reference to public shame rather than one's conscience), and
- contracts are black and white (external).

Contrast this with the way Blair, who was also not short of challenges, was seen to be dealing with the issues he faced, as described in the previous section. In Blair's case, challenges, values, and successes were defined by him and came in part from within himself or his view of himself, even though he too would be concerned about meeting the requirements of the law and professional standards. You might recall that he said the core values of the organisation had to come from within people and that staff had to know "you're not going to haul them in because there's a rule in a bloody book that says ... you're going to haul them in because it's bloody important."

In this next quote Alan described the challenges he faced:

The challenging part was for me to try and convince them that we wanted the [project] finished, that they had the ability to do it but what they needed to do was get their act together so they were actually doing the job that we were paying them for, and that was a challenge. And making sure that they didn't get in a huff and just walk off or whatever, because there was a whole heap of equipment got stolen up there and, it was dynamite, eh? And making sure that I had everything completely documented right from when it started turning from being a good successful contract to something that I could see that was turning bad.

The challenges Alan faced here are significant: keeping the contractors on the job and getting the job done to standard, retaining the equipment on the site, making sure that the documentation was adequate. These are all things that needed to be done, and the need for these things to happen was also external to Alan. Working from within a third order frame, his self-complexity seems to have been constructed from these external requirements, he was subject to them. A manager working from the fourth order of self-complexity would face these same challenges and would have to consider how to respond to each of them and, in doing so, might be expected to act more as a chair of the board, arbitrating between the competing pushes and pulls that are both external and internal to her or his self.

In the next case we see another manager working within a third order frame where he talked about how he saw himself in a work context and how he thought others saw him. Later I will present four cases in which we see managers who demonstrated both fourth and third order frames.

Theme 2: Making Sense of the Self

Ben

Ben was also an Area Manager in the Department of Conservation. He had been in the role for 10 years and managed a large area with around 15 full-time staff. There was a high demand for recreational facilities in the area as it was on a major tourist route and a high proportion of the lands in the district were managed by the Department. There were also significant forest and freshwater management issues with longstanding pest management programmes. While the local territorial authority and the local community had often opposed conservation initiatives in the past, these views had changed markedly with increased

economic benefits coming from tourism and conservation. Ben was well regarded as a conservation manager. He was described as committed, careful and conscientious. He was liked by his Conservator, peers, and staff and their regard mattered a lot to him. He wanted to be an effective and well-liked leader. He was reflective about his own performance and concerned to perform more effectively. As he demonstrated in the interview, he reflected on how he led and how he related to his staff.

Ben talked about a staff management and communication issue. He felt he was seeing an emerging pattern of unhappiness amongst some of his staff. He was putting together things that had been said relating to a few unconnected issues and he chose to meet with the field staff, the rangers. These are people who were not his direct reports and with whom he would not normally meet. They reported to Programme Managers, who reported to Ben. Ben met with the field staff without the Programme Managers being present.

In describing this meeting Ben talked about the importance to him of being seen as a person others can relate to rather than just being seen as their boss or a manager. For others to see him in this functional way, he feared, diminished him and his effectiveness. Ben's view of himself was here being constructed by how other people saw him. This appeared to be a third-order view of himself. At one point he expressed concern that "they're trying to diminish my real qualities." He saw his real qualities as constructed by those outside of himself and felt these views as being a put down that could erode how he saw himself. For all this, Ben could have been a person who is extroverted and/or has strong affiliative needs. The question arises as to how much of this might have been a psychological trait that was being expressed and how much might have been developmental?

I realised that I had diminished the importance of the inter-personal connections I had with a lot of those people. 'Cos I've known many of them for a long time. But certainly when I'm in my daily work, I go through sort of rituals that would tell them that they are important to me. So ... "how's it going, how's the family going," you know, taking an interest. Yet, I hadn't been actually looking after some of their work needs. So making the time ... and then actively listening to their concerns. And to hear them actually really tell me what they thought. And, as a result of that, win back what I felt was some credibility with them, that I thought might have been diminished, reinforced ... that although I can run a series of rituals around being familiar with people and taking an interest in them, for me, I need to know that I'm doing more than that. I need to know that I'm actually fulfilling a deeper relationship sort of need.

What's most important about that deeper relationship need?

Not letting people down. Living up to my side of the relationship.

And what's most at risk if you let people down?

Losing ... ah ... them losing respect for you.

Ben explained that he needed to not let people down and to live up to his side of the relationship. This is another of those concepts that might find expression at a number of different developmental levels. By way of example, we might imagine a manager operating at the fourth order explaining that she had come to a view that the best way for her to manage effectively was to be in service to those who were responsible to her and to live up to her side of the relationship, as she conceived of it. Or a different manager working from a fourth order frame might say he or she needed to not let people down by providing them with clear frameworks and direction and opportunities to excel. With such managers, what might be most at risk is they become disconnected from their staff. In the first example, her model of being a servant leader would no longer be functioning because she might no longer

understand staff needs and they her needs or those of the organisation. The leader who seeks to provide direction and opportunities might feel he is letting staff down if the organisation is no longer clear about its goals or enabling of its staff. When I asked Ben what was most at risk in this situation, he said that it was those staff losing respect for him. This is not conclusive but it seems more likely to be a third-order construction. The sense is of Ben's sense of self being at risk, rather than perhaps the performance of the organisation, or the possibilities for staff to grow in their roles, for example.

Ben continued on to talk about his concern that staff were only interacting with him as 'the Boss' rather than seeing him as a person.

Why is it important that they interact with you as a person?

[B]ecause I want to have a relationship with people that I work with ... that is more ... is wider than the work relationship, wider than my managerial relationship. And I think I need to do that to be to be happy in myself. But I also think I need that to be effective....

[I]f a staff person wanted to aggravate me, then the way to do that would be to label me and to describe my reasons and my motivations and the way I do things as being, you know, robotic in management.

So if they label you in that way, how does that affect you? If you perceive that somebody is labelling you in that way, how are you affected by that?

Well, the effect as on me is that they're trying to ... well, I perceive that they're trying to diminish my real qualities.

And what's the most disturbing part of that for you?

Is that my skills aren't management skills, they're people skills. It's a put down.

And what's most disturbing about being put down?

I won't ... my value to other people and my reputation – and how I see myself – is being questioned. And potentially eroded.

Here Ben's concern is that the labelling by others diminishes him and his self-concept is potentially eroded in the process. We all have to deal with criticisms from others at some level -- and we are all affected by them. We have already seen how a feeling like sympathy can be constructed and expressed differently at different levels. In the case of the views of others, the developmental question is about how much these views work, in an unmediated way, to create our views of ourselves. As people gradually shift the extent which their sense of themselves is made up by these views of others, and become more able to construct their own perspectives, albeit in part in reflection of the views of others, we say they have moved towards being self authoring (fourth order). At the third order, the individual is held by the views of important others. The views of important others -- or their relationship to the norms of their profession, or group, or peers -- are filtered through their third order lens and become the views they hold of themselves. At the fourth order the views of others and the norms and rules are just that. They may be important considerations, but they are considered as things to be taken into account in the individual coming to the 'right' view, choosing between these perspectives. As people grow towards the fifth order, this 'right' view becomes a more fluid thing. A number of 'right' views can be considered and these can be seen as interacting and can be held at the same time. There is not such a need to choose the one true and correct path.

Transition from third to fourth order

This transition is the basic transition of adulthood for most people. Many managers are in this transition. People in this development space hold both a third and a fourth-order frame of self-complexity. These can be uncomfortable frames to hold at the same time. The manager in this space may find themselves torn between two different people whose opinions she or he values, or between different values or theories or organizational expectations. Part of the transition in the management space is about establishing confidence in the individual's own voice and mind. For example, the underlying approach of the Department of Conservation's leadership programme provided to its managers is to develop leaders who are confidently self-authoring and accountable for their actions (AdvancedDynamics 2003).

In the middle zone between the third and fourth orders of self-complexity, opportunities arise and things can get increasingly uncomfortable as a manager's perspective shifts. With the process of seeing a larger picture and having to take more responsibility can come a sense of liberation and it can also be experienced as greater isolation, particularly a sense of severing connections with colleagues whom the leader may have worked alongside in the past.

In the next pages I look at the two themes as they occurred in managers who were transiting the zone between these two orders. Two managers are focused on under each theme. Note that while the next two examples focus on the issues managers face and the hard decisions they need to make, both of these examples also have an element of these managers reflecting on how they see themselves. These two themes come together to such an extent that they cannot easily be separated, the problem I had with the examples of fourth order self-complexity.

The managers presented here are clustered more toward the fourth-order frame than the third-order frame. The first three cases here, Jeremy, Max, and Kevin, are managers who profiled as 4/3. This means they presented both fourth and third-order frames but with the fourth order frame predominating. Of the nine managers in the three-four transition zone, two scored as 3/4 and seven as 4/3. The fourth case presented in this section, Phil, actually profiled at the fourth order, although with vestiges of a third-order frame: 4(3). The case is included here because it is a useful example of how the remnants of the third order frame can remain present.

Theme 1: Making hard decisions

Jeremy

Jeremy was a Regional Council leader at director (second tier) level, in charge of the Council's sustainable management and planning functions. He had many years of experience in the role. These had been hard and contentious years with the professional staff often at odds with the elected councillors. He said he felt grounded in his roles because he grew up on a farm, trained as a scientist and engineer, and feels a strong commitment to environmental management. He described "*the most important thing*" about his work and the work of his Council and of his profession is: "making sure that good environmental decisions are made."

Jeremy had often seen councillors making what he considered to be the wrong decisions for what he thinks are also the wrong reasons or because of their 'biases'. He said he found this

demoralizing. In general, he told this story in a very fourth order way. He saw the ways he was trying to manoeuvre these errant councillors. He had a sense of the ways they understood the world and why his attempts to move them were being done for the right reasons. He also saw that there were significant risks involved. However, when asked to identify the main risk he highlighted a third order concern – how he would be seen by the councillors involved?

Jeremy defined the problem as bad decisions being made by a small number of elected councillors, affecting hundreds of thousands of people, and being based on inferior reasoning and self-interest. He said these are not direct conflicts of interest in most cases but are examples of decision-makers:

not wanting to see change, not wanting to see their constituency, whether it be their farming constituency or whatever, having less resource than they've had in the past.

Jeremy's response to these problems was to try to find ways to get the offending decision reversed. Jeremy was asking what he, his peers, or his staff, might have to do differently to "paint a few councillors in a corner", or to try to get wavering councillors to reverse decisions they had made earlier.

Where I can see that there is a self-interest that is still open or amenable to persuasion, then clearly we do that and do the pre-planning to try and get a different decision. But there are occasions where that so-called self-interest, the different decision, is just not going to change. And we can pick those situations and those people reasonably successfully. So from my point of view, the strategy is that we try and paint that picture in a black-and-white, very stark way. To ring-fence that person or that issue or whatever it is, and make sure that they and others have had a very, very simple black-and-white choice to make.

Two issues arise in relation to this. One is the way that Jeremy had a view of the system of each of these councillors. He had a sense of how they made sense of things and felt he could pick people and when their self interest might change or might be more fixed and the person might need to be 'ring-fenced'. He also had a sense of his own system. He could see how their system might be different from his and, as he indicated in later quotes, that there was a cost to his self-system in the actions he was describing.

There is a second aspect to this that I found intriguing. What should we make of Jeremy's sense of rightness? Jeremy was the professional expert. The problem was his advice was being ignored and, in his view, bad decisions were being made for spurious and self-interested reasons. Our interest here is not in this content. People can be convinced they are right at any order of mind. We are interested in the way Jeremy holds this view.

I explored with Jeremy the risks and the costs involved in the actions he was describing. Given his commitment to reasoned and rational decisions, and also to the overall democratic process, did painting some councillors into a corner, albeit to achieve the 'right' environmental management decision, have a cost and what might that cost have been?

To me, personally?

Yeah.

Yes, there is. Primarily because I – and I think most of the people I work with – because of the science background and analysis background, we try and reason our way through issues, to come to a choice of decisions, a choice of options and decision. And along the way, you shelve others that are just not appropriate. So the cost to me is that reasoning, or that reasoned background or position you put

yourself in, is just cut off at the knees. And I find it very difficult to speak to people who ... you can't reason a person out of a position they weren't reasoned into. And we get a fair bit of that.

And so how do ... how do you connect with people in that situation?

Usually by confrontation. Not nasty in any way, but very calm confrontation, to – as I said before – to paint the decision as black and white as you possibly can.

And in painting it as black and white as you possibly can, there's a satisfying aspect to that, and there's also a frustrating aspect to that – am I right in assuming that?

Oh, yes, yes.

What's the most frustrating aspect of that?

Probably knowing that the relationship you have with that particular person or group of people, suffers. Because it's usually the same people that you're usually having to do this to or with, and you know that the more it happens, the more you lose the opportunity that those reasoned decisions will be made, or accepted by those people.

Jeremy pointed to one cost arising from the contradiction between his using a black-and-white approach to paint some councillors into a corner and his own desire to operate by using reason and analysis and recognizing a full suite of options. His reasoned approach got “cut off at the knees” by his own actions. This was a fourth order view. There was a part of his self system that he saw being sacrificed by his taking this tactical approach to get a preferred result. Had it been held and explored in a more explicit and paradoxical way, it might have represented a fifth order perspective.

Jeremy also described the gradual loss of confidence these particular councillors have had in him and his staff. Not only was it often the same councillors who were being painted into the corner, but the same manager and his staff were doing the painting. Because of this, attitudes had become hardened and councillors' confidence in the manager and his staff had declined.

Jeremy said the risks were “huge”.

The objective for the interviewer in a subject-object interview is to ask questions in a way that helps to reveal the structure of the self-complexity of the interviewee. Broadly speaking there are two main approaches to this and these approaches are often combined. One is to have the interviewee consider what is the most rewarding or disturbing or frustrating or important aspect of a situation. This approach can be seen in some of the quotes above. A series of two or three questions along these lines often peels back the surface of the story and gets to aspects that really matter. The second approach seeks to test the interviewer's working hypothesis about the order of mind being demonstrated by the interviewee. An interviewer wondering if the person is operating in the third or fourth orders, or both, could construct questions that offered a choice between third and fourth order constructions of an issue the interviewee is discussing. Here is an example from Jeremy's transcript where he has been discussing the nature of the risks that arise when he is trying to paint particular councillors into a corner to influence them to change their decisions on an issue.

I asked Jeremy what was the most unsettling aspect to taking these risks:

[D]oes that relate to the professional standards that you've been trained in, and practised, or does it relate to the public process, the submission process and the legal process that goes forward from the decision, or how much does it also relate to your own perspective of how you should handle your own views about how you handle these sorts of issues?

The question I was asking here was trying to tease out how much this might be a third order perspective about not following the ‘rules’ relating to public processes or the standards of the planning profession. Concern about breaking these ‘rules’ could also be held in a fourth order way. For example, if the concern was that these practices might damage the integrity of the wider processes followed by the Council or cause other damage to the whole system. The third option in my question was an attempt to see if Jeremy saw these risks from a fourth order perspective in terms of the potential damage to his own sense of integrity or his views on the appropriate balance to be struck. The cost he had already identified in terms of the damage to his more reasoned and analytical approach might be canvassed under this category. Jeremy actually chose a fourth type of risk, albeit also one he had signalled earlier in the interview.

Um ... probably none of those!

Oh, okay!

Probably ... everybody likes to be liked and respected and believed, I guess. So it's more that you're alienating someone, and somebody loses confidence in the person in particular, myself, or whoever it is. And so it's more in the personal area of how will that person speak to me nicely again, sort of thing. Rather than the professional areas you talked about.

Jeremy continued with his third order concern about the way he and other staff got talked about ‘disrespectfully’ by these ‘cornered’ councillors and how such criticism could grow over time. Asked what was most disturbing about alienating or ‘losing’ a councillor, Jeremy said:

It comes down to the personal, the personal level, about how they talk to other people about that person, that scientist, yourself, whoever it is, policy person, disrespectfully and so on, in their own circles. And of course that can grow.

Then Jeremy pulled back to a bigger fourth order perspective: that such tactics are justified in the circumstances and the bigger gains are more important than the impacts on the people involved. I asked if he felt any ambivalence about his actions.

Oh, I don't feel ambivalent about it at all. I accept that that's what will happen at times....

So the lack of ambivalence means you go with it, this is the right thing to do, rather than the feelings.

It's a big step to take to believe that the message you're giving is more important than yourself, or whoever, the staff member, or the consultants you've hired. Yeah. It's a big step to take, but in my view, it's the right one. At the end of the day, it may cost someone their job. And in ridiculous situations that has happened.... That the end result, the outcome you're trying to achieve, is bigger than the person or people that are trying to get there.

Jeremy reached this conclusion by describing what he saw of a bigger system. He recognised the shift in perspective, from his own importance to that of the message, and called it “a big step to take” but saw his work, and the shift in perspective involved, within that more fourth order context.

Max

Max was a Regional Council director with a range of environmental management and corporate responsibilities. He had been with the Council in his second-tier position for eight years and before that was managing a smaller team in a central government agency. Max was an insider, in that he closely embodied the culture of his Regional Council but also saw himself as a relatively new member of the senior management team. In the course of his

interview Max compared his experience of handling two difficult staff management issues. As he described it, there was a ‘judgement call’ that was common to both issues: “when do you go boots and all into a situation? When do you go from the gently-gently working with people, guiding them, caressing them – to slapping them?”

In the first issue a conflict had erupted on a very large development project between a manager, Carl, who reports to Max and had core responsibilities for implementing the project, and the lead consultant. It was at a project team meeting, where Carl behaved in ways that Max says were “*way* out of line” and he had to be told so, very clearly, straight after the meeting. On reflection Max thought this had been a case where “I probably didn’t act strong enough, hard enough, early enough.”

Max contrasts this with an issue he had worked through recently with another of his direct reports, an operations manager named Gary. Here he said he started with a ‘softly-softly’ approach and then went in hard.

In describing both these situations in some detail, Max set out his thinking on the ways he might engage with staff. Most of this material is not quoted here. Max demonstrated a calculation to his thinking about how he dealt with staff. This could have been a fourth order perspective on himself and his relations with managers as ‘objects’ he was engaging with in a bigger system, or it might have been held in a more third order way, as in following a plan or a script as to when to go in hard or when to go gently-gently. I asked Max what was most satisfying about the way he had dealt with both these situations with his managers.

Gary’s, I didn’t feel that satisfied because even when I’d gone in hard ... there was an element of denial. On the other hand, Carl very clearly, very quickly got the message I was giving him to say, hey, we’re in the middle of a project here, we’ve got to get to the end, I’m not changing ... you know, we can’t change [the lead consultant].... [H]e understood, and we were able to work our way through it, and he was able to express his feelings, and we were able to work through some strategies.... And we were able to talk and we were able to get to a firm understanding and we walked out of it feeling good. Both of us walked out of that meeting feeling good. Whereas the meeting after, with Gary, I didn’t feel good at the end of that. And I’m sure Gary didn’t feel good about that because he stewed on it for quite a while. We’ve rebuilt those relationships, as you have to. And we’re back on good terms. But for a little while there, a week or two, there was you know ... we were circling each other! Avoiding and circling!

It was interesting that Max judged this on the extent to which the other person seemed to understand or agree and on the feelings between the two of them. This latter, his concern about the feelings of others, could be a concern about whether they like him and could be held in a very socialised third order way. This concern about the feelings of others could also relate to the effects this might have on getting the job done – a subject Max returned to later in the interview.

Reflecting on his years with the Council, Max described what sounds like a shift from more of a third order of self-complexity to more of a fourth order view:

I guess as I’ve been in this job longer, after being here seven/eight years now, I’m well-established, I don’t need to feel threatened about my position. But in the early days, you know, you’re the new kid on the block and all the rest of it and you want to be liked and all the rest of it. I feel much more comfortable now, as if I’d ended up having a discussion with somebody and they ended up thinking “he’s a bastard, really don’t like him, I’m not going to have a beer with him on a Friday night” – I

wouldn't lose any sleep. Whereas a few years ago, it would have chewed me up a little bit internally. Much less so now. Much less so. For instance, when we walked away at the end of Gary's meeting, with not a particularly satisfactory outcome or satisfactory resolution, I was relaxed about it, 'cos I know I've made my feelings very clear to Gary. At the end of the day I'd set my expectations out – if he continued to breach them and behave against those expectations, okay, I've set the rules here, you continue to break the rules, you face the consequences. Whereas, you know, four, five, six years ago I would have not felt as comfortable about that sort of situation.

While Max had greater comfort in this area than previously, when he described the discussions with both Gary and Carl, he made it clear that it was important to him that, at the end of it, they each feel okay about the discussion and the situation. When I asked Max about this, he said:

That's a little bit of my personality traits coming through. I do like to see people happy at the end of the day. I don't want them thinking I was a big baddy!

Is it about them thinking you're a big baddy, or is it about some sense you've got that they can't go forward unless they've actually come to some resolution about that?

I think it's more the former. I think it's more me, the way I feel about myself.

Max said their thinking he was a “big baddy” would affect the way he feels about himself. In this sense of having his views of himself conditioned by those around him, Max was exhibiting the third order frame of the socialised mind.

He went on to describe a spectrum of approaches he could use in dealing with staff. These extended from talking over the issues to find a common approach to using his positional power to instruct staff how to act, “because this is the director talking.” I asked Max about his thinking behind his choice of approach. When he chose a style based on working with people, how much might this have been driven his concerns about how staff would feel about him and how much was it about his concerns about how effectively they might do the work?

Initially it starts off with the “hey, I want to be your friend” here. I want you to like me and all the rest of it. But then, when I move backwards, it's because it's reflecting the fact that the ultimate say is the job. At the end of the day – and that's a classic example with Carl in that situation we've been discussing – it was threatening the job. “Hey, I don't have a choice now, I need to ... I don't care what you think about me anymore, the effectiveness of what you're doing in getting the job done, has overridden how I feel you feel about me.”

When that's occurring, are you carrying both those things, or is it one's taken over from the other?

Oh, at the end of the day the job ... at the end of the day, if we're getting the job done, and everybody in this organisation hates me, but we're an effective organisation, that's fine by me. It won't stop me sleeping at night. That's the ultimate one. The “how I feel about myself” is an internal thing and I don't need others. No, that's not true. Everybody needs others to a certain degree.

In this, as in earlier excerpts, Max described a transition from a third order perspective, of being subject to needing the friendship of direct reports, to a larger view of these relationships within the context of the work: “the ultimate say is the job.” He described himself as independent of the feelings of others, sleeping easily at night, then he re-considered and said we all need others, but that needing of others was held as an object, within the context of working together for a particular purpose. The traces of the third-order view are now also held inside a larger fourth-order perspective of the role.

Theme 2: Making sense of the self

Kevin

Kevin was a Department of Conservation manager responsible for providing technical advice to his Conservator and fellow managers and their staff. This advice covered the full range of Conservation functions, from threatened species recovery programmes to animal pest and weed control operations, to planning and standards for maintaining recreation facilities such as back country huts, to marine conservation, to conserving historic sites. This wide brief cut across all facets of the Department's work. Kevin had decades of experience working in the field and in line management and advisory roles in conservation. In his interview he talked on two occasions about getting angry; once he seemed to be speaking more from within a third order frame, then later from a more fourth order perspective.

I get angry from time to time when I hear DoC people getting angry, or reported as being angry, about something the public's done [in this case, Kevin mentions people stealing ferns from within a national park or dogs killing seals]. I don't think that we are the people that should get angry about stuff. We might be disappointed in other words, but I don't think we should get angry about things.... I don't mean that we should be automaton whatevers, but I think we should be professional, and being angry is not being professional. I mean, to me, that's work.... What I'm trying to say is that the job type stuff should be the job type stuff, where we are a little bit more objective about it. I mean, we might be ... we might be ... I mean, we get pissed off with the public all the time. But we don't have to have it reported in the paper that we're angry about things.

And why is that particularly concerning?

I actually don't know. It just smacks of being unprofessional. That I expect somebody from Forest & Bird to be angry about something like that, or some mother of ten or whatever. Even Joe Blow ranger. I think that they should be seen as, you know, more objective and professional, and they might feel angry about it, but they wouldn't report it that way.

Kevin was concerned about the appropriate standard of behaviour that DoC staff should show when they are on the job. He appeared to hold this as an external standard, a mark of objectivity and professionalism that was important in terms of the way staff should be seen to be behaving. This was clearly important in the way Departmental staff are perceived (although, I would observe, there may also be rare cases where it might be quite effective in terms of the relations with the community to be known to be angry). The way that external perceptions condition the appropriate behaviour, which is more of a third-order pattern, can be contrasted with Blair's clear sense of values and what is right, a more fourth-order construction, as presented earlier in the chapter.

When I asked Kevin what was especially important about being objective, he started in the more third-order view based on external standards and then shifted to his own system as it was making different judgements. This is more of a self-authoring, fourth-order stance.

I like to differentiate between the DoC staff from the loony left greenies, right? They are the ones emotionally involved – we are the ones that are professional. Now, that's not to say you can't get emotionally involved. You know, when we do things like the getting kokako back in [a local conservation reserve], and stuff like that, you cannot not feel something, 'cos it's great. But, again, that's emotion. Which is actually quite interesting, isn't it? 'Cos when you look at the "angry" one and the

“touched” one⁵⁶, I suppose I’d be happy to show that sort of emotion, and not the other one!

Here, toward the end of this quote, Kevin shifted toward a more fourth order frame. He saw the way that it might be acceptable to him for staff, and himself, to be moved and touched while on the job but it was not acceptable to be angry. He started to see his own self-authoring system making these different judgements.

Later in the interview, Kevin was trying to make a distinction about his relationship to his work: “I’m sort of passionately involved, but I’m not emotionally involved – if you get what I mean?” He talked about his passion to really want to achieve particular conservation results and pointed to a photo on his wall of a degraded forest ecosystem where deer had grazed out all the new growth. He said the scene: “bloody near offends me, actually. And that must mean I’m emotionally involved. But, you know, to some level, it does.” The photo was taken in a national park where Kevin had worked for many years. In the 1970s, he had been involved in bringing the forest back from a state similar to that shown in the photo. “My part of what I’m trying to do now, is find out how to put the resources in to fix it. If it’s fixable.”

What was at stake for Kevin, was what he called ecological integrity - “basically, deep down, that we have, and get to, a system that’s running itself properly.” To achieve these aims, what mix of passion and objectivity might be required? I asked Kevin how he maintained his sense of offence *and* his sense of objectivity.

Well, I think being offended by it is actually healthy. It gives you the “go” to do something about it, or maybe a little bit more than you need. But I’m realistic enough to realise that the only way to find some resources to do something about that, requires an objective approach to prioritising how we spend our money.... [T]here’s no point in getting emotionally involved in that. It’s nothing to do with emotion, it’s actually nuts and bolts stuff. It’s good decision-making, and being able to absolutely demonstrate that the resources we’ve got are well spent.

Kevin had identified a place for emotion and a place where it is a problem. I asked again about how he manages these different ways of responding.

I am emotionally involved to some extent, but I sort of know when not to show it. I might use it as a sort of a something to motivate me to do something, but I wouldn’t demonstrate that anger in the wrong ... in a forum where it’s not productive ... or maybe not even at all. It might be something that motivates me.

And that’s a matter of keeping the two things separate, or is it a matter of sort of holding onto those two ideas but only ... but then deciding which bits can come out.

One’s demonstrated, and one’s not, I think. And one shouldn’t be, in my view.

And to do that, do you have to keep the two things separate in your sense?

Nah, not really. You just control them.

Are you saying you can be objective and angry at the same time, or does it ... is it more you’ve got to switch the anger off, or you’ve got to control?

I think the emotion at the back of that is just there, in the background, right? And it might be a thing that keeps pushing to do all that you need to do, to get to there through this sort of onerous bloody business. Which might take several years. But I can’t see a need at any time to demonstrate the emotion. Maybe that’s a bad thing. I mean, maybe from time to time it would be productive to do it. And there’s different sorts of emotion. Most people would buy into the emotion connected to that. But it’s the sort of angry-ness type thing that I think is a negative.

⁵⁶ He is referring here to the topic cards he has been given in the interview.

Here Kevin demonstrated that he could hold these different components, his passion and his understanding of what is needed in the job, in a relationship that served his larger self-authored view of working for the ecological integrity of the places he had responsibilities for. This is a more fourth-order construction of Kevin's own that contrasts to a degree with his earlier expressions about the inappropriateness of anger from a professional, objectivity perspective. This is a perspective that he returned to at the end of the quote above. In the interview with Kevin, he demonstrated that he was holding both fourth and third order perspectives.

Phil

Phil provides an example of aspects of the third order frame, although he profiles as fourth order. His transcript was assessed as 4(3). This means fourth order with vestigial elements of the third order. On the broad categories I have used in this study, Phil is counted as fourth order. I include him here because his interview provides a useful example of a predominantly fourth order frame with some elements remaining from the third order.

Phil talked about the risk of raising questions about standard approaches within the Department of Conservation and the impacts on his reputation and on the reputation of his Conservancy. Phil was a Conservator, managing around 100 staff and a budget of about \$10 million. In the course of the subject-object interview he cited a number of recent examples where he had made a decision to vary the way standard procedures were being applied in his Conservancy. On each occasion there had been a negative reaction, not from the General Manager who was his boss, but from the person in the regional office or the head office who was responsible for the particular system or procedure. This is a classic tension between the operational staff and policy or advisory or service staff in any medium to large organisation (the line versus support and service staff, in the jargon). In Phil's experience:

[W]e say you're free to ask your question, or find alternatives. But the fucking reality is you may not be. You have to suffer a degree of odium and bloody contempt.

Concern about reputation is something that can be held in many frames. In a second order frame I might be concerned about the direct implications for me, perhaps in the ways I am going to be directly disadvantaged. In a third order frame I am more likely to take on board my reputation, the external view influences my own view of myself. In a fourth order frame I am likely to see how I am in relationship to my reputation. I am likely to see how my reputation might have wider effects. Phil largely showed this latter perspective. It also seems to me that there were ways that he was personally affected by his sense that he has a reputation of being a non-conformist.

Phil set up the dichotomy between being subject to the views of others and seeing them in a wider and less personal context when he pointed out he is not a worrier but he is concerned about the organisational culture. He said he was not going to let somebody else's negativity get to him. There was a fourth-order 'self authoring' quality to this, and an implicit recognition that other people's negativity might affect him in a more third-order way. There were occasions, when he was swearing with some energy and a good deal of colour about the other protagonists, where it appeared that he might be more caught by their 'negativity' and criticisms. Recognising that Phil seemed to swear a lot, he seemed to swear with more intensity when talking about these exchanges and the other individuals. I have not included the specifics of these complaints in this account. After he had detailed them, I asked him what the cost was to him in raising these concerns.

I don't worry about stuff, eh. I'm not a worrier. But if I think about it from the point of view of the organisation's culture, I don't personally get flailed by that. I'm not going to let some other bugger have a bit of negativity get to me.

So what's most important about raising these?

I think, basically, I made decisions that I thought were right. And took a course of action that I thought was right, or questioned something I thought needed to be questioned. And what interests me is that there's a certain lack of reception to that. And I think, organisationally, that's not healthy. I told the GM that. I laid it out We don't have a culture of openness. I think we need to.

And what's important ... the most important thing to you about having a culture of openness?

....We've gotta be able to have a staff member who says to me "hey, your approach in relation to red deer, or bloody goats, is wrong, and this is why I think that".... Our decision-making is going to be better if the bloody goat hunter over there, who's a young bloody keen bugger who gets out more often than I do, they've got to [be able to] come and say "look, I think this about this issue, this ecological issue". So to succeed with these issues, we need to have more than just this list of bloody names on the list, thinking about these things. I mean there's a name on the list here that is quite hide-bound with some of the things that they propound. Others have a contrary view. We've got to be able to have the contrary views being listened to sensibly and intellectually, and not damned for raising it.... You should not be subject to personal character attack merely by raising a contrary view to what's expected in the SOP⁵⁷ I found as a third level person in this organisation, that I was – for a time – poorly regarded for raising contrary views. And that's not a healthy way to be acting. So if I get that at my level, how's the bloody A1 or the A2⁵⁸ going to go? They've got to be able to do it.

Phil gave clear fourth order reasons for why the odium and contempt he felt subject to had wider organisational implications. When I asked him what were the most significant costs to him in being questioned personally, he raised the risks to his reputation. He seemed to me to do this in both a third and a fourth-order way:

This is not a deep consequence, but you know there's a reputational consequence. You can get very quickly branded as a perhaps a problem-maker or a bloody renegade or a non-conformer.

But what's the most challenging thing about being a non-conforming manager?

Well, it's reputational. Your reputation is actually quite important in an organisation ... I think. It's not from an ego point of view, but I think you can be quickly damned.... I think you can suffer from a reputational perspective quite dramatically, but possibly not realise that. And without knowing that and you can be damned without trial. So I think the reputational stuff, to protect ... and it's not just me. The problem is that if, say, an individual starts getting a downer on me, they actually get a downer on the Conservancy. And I actually want to protect the wider view. I want to protect the wider reputation. As far as I'm concerned, this is a "doing" Conservancy – we do things, and we produce things. We produce stuff. Like, I'm actually proud of what we do. And if I started getting offside with someone, that can potentially affect the wider group, the wider bracket. So I need to protect that. So I'm more worried about that, than the individual reputation.

So there's a downstream cost in terms of effectiveness, from being seen as non-conforming, or obstructive or resistant?

Yeah. It's almost like maintaining the positive marketing of the entity that you're managing. I see that as important. Because it's not just me. It's the A1 at the other

⁵⁷ Standard operating procedure.

⁵⁸ Lowest level of staff classification.

end of it, of the link as well.... And also your bidding potential. Say, I got completely offside with [A and B, key regional office staff] in relation to the SOP. I mean, we're always putting up bids for this and bids for that. "Oh fuck [Phil's] Conservancy, fuck it, let it go to [another] bloody Conservancy." So I can't afford to let that happen. I have got to make a positive ambience, working ambience, working professionally with them all the time.

Phil is another manager who has shown himself to be operating in a fourth-order frame with times when he shades back into his third-order frame. For many people this transition is a challenging one. The effort to construct and to hold the fourth-order frame can lead to a certain allergy toward aspects of third-order thinking. It seems plausible to me that part of Phil's frustration with key advisory staff and the way they reacted to his criticisms may lay in the tension between his discretion to make his own mind up in a fourth-order, self-authoring, and accountable way, and the concern of the advisors to have Phil and his staff stick closely to their rules (perhaps held in a very third-order frame).

We have so far seen examples of managers demonstrating fourth- and third-order self-complexity and of managers in transition between these levels. This thesis suggests that managing complex environments and challenging interactions with communities may require at least some leaders of fifth-order self-complexity. No one interviewed in this study demonstrated a full fifth-order frame. But there were some hints, particularly with Warren whose case is described below.

A glimpse into the fifth order

Warren

Warren was a senior manager in a Regional Council. His role was a relatively new one, and he brought new perspectives to his council, although these were grounded in his many years of experience in the government sector. The stories people chose to tell in the subject-object interview were not restricted to work topics, although that is where most participants were focused. Warren told a story that reflected on how he made sense of himself. He recounted the experience of going back to university after many years to do a post-graduate block course in preparation for a planned PhD. Doing the PhD would mean shifting from the discipline of Warren's previous degree to a new one and therefore was going to push him into new places that he had not studied in but had been thinking about for years. He said the pleasure in the university course has been a surprise because:

[M]ore than anything else I've done this year, it took me right outside my comfort zone. And it took me right outside my comfort zone in something that I felt intellectually superior over. And it made me confront the fact that I was actually the odd person out in the room, even though I was the one thinking that I was actually coming at something from an intellectually superior point of view. And having to say well, isn't that interesting that I'm considered by these people in here to be old-fashioned. And that's ... that's actually quite ... that's a bit of a wake-up call. Not because I've necessarily changed my mind about what I think, but I've had to change my view about how I think about myself.

In this opening, Warren laid out what sounds like a self-authored view with also the possibility of a fifth-order self-transforming frame. He saw himself as thinking differently from others in the room and he saw the way they might consider him to be 'old-fashioned' in his thinking. He held this observation as a matter of interest rather than taking it on as a

possible definition of who he might be. Warren's comment that he had had to change how he thinks about himself could indicate a third-order frame, or it might also be an indicator of some fifth-order thinking. The feature that leads me to suspect it might be more a fifth rather than a third order signal is that Warren was conscious about the process of changing his thinking. How he saw himself and how this was changing were objects that Warren could discuss. This would not be the case in a third order frame.

It turned out that Warren knew the professor, an old mate from university days in a different era. "That's when you know that you're really old, when your professor is your chum from university!" It was a new era not just in generational terms. The lecturer and his fellow students turned out to be 'orthodox' thinkers in ways that surprised Warren. He found he had become an 'old-fashioned liberal' in an orthodox world.

I had to suppress the desire to actually want to sneer at them all, because it was ... it was the sort of thing you'd ... good grief, what have I come to? You know, these people were all complete morons! And there was a dreadful desire to actually get up and walk out. I actually got a bit depressed by day three, because there wasn't a single, solitary thing that I read that anybody in the room actually agreed with, including the lecturer....

Warren was able to discuss his reactions in a self-authoring way. He could see that he wanted to sneer and he suppressed that.

And what's hardest about being in this room full of people who you expected to be in a similar space to you, and they're actually in a very different space?

Well, I think that the barrier to wanting to pay attention and learning was there, straight away.... All the shutters went up and thought "what can I possibly be going to learn here?" And I thought "no, no, I can't think this way, this is not the way to think about this. You know, you want to go and do this 'cos you want to go somewhere you haven't been before, you don't want to go and do this because you want a great big tick in the box that says, you know, 'you're smart'."

There are three things happening in this paragraph that strike me as relevant: Warren watched his own barriers go up; he reflected on how he was reacting and how he wanted to react; and he noted that what he wanted to experience was to go somewhere new – he was seeing the self as an object that experiences new things rather than achieving external recognition. These are self-authoring features.

And I thought "well, kiddo, this is actually astonishing." Because all I was expecting was that, you know, I was in ... I was out of my comfort zone because this was a discipline I hadn't worked in before, so therefore, you know, I didn't know who to read and blah, blah, blah.... And you know, I was just going to be getting some kind of formalisation of something that I had already sort of was on the way to. Well, that was not what was going to happen in this room.

And so what was the hardest thing about being in this very different space?

Um ... being willing to listen, being willing to listen.

But what was hardest about getting to the point where you were willing to listen?

Oh no, it was a real experience in itself because it was about actually ... it was about trying to expand on the thing that I think is at the core of what matters to me in terms of human relationships, which is that you've got to understand this, whatever it is externally. You've got to ... I think to be good at self-realisation, and to be good at communications, you've got to understand this is somebody else's point of view. And yet I was going to have to struggle to get to that other point of view almost immediately. So it took quite a lot of personal, you know, a bit of hard yakker, to say

no, no, no, no ... okay, you know what you think, you know what you think of this. So that's okay ... just park that over there, because that's where ... it doesn't mean that it's wrong or whatever. You know what you think. You've gotta ... what is there here that you need to understand, at least understand it. And then make up your mind about whether you agree with it, but you've got to understand it. So, it's not about saying tick, you've got this right or wrong, it's about actually being willing to participate on the ground rules that were there.

Again, Warren took himself in hand in a very fourth order self-authoring way. He did the 'hard yakker' required to put aside his own views and tried to participate on the others' ground rules, so he could understand them.

I found that the process ... and it didn't just happen on the block course, it actually took me right through the rest of the semester, because I had to confront it in writing my assignments. And, you know, I found ... I found that the most challenging because the 'perfection – must get A' side of me over here was thinking "how the heck am I going to get an A and disagree with this guy" and actually no, no, I've gotta go ... I've gotta go down the path and this is where my thinking is at the moment and actually do this properly. Was yeah, about actually really being willing to go somewhere you haven't been before. And still apply all of that thinking to it and say, well, not just you're wrong, but actually, okay, what is it, where's this come from, how have they got here.... So I think on a personal level, I found myself confronted by an awful lot more smug ego than I thought I had. I think that was, that was, that was quite big.

Here Warren had again stated the challenge from a fourth-order frame. Then, in response to the next question, he started to shift gears. He described the process of seeking to understand the presenter as operating on two levels. The first was the consideration of the ideas. The second level involved the breaking down of some of his own barriers to learning. The way Warren talked about this second level provides a glimpse of a fifth-order or self-transforming frame of thinking.

And what ... what was the most challenging thing about seeing that smug ego?

Um ... the most challenging part of it was to kinda ... was to allow myself to actually look at what was being presented from the point of view of the presenter. What's their point? Can I actually get to the bottom of ...? Rather than just saying, nah, and dismissing it. What's in here? What brought them here?... And I could feel this happening on two levels for me. One on the level of actually the topic, which was good, but I was very, very aware that it was actually breaking down some other, some other personal barriers to learning, and a few more personal barriers to a kind of private sort of sense of no "I'm right".

And what was happening there – what was the thing that was happening to 'I'm right?'

Um, that, you know, okay, no, I'm not always right. You think ... you think you're open to stuff and actually you realise that there's always ... there must be always those fear barriers to get past. And in the end somewhere it's associated with some form of fear, you're protecting image, you're protecting something. If you're really open to challenge, it's not threatening. So why would it feel threatening? Why would I want to say no, I don't want to hear this? What harm is hearing it? No harm.

And what was the most scary part about that?

It wasn't so much scary, I think it was more the fact that it's instinctive to say that, because I guess that what you're looking for is some form of self-actualisation, you want some kind of pat on the back. And there's ... and that would be the complex side of you that likes to succeed, the same reasons that you're a workaholic or that you ... that you are success-focused. 'Cos you want to be right about stuff. And not

always being seen to be right is not necessarily harmful! In fact, it's, you know, it's unharmed. That's a really important lesson in leadership actually, I think.

In these last two paragraphs, Warren was making object his own self-authoring system, considering the way his fears created barriers to learning and seeing ways to not hold to those barriers and to be open to challenges. He saw the drives for pats on the back, the focusing on success, and the ways these drive a need to be right. Then he saw that not always being right is 'unharmful'. This holds hints of the fifth order of self-complexity being exhibited in the moment. It is not a full fifth order frame. For that we might expect the way personal barriers emerged or were revealed to be much more at the centre of the story and for there to be more reflection on the positive and negative features of these barriers, the parts of Warren that they strengthen as well as the parts they constrain and how these two aspects might interact. Aspects of fifth order thinking and its implications for environmental management and leadership will be explored further in Chapter Ten.

Summary

In this chapter I have presented cases that illustrate the findings of my research on the levels of self-complexity exhibited by environmental managers during subject-object interviews. More than three quarters of the managers interviewed had fourth-order frames of self-complexity. Twenty four of the thirty one interviewees profiled as at the fourth order or combined both fourth- and third-order frames.

Of the thirty one interviews I conducted and analysed:

- seven profiled as being predominantly third order in self-complexity,
- nine profiled as in transition from the third to fourth order, and
- fifteen profiled on or about the fourth order.

The leaders of the three Regional Councils and the three DoC Conservators profiled as fourth order.

There were no full fifth-order frames found.

The Department of Conservation managers profiled predominantly at the third order or in transition from the third to the fourth order. Of the DoC managers, only the three Conservators and one other manager profiled at the fourth order. Six managers profiled at the third order and five in transition from the third to the fourth orders.

The Regional Council managers were predominantly at the fourth order. Eleven were in this grouping. Four were in the transition grouping from third to fourth orders. There was one Regional Council manager at the third order. This may be a reflection of the Regional Council managers occupying positions that are located higher up the management hierarchy than the DoC managers. The managers interviewed may have spanned four levels of a management hierarchy in comparative terms⁵⁹.

The management transition for environmental managers appears to be the development and consolidation of self-authoring fourth-order leadership. This is the predominant value in the wider leadership literature and in the cultures of leadership development and accountability within these organisations. What happens next? Having encouraged development to this level, is development beyond this point into the fifth order encouraged, discouraged, or are the systems and organisations involved blind to these possibilities? The dimensions and implications of these questions will be addressed in the next two chapters.

⁵⁹This is using the typology of Elliott Jaques: The Regional Council chief executives occupy positions that are probably stratum or level 5 and their direct reports are at stratum or level 4. DoC Conservators are at stratum 3 and their reports at stratum 2.

Summary of Part Three: Adult Development Findings

In reviewing the interview data from the two adult development perspectives presented in these chapters, my overall findings are:

- Only one person demonstrated complex thinking in the interview. I did not find anyone who was operating with a full fifth-order frame of self-complexity⁶⁰ during the interviews.
- At the interviews, more than half the managers demonstrated complicated thinking and almost half were self-authoring in their self-complexity.
- The interviews with another quarter of the participants showed them operating in transition from the third to the fourth orders of self-complexity and that they were capable of complicated thinking.
- Another quarter profiled at the third order of self-complexity. Half of this group demonstrated only straightforward thinking and the other half operated with mainly straightforward thinking but also demonstrated complicated thinking.
- There was a rough parity between the two forms of measurement although the one leader who demonstrated complex thinking did not profile as having a full fifth-order frame of self-complexity.
- The Regional Council managers generally profiled at higher levels than the Department of Conservation managers and, as we saw in Part Two, are performing more complex roles.
- The analysis in both Parts Two and Three suggested the leaders of the top ranked Regional Council and DoC Conservancy appeared to be very successful at translating complicated ideas into concepts that work for their staff.

While a number of the implications that arise from these findings will be addressed in Part Four, I wish to conclude this part by returning to my working proposition and over-arching question set out in the introduction.

My opening proposition was that the responses of managers to environmental challenges might be greatly improved were higher levels of complexity of thinking and consciousness able to be applied by those managers. My over-arching research question asked:

What is the level of complexity of thinking and self-complexity that might be required to sustainably manage the environment and how does this compare with the current situation?

At the end of Part Two, the findings on environmental and conservation management suggested that the range of issues faced by leaders were such that a spread of levels of complexity of thinking and self-complexity would be useful if the whole range were to be addressed effectively. Leaders appeared comfortable that they could deal with the known issues and with issues at the edge of the known. Beyond that point there was the much greater uncertainty of what might be called the ‘unknown unknowns’. Some leaders were relatively sanguine about working it out as they went along; others saw that particular kinds

⁶⁰ Note that I did not expect to find leaders who were ranked as fifth order but rather that there might be leaders who demonstrated a combination of fourth- and fifth-order thinking, that is, they had both full fourth- and fifth-order frames in evidence.

of ‘wicked’ problems may not be being addressed effectively. There was little consideration of the potential for different thinking or meaning-making capabilities to transform approaches to existing practices.

What do the adult development chapters add to this picture? There are two pictures that are relevant here. In the Regional Council management teams there were leaders who profiled as clearly self-authoring and fourth order in their self-complexity. They were working with management teams whose members profiled at roughly the same order. With one notable complex thinking exception, the leaders and teams profiled as complicated thinkers.

The second picture was of the Department of Conservation Conservancy management teams. The Conservators each profiled at level four. One other DoC manager profiled at level four. Of the other DoC managers, five profiled as being in the third- to fourth-order transition and six as predominantly at level three. The composition of the DoC management teams and potential capability was therefore significantly different to that of Regional Council management teams.

Earlier I discussed the different orientation and related complexity of the work of Regional Councils and the Department of Conservation and how this is reflected in the different roles of the respective managers involved. These different adult development profiles for the two organisations aligns with the assessment that the work is at a different order of complexity. It also suggests a difference in the internal orientation and developmental curriculum for these two bodies. The development curriculum for DoC Conservancy teams is more likely to be in supporting the shift from third to fourth order of self-complexity and a move from straightforward to more consistently complicated levels of thinking. The development curriculum in the Regional Council would be to help managers to move beyond the fourth order into developing some fifth-order perspectives to hold alongside their fourth-order orders of self-complexity, and to enhance capabilities to think in more complex ways.

I am conscious that neither Regional Councils nor DoC Conservancies may see that there is any great need to change in a ‘developmental’ way. They may describe their needs not within a developmental frame but in terms of strengthening specific skills and capabilities. I agree that there are specific capability needs that should be addressed, in the environmental management field particularly, in enhancing the skills of managers to engage with their communities and key stakeholders. These may well contribute to the consolidation of fourth-order capabilities.

It may be that the primary development gain will come from consolidating managers as fourth-order leaders by broadening their skills at this level. I also think there is a need for fifth-order self-complexity and complex thinking within the system. Is this needed within the management teams in DoC Conservancies? DoC will need this capability if it is to move to the integrated management of ecosystems and to implement its strategic direction, but this may not be necessary in Conservancy teams if it is adequately available elsewhere. I suggest there is real value in having fifth-order self-complexity and complex thinking somewhere within the Regional Council management teams. The leaders may not need to generate this thinking themselves but they will need sufficient capability to nurture it in others and engage with the ideas.

These ideas are considered further in Part Four. In Chapter Ten I provide examples of how fifth-order self-complexity might provide different perspectives on key issues addressed in the interviews.

Part Four: Analysis and Implications

Overview of Part Four: Analysis, answers, implications, more questions

In the two chapters of Part Four I draw together the components of this thesis. I answer the research questions, consider what is to be done, and ask more questions. In Chapter Ten, “Environmental Leadership,” I consider how the different components of the thesis relate to each other and what this might mean for environmental leadership. I use the framework for environmental management and leadership (EMAL), presented in Chapter Four, as a structure with which to analyse my findings on the adult development of environmental managers: their systems thinking and self-complexity capabilities. I then explore in some detail the nature of the transition from the fourth to fifth order of self-complexity and how this might be manifest among environmental leaders. I conclude by drawing out environmental leadership and organisational implications from this material.

In Chapter Eleven I turn back to my four research questions. I address each of these in turn. While the first three responses involve summations of material already covered, the fourth question opens up areas that have had less attention. This question is: What might my findings imply for the complexity of thinking required to manage the environment well? What does it imply about the work that is being done now? What does it imply about what needs to come next? This leads into a fuller discussion of what is to be done and I explore the central developmental question that emerges from this work. I present an agenda for change and further exploration.

Chapter Ten: Environmental Leadership

Introduction

In this chapter I bring together a number of the pieces of this dissertation and consider what might be learnt from the relationships between these components. Firstly, I return to the framework for environmental management and leadership (EMAL), presented in Chapter Four. I compare this framework with my findings on the adult development of environmental managers, their systems thinking, and self-complexity capabilities.

What I find is the EMAL framework provides a useful way of seeing and applying levels of thinking in a particular management context and is easier to use than other models. It also appears useful in considering the ways managers lead at different levels of the framework. The use of the framework enables me to reflect on the absence of Level V examples of environmental leadership and the implications of this. It also provides a way to construct examples of what leadership may sound like at the fifth order of self-complexity and to illustrate some of the transitions involved.

I arrive at these findings by summarising the thematic examples of systems thinking and self-complexity, explored in Part Three, and comparing these with the EMAL framework.

The EMAL framework is reprinted here to enable comparisons. Table 10.2 presents a summary of the thematic data on the systems thinking capabilities of environmental managers. I have paraphrased the material presented by managers in the three thematic case studies described in Chapter Eight. I then compare this material with the EMAL framework - discussing the relationship between the systems thinking demonstrated by managers and the functions required of managers.

Table 10.3 is a paraphrasing of the thematic material presented in Chapter Nine. It sets out the levels of self-complexity observed amongst environmental managers. I then discuss the levels of self-complexity observed amongst the study participants and the significance of this in relation to adult development theories and the demands of environmental management.

Two other matters are addressed in this chapter. After discussing the self-complexity findings in the context of the EMAL framework, I then explore the transition from the fourth to fifth order of self-complexity and how this might be manifest among environmental leaders.

I conclude this chapter by relating the conservation and environmental management findings to the EMAL framework and considering some of the leadership and organisational implications.

Table 10.1: Functions and Levels of Environmental Management and Leadership (EMAL) – as they relate to systems capability and self-complexity (also Table 4.1)						
Level	I	II	III	IV	V	
Part 1: Systems Capability in Management	Managing Through – Using adaptive science-based processes: seeking patterns, understanding system dynamics, making plans to act.	Tends to use science more to prove or disprove the correct solution. Systems thinking, where it is used, is as a method or discipline.		Seeing interventions more as experiments to learn from rather than solutions to implement, while still concerned with results. Systems thinking is used more as a worldview than a method.		
		Fits information to a prescribed pattern or plan and, in acting, makes local adjustments as required.	Implements plan. Can identify cause and effect patterns, accumulate data to test patterns and modify these accordingly to help implement plan.	Produces plan. Able to identify and make choices between multiple cause and effect patterns.	Contributes to dynamic strategy. Able to identify multiple systemic, nonlinear patterns and test and modify these.	Decides dynamic strategy. Sees systems of systems. Able to consider 2 nd and 3 rd order system effects, choose between options and keep choices under review.
	Managing In and Up – Working in bureaucratic and political processes	Follows procedures and processes, works around local variations.	Understands process strengths and weaknesses, notes problems, accumulates data and makes changes.	Can define and implement process improvements. Sees constraints in systems. May see constraints in self and relationships.	Can define system improvements and can identify alternative approaches and choose among them. May also be able to see alternatives for self and relationships.	Understands whole system dynamics and can identify changes. May also see dynamics and fluid nature of self and relationships and reflect on and engage in change.
Managing Out – Engagement with communities and interests, nature of discourses.	Embedded in the discourse, with local variations, engagement to advance objectives with local communities.	Sees the discourse but accepts it as a given (as constraint or opportunity). Sees risks in ‘other’ discourses. Engages to educate and advance the plan.	Able to develop and advance a unifying discourse or story to support achievement of preferred outcomes. Engagement to achieve outcomes, perhaps help define the plan.	Chooses between different forms of discourse – and how these shape outcomes. Able to identify and use different forms. Engages to define outcomes.	Able to hold multiple discourses. Sees ways to reframe debates to improve environmental management. Engagement as a mutual learning process.	
Part 2: Self-Complexity	Self-complexity manifest in leadership	3rd order Focused on others who are regarded as most significant. Can feel torn between competing authorities. Power derived from connections.	3rd/4th order Tends to still be held by views of profession or peers but also fashioning self-authored views. Power derived from expertise and position. Tactically oriented, focused on analytical problem-solving.	4th order Can take multiple perspectives while maintaining own views. Power derived from drive to achieve organisational outcomes. Strategic enough to lead episodic shifts in direction.	4th/5th order Beginning to explore self as fluid and interconnected with others. Uses range of styles, and engagement, to achieve valued outcomes. Visionary and open to change, including basic assumptions.	

How systems thinking data relates to theoretical model of the thinking required of environment managers

What happens when we compare the systems thinking data with the environmental management framework? There is a general congruence between the three cases of systems thinking, presented in Chapter Eight, and the three functions of environmental management and leadership, used in the Westley model and the EMAL framework:

- Case 1 – Priority-setting and planning serves as a partial representation of the issues involved in managing *through*.
- Case 2 – Changing approaches to environmental management canvases the politics and processes of the environmental management system, a focus of managing *in* and *up*.
- Case 3 – Conflict over deer control provides an example of managing *out*.

Each of these cases is discussed below in terms of the related function of environmental management. A paraphrased version of the material from Chapter Eight is presented in Table 10.2.

Table 10.2: Levels of Systems Thinking of Environmental Managers⁶¹

	Straightforward thinking	Complicated thinking	Complex thinking
Case 1: Priority setting and planning (<i>managing through</i>)	<i>Alan:</i> The Conservancy priorities make sense to us because they are basically put together by the Areas. <i>Phil:</i> We have to blend the national issues and priorities with local and community concerns. Complying with the national objectives is important because they are the priorities of the government of the day and complying with them brings in the money.	<i>Kevin:</i> To do the best we can with the money we have available we need to take all the strategies for different animal pest and weed species and, instead of dealing with them separately, use these as tactical responses to achieve the outcomes we have identified as desirable and achievable at particular sites. We need to prioritise by focusing on the outcomes rather than on the particular tactics.	
Case 2: Changing approaches to environmental management (<i>managing in and up</i>)	<i>Jeff:</i> The opportunity has been lost to make the long-term plan a key strategic document, not only with community outcomes and measures of progress toward them, but also align our key activities towards achieving those outcomes and the strategic prioritisation implicit in that has not happened.	<i>Greg:</i> There has been an evolution in the number of extra things that need to be evaluated in acting in the environment: from the physical to the economic to the environmental to now cultural and social. This change is continued in the LGA but part of the Act, the long-term plan, is based on a fiction about the extent of community involvement. It does not deal with the real need in resource management: assessing cumulative effects and setting limits.	<i>Bruce:</i> The strength of the LGA approach is not in the long-term plan but in the way it enables community partnerships and multi-stakeholder collaborative approaches. The results of these can then be fixed in the regulatory framework. This enables diverse values to be considered, in a process underpinned by science.
Case 3: Conflict over deer control (<i>managing out</i>)	<i>Phil:</i> Halting commercial helicopter recovery of deer caused a dramatic increase in deer pressure on forest understories. Enhancing recreational hunting has not produced the goods so we are using aerial control methods. We could do a lot more of this but this would bring major opposition from deer hunters.	<i>Malcolm:</i> There was a clear and obvious conflict in creating a national park (required to be deer free) in the premier place for hunting whitetail deer. This is a theoretical conflict while we do not have the technology or the resources to remove the deer, but if the deer impacts are too large and technologies become available then the conflict would become very much a real one.	[On the cusp of complex] <i>Malcolm:</i> We delude ourselves that we can control deer on a large scale and we feel regret for the damage often caused through introducing these species have often caused. The contradiction is that we call ourselves New Zealanders but these animals are still 'alien'. We have yet to make the transition as a society to valuing these animals.

⁶¹ The statements included in this table are my paraphrasing of the more extensive quotes set out in Chapter Eight.

Considered from the perspective of managing *through*, and the priority-setting and planning stream, as set out in Table 10.2, Alan and Phil are involved in producing local plans, within the constraints and supports of a national system and national directions and processes applied in a local context. The level of systems thinking is straightforward, the work issues involved are between levels II and III on the environmental management framework. Kevin is considering the strategic context of those plans and a different interweaving or application of the national strategies to make the local plans more effective on the ground and to give confidence that the most effective work is being done. Here Kevin's thinking is at the complicated level and the work he is doing lies between levels III and IV on the environmental management framework. He is not doing more than Alan or Phil to produce a plan but he is doing something more complex in the way he is seeking to reframe choices. He is trying to alter the way national priority-setting tools are applied at the local level. It is not designing the system improvement or strategy from scratch but it is being involved in its application and re-shaping.

From the managing *in* and *up* stream, and the example of the law changes affecting environmental management, we see three quite distinct levels of thinking. Jeff takes a mechanistic process view of the workings of the new Act. In his view, the key processes are not being followed. He is describing a weakness he sees in the ways the processes are being applied. This is work at Level II of the environmental management framework and Jeff's thinking is straightforward. Greg might be seen as describing a process failing or a system weakness. However, unlike Jeff who was describing a failing in process implementation, Greg is pointing to a weakness in the system, in this case weaknesses in the existing legal system and in the system change, from one law to another, which, in his view, does not address the key problems he says the system needs to be able to respond to. In his case, the weakness is the perceived failure to deal with cumulative effects and to strengthen the provision of clear national standards. Greg is at the stage of describing the system weaknesses but not describing a change that encompasses the dynamics of the whole system. This is Level III work on the EMAL framework. At Level IV he might have gone on to describe the ways the system could have been improved and some of the contradictions and tensions in making such improvements. Greg, who demonstrated complicated thinking in the interview, gave an earlier description of the evolution of the scope of impact assessment that captured some of the complexity of Level IV work.

In contrast to other managers from this Council, Bruce is describing the dynamics of the whole system and potential whole-of-system improvements. This is work at Level V of the framework. Much of the thinking is complicated but then the complicated components are combined in larger schema. Bruce is demonstrating complex thinking.

In the managing *out* stream we can see the relationship between Phil and Malcolm and the different discourses present in relation to deer control. Phil is presenting a Level II perspective in a straightforward way. He is in the prevailing 'official' conservation discourse in which deer are an animal pest. He can see the risk to what he is trying to achieve of a competing 'every-deer-is-sacred' discourse gaining traction. Malcolm sees the contradiction that arises from the two different groups trying to satisfy their interests in the national park compromise. The two discourses exist and are accommodated but the contradictions in this could easily be exposed in the future. Then Malcolm moves to a higher level, either a high level of complicated thought or onto the cusp of complex thinking, when he describes how he sees the 'official' conservation discourse as representing a contradiction within the national

collective psyche, part of a deeper societal ambivalence about the place of humans in New Zealand and the place of other recently introduced species. Malcolm is working between levels III and IV of the EMAL framework. He can describe the official discourse and another discourse and highlight the contradiction inherent in the official view but he does not go to Level V of the framework where he might reframe the debate to sufficient extent to create synthesis to enable both of the discourses to be held in a non-contradictory way.

This comparison of material from the systems thinking analysis with the environmental management framework suggests that the framework, perhaps in a revised form, might be a useful way of thinking about the complexity of work and thinking required by environmental managers. The framework provides a way of seeing the levels of thinking in context and is easier to use than the cumbersome dialectical schemata framework or my more simplified version of it. It is close to my simplified version applied to a specific context. In this it takes a similar approach to Theo Dawson-Tunik's efforts to create complexity of thinking assessment tools in specific fields of work or study. Because it is contextual and relatively easy to use, the framework could be used by managers to make judgements about the nature and level of the work required for specific roles and the performance of individuals and groups as to whether or not they are performing the level of work required.

There is a further question about the 'fit' between the categories of systems thinking I have used and the levels I-V of the EMAL framework. There is a relationship between these two scales and it is also somewhat awkward, as explained in chapter four.

While the congruence between these approaches is rough, there is enough relevant commonality to be able to offer the following observations on what might be expected to be achieved by environmental managers and what might be beyond expectations. In essence, there is an absence of Level V examples of managing, *through*, *in* and *up*, and *out*. There is an absence of leadership that is seeing the dynamic nature of systems or the systems of systems. Strategies tend to be static rather than dynamic and emergent. There seems to be relatively little conscious reframing of debates and discourses or the use of processes to enable mutual learning on issues or collectively owning and re-framing of those issues. The shift from complicated to complex thinking would appear to make a significant contribution to the shift from Level IV to Level V work on the framework. In my judgement, even the best performing Regional Council was not consistently performing at Level V on this framework. It was performing very well on the basis of good management, complicated thinking, and consistently achieved Level IV work.

Table 10.3: Levels of Self-complexity of Environmental Managers⁶²

	3rd order	3rd-4th order	4th order
<i>Focus on Making Hard Decisions</i>	<i>Alan:</i> I get them to meet the standards and get the job done to deliver the results. I am accountable for this.	<i>Jeremy:</i> I have painted councillors into a corner to get unreasonable decisions reversed. The cost is that, over time, the councillors involved lose confidence in me. I fear they will no longer engage with me nicely. <i>Max:</i> My question is when do you go from the gently, gently working with people, to slapping them? I like to see people happy. I don't want them thinking I was a big baddy! But, at the end of the day, it is the job. Are we being an effective organization?	<i>Blair:</i> I know what we're meant to be doing, I know how hard it is, and I am the best judge of the success of my staff. Often the right thing to do is pretty obvious, once you go through things carefully and you exclude personal agendas. <i>Finlay:</i> I play different roles, the regulator and the advisor to people: the cold, hard face and the human, compassionate face. The roles get mixed and I am comfortable playing these roles depending on the situation. You often have to look beyond the particular prosecution or decision. <i>Bruce:</i> It was most important to make certain that I understood enough about the situation that the decisions I would make would be ones of integrity and would also deliver a positive outcome. If you cannot make your own decisions with integrity then they're not worth much. Sometimes you are torn. You know you are going to have to put up with some incredible public acrimony for taking that action but know it is the right thing to do. Often, it is not just a legal or professional question, it is a moral question as well.
<i>Focus on Making Sense of the Self</i>	<i>Ben:</i> To be effective and happy I need a wider engagement with my staff than just a work relationship. If others saw me differently it might erode how I see myself.	<i>Kevin:</i> There can be value in being emotionally involved; it can give you the 'go' to get things done, but winning resources requires an objective approach. We should be professional and being angry is not professional. <i>Phil:</i> You have to be able to raise contrary views, staff at all levels do, and not be dammed for raising them. Personally, there is a reputational cost to me in being branded a non-conformer. And there is a cost to my unit.	

⁶² The statements included in this table are my paraphrasing of the more extensive quotes set out in Chapter Nine.

Self-complexity data and the environmental management framework

There are two comparisons I wish to make between the self-complexity data summarised in Table 10.3 and the EMAL framework⁶³. The first is to consider the self-complexity data from the perspective of the levels of work in the framework. The second comparison is to look at the leadership styles represented in the self-complexity data.

The stream in Table 10.3 focused on making hard decisions can be used to illustrate the theme of managing *in* and *up* as described in the EMAL framework. Alan is working in levels I and II of the framework; he follows procedures and processes, working around local variations (Level I) and he is able to understand strengths and weaknesses, to identify problems and make changes to deal with them (Level II). Jeremy, in his 'management' of the councillors with whom he is having difficulties, is describing developing and advancing a unifying discourse with which he can shepherd the councillors to the decisions he wants them to take. This is working at Level III. Bruce is describing a Level IV way of weighing alternative approaches for the organisation and for himself and seeing the importance of his own integrity in the context of how it enables him to perform his role.

Following the theme of making sense of the self: Ben we can see as embedded in a view of himself that is at least partly constructed by the views of others. This could be the perspective of someone working in a Level II way in that Ben sees the way the discourse about him affects him and accepts this as a given. He is not constructing the discourse about himself as he might be doing working in a Level III or higher role. Phil, however, is working at this higher level. He sees the constraints to himself and to his relationships from the way the organisational culture or discourse is manifest and can argue for a preferred approach. He is not demonstrating a Level IV approach, though, in which he would be choosing between the strengths and weaknesses of the different discourses, or, in this case, approaches to organisational culture. Finlay does this to a degree when he describes how he might play two distinct roles in a relationship and the reasons for maintaining this duality. Finlay's approach aligns with a Level IV approach to engagement and discourses in the terms of the framework.

From following these two themes through the self-complexity data and comparing them with the environmental management framework, we can see a second way that the framework can be useful in providing a map for managers and leaders of the situations they face and the appropriate ways they might respond, or ways they might seek to coach their staff to respond. There is a transition in doing this. In using the framework our thinking has to shift back and forth from the requirements of particular roles or situations to the ways a manager might respond or behave in the circumstances and back again. Using the framework to consider how a manager leads or engages with others is a different question from the nature of particular issues or roles. It may be that the fourth row of the framework, dealing with leadership styles, is of more use in addressing how a leader might lead. This is the second comparison of the self-complexity data with the framework, to which I now turn.

⁶³ Note that, in plotting the self-complexity data against the EMAL framework, I am using this data in a different way than is intended. The self-complexity data was collected in a subject-object interview where the focus is on how the interviewee is making meaning, rather than on the specific content. In relating the content to the levels of the EMAL framework I am beginning a form of content analysis of this material.

The largest group of the managers interviewed for this thesis make meaning in a fourth order way⁶⁴. A few are at the third order. The other large group is in the transition from the third to the fourth orders.

Strikingly, there was almost no evidence of fifth order self-complexity. The data shows consolidation of fourth order self-complexity, movement from third to fourth order in others but almost no movement beyond the fourth order into a full fifth order frame. The absence of anyone with a fifth order frame was surprising.

Two questions arise here. One is how environmental management systems and organisations support leaders in the transition from third to fourth orders of self-complexity. The second question is whether environment management systems in some way constrain movement beyond the fourth order of self-complexity while, at the same time and paradoxically, seeming to need these higher orders of consciousness.

I will return to this second question shortly. First, let us look at how the system supports the transition from third to fourth order self-complexity. As mentioned earlier in the theory section, fourth order or self-authoring self-complexity is the most commonly assumed model for any manager or leader. Most leadership development programmes for middle level to senior managers are intended to support leaders in making the transition to a self-authoring frame. While these programmes have changed significantly over recent decades, much of the change has been toward a softer, more human-centred style of self-authoring leadership rather than in seeking to move leaders to beyond the self-authoring into a self-transforming frame.

The structure of table 10.3 also demonstrates an aspect of this shift from the third to fourth order. While we can begin at the third order and identify material that fits in one or other of two distinct themes, as we move toward the fourth order the hard decisions and the sense of self become one. Successful self-authoring people are comfortable making the hard calls (and recognising some of the costs to others that might be involved, including costs to themselves). This becomes a part of how they see themselves and what they say about themselves⁶⁵.

The lack of evidence of any examples of thinking beyond what might be expected at the fourth order has implications for environmental management. It suggests a significant limitation in managing organisations at Level V, in the manner described in the EMAL framework. Given these limitations it is worth exploring further the nature of the transition from fourth- to fifth-order self-complexity as it may be manifest among environmental leaders.

⁶⁴ I am using 'fourth order' to refer to the orders of self-complexity and 'Level IV' to refer to a level from the EMAL framework.

⁶⁵ It may also be the case that there was a bias toward this in the nature of my interviewing because interviewees were asked to talk about themselves and about their work. In the subject-object part of the interview there was a tendency for people to choose to tell work-related stories.

Transition from fourth- to fifth-order self-complexity among environmental leaders

There was only one example in my data of someone who demonstrated a hint of a fifth-order frame of self-complexity. This was Warren, who described the experience of being in a very different study environment than he expected and was able to reflect not just on the interplay between people in that environment and the challenges this posed to him (in a fourth-order way) but also how this altered the way he saw himself, the way he reflected on his own self-authoring system. “[T]here must be always those fear barriers to get past,” said Warren. “And in the end somewhere it’s associated with some form of fear, you’re protecting image, you’re protecting something. If you’re really open to challenge, it’s not threatening. So why would it feel threatening? Why would I want to say no, I don’t want to hear this? What harm is hearing it? No harm.”

This absence of examples of environmental managers choosing to reflect on themselves in this way⁶⁶ has meant I have needed to construct examples of fifth-order self-complexity in order to illustrate the central issues about how the transition from fourth- to fifth-order self-complexity might be manifest about environmental leaders and why it is significant⁶⁷. To do this I have taken the fourth-order examples given in Table 10.3 and then written fifth-order versions of them. This is obviously an artifice. Both the fourth- and fifth-order texts set out below are my constructions. The fourth-order text is my paraphrasing of the data. The fifth-order text is my imagining what these leaders might have said were they making meaning in fifth-order frame. I am not suggesting here that I know the ‘right’ answer or answers or the ‘right’ paradox, or even that I am operating at a higher level of self-complexity than these leaders. I drafted these texts purely for illustrative purposes rather than to judge these managers. It is worth remembering that the fourth-order material is based on what people actually said, in the moment. The fifth-order material is based on what I have been able to construct with the luxury of time.

Experience and confidence

Blair is confident of his position and judgement as a leader of many years standing in a clear, self-authoring, fourth-order way. He has done the hard yards and made many hard calls.

Blair 4: I know what we’re meant to be doing, I know how hard it is and I am the best judge of the success of my staff.... Often the right thing to do is pretty obvious, once you go through things carefully and you exclude personal agendas.

In a fifth-order frame, Blair might be just as confident but perhaps more confident in his uncertainty. He might also see the way his experience and confidence have enhanced his power and also have constrained him.

Blair 5: I know this job and there are ways I don’t know it still. My knowledge of the dimensions of this role and my direct experience of the challenges of our work give me an insight and wisdom I can bring to bear in the moment. This provides for a

⁶⁶ It might seem relevant that the only example of fifth-order thinking occurs in a personal rather than a work-based story. Interviewees tended to focus their stories on work examples (although not exclusively) and while it is possible that managers may be less likely to be openly self-reflective in talking about their work than their personal lives, I did not notice a discernable difference in the level of disclosure or the level of self-complexity when interviewees moved back and forth between work and personal topics.

⁶⁷ Because this is a speculative exercise, I have included this material here in this analysis chapter rather than in Chapter Nine where I presented my findings on self-complexity.

clarity of judgement that poses its own challenges. While it gives staff confidence, it can also constrain the space they have to make judgements and decisions. We put a lot of emphasis on making decisions and being accountable for them and reflecting on doing it better and learning from that and I am conscious that my experience and ease of judgement also constrains my learning. I have a sense that there can be a number of ways to resolve things, to be right, and I am intrigued that I have not felt the paralysis-by-analysis I might have once feared would come through being more open to a wider range of possibilities. I still get on and make decisions, but I find the choices I make often emerge in ways I would not necessarily have picked, looking at the issue for the first time.

Different selves

From a fourth-order frame, Finlay described balancing the two different roles he played in dealing with a particularly difficult prosecution.

Finlay 4: I play different roles, the regulator and the advisor to people: the cold, hard face and the human, compassionate face. The roles get mixed and I am comfortable playing these roles depending on the situation. You often have to look beyond the particular prosecution or decision.

A Finlay operating in a fifth-order frame might describe a larger balancing of multiple selves. Rather than just the two roles he might use in dealing with the person involved, he might describe a number of different parts of himself and the other person or persons involved. He might also place more emphasis on the way the prosecution is a step, albeit significant, in a much wider system.

Finlay 5: We are all a mix of selves. The requirements of the work setting and the role may condition which of these gets emphasised, but my need is to hold each of my selves in connection with the others and to connect with the many selves in the people I am engaged with. A prosecution is an important event in so many lives. It helps for me to see its importance in the lives of the prosecuted and the prosecuting and the community and the people touched by it. It is important to see what comes before and after and how the prosecution functions as a part of this system.

Scope of integrity

From a fourth-order frame Bruce described how he made a tough call on whether to prosecute a local council. He had to deal with uncertain knowledge, tight time frames, and the likelihood of public acrimony to decide on the 'right' thing to do.

Bruce 4: It was most important to make certain that I understood enough about the situation that the decisions I would make would be ones of integrity and would also deliver a positive outcome. If you cannot make your own decisions with integrity then they're not worth much. Sometimes you are torn. You know you are going to have to put up with some incredible public acrimony for taking that action but know it is the right thing to do. Often, it is not just a legal or professional question, it is a moral question as well.

From within a fifth-order frame, Bruce might seek to place integrity of his decision-making within a wider frame. He might also describe the way some of the negatives in the process also present opportunities: the either/or complexion of the legal system and the way these issues are reported in the media and the energy generated by public acrimony,

Bruce 5: In making a decision to prosecute I need to be able to know enough to make decisions of integrity, even in situations of uncertainty. The stakes are particularly high when choosing to prosecute a council we also partner with. These are legal and professional questions and personal and moral ones. There is also a larger responsibility to the integrity of the resource management system within our

community. Prosecuting, and the legal process, usually reduces matters to either/or choices. Either/or is also the way these issues get communicated. The challenge for me is to help to move these issues into a both/and space, and the simplification of the issue to either/or, the contrast in that, might also provide ways that the issues can be reframed as both/and opportunities. The issue may be one where incredible public acrimony is inevitable. And this too can provide perverse opportunities. How might the acrimony be used as source of energy and attention that enables us to build public consciousness and a more sustainable solution? But this is a riskier path and it raises questions about how I might lead in this place and also strengthen the work of the Council.

Environmental leadership implications

From these examples of how environmental leaders might reason from a fifth order perspective, we can gain an insight into more dynamic and flexible approaches. These approaches might be employed to develop and implement strategies, manage systems of systems, and be able to reframe key debates. Enhanced capability in leadership teams to make meaning beyond the fourth order offers great potential to manage the uncertainties involved in such issues, including enhanced capabilities to build relationships in contentious settings and greater self-awareness among leaders.

While this order of self-complexity was not evident in my interviews, many of the leaders I spoke with for this research were good men and true⁶⁸. Some of the leaders I interviewed were highly rated by external judges and by peers and staff. In my judgement these leaders, in particular, seemed to be very effective translators. They were able to extract from the complexity of the situation a clear direction and translate that into tangible actions that would contribute to the outcomes being sought. In general they were a combination of complicated thinkers and self-authoring or fourth order in their self-complexity. In terms of Joiner and Josephs, these leaders appeared to use the achiever leadership style. This combination seems to be central to their success and what stakeholders most expect of these leaders. These are successful leaders of successful units. It is against the performance of these Regional Councils and Conservancies that others benchmark their performance.

The challenging question here is whether this success is enough. Is it reasonable to ask for more? If more is desirable, how much does the system require this level and type of performance? I address the systemic question below and, in the next chapter, return to the questions about what might be required.

What shifts as leaders move from the achiever to the catalyst leadership style, or to first manifesting a full fifth order frame of self-complexity, is the approach to uncertainty and control. In the fourth order frame leaders are aware of multiple perspectives and choose the best alternative between them. In the fifth order frame leaders doubt that there is a best choice and are more concerned to hold the ambiguity and uncertainty that exists across multiple perspectives. Level V complex thinking would seem to be an important co-requisite to enable leaders to hold these multiple perspectives.

⁶⁸ Only two of my thirty one interviewees were women and they were not in the most senior positions, although they too seemed good and true.

This is hard to do in general. It is harder to do when stakeholders and staff want a clear sense of direction. Others in an achiever or fourth order frame expect fellow leaders to be able to make clear choices based on their best judgement about what is right. Staff and stakeholders operating from third order frames expect leaders to provide clear directions and make expert choices, within which they can operate. So the external demands on a leader who may begin to see the world in a more complex way can be summarized in the KISS principle: keep it simple, stupid⁶⁹. It is not just the social context that prompts leaders to offer certainty and the prospect of control, formal accountability mechanisms mirror this perspective. All of the managers interviewed in this research are public servants. As public accountability mechanisms have been strengthened over the years, so has the expectation that leaders will be able to deliver results. Environmental managers, particularly in regulatory roles, are subject to judicial oversight of their decisions. This is a further disincentive to acknowledge uncertainties, errors, or an absence of control.

In recent decades there has been an evolution in the focus of public agency management from concentrating on inputs (the things needed to deliver the service), to outputs (the particular services being delivered), to outcomes (the overall results that may or may not be achieved as a result of the services being delivered). This evolution in the logic of intervention by public agencies has been very worthwhile and it is continuing to advance. It has two broad implications for the self-complexity and complexity of thinking of leaders: the role becomes much more complex and requires recognition about the multiplicity of interconnections between the actions of an agency and the results in the world at large. This creates a demand for higher levels of thinking and self-complexity. Paradoxically, it also creates assumptions that there is a logical chain to interventions and leaders can control actions along the path from outputs to outcomes and can be held to account for the results. As a management consultant colleague of mine says: accountability is still conceived of as being accountable for what has happened in the past rather than being accountable for being better equipped for the future. These leaders need to be operating at time scales where the decisions they are involved in making will have impacts well beyond the times when many of these individuals have retired or gone beyond. There is little that can be done to hold them to account for the specific outcomes that communities need these leaders to be working on.

In terms of the management and leadership framework set out in Table 10.1, the successful operators are primarily doing Level IV work well. The strategic shift described above involves moving to Level V on the framework. There is a need to develop an understanding of the whole system and how it operates at multiple scales and to be able to hold multiple discourses and to reframe those discourses.

To some degree the successful Regional Councils and DoC Conservancies have demonstrated they are already able to balance the needs of a range of stakeholders – the successful operation at Level IV. To the extent that this is the case, then the agenda for change, in terms of the development of managerial capability, is to consolidate the self-authoring fourth order of self-complexity and the complicated thinking capabilities of managers. This will be explored further in the next chapter.

As I ask in the next chapter: how much should the focus be on bring more leadership teams up to the best performers (units that are achieving well in Level IV terms) and how much is

⁶⁹ The phrasing of this echoes H.L. Mencken's aphorism that "no one ever went broke underestimating the taste of the American public."

there a need to move to greater Level V capability? The answer may well be both, but before we move quickly to such an easy thing to say, it will pay to discover it is a hard thing to do. These options, to a degree, pull in different directions.

The levels of uncertainty in both the DoC and Regional Council settings are such that I am still left assuming that managing in these contexts over time, to meet the standards and learnings needed for sustainable management, will require some leaders or advisers to have capabilities to deal with multiple uncertainties that are more extensive than the leaders interviewed for this research.

This capability to deal with greater level of uncertainty (more situations where there are also more uncertainties) involves a developmental shift. This is the shift to Level V on the EMAL framework. It involves a shift to either complex thinking and/or into a self transforming order of self-complexity. These are co-requisites to a degree but different people may advance along different paths, putting more or less emphasis on the thinking and feeling sides. These questions will be taken further in the next chapter.

Chapter Eleven: What Are the Answers? What Is to Be Done?

Answering the questions

The research questions this study set out to address were:

1. What is the relationship between the complexity of the thinking of senior managers and assessments of their success?
2. How do the selected environmental managers understand the performance of their organisations as effective environmental or conservation managers and the challenges they face?
3. What is the level of systems thinking and self-complexity exhibited by a selection of senior managers responsible for the management of the environment within New Zealand?
4. What might this imply for the complexity of thinking required to manage the environment well? What does it imply about the work that is being done now? What does it imply about what needs to come next?

In this chapter I will address each of these questions in turn. In effect, research questions two, three, and four are each addressed by Parts Two, Three, and Four of the thesis. I will provide summary responses here and also discuss the implications of ‘what is to be done?’⁷⁰

What is the relationship between the complexity of the thinking of senior managers and assessments of their success?

Not much. This was not quantitative research but there was little pattern discernible to the author in the variations in the complexity of thinking of leaders and managers and the assessed performance of their organisations. There were two types of judgement of the performance of these organisations. At the beginning of the study I asked separate panels of informed advisers to rank the Regional Councils on their performance on sustainable environmental management and DoC Conservancies on their performance on integrated conservation management. From this I was able to identify and interview members of the management teams in Councils and Conservancies ranked as top, medium, and bottom performers.

The second source of data on performance was from the managers themselves. They were asked to assess how well they thought their organisation and management team were performing. In the case of the Regional Councils: the managers at the Council assessed as a top performer thought they were doing very well; the managers at the Council assessed as a medium performer thought they were doing well and were among the better performers; and the managers at the Council assessed as a poor performer had mixed views but were generally dissatisfied with performance.

⁷⁰ This is a good question in most circumstances. It is also the title of a famous treatise by V. I. Lenin (1902).

In the case of the DoC Conservancies there was less variation among the assessments by managers of how well they were doing. There was a generally consistent view that they could do the job, or do more of the conservation job more effectively, if there were access to more resources. Managers in the Conservancy assessed as a top performer were a little more positive about their performance and more confident they could clearly identify conservation priorities than managers in the other two Conservancies. The managers in the Conservancy assessed as a poorer performer were more caught in the difficulties and challenges of the work and were more circumspect about their performance and they were also very positive about a number of areas where they thought progress was being made.

There was no discernable pattern that emerged from assessments of the complexity of thinking of the managers in different teams and the assessment of the performance of their organisations. The leaders of the six management groups (three Regional Council chief executives and three DoC Conservators) all profiled in their interviews as making meaning from predominantly fourth-order frames⁷¹. In terms of the systems thinking capabilities shown during the interview: one Regional Council chief executive demonstrated complex thinking; the other two demonstrated complicated thinking. All the DoC Conservators demonstrated complicated thinking. One of these was on the cusp of complex thinking, one showed consistently as complicated thinking, and the third was sometimes more straightforward in his thinking and sometimes complicated. The Regional Council chief executive who profiled on interview as a complex thinker and the Conservator who profiled as at times almost a complex thinker were the leaders of the Regional Council and Conservancy assessed respectively as the poorer performers. This may be just happenstance. I cannot comment on whether this is significant or not.

There was certainly no clear pattern among the leaders (or among the other managers) that would enable me to equate complexity of thinking or self-complexity of the leaders with assessed performance of the organisation. Any interpretation of this result would be purely speculative. My assumption is that a multiplicity of factors contribute to the success or otherwise of Councils and Conservancies and the complexity of thinking and self-complexity of the leaders may be only one of a number of factors.

However there is a relevant pattern here that I will return to in answering the fourth research question: all the leaders profiled as fourth order in their self-complexity and complicated in their thinking. To what extent might this be the result of the organisation and community needing and shaping leaders of this capability to perform these roles? If they might have been supported to this level, could they be supported to move beyond the fourth order of self-complexity and complicated thinking?

How do the selected environmental managers understand the performance of their organisations as effective environmental or conservation managers and the challenges they face?

Firstly I will address this question to the Regional Councils. Progress made by individual Regional Councils toward sustainable management, in the views of the managers involved,

⁷¹ One DoC Conservator profiled as straight fourth order and two as 4(3). Two Council chief executives profiled as straight fourth order and one as 4(3).

varies from good to mixed. In the Council assessed as the best performer the assumption is that they have much better information and now know what needs to be done and are able to get on with it, with broad community support. In the Council judged to be a poor performer, gathering the information required on critical resources and developing the community support needed for key actions is still work that is underway and some of the managers are not confident that important communities of interest will accept constraints on their use of resources that they consider essential.

There is a number of inter-connecting actions that managers describe to explain their success, or lack of it. These are described at two levels, an action level and a support level. At the action level these include: implementing an approach that has been agreed with the community, having a strategic approach to relationships, and being tough enough to enforce the rules.

There is also a group of inter-related factors needed to support these actions. These include: quality leadership, in particular to provide a clear framework within which relationships and action fit; quality governance – especially a good relationship between the chief executive and the Council chair; quality science; and having a significant income stream in addition to rating.

There are two provisos to this. It is not clear how effectively long-term environmental degradation and threats are being managed. These include non-point source pollution and declines in water quality, biosecurity threats, and continuing loss of biodiversity. It is also unknown to what extent climate change and climate change mitigation will complicate or enable the environmental management responsibilities of Regional Councils. Secondly, the Regional Council mandate is potentially broadening with the shift in emphasis from sustainable management (mainly of the bio-physical environment) to sustainable development, encompassing social, economic, and cultural concerns as well as bio-physical factors.

In the case of the Conservancies of the Department of Conservation a relatively consistent view was expressed by most managers. I have summarised this as follows: we do a good job implementing our annual plans, but the scale of the job is very large and the plans are only a small part of what we think needs to be done to protect biological diversity. There are two main constraints: we do not have enough resources, especially money, and we do not know enough about ecological interactions to make confident decisions about priorities and preparing the plan. Taking a more integrated approach to conservation management is a good idea but it is more a theory than actual practice. We are also having more success engaging with the community and building community support for what we do.

In both the Regional Council and DoC cases the underlying sense is that the professionals know what to do. In the case of the more successful regions they have been able to build community support for this or are moving to strengthen that support and deal with opposition. In the less successful Council the professionals have been less successful in gaining the support of councillors and key stakeholders for the resource management constraints they recommended.

With the DoC Conservancies there is a paradox about the managers' confidence that, given enough resources, they can do the job. At one level there is the experience that programmes to control such threats as predators, browsers, and weeds, for example, are known

commodities with known costs and benefits. All that is needed is additional money and people, and more conservation results can be achieved. The paradoxical element to this is that the more expert ecological advisors are less confident. The uncertainty is not so much about whether the particular management programme might achieve the predicted results (there is a relatively high degree of confidence about this) but more about where conservation efforts need to be focused to achieve the greatest value in ecological terms and how different programmes might be more effectively integrated.

What is the level of systems thinking and self-complexity exhibited by a selection of senior managers responsible for the management of the environment within New Zealand?

My findings also show that almost all leaders in Regional Councils and DoC Conservancies demonstrated, at interview, complicated thinking and fourth-order self-authoring self-complexity. Their managers showed thinking that ranged from straightforward to complicated and self-complexity from the third to fourth orders. More than half those interviewed demonstrated complicated thinking and almost half profiled as self-authoring in their self-complexity. Another quarter of those interviewed profiled as in transition from the third to the fourth orders of self-complexity and as being capable of complicated thinking. Roughly the final quarter profiled at the third order of self-complexity. Members of this last group were split between just demonstrating straightforward thinking or mainly operating with straightforward thinking but also showing complicated thinking. I encountered only one complex thinker in the course of my interviewing, and no one operating with a full fifth order frame of self-complexity. There is a rough parity between the two forms of measurement although the one leader who demonstrated complex thinking did not profile as having a full fifth order frame of self-complexity and I had another notable case of a leader who also profiled as fourth order in his self-complexity and demonstrated a mix of straightforward and complicated thinking.

I also found that Regional Council managers are performing more complex roles and generally profile at higher levels than the Department of Conservation managers. The leaders of the top ranked Regional Council and DoC Conservancy appear to be very successful at translating complicated ideas into concepts that work for their staff. Neither profiled as showing the highest level of thinking that was evident among the Regional Council chief executives or DoC Conservators, respectively.

What might this imply for the complexity of thinking required to manage the environment well? What does it imply about the work that is being done now? What does it imply about what needs to come next?

The answers to the previous questions have involved summarising material already presented in this dissertation. From here on it is largely new territory, although I have been reflecting on questions such as these at the end of major chapters and each part of the thesis.

In this section I address the questions of how much leaders may need to change and how those changes might be made. Then I describe an agenda for change and conclude by describing questions for further research.

How much change? Consolidation, transformation, or both?

At the conclusion of Chapter Ten I considered the environmental leadership implications of my findings. I described two approaches to future leadership development in this field. One would focus on consolidating and enhancing the self-authoring fourth order of self-complexity and complicated thinking capabilities of managers. Particular efforts would be made to lift the skills of managers to engage in multi-stakeholder processes to resolve complex environmental issues. I will call this the consolidation approach.

The second approach would support the transitions of some or many leaders to a self-transforming fifth order level of self-complexity and from complicated to complex thinking. I will call this the transformation approach. It is assumed that this would incorporate the gains won through the consolidation approach and go much further. The additional benefits that would come from the transformation approach lie in the ways it would strengthen the abilities of leaders to work across a suite of complex issues, at the same time, and also be able to reframe and enable the transformation of many of their organisation's existing ways of doing things. While the transformation approach offers additional benefits it is also likely to be much harder to achieve. I came to the view that both approaches may be needed but that these might not be easy to combine. It may be that success in consolidation will also limit the possibilities to achieve transformation.

To design an agenda for change I need to further consider this issue and also two related questions. The central issue I defined above can be restated in the following questions:

- How much should the focus be on consolidating fourth order leadership with, in this context, a focus on enhancing social or relational skills, or how much should attempts be made to achieve a transformative change by moving leaders to the fifth order of self-complexity?
- How might these two approaches, consolidation and transformation, be combined?

Two other questions arise in relation to these issues:

- What are the needs and issues of the environmental management agencies in relation to these changes?
- Might there be a particular benefit in focusing on complexity of thinking? To what extent might a focus on helping environmental leaders to move beyond complicated to complex thinking act as a bridge for what might be considered the 'larger' shift to a fifth order frame of self-complexity ?

Environmental management needs

I will start with the questions of the needs of the agencies involved and the issues they face. Not all environmental management issues are so complex as to require fifth-order self-complexity or complex thinking. The successful leaders have demonstrated that much of what is needed can probably be done with good fourth-order leadership. However, I have also identified that complex thinking and fifth-order self-complexity is most useful if agencies are to be able to grapple effectively with the next level of 'wicked' issues.

Factors that demand fifth-order self-complexity and complex thinking include:

- multiple scales at which issues need to be addressed,
- very long timeframes for many environmental management matters,
- very high levels of uncertainty,
- complexity of multi-stakeholder community and public processes, and
- overlapping and often conflicting interests and values of multiple stakeholders.

These are characteristics of some of the issues faced in most Regional Councils, such as the long-term effects of nitrate levels in groundwater. They are also characteristic of some of the issues faced at the national level in the Department of Conservation and, in the case of ecosystem management and biosecurity issues in particular, with issues that can also occur at Conservancy level. However, as discussed at the conclusion to Part Two, the complexity with these Conservancy issues is more related to technical complexity (although not exclusively) and with the Regional Council it is more a mix of technical and social complexity, because the Regional Council is more likely to be seeking to have, for example, farmers and foresters change their behaviours on their own lands, or on private lands they manage.

From my consideration of the relative complexity of the different roles, I concluded that at the DoC Conservancy level the need appears to be for fourth-order consolidation and some development of particular skills. Where complex thinking, and perhaps fifth-order self-complexity, is needed it might be based elsewhere in the Department of Conservation or in external agencies, with these perspectives able to be made available to the Conservancies. In the case of Regional Councils the need is more to have fifth-order self-complexity and complex thinking available among some members of the management team.

Consolidation approach

I have suggested there are two broad approaches to be followed: a consolidation approach and a transformation one. The consolidation agenda involves building on the existing fourth-order strengths of leaders. In my view, the need would be to improve these leaders' relational skills, and probably the complexity of their thinking, to better enable their engagement in multi-stakeholder complex issues and the crafting of sustainable solutions that are owned by the community. This is about those leaders helping their communities to make better choices.

Not only is there an identifiable need for this consolidation, it may also represent the most significant *easily attainable* improvement. I use the word 'easily' advisably here. A consolidation of the capabilities needed for effective self-authoring leadership is still a challenge. However, it is a challenge that is supported within the central management paradigm. Effective, accountable, self-authoring environmental leaders are what is expected in the set-up of current systems and by communities. Partly because of this, there is not much need to comment further on development from the third to fourth orders. The bulk of the existing leadership development effort is already focused here.

The initial consolidation focus may be twofold. One part is to improve the social and relational effectiveness of fourth-order leaders, because this has been highlighted as a need. The other part is to support development of more complex thinking. This approach might be summarised as consolidating an openness of heart and leading with the head. I will say more about the second aspect of these changes, building complexity of thinking, later in this section.

Transformation approach

The transformation to fifth-order self-complexity and complex thinking may be needed for many leaders. If leaders are to fully achieve the potential available as the sum of the capabilities of themselves, their staff, and the communities they work within, and to also develop that potential to learn and grow together, then they are going to need the ways of acting and thinking embodied in fifth-order self-complexity and complex thinking. Such

changes are likely to be more difficult to achieve than the consolidation approach. They represent big stretches for individuals and for organisations. A transformation to fifth-order self-complexity and complex thinking is not something that can just be engendered in a set of block courses or a management retreat.

Based on the limited evidence available from the few longitudinal studies of changes in self-complexity, the developmental transition from fourth to fifth order might be assumed to take many years, at least (Kegan 1994:188). Establishing a cadre of environmental leaders who exhibit fifth-order self-complexity and complex thinking is a formidable agenda at both the individual and organisational scales, and having a spread of complex thinking fifth-order leaders and organisations engaged in environmental management remains some distance in the future.

The difficulties in this are not just experienced by individuals. The fifth order of self-complexity is also a hard thing for organisations to encompass. Factors that constrain fifth-order self-complexity and complex thinking relate to the contexts leaders work within and their perceptions about what is possible or desirable. Contexts include:

- public processes and accountability, in particular the difficulty of making mistakes and learning from them, in publicly accountable processes, for fear of being punished; and
- the simplicity that is sought by people throughout the system, including ministers, councils, communities, and staff.

The perceptions of leaders that might be relevant in this situation include:

- the sense of efficacy and authority that comes from being fourth order and the consequent loss of confidence that can occur in the face of fifth-order uncertainties; and
- the sense of achievement at the fourth order and the greater doubt that seems to arise at the fifth order about how much might actually be achieved through the intentional actions of leaders.

Government environmental organisations are set up as systems of control, with the intention of being accountable to the community and operate under clear statutory regimes. Each of these frames (organisational, publicly accountable, legal) imposes disciplines that reduce, restrict, and resolve ambiguity and paradox to enable action to be taken and control to be established and maintained.

These features are all consequences of important aspects of the system, matters such as transparency, accountability, the need for certainty, probity, and the rule of law. But, as we have seen, these important control features and values, while necessary, are insufficient to manage the complexity of many current environmental management issues.

Complex thinking and self-transforming self-complexity resist the reducing, restricting, and resolving of ambiguity and paradox unless this is clearly a good way to proceed. Where there is uncertainty the intention is more to hold on to ambiguity and paradox and seek to take advantage of it. Understandably it is difficult to find places for these ways of thinking and working in many organisations. There is organisational and systems resistance to complex *thinking* and even more to the complex *feeling* of self-transforming fifth-order self-complexity. The emotional component of the fifth-order transition may be a step too far in many organisations.

Having described some of the organisational constraints to transformation, it may pay to look again at the pattern I found. My findings suggest that leaders in environmental management are generally operating as complicated thinkers who appear to make meaning in a fourth-order self-authoring way. These are higher levels of complexity than might be expected in the adult population as a whole and similar to those for a group of managers. This suggests that the fourth-order nature of organisations may have helped those managers to develop to the self-authoring level of self-complexity. Most of them have been in their roles, or their organisations, for more than ten years and it is likely that this development has happened in the time they have been with that organisation. If it is the case that these organisations, or the expectations made of managers and leaders in general, have been major shaping forces in their development, then might it also be possible for organisations committed to nurturing fifth-order self-complexity and complex thinking to also help to develop a group of its leaders to these next levels?

Consolidation and transformation: the challenging in attempting to achieve both

If consolidating and transforming are required then what are the constraints on doing both, or one then the other? The value that organisations put on consolidating leaders at the self-authoring fourth order is likely to be a strength and a weakness. The need for the transitions from the third to the fourth orders of self-complexity and from straightforward to complicated thinking are clear and well represented in most training efforts in organisations. Attaining a fourth order self-authoring level of self-complexity helps strengthen many leaders and leadership teams to deal with making difficult choices with greater confidence and effectiveness. The risk is that it also makes the transforming step harder. The problems arise when the fourth order becomes an end in itself instead of being a useful way of performing particular roles. It can be seen as a level or zone in a development pathway that is very useful for some roles and organisational settings and less useful for others. It can also be seen as the 'right' leadership model, the place to arrive at. This is also self-reinforcing because it happens to be a tendency of the self-authoring frame for things to be seen as the 'right' answer. When the fourth order is privileged in this way, as the preferred place for leaders to operate from, there is also a probability that this preference is fixed into the organisation's culture - as 'this is the way we lead around here.' When this occurs it becomes much harder for individual leaders and leadership teams to shift to a different model.

It is the case that any transition from one order of self-complexity to another involves a rejection of the old and then an accommodation and incorporation of that model into a wider frame. In this case, for self-transformation, the self-authoring mould actually has to be broken. But this rejection is a temporal thing. The rejected or 'broken' fourth-order model is still serviceable, is a way of operating that fits many circumstances. The leader holding both a fourth- and a fifth-order frame of self-complexity benefits from being able to hold both these frames, to gain the full benefit of both approaches, rather than rejecting one over the other. However, as we have seen, getting to hold this wider view may be a hard transition. While each leadership transition has its difficulties, that from the third to the fourth order is supported by organisations. A shift from the fourth to the fifth order may be doubly difficult because it cuts across the organisational grain.

Shift in thinking

I have discussed the scale of the change that would be involved in a move to fifth-order self-complexity among many leaders. A question arises as to whether a shift from complicated to complex thinking might function as bridge in this transition. There are couple of observations to make here. It may be that people come to developmental shifts through

routes that are more likely to emphasise the cognitive or emotional aspects of their personality, depending on their personality type. However the individual approaches these matters, a focus on developing cognitive skills is likely to be much more accessible in organisations.

A proposition that is, as yet, little studied is the relationship between an understanding of systems thinking and how an individual might see and experience their self as a system. As a person moves from complicated to complex thinking they are more able to see the systems involved, in the moment. Can they see how they operate within those systems, in the moment? Can they see themselves as a system? Greater facility in this area implies being able to understand the dynamics of the systems, the key relationships, and the ways boundary choices define what is included and excluded. If we can enhance people's abilities to create pictures of the world outside of themselves, might we extend this capacity for people to see themselves in these pictures and to picture the systems within themselves? Might these more personal pictures be key learning tools for more complex ways of thinking, or, conversely, might developing more complex ways of thinking about the world at large be a cognitive scaffold for a move to fifth-order self-complexity?

Berger, reviewing her experience of the applications of subject-object theory says the observable pattern is that people tend to come to these orders of self-complexity in a cognitive way, then they get them emotionally (Berger In press). This observation raises two points. The first addresses the question of whether there might be a cognitive first step toward building a fifth-order frame; the second relates to the approach of consolidating fourth-order self-authoring complexity.

If orders of self-complexity are occupied in a more cognitive way first, and then emotionally, this may support the idea that focusing on the shift from complicated to complex thinking may be the most effective way to start the growth of some leaders beyond the fourth order. It may also support the idea that the consolidation need in the fourth order is to focus more on the social aspects. There may still be work to done in helping self-authoring leaders occupy the more emotional spaces of being self-authoring. The perceived weakness in the abilities of some of the complicated thinking, self-authoring leaders to effectively engage with their communities may be a reflection of leaders who are living in the self-authoring frame from a cognitive perspective but are not yet so comfortable there emotionally.

How to make changes?

In addition to reflecting on *what* changes are needed, applying a developmental lens to individuals and organisations working in environmental management also raises questions about *how* those changes might be made. These questions and issues arise in relation to individuals and organisations. Individuals might use these lenses to reflect on their own development and their own goals, or to work with people who directly report to them, or perhaps to work with a coach. An organisation could apply a developmental approach to analyse its situation and identify changes it might make. I will consider how to make changes first in relation to individuals and then from the perspective of working with organisations.

Working with individuals

In considering changes for individuals it is useful to take a coaching perspective as this is also a key part of how leaders lead individuals. The coaching literature makes a distinction between behavioural and developmental approaches (Laske 1999). The dominant approach

in leadership coaching is to focus on particular ‘problems’ or difficult situations and to work with the leader to identify what he or she might do differently and how the change in behaviour might be achieved. A developmental approach is more focused on the overall thinking or self-complexity frame of the coachee and how that might develop over time. It incorporates behavioural change within a developmental framework: taking short-term actions to deal with particular issues and also to contribute to longer-term developmental shifts.

From a behavioural perspective one can ask: what behaviours are needed to perform this role? How are these different from what is happening now? What skills need to be developed to effect this change? These questions can be sharpened by placing them in a developmental frame: what skills might this organisation need in order to change behaviours in the required way and to encourage the developmental shifts it needs over the longer term?

A coach working with a leader on the cusp of more complex thinking or beginning a shift into generating a fifth-order perspective, could consider three courses of action aimed at developing particular skills and, through the practice of these skills, enabling a developmental shift. Firstly, the leader could be encouraged to ask different questions, to ask a broader range of questions and to hold those questions open for longer, to not work so hard to quickly close down ambiguity and resolve paradox.

The second change sought might be to have the leader seek to hold multiple perspectives. A leader operating in a self-authoring way is well able to look at an issue from many different perspectives (how might X or Y see this?) and then choose the ‘right’ perspective and choose how to communicate this right view in ways that those holding other perspectives might find easier to understand. A leader with a fifth-order frame would be able to hold those conflicting perspectives, feel less need to choose among them, and, in dialectical terms, be able to lift above them and identify something of a synthesis that may meet multiple needs.

A third focus for a coach working with such a leader would be to help find ways that the leader can see with greater clarity and richness the nature of the system the leader is working within and seeking to influence. This is at the core of shifting from complicated to complex thinking.

Working with organisations

The focus in most of the adult development literature is on the progression of individuals and how managers or coaches might support that. Organisations tend to be seen as constraining factors. I have done the same here in listing many of the organisation and governance-based constraints on moving from the fourth to fifth order of self-complexity. However, I also noted that the transition from the third to the fourth orders is encouraged by many organisations, at least in the case of senior managers.

What if the organisation might also be a crucible for a transformation from the fourth to fifth orders? Could the transformation be a collective process, or at least an individual process supported by a collective? The implications of seeking a collective shift in levels of thinking and/or self-complexity are intriguing and little studied. Is it possible that leaders may be able to more effectively see and change their own frames of self-complexity were they to be working with others and making object the frames of others? What might be involved in moving a whole management team a couple of sub-divisions: perhaps from a fourth-order focus with some members still with trailing habits of mind in the third order to a centre of

gravity based on the fourth order and starting to build a fifth-order frame?⁷² So while we can expect resistance to change of this sort in an organisation, it is also possible that collective efforts may be very helpful in enabling change.

There are additional organisational points to be made here. They come under the general observation that pursuing either the consolidation or transformation approaches, or both, requires organisational support. The core systems of the organisation need to be in alignment. The systems that govern the way people are recruited, managed, and rewarded, the way work is assigned and reviewed, all need to consciously support the outcomes of the organisation and, implicitly, the developmental levels needed to be able to perform the roles.

As an example, consider that the majority of a leader's experience that enables her or him to make the transition from working in a largely third-order frame of self-complexity to a fourth-order one arises on the job and across other parts of their lives. In a well-managed organisation, the processing of that on-the-job experience with one's manager is a core part of the learning for the individual. The experience also can be enhanced through other forms of conscious reflection. This can be done by the individual leader, on leadership courses, with a mentor or coach.

One point is that these changes are very hard for individuals to make alone or even with just their coach or through one-off leadership training, unless the systems and management of the organisation support these changes and provide for reflection and reinforcement on a regular basis. A second point is that supporting a change to leadership self-complexity beyond the fourth order is likely to require quite different systems and approaches than those needed to support the change from the third to the fourth orders or even to consolidate leaders at the fourth order.

Organisational analysis

There is a considerable challenge to re-configure organisations and environmental management to encourage both the long view in environmental management and in the growth of wisdom and capability among leaders and the communities and to enable the necessary combination of flexibility and accountability. Earlier in this chapter I made my own assessment about the developmental levels that might apply to different roles in different environmental management agencies.

This was my assessment. What judgement might leaders in those organisations make were they to make their own assessments? I expect there would great value in these agencies being able to make their own assessments of their needs and capabilities using an adult developmental framework. The very action of considering things from this perspective is likely to change the way people would see their own organisations and their work. As I have indicated, the needs of the Department of Conservation will be different in its head office compared with in Conservancies and DoC's needs will differ from Regional Councils' or the Ministry for the Environment or Crown Research Institutes. I expect that the process of

⁷² This assumes, as an example, that the current average level in a management group might be a subject-object interview assessment of around 4(3), with perhaps around half or more of the members of the management group profiling as fourth order and half with both fourth and third order frames. The shift being sought might be to move to what is effectively a 4(5) average, with half the team or more operating from within solid fourth-order frames and the others using a mix of fourth- and fifth-order frames.

assessing these needs in developmental and capability terms is likely to provide to managers different insights on the nature of the challenges faced by their agencies and how they might increase the effectiveness of their responses, from those they might arrive at using other strategic assessment tools.

One approach would be to use a model such as the EMAL framework as the basis for conducting an organisational developmental analysis. Such a method would apply a selection of lenses to appraise the organisation and the context within which it was working, and identify its developmental needs. These lenses could include:

- the place of certainty and uncertainty in the work of the organisation and the way risks were perceived, socially constructed, and responded to;
- the discourses the organisation and its leaders worked within and opportunities to re-shape those discourses;
- the operative systems, external and internal to the organisation, and the ways these might be re-cast; and
- the ways the developmental orientation of leaders, staff, and communities is manifest in the organisation's approach to its work and options for how this might be changed.

A developmental perspective could be brought to each of these lenses to provide rich understandings of the way the situation might be expected to evolve and the capabilities that would be required.

More accessible concepts

Adult development concepts are abstract, esoteric, and often threatening, whether applied to individuals or to organisations. Rosenberg's concern about the "potentially serious and noxious" implications of this capability measurement approach when applied in a political context, applies equally in organisational settings (Rosenberg 2002). These tools are used to make judgements about aspects of people and people feel judged through their use and abuse. The language involved can seem arcane and the concepts inaccessible to people who are subject to them.

This is not the whole picture. It is also the case, in my experience, that many people report enjoying the experience of a subject-object interview and the coaching version, a growth edge report. Work is needed to broaden the accessibility of these concepts and to be particularly careful about the ways they are applied in organisational settings.

To enable adult developmental concepts to be used as a social process of organisational investigation and reflection, it would seem especially to be the case that those involved need to be familiar with, and accepting of, the core concepts.

On other occasions it might be better if the adult development concepts were less, rather than more, accessible or visible. A leadership developmental programme, for example, constructed in line with these theories, might say very little about the theories themselves. Intelligent construction of the practical examples could do the trick and enable the developmental aspects to remain muted. People will learn and change as they see the direct value to themselves and their colleagues and peers. The developmental shifts (which it may be hubris to even contemplate striving for) may merge incidentally from programmes designed to meet the needs of the environmental management challenges, the individuals, and the organisations involved.

An agenda for change

Considering the questions and comments I have discussed above moves me to an agenda for change. This agenda sets out a plan of action that might be shared between leaders in the field of environmental management, leadership development, and adult development. The main actions I propose are as follows:

- a) Make adult development a more explicit part of leadership and organisational development by:
 - (i) Working to make the concepts and language of adult development more accessible, and the applications of them feel less judging of the whole individual;
 - (ii) Refining and using tools and programmes, such as the EMAL framework, to apply adult development concepts to organisational management issues, in order to change the capabilities of individuals, teams of leaders, and systems;
- b) Consolidate the fourth-order self authoring leadership capability of environmental leaders to enable more effective leadership of people and engagement with communities and stakeholders;
- c) Support environmental leaders to lift to more complex thinking;
- d) Use a programme of developing particular skills of questioning, perspective-taking, and systems thinking to enable leaders to change their practices and underpin a developmental shift;
- e) Work on organisational structures, systems, and staff policies to support both the consolidation and transformation approaches, and, in particular, through finding, nurturing, and making effective use of people who are potentially complex thinkers and/or developing fifth order frames; and
- f) Relax – recognise how much of this may be beyond our control. The fifth-order self-transforming capabilities of individual leaders are more likely to be emergent properties of the working through of systems and processes and life experiences, than they may be able to be ‘developed’ specifically. This means supporting the contexts in organisations and individuals that allow these capabilities to emerge and stepping back and learning from what happens.

Future research agenda - What might most helpfully be explored next?

The questions arising from the foregoing discussion suggest six broad areas where future research could be pursued. Each of these is briefly described:

- a) *Environmental managers and their capabilities for managing complexity*: Investigate further the changing capabilities of environmental managers to engage with uncertainties, complexities, and with communities in social processes. This aspect of the research could be extended to other roles and functions of environmental management and to careful reflection on the handling of current ‘wicked’ problems and the personal learning this occasioned amongst the managers involved.
- b) *The interactions between the consolidation and transformation approaches*: Explore more the choice that I have posed as being between consolidating leaders in a more rounded fourth order of self-complexity and seeking to assist to make more of a transformation to fifth-order frames of self-complexity. How much could this be a both/and choice or is the nature of the different developmental pulls such that it is an either/or option? Does further consolidation in the fourth order also help to scaffold people toward fifth order perspectives or hold them more fully in the fourth order? Paradoxically it may do both. We need to know more about the nature and experience of these transitions, particularly from the fourth to the fifth orders of self-complexity.

- c) *The relationship between complexity of thinking and self-complexity*: Investigate further the relationship between the development of greater complexity of thinking and the development of self-complexity. Is one a pre-requisite of the other or are these co-requisites, or to what extent might they be distinct but overlapping factors? Do some people develop more through their feelings or their thinking functions and what might the relationships between these two (or multiple) pathways?
- d) *The change from complicated to complex thinking*: Understand better the nature of the change from complicated to complex thinking. What might we learn by re-tracing the paths that complex thinkers consider that they have taken and the inflexion points and obstacles they recall encountering along the way. Relate this to their work contexts and seek to identify common and accessible steps to complex thinking.
- e) *Organisational scaffolding*: Identify the role of organisations and organisational life in scaffolding leaders to move from the fourth order to also hold a fifth-order frame. How might organisations develop different supports that allow leaders more scope to work with uncertainties rather than necessarily having to control or to resolve them? What are the structures that hold leaders at the fourth orders and what are the benefits and costs to organisations of seeking to change these structures?
- f) *Defining outcomes for leadership development and coaching programmes*: Find ways to more clearly define outcomes for developmental coaching and programmes for leadership transformation, even if these must, by definition, be broad and multi-levelled in their approach. There is much more to be discovered through careful research into how leaders and others make these developmental shifts, especially in the middle years.

Concluding observations

I began this dissertation by setting out some propositions I brought to this study and how I had arrived at this point in my life and thinking. At the end I am left holding a paradox.

To begin with I asserted that the progress made in environmental management during the past three and a half decades had been remarkable and was also inadequate. I said that the scale and momentum of human environmental impacts already working their way through bio-physical systems were such that it would require a much more emphatic response than the impressive but partial responses made thus far to the more visible threats. From this context, I argued that a new level of capability of management would be required amongst environmental leaders, a capability I expressed in terms of levels of complexity of thinking and self-complexity.

In the course of this research I have been reminded that the most successful management at present seems to be based on well-understood and straightforward management practices, well executed. It is not 'rocket science', in the common saying. It is not unduly complicated. It seems to be based on clear leadership, connected to a simply-articulated direction, underpinned by good science, and a preparedness to take action, review the results, and try again. In this latter sense it is adaptive. At one level none of this is a surprise. It is good, common sense.

At another level, does the success of simplicity have the potential to challenge my assertion that a higher level of complexity will be necessary to deal with the more complex problems we face? It might suggest that simple forms of management, done well, will be enough.

The simple forms have to be based on an understanding of the deeper complexities. In the memorable comment ascribed to the United States jurist Oliver Wendell Holmes Jr: "I would not give a fig for the simplicity this side of complexity, but I would give my life for the simplicity on the other side of complexity." Holmes lived in turbulent times, fighting and being wounded on three occasions in the American Civil War, and later serving almost thirty years from the turn of the century on the United States Supreme Court. He had ample opportunities to distil simplicities from the complex of material laid before the court and was famous for his concise and pithy opinions.

My sense is that the most successful environmental management teams I have looked at in this study, doing their best work, are already finding simplicity on the other side of complexity, at the levels at which they are currently working.

I wonder if this level of work will be enough. I suspect the complexities mastered by these teams are the successful resolution of complicated problems, issues that lend themselves to researched, science-based solutions, applied carefully over time. This is not to diminish these achievements, nor the power of simplification. Leaders and teams who can move through the thickets of complexity and then take relatively simple actions, backed with relatively simple explanations of the situation, will considerably enhance their effectiveness, especially if they are closely watching their own actions and learning from the experience as they go.

I am suggesting that greater uncertainties are still to be 'simplified'. What I have seen of complex problem-solving, in the course of doing this research, continues to suggest to me that greater complexity of thinking and greater self-complexity will be both needed to engage effectively with the most challenging problems of sustainable development. A related assumption I make is that applying this greater complexity of thinking to the 'wicked' problems will also unleash a windfall of insights into the more mundane issues that environmental managers are facing.

The paradox here is that there are ways that simplicity drives out complexity. Much of the simplicity we aspire to, prompted by our needs for speed and engendered in many of the systems we have created, is the simplicity on this side of complexity. We need to be able to honour the paradox of exploring and holding greater complexity, often working for long periods in much greater uncertainty than is currently acceptable, and also seek out the simplicities within each situation. We will need to be simultaneously lost and found.

Appendix One: Relevant Issues of Development Theory

Working from the assumption that more systemic perspectives would be needed for environmental management, and to do this would raise challenging questions about organisational and individual capabilities, a number of issues within adult development theory were relevant to this study and needed to be addressed. These were issues of scope, scale, stages of development, and approaches taken to the higher levels of development. In addition there were a set of issues beyond the theories themselves, but involving the application of the theories to wider issues of leadership and the management of organisations. These issues of application include: the intersection between adult development and the exercise of judgement by leaders, how adult development perspectives might be reflected in the design of leadership roles and organisations, and the possibilities for supporting leaders to shift from one developmental frame to another. I will address each of these issues in turn.

Scope

What develops? Or, how much develops? And which of these aspects of people's development is most relevant to this study? I decided to focus this study on cognition *and* affect. Kegan (1994) calls this combination 'ego development' or 'self-complexity'; Basseches (1989) calls it 'psychological organisation', to avoid the interpretation made by some readers that 'cognitive organisation' would exclude affect. Loevinger and Cook-Greuter have also taken similar approaches in their contributions to ego development theory (Loevinger and Wessler 1970; Hy and Loevinger 1996; Commons and Bresette 2000; Cook-Greuter 2000).

Other options considered as possible ways to focus this study included:

1. Studying almost everything, and seeing if a pattern emerged. Ken Wilber has identified "some two dozen relatively independent developmental lines or streams" (Wilber 2000:28). These lines include factors as varied as: morals, affects, self-identity, psychosexuality, ideas of the good, role-taking, cognition, spiritual, socio-emotional, creativity, altruism, joy modes of space and time, communicative competence. This comprehensive approach was constructed by Wilber largely for comparative purposes. It is too broad for this study.
2. Focusing on cognition in combination with another domain that I might have judged to be especially relevant to environmental decision-making, such as moral reasoning (Kohlberg 1958), reflective judgement (King 1994), or values (Armon and Dawson 2003). This approach is now thought to be duplicative. Recent studies, comparing results for earlier work, on levels of performance in particular domains, with overall cognitive performance, suggest that domain-specific performances align very closely with overall cognitive ability (Dawson 2002; Armon and Dawson 2003; Dawson 2003; Dawson, Xie et al. 2003; Dawson In press).
3. Just researching cognitive development alone (Commons and Richards 1984a; Jaques 1989; Jaques and Cason 1994; Commons, Trudeau et al. 1998; Fischer and Bidell 1998; Fischer and Bidell 2005, in press), with the assumption that other components are either not so relevant or are driven off cognitive development. While cognition is a prerequisite, the questions that arise include whether it needs to be specifically measured and whether other factors should be added to it, to give an appropriately rounded picture, without

adding distracting and burdensome details.

The reasons for choosing this combination of cognition and affect were set out in Chapter Three. They relate to these approaches providing a domain-general view that matches the need of environmental managers to understand technical systems and social processes and because these methods are more suitable than purely cognitive approaches at ‘higher’ levels of development. This latter point will be returned to in the section on the divergence between theories at the higher levels.

The factors listed above as relevant to environmental management (knowledge, a transformation of values and understanding, social processes, and leadership) suggest that something more than just cognitive capability will be required. Transformation in values, social processes, and leadership all depend, in part, on an emotional, feeling component.

Moving away from a sole focus on cognition, however, also posed a number of challenges. The risk was that in combining definitions of the self with cognitive development involves combining *processes* of development between levels and the *content* of those levels; the next section on scale partially addresses this issue.

Scale or axis of development

A distinction can be drawn between changes in people that may be short-term, relatively small-scale, and skill-focused and change that is transformational. “Transformation is more than simply adding information into the container (your mind, for example) that already exists. Transformation is about changing the very form of the container—making it larger, more complex, more able to deal with multiple demands and uncertainty” (Berger 2003).

Many writers make distinctions like these and use a variety of terms to describe them⁷³: microdevelopment and macrodevelopment (Fischer and Bidell 1998); horizontal and vertical development (Commons, Trudeau et al. 1998); learning and development (Hoyer and Touron 2003; Dawson-Tunik (in press)); change and development (Laske 1999); ‘variational change’ and ‘transformational change’ (Overton 1998); and meaning schemes and meaning perspectives (Mezirow 1991).

The change processes of interest to this study are transformational, but there are also relationships between small-scale changes and transformational ones and these relationships appear often not to be linear: many small scale changes may have no transformational consequences but some small scale changes might tip the system of the self into a quite different developmental space.

Fischer and Bidell (1998: 512-3) point to “short- and long-term change as distinct but interrelated dimensions of the developmental process.... [M]icrodevelopment is the short-term process by which new skills are first constructed for participation locally in specific contexts.... Macrodevelopment describes the larger-scale process in which many local constructive activities in different contexts and domains are gradually consolidated, generalized and related through continual microlevel constructive processes on many fronts.”

⁷³ There are differences in the definitions used by these authors but for the purposes of this study the similarities are more relevant than any differences.

From these processes emerge new forms. Whether these new forms go as far as the transformations needed for sustainable environmental management is moot.

Issues also arise about the situations in which the accumulation of more and more skills and expertise reinforces particular perspectives and becomes a blockage to further or deeper change (Argyris 1991; Fisher, Rooke et al. 2003). These expertise-based blockages to change have also been observed in organisations: "When organizations learn from experience, they create sophisticated beliefs about reality and attend to an increasingly biased interpretation of it." Over time, "experience becomes a hindrance to learning that aims to change present conditions"(Holmqvist 2003).

The relevant environmental management issues are how much to focus on an information-and knowledge-based approach to change (which has been the more traditional approach both in environmental management and in skills or competency-based approaches to human resource development), on the assumption that this would lead to improved performance and might increase the chances of the emergence of transformational change, and how much to focus directly on enabling transformational change⁷⁴. There are questions about the extent to which transformational change or adult development can be enabled or accelerated (Jaques 1989; Laske 1999; Berger 2005; Laske and Stewart 2005; Joiner and Josephs 2007).

Questions about stages or non-stages in adult development

Debate about developmental stages and whether development follows a universal pattern or not has been at the core of theories and research in developmental psychology (Berk 2001:6). Fortunately, this is not a debate that has to be resolved in this study; it is relevant but not central to the study. Two quite different perspectives provide ways to 'resolve' the issue by embracing both the concepts of stage and variations. One arises from a dynamic systems perspective – because it recognises development as dynamic and systemic, it provides for both high levels of variation *and* emergent order.

Fischer and Bidell (1998: 545) argue that they have transcended the 'stage' issue: "When multiple levels of skill are analysed in each person, the debate about stages disappears. Under optimal, highly supported conditions, people show jumps in performance that act much like stages; but under ordinary, low-support conditions, the same people show no systematic stages, often progressing in smooth, monotonic growth."

An area of interest for this study is how to support optimal functioning to create a transformation in environmental management.

Basseches provides another way to interpret the mix of evidence supporting stages and variation. He argues we get into difficulty with stages or developmental structures because we rely on them for the wrong thing, that it is a mistake to expect them to be predictive in a psychological sense. "Their explanatory power does not take the form 'George has the structure of formal operations in his head, and therefore you can expect he will act in such and such formal operational ways.' ... [P]eople don't behave as predicted." (1989: 195). Instead, Basseches suggests using stages in a 'philosophical-teleological' way to explain the

⁷⁴ There is an analogous debate in the sustainability literature over how much sustainability requires a radical transformation in the ways of life in the western developed world or how much it might be achieved through reforms and technological fixes.

way of thinking a person is working towards. He summarises this by saying: “while individuals are best understood as having their own unique psychological organizations and developmental histories, stages are best understood as philosophical, not psychological concepts” (p.192). So, rather than saying a person is *in* a particular stage, Basseches suggests we talk about a stage being *in* (or more or less accessible to) a person. This loosely overlaps with Kegan’s subject-object concepts. A person can be held in a particular frame, or stage, of self-complexity. In this way they can be ‘subject’ to that perspective and less complex frames can be accessible, or ‘object’, to them (Kegan 1994). Thus the main value of a ‘stage’ may be that it can be held in the eye of the beholder – there is something that can be identified and named and be held in view as an object.

Divergence between theories of cognition, ego development and dialectical thinking at later levels

There is an important distinction between theories of cognitive development and those of ego development and dialectical thinking. This divergence is particularly marked at later levels of development and is thus very relevant to this study.

While a purely cognitive approach shows the later or higher levels as a capability to see more widely and over longer time spans and understand greater complexity (Jaques and Cason 1994; Fischer and Bidell 1998; Commons and Richards 2003), the ego development perspective suggests that at the later levels people may see more widely and over longer time spans, may understand greater complexity, *and* may also perceive the transitory nature of much of this ‘understanding’ and the interconnected and ‘fluid’ nature of the self. This would suggest that we may not be able to get to later levels by cognitive means alone, because many of these structures in our selves may need to be dissolved (Kegan 1994: 307-52; Cook-Greuter 2000: 70; Hewlett 2004). If this is the case, and these levels were found to be critical for leadership of environmental management because of an increasing emphasis on social as much as technical processes, this would have profound implications for this study.

Cook-Greuter (2000) is one of the few researchers to have focused on people who have ‘scored’ at higher or later levels of development, partly because she has accumulated an unusually large data set of protocols from such people while scoring sentence completion tests, a measure of ego development. Her work is relevant because it is at these levels that many environmental managers will need to operate.

One especially relevant feature of these levels is an apparent divergence between the nature of cognitive capability and ego development. Cook-Greuter (2000: 99) has identified a tension between order and the dissolving of order or boundaries and the dissolving of boundaries. She suggests that ‘postconventional’ development (which occurs beyond Kegan’s institutional stage) can be looked at from two seemingly contradictory perspectives. The first is the continuing pattern of “alternating stages of differentiation and integration toward greater and *greater hierarchical complexity* accommodating an ever-expanding experiential universe.” The second perspective understands ‘postconventional’ development “as a *stepwise deconstruction*” of the permanent object world that people have previously (unconsciously) constructed. According to Cook-Greuter, both perspectives are useful but only the second one “is adequate to describe the insights of people at the most advanced ego stages” (author’s italics).

Dane Hewlett provides a further elaboration of aspects of this transition. Although I chose to use Kegan's theory because ego development involved more than just cognitive development, Hewlett raises an interesting question as to whether Cook-Greuter's coding (which takes a similar approach to Kegan but is more based on careful analysis of wording) may lean toward more rational-directed, cognitive approaches and away from more intuitive or feeling-directed approaches (Hewlett 2004).

Basseches (1984: 274-8) also argues that a structured cognitive-based analysis such as the model developed by Commons and Richards (Commons and Richards 1984a) "does not reflect the organization of dialectical thinking. Whereas all fully dialectical thinking can be said to be metacognitive in that it deals with transformation of systems, all metacognitive thought cannot be said to be dialectical."

A brief description of the approach of Commons and others is necessary here. Their model (Commons and Richards 1984a; Commons and Richards 1984b) is the antecedent for later work by Commons and then Theo Dawson-Tunik (Dawson 2002; Dawson-Tunik (in press)). Commons and Richards' model identifies stages of greater cognitive complexity beyond the end point identified by Piaget and called 'formal operations'. This is the level of logical, rational, linear thought, based on evidence, which is most common in adulthood. While "few individuals perform at stages above formal operations" (Commons, Miller et al. 2005: 9), the model of hierarchical complexity identifies four stages beyond this point. Each stage organises and transforms the stage below in a way that cannot be carried out at that lower stage. In ascending order: at the *systematic* stage two or more abstractions can be coordinated to effectively produce a system; at the *metacognitive* stage multiple systems are coordinated, based on a principle, to produce a metacognitive system; at the *paradigmatic* stage metacognitive systems are coordinated to develop a new paradigm; and the *cross-paradigmatic* stage multiple paradigms are coordinated to create a new field⁷⁵.

Note that both Jaques (1989) and Fischer (Fischer and Bidell 1998) have developed cognitive models with very similar structures, although Fischer, whose is the most evidence-based approach of these theorists, does not go beyond the paradigmatic or principle level.

The important point here is that the organisation and transformation of lower order actions is the same type of coordination action; the increase in complexity occurs as the actions being organised become more complex. Basseches argues the Commons et al model is a closed system. Metacognitive thought in this model is essentially formal thought about systems. It does not involve any new organising principle or equilibrium and is therefore not dialectic. This seems to be the same distinction that arises between the cognitive and ego development theories. The ego development models are dialectical because they move to a very different form of organisation at the 'post-conventional' levels.

A final reflection that complements Basseches' point comes from the observation by Berger that all theory-making is a fourth-order activity. Beyond the fourth order, theories are deconstructed (Berger 2005).

In summary:

⁷⁵ The authors note this last stage has not been researched in detail because so few people are thought to attain it.

- I chose to focus on cognition and affect because this combination most closely approximated to the kind of ‘substrate’ needed to support the conceptual and social needs of environmental management.
- My interest has been in transformational change, recognising that particular micro-developmental behavioural factors may be relevant in catalysing transformational changes.
- I did not need to take a position on the existence of stages but there needs to be enough of a formation recognised that there is a structuring of factors that can be held as an ‘object’ by people.
- I have chosen theories that assume a change in developmental forms and dynamics at the higher levels, rather than a continuation of more complex versions of the same structures.

Appendix Two: Basseches' Dialectical Schemata⁷⁶

Basseches (1984) operationally defines dialectical thinking in terms of 24 measurable speech acts, grouped into schemata focusing on movement, forms, relationships, and meta-cognitive processes. Although there is insufficient space here to describe each of the schemata in detail, their names are presented and the major groupings are described.

The eight “motion-oriented” schemata emphasise the way in which existence and knowledge are constantly in flux:

1. “Thesis-antithesis-synthesis movement in thought
2. Affirmation of the primacy of motion
3. Recognition and description of thesis-antithesis-synthesis movement
4. Recognition of correlativity of a thing and its other
5. Recognition of ongoing interaction as a source of movement
6. Affirmation of the practical or active character of knowledge
7. Avoidance or exposure of objectification, hypostatization, and reification
8. Understanding events or situations as moments (of development) of a process” (Basseches, 1984)

These schemata draw attention to the importance and inevitability of change in general, or with a particular emphasis on thinking about change in dialectical terms. These schemata are relevant to systems thinking because a person making use of them will demonstrate particular sensitivity to dynamics, transformation, and the fiction of thinking about the world as separate entities interacting with unchanging identities. Although they may occasionally be forced by the limitations of language to objectify or reify reality, they will at least be more aware of doing so.

The second grouping consists of three “form-oriented” schemata which refer to the ways in which thinkers conceptualise organised wholes or forms:

9. “Location of an element or phenomenon within the whole(s) of which it is a part
10. Description of a whole (system, form) in structural, functional, or equilibrational terms
11. Assumption of contextual relativism” (Basseches, 1984).

The word “form” is more useful in this context than “thing” because it implies an organising structure or function while recognising the momentary nature of that structure. Recognition that an element is part of a larger system, structure, process, or context is a key move in systems thought. This is most explicitly picked up in Schema 9 “Location of an element or phenomenon within the whole of which it is a part.” Recognition of contextual relativism is also deemed to be a form-oriented schema because the emphasis here is on relating elements to their broader context as organised wholes. Without understanding the context, it is usually impossible to understand the meaning of the component elements.

⁷⁶ This Appendix is excerpted from Atkins and Johnston (2005)

The third group of schemata are the “relationship-oriented” schemata:

12. “Assertion of the existence of relations, the limits of separation and the value of relatedness
13. Criticism of multiplicity, subjectivism, and pluralism
14. Description of a two-way reciprocal relationship
15. Assertion of internal (constitutive) relationships” (Basseches, 1984).

These schemata draw attention to the relatedness of forms and the constitutive or interactive nature of those relationships. Schema 12 is reasonably obvious. Schema 13 recognises the inherently non-systemic nature of subjectivist or pluralistic approaches to judgment. Seeing all opinions or points of view as equally valid establishes them as discrete entities relatively impervious to change and located within separate individuals. Basseches’ (1984) dialectical perspective instead sees perspectives and judgments as interacting with one another through time. Schema 14 emphasises the idea common within systems thinking of mutual interaction while Schema 15 focuses on the ways in which elements of a system obtain their identity or meaning from the relationship to the whole or other parts.

The last grouping of schemata is the meta-formal schemata. These schemata each integrate at least two of the elements of motion, form and relationship, and are meta-systemic in that they view systems and the evolution of systems from a broad perspective.

16. “Location (or description of the process of emergence) of contradictions or sources of disequilibrium within a system (form) or between a system (form) and external forces or elements which are antithetical to the system’s (form’s) structure
17. Understanding the resolution of disequilibrium or contradiction in terms of a notion of transformation in developmental direction
18. Relating value to a) movement in developmental direction and/or b) stability through developmental movement
19. Evaluative comparison of forms
20. Attention to problems of coordinating systems (forms) in relation
21. Description of open self-transforming systems
22. Description of qualitative change as a result of quantitative change within a form
23. Criticism of formalism based on the interdependence of form and content
24. Multiplication of perspectives as a concreteness-preserving approach to inclusiveness” (Basseches, 1984).

Appendix Three: Assessment of Councils and Conservancies

One: Criteria for assessing Regional Councils

The following cover letter and assessment sheets were sent to members of an expert panel who were asked to assess the performance of all Regional Councils against the criteria provided. Group members were chosen for their breadth of knowledge of councils across the country. The responses came from the chief executive and senior managers of the Ministry for the Environment, the Parliamentary Commissioner for the Environment, a leading academic in the planning and resource management field, a person with long experience in sustainability issues in the local government sector, leaders from environmental organisations, and resource-using industries.

Dear (XXXX)

Selecting Regional Councils for research purposes

I am at present a student at the School of Business and Information Management at the Australian National University. I am completing a PhD thesis about the complexity of thinking and meaning making required to sustainably manage the environment. I am applying theories of adult development, systems thinking, and organisational behaviour to environmental management.

I am exploring how ‘environmental decision makers’ make sense of the world about them and their roles in it and the complexity with which they think about their work.

My focus is on senior managers in Regional Councils and Conservancies of the Department of Conservation. I wish to interview members of the management teams of three Regional Councils and three Conservancies of the Department of Conservation. I am planning to interview the council chief executive and four of his or her direct reports who have an involvement with environmental management. To begin this work I need to select Councils and DoC Conservancies. I would like your help with the selection of Councils.

In order to select those Regional Councils to be invited to participate, I need to have an assessment of the overall performance of individual Councils. I am asking you to contribute to this assessment by completing the simple survey that is attached.

My intention is to base the selection on the assessments of a panel of people who understand the resource management field, have a broad national perspective and yet are close enough to the action to be able to make judgements about Councils. You are one of these experts.

You are asked to assess each of the Councils against the five criteria provided: understanding and direction, effective action, leadership and management, engagement with communities, and degree of difficulty. To construct a short survey I have clustered factors within these

criteria. This makes it harder for assessors to make a judgement on individual Councils but I am looking for a general overview of performance.

I suggest that these criteria be considered in terms of the purpose of the Resource Management Act 1991: “to promote the sustainable management of natural and physical resources” Section 5 (1).

Obviously this judgement is a subjective and arbitrary one, but the variety of circumstances faced by Regional Councils and the absence of comparable data mean that this is the most effective way to achieve an assessment. I have tried to make allowances for the differences in circumstances faced by Councils by seeking an assessment of the degree of difficulty faced by Councils in their sustainable management work.

I do not intend to make the assessment of Regional Councils available to anybody. This includes withholding it from the members of the assessment panel, and the subject Councils. The panel’s judgement about the performance of Regional Councils is likely to be referred to in my dissertation and may be referred to in journal articles. The identity of the Councils, however, will be withheld. The assessments of Councils by members of the panel will also be withheld. All material relating to these assessments will be securely stored in locked filing cupboards, which only I have access to, so far as the law allows, and any notes recorded on computer will be protected by computer password.

I expect that completion of the forms should take between 20-30 minutes. I would be especially grateful if you could **return them to me by Wednesday 7 September**. Thanks very much for your contribution.

Forms can be completed electronically (remember to save the document, then fill it out and e-mail back the saved version) or on paper.

Please return to
Keith Johnston
keith.johnston@anu.edu.au
42 Aperahama St
Paekakariki, 6010

Should you prefer not to participate in this assessment exercise then obviously that decision will be respected.

Thank you, again, for your assistance

Best wishes

Keith Johnston

**Assessing the performance
of Regional Councils in sustainable environmental management**

Please assess each Regional Council against the five criteria provided.

Criteria are to be considered in terms of the purpose of the Resource Management Act 1991: “to promote the sustainable management of natural and physical resources” Section 5 (1).

“‘Sustainable management’ means managing the use, development, and protection of natural and physical resources in a way, or at a rate, which enables people and communities to provide for their social, economic, and cultural wellbeing and for their health and safety while –

Sustaining the potential of natural and physical resources (excluding minerals) to meet the reasonably foreseeable needs of future generations; and

Safeguarding the life-supporting capacity of air, water, soil, and ecosystems; and

Avoiding, remedying, and mitigating any adverse effects of activities on the environment.”
Section 5(2).

Please return **by Wednesday 7 September** to

Keith Johnston

keith.johnston@anu.edu.au

42 Aperahama St

Paekakariki, 6010

If you have any questions or concerns please e-mail or call.

Phone: 04 905 9007

Thank you for your assistance.

A. Understanding and Direction							
<i>1 Best practice</i>		<i>2 Above Av.</i>	<i>3 Average</i>	<i>4 Below Av.</i>		<i>5 Poor performance</i>	<i>Not able to assess</i>
<i>Clear understanding and direction</i> The council management team communicates a clear understanding of the environmental resources and processes of its region and has set out a clear direction and priorities for sustainable management through policies and plans.	1	2	3	4	5	<i>Lack of clear understanding and direction</i> The council management team does not communicate a clear understanding of the environmental resources and processes of its region and/or has not set out a clear direction and priorities for sustainable management through policies and plans.	
<i>Regional Councils</i>							
	1	2	3	4	5		Not able to assess
Northland							
Auckland							
Waikato							
Bay of Plenty							
Hawkes Bay							
Taranaki							
Manawatu-Wanganui (Horizons)							
Wellington							
Canterbury							
West Coast							
Otago							
Southland							

B. Effective Action						
<i>1 Best practice</i>		<i>2 Above Av.</i>	<i>3 Average</i>	<i>4 Below Av.</i>	<i>5 Poor performance</i>	<i>Not able to assess</i>
<i>Effective action</i> The council appears to have performed effectively over the past 5 years, implementing a coherent programme of priority actions for sustainable management, and reviewing this programme in the light of experience.	1	2	3	4	5	<i>Ineffective action</i> The council appears to have performed less effectively over the past 5 years, has struggled to implement a coherent programme of priority actions for sustainable management and/or does not appear to review its programme in the light of experience.
<i>Regional Councils</i>						
	1	2	3	4	5	Not able to assess
Northland						
Auckland						
Waikato						
Bay of Plenty						
Hawkes Bay						
Taranaki						
Manawatu-Wanganui (Horizons)						
Wellington						
Canterbury						
West Coast						
Otago						
Southland						

C. Leadership and Management							
<i>1 Best practice</i>		<i>2 Above Av.</i>	<i>3 Average</i>	<i>4 Below Av.</i>		<i>5 Poor performance</i>	<i>Not able to assess</i>
<i>Well-managed</i> The council appears to operate as a cohesive and well-lead team applying clear and effective systems.	1	2	3	4	5	<i>Management limitations</i> The council does not appear to operate cohesively, there is a lack of leadership in key areas, and/or systems do not appear to be clear or effective.	
<i>Regional Councils</i>							
	1	2	3	4	5		Not able to assess
Northland							
Auckland							
Waikato							
Bay of Plenty							
Hawkes Bay							
Taranaki							
Manawatu-Wanganui (Horizons)							
Wellington							
Canterbury							
West Coast							
Otago							
Southland							

D. Engagement with Communities								
<i>1 Best practice</i>			<i>2 Above Av.</i>	<i>3 Average</i>	<i>4 Below Av.</i>	<i>5 Poor performance</i>		<i>Not able to assess</i>
<p><i>Constructively engaged with communities</i> The council appears to be constructively engaged with communities to advance sustainable management. It is very open to the views of its communities, including tangata whenua, and is able to lead constructive community engagement, and is prepared to alter course in making decisions to encompass the views of communities.</p>	1	2	3	4	5	<p><i>Limited or troubled community engagement</i> The council appears to be limited in its engagement with its communities or these involve many troubled relationships. It is either not open to the views of its communities, including tangata whenua, seems to have difficulty leading constructive community engagement or is not easily able to change course in the face of community concerns.</p>		
<i>Regional Councils</i>								
	1	2	3	4	5			Not able to assess
Northland								
Auckland								
Waikato								
Bay of Plenty								
Hawkes Bay								
Taranaki								
Manawatu-Wanganui (Horizons)								
Wellington								
Canterbury								
West Coast								
Otago								
Southland								

E. Degree of Difficulty							
<i>1 Greater constraints</i>		<i>2 Above Av.</i>	<i>3 Average</i>	<i>4 Below Av.</i>		<i>5 Fewer constraints</i>	<i>Not able to assess</i>
Higher degree of difficulty The council's efforts are significantly constrained by substantial environmental, economic or social challenges in its region and/or the council's own limited resource base.	1	2	3	4	5	Lower degree of difficulty The council's efforts are bolstered by environmental, economic or social advantages of its region and/or the council is relatively well-resourced.	
Regional Councils							
	1	2	3	4	5		Not able to assess
Northland							
Auckland							
Waikato							
Bay of Plenty							
Hawkes Bay							
Taranaki							
Manawatu-Wanganui (Horizons)							
Wellington							
Canterbury							
West Coast							
Otago							
Southland							

Two: Criteria for Assessing DoC Conservancies

The following cover letter and assessment sheets were sent to members of an expert panel who were asked to assess the performance of all Department of Conservation Conservancies against the criteria provided. Panel members were made up of DoC's top management team, including the Director General, the Department's internal auditor, the chair of the New Zealand Conservation Authority, and a Deputy Commissioner of the State Services Commission with a close knowledge of the Department.

**Assessing the performance
of Conservancies of the Department of Conservation
on their effectiveness
as managers of natural resources for conservation purposes**

Dear (XXXX)

As you know I am at present a student at the School of Business and Information Management at the Australian National University. I am completing a PhD thesis about the complexity of thinking and meaning making required to sustainably manage the environment. I am applying theories of adult development, systems thinking, and organisational behaviour to environmental management.

I am exploring how 'environmental decision makers' make sense of the world about them and their roles in it and the complexity with which they think about their work.

My focus is on senior managers in Regional Councils and Conservancies of the Department of Conservation. To begin this work I need to select councils and DoC Conservancies. I would like your help with the selection of Conservancies.

I wish to interview members of the management teams of three Conservancies of the Department of Conservation. In order to select those Conservancies, I need to have an assessment of the overall performance of individual Conservancies. I am asking you to contribute to this assessment by completing the attached form.

My intention is to base the assessment on the perspectives of General Managers and the Director General and a couple of people who have a close and national perspective of the Department's work.

I am approaching you in your role as

You are asked to assess each of the Conservancies against the five criteria provided: understanding and direction, effective action, leadership and management, engagement with communities, and degree of difficulty.

These criteria are to be considered in terms of the functions set out in the Conservation Act relating to the preservation and protection of natural resources “for the purpose maintaining their intrinsic values, providing for their enjoyment by the public and safeguarding the options of future generations.”

Obviously this judgement is a subjective and arbitrary one, but the variety of circumstances faced by Conservancies and the absence of comparable data mean that this is the most effective way to achieve an assessment. I have tried to make allowances for the differences in circumstances faced by Conservancies by including an assessment of the degree of difficulty faced by the council in its natural heritage management work.

I do not intend to make the assessment of Conservancies available to anybody. This includes withholding it from you, as a member of the assessment panel, and the subject Conservancies. The panel’s judgement about the performance of Conservancies is likely to be referred to in my dissertation and may be referred to in journal articles. The identity of the Conservancies, however, will be withheld. The assessments of Conservancies by members of the panel will also be withheld. All material relating to these assessments will be securely stored in locked filing cupboards, which only I have access to, so far as the law allows, and any notes recorded on computer will be protected by computer password.

I expect that completion of the forms should take between 20-30 minutes. Thank you very much for your contribution.

Forms can be completed electronically (remember to save the document, then fill it out and e-mail back the saved version) or on paper.

Please return to
Keith Johnston
keith.johnston@anu.edu.au
42 Aperahama St
Paekakariki, 6010

Should you prefer not to participate in this assessment exercise then obviously that decision will be respected.

Thank you, again, for your assistance

Best wishes

Keith Johnston

Understanding and Direction							
<i>1 Best practice</i>		<i>2 Above Av.</i>	<i>3 Average</i>	<i>4 Below Av.</i>	<i>5 Poor performance</i>		<i>Not able to assess</i>
<i>A. Clear understanding and direction</i> The management team communicates a clear understanding of the natural resources and processes of its Conservancy and has set out a clear conservation direction and priorities through policies and plans.	1	2	3	4	5	<i>Lack of clear understanding and direction</i> The management team does not communicate a clear understanding of the natural resources and processes of its Conservancy and/or has not set out a clear conservation direction and priorities through policies and plans.	
<i>Conservancies</i>							
	1	2	3	4	5		Not known
Northland							
Auckland							
Waikato							
Bay of Plenty							
Tongariro/Taupo							
East Coast/Hawkes Bay							
Wanganui							
Wellington							
Nelson/Marlborough							
Canterbury							
West Coast							
Otago							
Southland							

Effective Action							
<i>1 Best practice</i>		<i>2 Above Av.</i>	<i>3 Average</i>	<i>4 Below Av.</i>		<i>5 Poor performance</i>	<i>Not able to assess</i>
<i>B. Effective action</i> The Conservancy appears to have performed effectively over the past 3 years, implementing a coherent programme of priority actions to conserve species and ecosystems, and reviewing this programme in the light of experience.	1	2	3	4	5	<i>Ineffective action</i> The Conservancy appears to have performed less effectively over the past 3 years, has struggled to implement a coherent programme of priority actions to conserve species and ecosystems, and does not appear to review its programme in the light of experience.	
<i>Conservancies</i>							
	1	2	3	4	5		Not known
Northland							
Auckland							
Waikato							
Bay of Plenty							
Tongariro/Taupo							
East Coast/Hawkes Bay							
Wanganui							
Wellington							
Nelson/Marlborough							
Canterbury							
West Coast							
Otago							
Southland							

Leadership and Management							
<i>1 Best practice</i>		<i>2 Above Av.</i>	<i>3 Average</i>	<i>4 Below Av.</i>	<i>5 Poor performance</i>		<i>Not able to assess</i>
C. Well-managed Conservancy appears to operate as a cohesive and well-lead team applying clear and effective systems.	1	2	3	4	5	Management limitations Conservancy does not appear to operate cohesively, there is a lack of leadership in key areas, and/or systems do not appear to be clear or effective.	
Conservancies							
	1	2	3	4	5		Not known
Northland							
Auckland							
Waikato							
Bay of Plenty							
Tongariro/Taupo							
East Coast/Hawkes Bay							
Wanganui							
Wellington							
Nelson/Marlborough							
Canterbury							
West Coast							
Otago							
Southland							

Engagement with Communities							
<i>1 Best practice</i>		<i>2 Above Av.</i>	<i>3 Average</i>	<i>4 Below Av.</i>	<i>5 Poor performance</i>		<i>Not able to assess</i>
<i>D. Constructively engaged with communities</i> Conservancy appears to be constructively engaged with communities to advance conservation. It is very open to the views of its communities, including tangata whenua, and is prepared to alter course in making decisions to bring communities with it.	1	2	3	4	5	<i>Limited or troubled community engagement</i> Conservancy appears to be limited in its engagement with its communities or these involve many troubled relationships. It is either not open to the views of its communities, including tangata whenua, or not easily able to change course in the face of community concerns.	
<i>Conservancies</i>							
	1	2	3	4	5		Not known
Northland							
Auckland							
Waikato							
Bay of Plenty							
Tongariro/Taupo							
East Coast/Hawkes Bay							
Wanganui							
Wellington							
Nelson/Marlborough							
Canterbury							
West Coast							
Otago							
Southland							

Degree of Difficulty						
<i>1 Best practice</i>	<i>2 Above Av.</i>	<i>3 Average</i>	<i>4 Below Av.</i>	<i>5 Poor performance</i>	<i>Not able to assess</i>	
<i>E. Higher degree of difficulty-</i> Conservancy's efforts are significantly constrained by substantial environmental, economic or social challenges in its district and/or the Conservancy's own limited resource base.	1	2	3	4	5	<i>Lower degree of difficulty-</i> Conservancy's efforts are bolstered by environmental, economic or social advantages of its district and/or the Conservancy is relatively well-resourced.
<i>Conservancies</i>						
	1	2	3	4	5	Not known
Northland						
Auckland						
Waikato						
Bay of Plenty						
Tongariro/Taupo						
East Coast/Hawkes Bay						
Wanganui						
Wellington						
Nelson/Marlborough						
Canterbury						
West Coast						
Otago						
Southland						

Three: Ranking of Councils and Conservancies

Regional Council	Score across four management criteria	Score adjusted for degree of difficulty	DoC Conservancy	Score across four management criteria	Score adjusted for degree of difficulty
A	1.8	1.2	A	1.9	1.0
B	2.3	1.6	B	2.2	1.4
C	2.4	1.8	C	2.2	1.6
D	2.4	1.9	D	2.4	1.6
E	2.6	2.0	E	2.3	1.8
F	3.1	2.1	F	2.6	1.9
G	2.9	2.3	G	2.8	2.0
H	3.0	2.3	H	2.8	2.1
I	3.8	2.3	I	2.8	2.1
J	3.1	2.4	J	2.8	2.2
K	3.2	2.4	K	2.9	2.3
L	4.1	3.4	L	3.0	2.3
			M	3.2	2.9

The first score is the average for each council on a 1-5 point ranking across the four criteria with 1 being the highest score. The second score is the first score adjusted for the degree of difficulty. To do this the degree of difficulty score was reversed, with 5 for the highest difficulty and subtracted from the total score for the four management criteria.

The Regional Councils where interviews were conducted are shown in **bold**. These were:

1. Top-ranked Regional Council, Council A, described in the text as Council One.
2. Middle-ranked council, Council E, described in the text as Council Two.
3. Bottom-ranked council, Council L, described in the text as Council Three.

An initial approach was made to Council G, but as full participation was not possible from this council, for logistical reasons, Council E was chosen as a replacement middle-ranked council.

The DoC Conservancies where interviews were conducted are shown in **bold**. These were:

Top-ranked Conservancy: Conservancy A.

Middle-ranked Conservancy: Conservancy G.

Bottom-ranked Conservancy: Conservancy M.

Appendix Four: Interview Guide

Interview Guide

Introductory remarks

Part One – Systems thinking about environmental management

Objectives:

The *primary objective* is to elicit samples of thought that demonstrate the extent to which the interviewee thinks dialectically or systemically.

A *secondary objective* is to gain the interviewee's perspective on the effectiveness of environmental management in the region or Conservancy, the performance of their agency, and things that should be enhanced, retained, or changed.

This part of the interview will be focused on the primary objective, although constructed around asking the interviewee about the effectiveness of the agency's environmental management, with a view to the interviewee demonstrating the extent to which he or she is thinking dialectically. Given the subject matter, the second objective may be met as a matter of course. If this is not the case supplementary questions would be asked.

Questions

- 1) Overall, to what extent is the goal of sustainable management being met in this region (or, how effective is natural heritage management in this Conservancy)? What might be done differently?
- 2) How would you describe the largest challenges facing your agency? How do you expect this to change over time? Do you think you or your team is responding effectively to these?
 - a. If so, how do you know?
 - b. If not, what would you need to do to respond more effectively?
- 3) How do the pieces fit together; how do the challenges you face interact (if this has not already been made clear)? How well do you feel you understand the workings of the system that you're responsible for? How might you explain it to a lay audience?
- 4) How does this (your understanding or experiences arising from your work) fit with your wider sense of how people relate to the environment? What is your wider sense of how people relate to the environment? Do the relationships people have with the environment need to change? If so, how? How might changes be achieved?
- 5) What have you learnt in the process of doing this work? How has this changed the way you approach this work?

Part Two – The way the interviewee makes sense of the world, with a focus on questions of leadership.

Objectives:

The *primary objective* is, through using a subject-object interviewing approach, to demonstrate the structure of the way in which the interviewee makes sense of the world, their level or order of meaning making

A *secondary objective* is to gain the interviewee's perspective on the effectiveness of their leadership or their agency's leadership

Topics: Success, Torn, Angry, Important to me, Strong stand and conviction, Moved/touched,

Fill in the topics one at a time by thinking about recent experiences that relate to your leadership or leadership you have experienced and the topic on the card. What you write on the cards is private to you. And you can take them away after the interview and dispose of them.

Make clear they do not have to talk about anything that they do not want to.

Part Two - Topic Cards

Success

If you think back over the last month or so and recall a time...

when you had achieved something especially satisfying, or something that was difficult for you or you had thought might go the other way, something that relates to your leadership or your leaders, can you note down two or three things that come to mind in relation to that situation.

(If nothing comes to mind for a particular card, skip it and go on to the next one.)

Torn

If you think back over the last month or so and recall a time ...

when you felt really in conflict about something, or part of you felt one way or was urging you in one direction and someone else of another part was feeling another way, something that relates to your leadership or your leaders, can you note down two or three things that come to mind in relation to that situation.

Angry

If you think back over the last month or so and recall a time ... when you were really angry or annoyed about, something that relates to your leadership or your leaders, can you note down two or three things that come to mind in relation to that situation.

Strong stand and convictions

If you think back over the last month or so and recall a time ... when you had to take a strong stand, or felt very keenly ‘this is what I think should or should not be done about this’, something that relates to your leadership or your leaders, can you note down two or three things that come to mind in relation to that situation.

Moved, Touched

If you think back over the last month or so and recall a time ... when you felt quite touched by something you saw, or thought or heard, something that moved you, something that relates to your leadership or your leaders, can you note down two or three things that come to mind in relation to that situation.

Important to me

If I were to just ask you, ‘What is it that is most important to you?’ or ‘What do you care deepest about?’ are there one or two things that come to mind?

Appendix Five: Content Coding

Table A5: Focus of content coding	
Code	Content and issues
	<i>1) Management context</i>
mansoc	a) Societal perspectives and how understandings and expectations of environmental management have changed.
manlaw	b) Effects, utility and suitability of laws and policies
manord	c) The ways organisations and institutions affect the context.
mancap	d) Issues of capability.
	<i>2) Environmental complexity</i>
envphy	a) Complexities of the physical environment and responses to this.
envsoc	b) Complexities of the social environment and responses to this.
	<i>3) Action and learning</i>
alact	a) Drive to simplicity, certainty, control, action.
allrn	b) Provision for flexibility and learning.
aloth	c) Other ways of responding to complexity.
	<i>4) Progress</i>
proenv	a) Progress toward sustainable environmental management.
procon	b) Progress toward integrated conservation management.
proenx	c) What needs to happen to achieve sustainable environmental management.
procnx	d) What needs to happen to achieve integrated conservation management.
	<i>5) Orders of mind</i>
ord3	a) Evidence of 3 rd order concepts.
ord4	b) Evidence of 4 th order concepts.
ord5	c) Evidence of 5 th order concepts.

Appendix Six: Complex Thinking Example

The following is an extended example of Bruce's complex thinking. It was too long to include in the main body of the text. Most of this is the construction of a number of ways of assessing water management issues at different scales. The pieces are generally not complex in themselves. What makes this complex is the construction of the whole and the use of theoretical models and abstractions to illustrate the on-the-ground evidence.

I have edited this text to remove identifying features and replaced the names of rivers, catchments, and districts with the radio identifiers for alphabetical letters.

We began with my asking Bruce about how he saw sustainability in his region operating at different scales.

I'm certainly of the view that if you're going to achieve sustainability, you've got to achieve it at multiple scales, different geographical scales and different time scales. If you look at the key issue facing this organisation, in terms of sustainability, I mean, there's many, but a dominant one is water management. It's the driver of the economy, it's also the key issue in terms of determining environmental quality within [the region]. We've had some work done ... looking at water availability issues. And that was looking at it very generally, it was just one of the parameters. And that's not enough. Got to look at all of the parameters. We've got a second stage that's looking at storage, 'cos it's clear that we're meeting our sustainability limits So we're effectively trying to define those limits and of course that has to be backed up with the RMA. So you need that regulatory tool, to set those limits.

I've been trying to figure out, what are the relevant scales for management of water within [the region]? From what I can tell, there are at least three scales we need to operate at. And we're gradually getting the stakeholder groups in some of the smaller scales, and we're very close to having the group that we need for all of [the region]. It would be useful for me to get a diagram. Well, maybe a number of diagrams!

The [regional] scale. For water ... water is at least convenient in that you can at least deal with it on a catchment basis. But [this region] is a little more complicated than that. This shows all of the major catchments, [Alpha, Bravo, Charlie, Delta, Echo⁷⁷], etcetera, etcetera. This shows from the water demand side, comparison between water availability and the potential demand. Currently, we've got about [this amount of] hectares that are irrigated land, capacity for [double that]. Certainly not the water with the current schemes to do that. Unless we put a stop on water extraction with our sustainability limits, we would have a serious water management problem. But people still want to get an indication of whether there is more water available. What we're looking at here, where it's blue, it shows the amount of water in the catchment is greater than the water demand in the catchment. So the [Alpha] there is more water available than what's needed for environmental reasons or for production reasons. [Bravo-Charlie district], big red areas. Even if you used all of the water that was potentially available in the catchment, you could not irrigate all of the potential

⁷⁷ I have.

areas. So you have a supply/demand problem. A similar issue in [Delta and Echo catchments]. A similar issue up here in the [Foxtrot], and the [Juliet] is where you start to get some additional water and then the [Lima]. And it's somewhat unique in it's a rather small catchment. But there's certainly water available there.

We've been looking ... at the grand scale, that if you put in strategic storages, where would they be to try and address this supply/demand problem? We've also been doing work on all of the river systems and we have [lots of] environmental flow specification sites, to try and make certain that we have the environmental constraints that we need to be managing as well as knowing the supply/demand. So there's an economic and environmental component to all of that. And we've got broader scale monitoring in terms of water quality. Our biggest issue in [the region] is in relation to the environmental quality of the lowland streams. We've got a range of groups that are working to try and address that issue. We're in the process ... we've got an [Alpha] group in place. We've got a [Delta-Echo] group in place. We've got an [Oscar] group in place. There's a lot of work going on in the [Papa] anyway. They're actually quite coherent in a social sense. We've started work up in coastal [Romeo], in the [Sierra], and also in the [Foxtrot], in terms of getting groups established. So we're starting to get each of the catchments and we're now about to try and put all that together in looking at strategic storages. And that's what stage 2 of the study is looking at. And these are some of the potential sites we would be looking at strategic storages.

We've also got groundwater basins which go river to river, so we can't just look at catchments. Because the groundwater zones don't match the catchments. You've actually got to look at the whole system. And there's no doubt with the major river systems, I mean, you've already got the [Lima] diversion race, cutting right across [Papa] and discharging into the [Bravo]. You've got a lot of proposals for use of the [Alpha], either in [Tango] or in the [Delta-Echo]. If you look at what's proposed with [Victor], they're looking at bringing water from the [Bravo] and from the [Charlie].... So the catchment scale is not big enough. You actually need a bigger geographical scale. So that's our high level scale. And stage three of the water study is looking at the storage possibilities in a sustainability framework.

Are you familiar with the pressure-state-response model?

.... [Here there is a detailed diversion to consider modifications to the pressure-state-response model that would, as Bruce puts it, better manage "the pro-active sustainability tasks, rather than just the reactive regulatory tasks"]

The next scale we need to operate at ... this is the [Papa] catchment. We've put in place through our [resources plan], which is very much the RMA-type tool, a range of restrictions on key points within the [Papa] system. And this highlights all of the various key points. I don't want to go into that level of detail. But one of the things we've now done ... we've been able to model just this catchment level. And demonstrate that if we apply the restrictions as absolutes, and not look at some of the more dynamic aspects, we find that if people here are under the restrictions at the same time as the people over here, then these people are effectively denied water. Whereas these ones will actually get it, the way that the hydrology works. We've also looked at how you could apply the restrictions in some minor variations. There's some groups that can take water from either stem [of the river]. If we can shift some people from one stem to another, we've actually got a model where you could get social equity in terms of reliability of supply to farmers. So if you're going to deal with equity of access, which I think is one of the sustainability parameters, but not usually one ... most people talk in economic and environmental. We're now

looking at some of the social equity issues and how we can deliver on sustainability at the catchment scale. So that's the second level.

If we then look ... yeah, this will probably do. One of the other things we've been doing at a finer scale again, as I said, we've got [lots of] environmental flow sites. They are in sub-catchments. So here is the [Whiskey], which is one of the smaller river systems, that's a tributary of the [Yankee]. This is the key gauging site, so this is the point that effectively controls the environmental specification for the river. This river naturally goes dry. We have cut-off points so that irrigation doesn't make the river go drier longer than what would have occurred naturally. So that there is an environmental flow specification [at] which irrigation cuts out. Doesn't mean it's the environmental minimum flow for the entire system, because as I said, the system declines naturally. There is now a water user group associated with this particular point. They get information on what their requirements are, what the environmental flows are, and they agree among themselves to limit the amount that they extract, so that the river doesn't go on restriction until it occurs naturally. They've even agreed whose pump goes off at a particular time. This is the third level.

Now, clearly, there's going to be individual properties as well, where you set environmental conditions. So you could say that there is a fourth level at the individual farm scale, where you're trying to get sustainability as well. So here we've got agreement being reached amongst various farmers about how to achieve their production, and not compromise the environmental flow. So we've got some form of social balance, economic balance, and environmental balance. So I think we need to do it at those three levels [to build a] sustainability framework.

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